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

FORM 8-K/A
(Amendment No. 1)

CURRENT REPORT
Pursuant to Section 13 or 15(d) of the
Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): December 28, 2012

CACTUS VENTURES, INC.

(Exact name of registrant as specified in its charter)

Nevada	**000-52446**	**000-52446**
(State or other jurisdiction of incorporation)	(Commission File Number)	(IRS Employer Identification No.)

501 Fifth Avenue, 3rd Floor New York, NY	**10017**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: **(212) 300-2131**

123 W. Nye Lane, Suite 129 Carson City, NV 89706
(Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- ☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- ☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a -12)
- ☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d -2(b))
- ☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e -4(c))

Explanatory Note: This Form 8-K/A includes the exhibits that Cactus Ventures, Inc. was unable to include, due to size limitations. to the Form 8-K submitted to the Securities and Exchange Commission (SEC) on January 2, 2013. The Form 8-K/A also includes a revised Exhibit 99.3 "Unaudited pro forma combined financial information of Cactus Ventures, Inc. and Actinium Pharmaceuticals, Inc."

CAUTIONARY NOTE REGARDING FORWARD LOOKING STATEMENTS

This Current Report on Form 8-K (this "Report") contains forward-looking statements. The forward-looking statements are contained principally in the sections entitled "Description of Business," "Risk Factors," and "Management's Discussion and Analysis of Financial Condition and Results of Operations." These statements involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. In some cases, you can identify forward-looking statements by terms such as "anticipates," "believes," "seeks," "could," "estimates," "expects," "intends," "may," "plans," "potential," "predicts," "projects," "should," "would" and similar expressions intended to identify forward-looking statements. Forward-looking statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. These risks and uncertainties include, but are not limited to, the factors described in the section captioned "Risk Factors" below. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Such statements may include, but are not limited to, information related to: anticipated operating results; relationships with our merchants and subscribers; consumer demand; financial resources and condition; changes in revenues; changes in profitability; changes in accounting treatment; cost of sales; selling, general and administrative expenses; interest expense; the ability to produce the liquidity or enter into agreements to acquire the capital necessary to continue our operations and take advantage of opportunities; legal proceedings and claims.

Also, forward-looking statements represent our estimates and assumptions only as of the date of this Report. You should read this Report and the documents that we reference and file or furnish as exhibits to this Report completely and with the understanding that our actual future results may be materially different from what we expect. Except as required by law, we assume no obligation to update any forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in any forward-looking statements, even if new information becomes available in the future.

USE OF CERTAIN DEFINED TERMS

Except as otherwise indicated by the context, references in this report to "we," "us," "our," "our Company," or "the Company" are to the combined business of Cactus Ventures, Inc. and its consolidated subsidiaries.

In addition, unless the context otherwise requires and for the purposes of this Report only:

- "Closing Date" means December 28, 2012;
- "Exchange Act" refers to the Securities Exchange Act of 1934, as amended;
- "Actinium" or "API" refers to Actinium Pharmaceuticals, Inc., a Delaware corporation;
- "Cactus" or "CTVN" refers to Cactus Ventures, Inc., a Nevada corporation;
- "SEC" or refers to the Securities and Exchange Commission; and
- "Securities Act" refers to the Securities Act of 1933, as amended.

INTRODUCTION

On December 28, 2012, Cactus entered into a transaction (the "Share Exchange"), pursuant to which Cactus acquired 21% of the issued and outstanding equity securities of Actinium, in exchange for the issuance of 4,309,015 shares of common stock, par value $0.01 per share, of Cactus (the "Common Stock"), which were issued to the shareholders of Actinium. As a result of the Share Exchange, the former shareholders of Actinium became the controlling shareholders of Cactus. In connection with the Share Exchange, Diane S. Button, the former sole director and officer of Cactus submitted a resignation letter resigning from these positions, effective upon the closing of the Share Exchange, and the directors of Actinium were appointed to the Board of Directors of Cactus, and the officers of Actinium were appointed as the officers of Cactus. The Company intends to continue to exchange its shares of common stock for shares of Actinium held by the remaining Actinium shareholders.

The Share Exchange was accounted for as a reverse takeover/recapitalization effected by a share exchange, wherein Actinium is considered the acquirer for accounting and financial reporting purposes. For more information about the acquisition of Actinium, see "Item 1.01—Share Exchange" and "Item 2.01—Description of Business—Our Corporate History and Background" of this Report.

As a result of the Share Exchange, Cactus is now a holding company operating through Actinium, a clinical-stage biopharmaceutical company developing certain cancer treatments.

To the extent that we are deemed to be a shell company, and in accordance with the requirements of Item 2.01(a)(f) of Form 8-K, this Report sets forth information that would be required if the Cactus was required to file a general form for registration of securities on Form 10 under the Exchange Act with respect to the Common Stock (which is the only class of Cactus's securities subject to the reporting requirements of Section 13 or Section 15(d) of the Exchange Act upon consummation of the Share Exchange).

This Current Report contains summaries of the material terms of various agreements executed in connection with the transactions described herein. The summaries of these agreements are subject to, and are qualified in their entirety by, reference to these agreements, all of which are incorporated herein by reference.

This Current Report is being filed in connection with a series of transactions consummated by the Company and certain related events and actions taken by the Company.

This Current Report responds to the following items on Form 8-K:

Item 1.01 Entry into a Material Definitive Agreement

Item 2.01 Completion of Acquisition or Disposition of Assets

Item 3.02 Unregistered Sales of Equity Securities

Item 4.01 Changes in Registrant's Certifying Accountant

Item 5.01 Changes in Control of Registrant

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

Item 5.05 Amendments to the Registrant's Code of Ethics, Waiver of the Code of Ethics

Item 5.06 Change in Shell Company Status

Item 9.01 Financial Statements and Exhibits

TABLE OF CONTENTS

Item 1.01 Entry into a Material Definitive Agreement.

ACQUISITION OF ACTINIUM AND RELATED TRANSACTIONS

Acquisition of Actinium

On the Closing Date, Cactus entered into a Share Exchange Agreement (the "Exchange Agreement") with (i) Actinium and (ii) the former shareholders of Actinium (the "Actinium Shareholders") pursuant to which we acquired 12,939,986 shares of capital stock of Actinium from the Actinium Shareholders in exchange for the issuance of 4,309,015shares of Common Stock to the Actinium Shareholders (the "Share Exchange"). As part of the Share Exchange, Actinium paid $250,000 to the shareholders of Cactus before the consummation of the Share Exchange. As a result of the Share Exchange, the Actinium Shareholders became the principal shareholders of Cactus.

The foregoing description of the Exchange Agreement is qualified in its entirety by reference to the provisions of the Exchange Agreement filed as Exhibit 2.1 to this Report, which is incorporated by reference herein.

The Offering

On October 1, 2012, prior to the closing of the Share Exchange Agreement, Actinium commenced an offering (the "Offering") of units (the "Units") each Unit consisting of an aggregate of (i) 181,818 shares of common stock of Actinium (the "Actinium Stock"); (ii) an "A" warrant to purchase 181,818 shares of Actinium Stock, exercisable at a price of $0.55 per share for a period of one hundred and twenty (120) days from the date of the final closing of the Offering (the "A Warrant"); and (iii) a "B" warrant to purchase 90,909 shares of Actinium Stock, exercisable at a price of $0.825 per share for a period of five (5) years from the date of the final closing (the "B Warrant") (collectively, with the A Warrant, the "Investor Warrants"). The Units were offered to Accredited Investors (as such term is defined in Rule 501 under the Securities Act) for $100,000 each. Laidlaw & Company (UK) Ltd. was engaged by Actinium as its exclusive agent (the "Placement Agent") to assist in placing the Units. The minimum offering amount is $5,000,000 (the "Minimum Offering Amount") and the maximum offering amount is $15,000,000 (the "Maximum Offering Amount"). Actinium also granted the Placement Agent an option (the "Greenshoe Option") to increase the Offering through the sale, in whole or in part, of an amount of Units equal to $5,000,000.

On December 19, 2012 and in contemplation of the closing of the Share Exchange, Actinium closed on the Minimum Offering Amount selling an aggregate of 9,366,273 Units (prior to the Share Exchange) to investors (the "Investors"), pursuant to subscription agreement (the "Subscription Agreements") and Unit Purchase Agreements (the "Unit Purchase Agreements") for gross proceeds in the amount of $5,151,450, and net proceeds in the amount of $4,469,776 after legal and other fees and expenses remitted to the Placement Agent. Post the closing of the Share Exchange, the Offering will continue on the same terms on a pro-forma basis with the common shares offered at $1.65 per share, the 120 day warrants exercise price at $1.65 per share and the 5 year warrants exercise price at $2.48 per share.

Registration Rights

In connection with the Offering, Actinium entered into a 2012 investor rights agreement (the "Investor Rights Agreement") with each of the Investors, under which it would be required, within 45 days after the final closing of the Offering (the "Filing Deadline"), to file a registration statement (the "Registration Statement") registering for resale (i) all Common Stock issued to the Investors pursuant to the Share Exchange Agreement, in exchange for the Actinium Stock issued as part of the Units, and (ii) all shares of Common Stock issuable upon exercise of the warrants issued pursuant to the Share Exchange Agreement in exchange for the Investor Warrants (collectively, the "Registrable Shares"). The holders of any Registrable Shares removed from the Registration Statement as a result of a Rule 415 or other comment from the SEC shall have "piggyback" registration rights for such Registrable Shares with respect to any registration statement filed by Cactus following the effectiveness of the Registration Statement which would permit the inclusion of such Registrable Shares. Actinium has agreed to use its reasonable best efforts to have the Registration Statement declared effective within 30 days of being notified by the SEC that the Registration Statement will not be reviewed by the SEC (and in such case of no SEC review, not later than 60 days after the Filing Deadline) or within 180 days after the Filing Deadline in the event the SEC provides comments to the Registration Statement (the "Effectiveness Deadline"). In addition, certain other holders of the Company's common stock have demand registration rights at any time after the earlier of (i) October 2014, or (ii) three (3) months after API's common stock becomes publicly traded.

Lock-Up Agreement

On the Closing Date and in connection with the Offering, we entered into lock-up agreements (collectively, the "Lock-Up Agreements") with each of the officers, and directors, as well as the Placement Agent and any other controlling persons, under which they agreed to not sell or otherwise transfer any securities of Actinium or Cactus owned by them until the date that is the earlier of (i) twelve (12) months from the Closing Date; or (ii) six (6) months following the effective date of the Registration Statement. On December 31, 2012, Actinium Holdings Ltd. (AHL) agreed not to transfer its shares of Common Stock, subject to exceptions for certain related-party transfers, transfers to trusts and other private transfers, until, in general, the earlier of (i) twelve (12) months from the Closing Date; or (ii) six (6) months following the effective date of the Registration Statement; however, the AHL "lock-up" agreement has not been finalized as of the date of this filing.

In addition, on the Closing Date and in connection with the Share Exchange, we also entered into a lock-up agreement with our former principal shareholder, Diane Button, under which she agreed to not sell or otherwise transfer any securities of Cactus owned by her until the date that is the earlier of (i) the final closing of the Offering, or (ii) February 28, 2013.

The foregoing description of the Subscription Agreements, Unit Purchase Agreement, A Warrant, B Warrant, Investor Rights Agreement, and Lock-Up Agreements are qualified in its entirety by reference to the provisions of the Forms of Subscription Agreement, Unit Purchase Agreement, A Warrant, B Warrant, Investor Rights Agreement and Lock-Up Agreement filed as Exhibits 10.6, 10.7, 4.1, 4.2, 10.20 and 4.3, respectively, to this Report, which are incorporated by reference herein.

Item 2.01 Completion of Acquisition or Disposition of Assets.

The disclosure in Item 1.01 of this Report regarding the Share Exchange is incorporated herein by reference in its entirety.

FORM 10 DISCLOSURE

As disclosed elsewhere in this Report, we acquired Actinium on the Closing Date pursuant to the Share Exchange, which was accounted for as a recapitalization effected by a share exchange. Item 2.01(f) of Form 8-K provides that if the Company was a shell company, other than a business combination related shell company (as those terms are defined in Rule 12b-2 under the Exchange Act) immediately before the Share Exchange, then the Company must disclose the information that would be required if the Company were filing a general form for registration of securities on Form 10 under the Exchange Act reflecting all classes of the Company's securities subject to the reporting requirements of Section 13 of the Exchange Act upon consummation of the Share Exchange.

To the extent that the Company might have been considered to be a shell company immediately before the Share Exchange, we are providing below the information that we would be required to disclose on Form 10 under the Exchange Act if we were to file such form. Please note that the information provided below relates to the combined Company after the acquisition of Actinium, except that information relating to periods prior to the date of the Share Exchange relate only to Actinium unless otherwise specifically indicated.

DESCRIPTION OF BUSINESS

Business Overview

We are a biopharmaceutical company focused on the $50 billion market for cancer drugs. Our most advanced products are Actimab™-A, an antibody-drug construct containing actinium 225 (Ac-225), currently in human clinical trials for acute myeloid leukemia (AML) and Iomab™-B, an antibody-drug construct containing iodine 131 (I-131), used in myeloconditioning for hematopoietic stem cells transplantation (HSCT) in various indications. API is currently designing a trial which the Company intends to submit for registration approval in HSCT in the settings of refractory and relapsed acute myeloid leukemia in older patients. The Company is developing its cancer drugs using its expertise in radioimmunotherapy. In addition, the Ac-225 based drugs development relies on the patented Alpha Particle Immunotherapy Technology (APIT) platform technology co-developed with Memorial Sloan- Kettering Cancer Center, and a related institution. The APIT technology couples monoclonal antibodies (mAb) with extremely potent but comparatively safe alpha particle emitting radioactive isotopes, in particular actinium 225 and bismuth 213. The final drug construct is designed to specifically target and kill cancer cells while minimizing side effects. The Company 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 U.S.

Our Corporate History and Background

We were formed as a Nevada corporation on October 6, 1997, originally under the name Zurich U.S.A., Inc. On July 10, 2006, we changed our name to Cactus Ventures, Inc. and began pursuing our business of marketing sunglasses. The Company encountered numerous problems with various vendors and ceased its operations. The Company shifted its efforts to seeking a business combination opportunity with a business entity, and negotiated a merger of a target company into the Company. Upon ceasing its operations, the Company was considered a "blank check" company as such term is defined under the Securities Act.

Upon completing the Share Exchange, the Company ceased being considered a "blank check" company and is now a clinical-stage biopharmaceutical company developing certain cancer treatments.

Acquisition of Actinium

On the Closing Date, Actinium completed a Share Exchange with Cactus, whereby Cactus acquired 21% of the issued and outstanding capital stock of Actinium from the Actinium Shareholders in exchange for the issuance of 4,309,015 shares of Common Stock to the Actinium Shareholders (the "Share Exchange"). Cactus has a class of securities registered under the Exchange Act of 1934 but its Common Stock is not registered under the Securities Act of 1933. As part of the Share Exchange, Actinium paid $250,000 to the shareholders of Cactus before the consummation of the Share Exchange. As a result of the Share Exchange, Actinium became the wholly owned subsidiary of Cactus and the Actinium Shareholders became the principal shareholders of Cactus.

The Share Exchange was treated as a recapitalization effected through a share exchange, with Actinium as the accounting acquirer and the Cactus the accounting acquiree. Unless the context suggests otherwise, when we refer in this Report to business and financial information for periods prior to the consummation of the Share Exchange, we are referring to the business and financial information of Actinium.

Effective following the expiration of the ten day period following the mailing of the information statement required by Rule 14f-1 under the Exchange Act, Diane S. Button has resigned from her position as member of the Board of Directors of the Company. Effective upon the closing of the Share Exchange, Diane S. Button resigned as an officer of the Company. Also effective upon the closing of the Share Exchange, Jack V. Talley was appointed to our Board of Directors. Effective as of the expiration of the ten day period following the mailing of the information statement required by Rule 14f-1 under the Exchange Act Dr. Rosemary Mazanet, David Nicholson, Sandesh Seth and Sergio Traversa were appointed to our Board of Directors. In addition, our Board of Directors appointed Jack V. Talley to serve as our President and Chief Executive Officer, Dragan Cicic to serve as our Chief Operating Officer and Chief Medical Officer, and Enza Guagenti to serve as our Chief Financial Officer, effective immediately upon the closing of the Share Exchange.

As a result of the Share Exchange, Actinium became a subsidiary of Cactus and Cactus assumed the business and operations of Actinium. Cactus plans to change its name to more accurately reflect its new business operations. As Cactus is a "reporting company" under the Exchange Act of 1934, and it is required to file periodic filings with the SEC, which include Actinium's quarterly and annual financial statements.

Corporate History of Actinium

Actinium was incorporated in 2000 in the state of Delaware. Until the Share Exchange, Actinium was a clinical-stage, privately held biopharmaceutical company with:

- Two clinical-stage products, Iomab.-B and Actimab.-A, in development for blood borne cancers;
- Preclinical data in additional cancer indications;
- A proprietary technology platform for novel radioimmunotherapy cancer treatments; and
- A proprietary process for manufacturing of the alpha particle emitting radioactive isotope actinium 225 (Ac-225).

Iomab.-B has completed Phase I and Phase II trials as a preparatory regimen in conjunction with fludarabine and reduced intensity radiation conditioning in patients who are otherwise ineligible for hematopoietic stem cell transplantation (HSCT) and the Company expects it to enter a regulatory approval trial in 2013, subject to input from the FDA concerning the design and conduct of a pivotal trial. Actimab.-A is currently in a Phase I/II trial in newly diagnosed elderly acute myeloid leukemia (AML). In addition, using its patented Alpha Particle Immunotherapy Technology (APIT) platform and via its collaboration with the Memorial Sloan Kettering Cancer Center (MSKCC), the Company has preclinical data on potential drug candidates in several other cancer indications and expects to further develop these into clinical stage drug candidates.

The Actinium has one wholly owned subsidiary, MedActinium, Inc., a Delaware corporation, which is party to certain isotope related licenses and contracts on which the Company relies.

Upon Actinium's formation in 2000, it acquired Pharmactinium, Inc. and MedActinium, Inc., and through Pharmactinium, Inc. acquired certain rights to the APIT platform. Core technology patents were in-licensed from N.V. Organon which also provided seed funding. Pharmactinium, Inc. was party to a research and development agreement with MSKCC beginning in 1996. In 2002, this agreement and relationship was significantly expanded and now includes research and development, preclinical development, clinical trials and commercial technology licenses. In 2007, Pharmactinium, Inc. was merged with and into the Company. In 2007, the Company also acquired its sister company, Actinium Pharmaceuticals, Limited (Bermuda) (the "Bermuda Company"), by a merger of the Bermuda Company into API and thereby also acquired certain patent licenses relating to APIT previously licensed by the Bermuda Company to API.

In 2000, API also began what has become a long term relationship with General Atlantic Investments Limited (GAIL), an entity which has provided most of the Company's investment capital since 2000, totaling $50.7 million. In 2010, the parent of GAIL contributed and transferred its ownership of GAIL (now renamed Actinium Holdings, Limited), whose only asset at that time was the shares of API, to an indirect subsidiary of Memorial Sloan-Kettering Cancer Center. In January 2012, the Company closed on $7,844,268 in gross funding through the sale of Series E Preferred Stock and a Senior Convertible Note financing. Our executive office is located at 501 Fifth Avenue, 3rd Floor, New York, NY 10017 and our telephone number is (212) 300-2131. Our website address is http://www.actiniumpharmaceuticals.com. Except as set forth below, the information on our website is not part of the Form 10 information for Actinium.

Summary of Scientific and Business Achievements:

The Company's scientific and business achievements to date include:

- In-licensing a Phase II clinical stage monoclonal antibody, BC8, with safety and efficacy data in more than 250 patients in need of Hematotoietic (HSCT, currently in 7 active Phase I and Phase II clinical trials;
- Commencing a Company sponsored multi-center Phase I/II clinical trial for Actimab-A in elderly Acute Myeloid Leukemia;
- Developing and organizing manufacturing of Actinium's lead drug candidate which was accepted by the FDA for multi-center human use;
- Supporting three physician sponsored clinical trials, including a Phase I and a Phase I/II trial with the alpha emitting radioactive isotope bismuth 213 (Bi-213) based AML drug and a Phase I clinical trial with the alpha emitting radioactive isotope actinium 225 (Ac-225) based AML drug;
- In-licensing the AML targeting monoclonal antibody known as HuM195 or Lintuzumab;
- Establishing clinical and preclinical development relationships with world-class institutions such as MSKCC, Fred Hutchinson Cancer Research Center (FHCRC) and University of Texas MD Anderson Cancer Center (the MD Anderson Cancer Center relationship includes clinical trials only), as well as leading clinical experts in the fields of AML and HSCT;
- Securing rights to an intellectual property estate that covers key aspects of the Company's proprietary technology platform;
- Supporting a number of pipeline projects, including preclinical experiments in metastatic prostate cancer, metastatic colon cancer, antiangiogenesis and breast cancer models;
- Maintaining contractual relationship with Oak Ridge National Laboratory (ORNL) of the Department of Energy (DOE) which gives API access to most of the current world supply of Ac-225; and
- Successfully developing commercial production methods for actinium 225.

Business Strategy

API intends to potentially develop its most advanced clinical stage drug candidates through approval in the case of Iomab™-B and up to and including a Phase II proof of concept human clinical trial (a trial designed to provide data on the drug's efficacy) in the case of Actimab™-A. If these efforts are successful, API may elect to commercialize Iomab™-B on its own or with a partner in the U.S. and/or outside of the U.S. to out-license the rights to develop and commercialize the product to a strategic partner. In the case of Actimab™-A, API will most likely seek to enter into strategic partnerships whereby the strategic partner(s) co-fund(s) further human clinical trials of the drug that are needed to obtain regulatory approvals for commercial sale within and outside of the U.S. In parallel, the Company intends to identify and begin initial human trials with additional actinium-225 drug candidates in other cancer indications. API intends to retain marketing rights for its products in the U.S. whenever possible and outlicense marketing rights to its partners for the rest of the world.

Market Opportunity

API is competing in the marketplace for cancer treatments estimated at over $54 billion in 2011 sales per IMS Health and projected to exceed $76 billion per year by 2015, according to the Global Academy for Medical Education. While surgery, radiation and chemotherapy remain staple treatments for cancer, their use is limited by the fact that they often cause substantial damage to normal cells. On the other hand, targeted therapies exert most or all of their effect directly on cancer cells, but often lack sufficient killing power to eradicate all cancer cells with just the antibody. A new approach for treating cancer is to combine the precision of antibody-based targeting agents with the killing power of radiation or chemotherapy by attaching powerful killing agents to precise molecular carriers called monoclonal antibodies (mAb). API uses monoclonal antibodies labeled with radioisotopes to deliver potent doses of radiation directly to cancer cells while sparing healthy tissues. The radioisotopes we use are the alpha emitter Ac-225 and the beta emitter I-131. I-131 is among the best known and well characterized radioisotopes. It is used very successfully in treatment of papillary and follicular thyroid cancer as well as other thyroid conditions. It is also attached to a monoclonal antibody in treatment of Non-Hodgkin's Lymphoma (NHL). It is also used experimentally with different carriers in other cancers. Ac-225 has many unique properties and the Company is a leader in developing this alpha emitter for clinical applications using its proprietary APIT technology.

API's most advanced products are Actimab™-A, Ac-225 labeled mAb for treatment of newly diagnosed AML, a cancer of the blood, in patients ineligible for currently approved therapies, and Iomab™-B, I-131 labeled mAb for preparation of relapsed and refractory AML patients for hematopoietic stem cell transplantation (HSCT). Iomab™-B offers the only potentially curative treatment for these patients most of whom do not survive beyond a year after being diagnosed with this condition. Iomab™-B has also demonstrated efficacy in HSCT preparation for other blood cancer indications, including Myelodysplastic Syndrome (MDS), acute lymphoblastic leukemia (ALL), Hodgkin's Lymphoma, and Non-Hodgkin's Lymphoma (NHL). These are all follow-on indications for which Iomab™-B can be developed and it is the Companies intention to explore these opportunities. In 2013, the Company intends to begin preclinical development of the mAb used in Iomab™-B by replacing I-131 with Ac-225. Such a follow-on product could have several advantages as a second generation product, including ease of transportation, minimal safety requirements for the centers using it, doses lower by orders of magnitude and significantly lower costs of manufacturing.

There are currently no approved treatments for either Actimab™-A or Iomab™-B targeted patients.

Other potential product opportunities in which a significant amount of preclinical work is being undertaken include metastatic colorectal cancer, metastatic prostate cancer and antiangiogenesis which reduces the blood supply to solid tumors.

The Company believes that its biggest market opportunity lies in the applicability of the Company's APIT platform technology to a wide variety of cancers. A broad range of solid and blood borne cancers can be potentially targeted by monoclonal (mAbs) to enable treatment with its APIT technology. The APIT technology could potentially be applied to mAbs that are already FDA approved to create more efficacious and/or safer drugs ("biobetters").

Clinical Trials

API has completed a Phase I and Phase I/II physician trial in AML at MSKCC using Bismab®-A, API's first generation AML drug that consists of bismuth-213 attached to the antibody Lintuzumab™. The Phase II arm of the Bismab®-A drug study has shown signs of the drug's efficacy and safety, including reduction in peripheral blast counts and complete responses in some patients. Bi-213 is a daughter, i.e., product of the degradation of Ac-225, with cancer cell killing properties similar to Ac-225 but is less potent.

API has commenced its first company sponsored Phase I/II multi-center trial with fractionated (two) doses of Actimab™-A, Actinium's lead product for treatment of elderly AML that consists of an AML specific monoclonal antibody (HuM195, also known as Lintuzumab™) and the actinium 225 radioactive isotope attached to it. The Company intends to conduct these trials at world-class cancer institutions such as MSKCC, Johns Hopkins Medicine, University of Pennsylvania Health System, Fred Hutchinson Cancer Center and MD Anderson Cancer Center.

The Company also continues to sponsor a Phase I AML trial at MSKCC with a single-dose administration of Actimab™-A. Initial data shows elimination of leukemia cells from blood in 67% of all evaluable patients who received a full dose and in 83% of those treated at dose levels above 0.5 microcuries (uCi/kg), and eradication of leukemia cells in both blood and bone marrow in 20% of all evaluable patients and 25% of those treated at dose levels above 0.5 uCi/kg. Dose levels in that trial have been reduced as we continue our work on establishing a maximum tolerated dose.

This Phase I trial builds on the experience with Company's first generation drug Bismab®-A that contains the same antibody used in Actimab™-A but labeled with bismuth 213, a less potent alpha emitting daughter of actinium 225 used in Actimab™-A. Bismab®-A trials and the Phase I Actimab™-A trial were focused on relapsed, refractory and other difficult to treat acute myeloid leukemia patients. The new multicenter Phase I/II trial is focused on newly diagnosed AML patients who have historically had better outcomes. In addition, the new trial includes low doses of chemotherapy with the goal of further improving patient outcomes.

Operations

The Company's current operations are primarily focused on furthering the development of its lead clinical drug candidates Actimab™-A and Iomab™-B. In the case of Actimab™-A, key ongoing activities include progressing a multi-center Phase I/II trial, support for an ongoing Phase I clinical trial at Memorial Sloan Kettering Cancer Center in New York, managing isotope and other materials supply chain, and managing the manufacturing of the finished drug candidate product. API has secured access to much of the currently available world reserves of Ac-225 and Bi-213 through a renewable contractual arrangement with the U.S. Department of Energy (DOE). The Company projects that these quantities are sufficient to support early stages of commercialization of alpha isotopes based products. API has also developed its own proprietary process for industrial scale Ac-225 production in a cyclotron in quantities adequate to support full product commercialization.

Operations related to Iomab™-B include planning for a registration trial which will include development of commercial scale manufacturing to be suitable for an approval trial and preparation of appropriate regulatory submissions.

Intellectual Property Portfolio

API's technology and products are protected by an extensive intellectual property estate in excess of 60 patents and patent applications, both in the U.S. and other countries. The cornerstones of the portfolio are patents and patent applications covering use of Ac-225 and Bi-213 for medical purposes and production of the Ac-225 isotope. Additional patents and applications relate to the API's proprietary manufacturing and treatment processes. Additionally, the Company believes that several of its programs are likely eligible for "Orphan Drug Protection" including its products intended for AML as well as bone marrow transplants. Orphan Drug Protection in the United States refers to the protection provided by the 1983 Orphan Drug Act which provides seven years of market exclusivity to drugs developed to address diseases that affect fewer than 200,000 patients in the United States. Similar protection exists in Europe and provides for ten years of marketing exclusivity.

Key Strengths

API believes that the key elements for its market success include:

- **Clinical results to date imply lower development risk for its lead drug candidates:** API's lead drug candidates have been tested in over 300 patients and demonstrated favorable safety and efficacy profiles. Iomab™-B has been administered to more than 250 patients in a number of Phase I and Phase II trials and has shown a clear survival benefit in the indication for which it is being developed. Bismab®-A and Actimab™-A, drugs based on the APIT platform have so far been tested in over 60 patients in 3 clinical trials. In each trial they exhibited few side effects and have shown indications of efficacy. The current proof-of-concept Actimab™-A Phase I/II clinical trial is directed at a patient population that is generally easier to treat (newly diagnosed vs. relapsed/refractory in previous trials), and employs a more potent treatment regimen (low dose chemotherapy plus two doses of ActimabTM-A plus low dose chemotherapy vs. a single dose of ActimabTM-A in the physician sponsored trial).

- **Additional product opportunities from the APIT platform:** API's Alpha Particle Immunotherapy technology has the potential for broad applicability for the treatment of many cancer types, which allows the Company to add new product candidates to its pipeline based on well-defined patent protected methods. The next product from the platform is expected to be a second generation BC8 product linked to Ac-225, Actimab™-B which could potentially significantly expand the market that is targeted by Iomab™-B.

- **Collaboration with Memorial Sloan-Kettering Cancer Center (MSKCC):** API's collaboration with MSKCC includes licensing, research and clinical trial arrangements involving MSKCC labs and clinicians and included financial support with respect to certain pre-2012 R&D-related expenses.

- **Scientific backing of leading experts:** API's clinical advisory board and collaborators include some of the best recognized clinicians and scientists working at some of the highest regarded medical institutions in the U.S. and the world, including MSKCC, Johns Hopkins University, University of Pennsylvania, Fred Hutchinson Cancer Center and MD Anderson Cancer Center. This is expected to be beneficial to API both in clinical development and market acceptance assuming its drug candidates are approved.

- **Isotope supply secured for clinical trials:** API has a contractual relationship with ORNL (Oak Ridge National Laboratory of the Department of Energy (DOE)) that provides the Company access to the largest known supply reserves of actinium 225. Iodine 131 is readily available from a number of qualified pharmaceutical supply vendors.

- **Proprietary alpha emitting isotope manufacturing fully developed:** API has developed its own proprietary technology for commercial scale manufacturing of actinium 225. This is expected to ensure commercial supply of Ac-225 for Actimab™-A, Actimab™-B and other actinium-linked products should they be approved.

- **cGMP Actimab™-A manufacturing developed:** API has developed at a contractor's site full cGMP (current good manufacturing practices) manufacturing processes for its drug candidate Actimab™-A.

- **Substantial IP portfolio:** API has an intellectual property portfolio in excess of 60 patents and patent applications, both in the U.S. and other countries, which cover clinical applications of the APIT technology and methods of manufacturing actinium 225 thus giving API control over both the applications of its technology and a supply chain of its key ingredients, actinium 225 and bismuth 213 alpha emitting isotopes.

Competition Overview

To API's knowledge, there are no other commercial entities that have significant programs in place for developing Ac-225- or Bi-213-based drugs. In the wider field of medical oncology, the Company faces competition from: developers of other alpha emitter based drug candidates, other radioimmunotherapy based technologies, technologies for labeling antibodies with toxic drugs (antibody-drug conjugates), and for each disease indication from all drugs available and/or in development.

For Actinium's lead indication, acute myeloid leukemia, there are a number of companies developing drugs for AML induction in the elderly. These drugs are most often small molecules. Until recently, our leukemia targeting monoclonal antibody HuM195 was under development as a native i.e. unconjugated mAb by Seattle Genetics, Inc., but its development has been discontinued due to lack of efficacy of the native mAb in that company's pivotal trial in AML. To API's knowledge, there are no clinical trials that have shown significant efficacy in this indication.

In the field of hematopoietic stem cell transplantation, pharmaceuticals currently used for bone marrow ablation/conditioning are generic drugs and to API's knowledge there are no significant industry efforts to enter this area, especially not in older patients.

Government Regulation

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

U.S. Food and Drug Administration Regulation

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

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

Employees

As of December 28, 2012, we have 4 full-time employees and 1 part-time employee. None of these employees are covered by a collective bargaining agreement, and we believe our relationship with our employees is good. We also engage consultants on an as-needed basis to supplement existing staff.

Available Information

We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Reports filed with the SEC pursuant to the Exchange Act, including annual and quarterly reports, and other reports we file, can be inspected and copied at the public reference facilities maintained by the SEC at 100 F Street, N.E., Washington, D.C. 20549. Investors may obtain information on the operation of the public reference room by calling the SEC at 1-800-SEC-0330. Investors can request copies of these documents upon payment of a duplicating fee by writing to the SEC. The reports we file with the SEC are also available on the SEC's website (http://www.sec.gov).

RISK FACTORS

An investment in our common stock involves a high degree of risk. You should carefully consider the risks described below, together with all of the other information included in this Report, before making an investment decision. If any of the following risks actually occurs, our business, financial condition or results of operations could suffer. In that case, the trading price of our shares of common stock could decline and you may lose all or part of your investment. See "Cautionary Note Regarding Forward Looking Statements" above for a discussion of forward-looking statements and the significance of such statements in the context of this Report.

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 September 30, 2012, we had a deficit accumulated during development stage of approximately $52.8 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 for at least the next several years 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 U.S. 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.

We do not currently have sufficient capital for the development and commercialization of our lead product and we will need to continue to seek capital from time to time to continue development of our lead drug candidates and to acquire and develop other product candidates. Our first product is not expected to be commercialized until at least 2016 and we do not expect that the partnering revenues it will generate will be sufficient to fund our ongoing operations. We believe that we may need to raise substantial additional capital to fund our continuing operations and the development and commercialization of our product candidates in or before the last quarter of 2013.

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. API's Amended and Restated Certificate of Incorporation requires us to obtain the consent of our stockholders who hold a majority of our issued shares of stock and also the consent of a majority in interest of our Series E Preferred shareholders, prior to issuing any new shares of stock in consideration for new capital and also requires us, until one year after expiration of all lock-up agreements entered into in connection with the Share Exchange, to obtain the consent of the Placement Agent in order to increase or decrease the number of directors of the Company. In addition, API's Amended and Restated Stockholders Agreement provides certain of our stockholders with preemptive rights, which obligate us to offer them the right to purchase an amount of any stock issuances in proportion to the shares already owned by such stockholders. We may not be able to raise sufficient funds to commercialize our products if our stockholders do not consent to our future proposed capital raising activities.

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 U.S. Food and Drug Administration clearances for our radio-immunotherapy products, or if such clearances 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 clearance or approval to market a radio-immunotherapy product is expensive and time-consuming and, notwithstanding the effort and expense incurred, clearance or approval is never guaranteed. If we are not successful in obtaining timely clearance or approval of API 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 the product has received approval of a Biologics License Application ("**BLA**") filed with the U.S. Food and Drug Administration pursuant to 21 C.F.R. § 314, seeking permission to market the product in interstate commerce in the United States. The BLA process is costly, lengthy and uncertain. Any BLA application filed by the Company 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.

Obtaining clearances or approvals from the FDA and from the regulatory agencies in other countries could result in unexpected and significant costs for us and consume management's time and other resources. The FDA and other 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 a BLA approval or pre-market approvals 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 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 cleared or approved, 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 actually cure cancer.

Only two product candidates of the Company are currently in clinical development by the Company. There is an ongoing Phase I AML trial at MSKCC under physician IND with a single dose of Actimab™-A. The Company has also commenced a Phase I/II multi-center AML trial with fractionated doses of Actimab™-A. Additionally, there are a number of physician IND trials that have been conducted or are currently ongoing at FHCRC with single doses of Iomab™-A. Neither API nor any relevant collaborative partner(s) has yet undertaken any clinical assessment or investigation of API 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 new BLA approvals.

Once a particular API product candidate receives FDA approval or clearance, expanded uses or uses in new indications of our products may require additional human clinical trials and new regulatory approvals or clearances, 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 clearances or 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 clearances and approvals can be a time-consuming process, and delays in obtaining required future clearances or 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 grant BLA approval of our future product candidates and failure to obtain necessary clearances or approvals for our future product candidates would adversely affect our ability to grow our business.

We have recently commenced a multi-center Phase I/II clinical trial for our lead drug candidate, Actimab™-A, in AML and in the future expect to submit a BLA to the FDA for approval of this product. This drug candidate is also the subject of an ongoing human safety trial being conducted under a physician IND at Memorial Sloan Kettering Cancer Center in New York City. We are in the early stages of evaluating other drug candidates consisting of conjugates of Ac-225 with human or humanized antibodies for pre-clinical and clinical development in other types of cancer and the Company has recently acquired rights to Iomab™, a Phase II clinical stage monoclonal antibody with safety and efficacy data in more than 250 patients in need of HSCT. Product candidates utilizing this antibody would also require FDA approval of a BLA. The FDA may not approve or clear these products for the indications that are necessary or desirable for successful commercialization. Indeed, the FDA may refuse our requests for BLA market approval of new products, new intended uses or indications to existing or future product candidates. Failure to receive approval for our new products would have an adverse effect on our ability to expand our business.

Clinical trials necessary to support BLA approval of our future product candidates will be time consuming and expensive. Delays or failures in our clinical trials will 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 BLA approval of Actimab™-A and other product candidates, will be time-consuming and expensive and the outcome 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 support initial safety and efficacy of Actimab™-A and on October 6, 2008, and January 5, 2009, we submitted IND amendments to the FDA for the conduct of a multi-center Phase I/II clinical trial for treatment of AML. 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 final BLA approval of 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.

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 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 clearance and 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. They 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 manner than most of the patients. In addition to FDA requirements, our clinical trial requires the approval of the institutional review board, or IRB, at each site selected for participation in our current Actimab™-A clinical trial. We have submitted our clinical trial to the IRBs at participating sites for approval and we have thus far obtained approval from two IRBs, and are engaged in discussions with investigators at other sites to in order to complete the approval process with their respective hospital centers. The Company's clinical trial protocols have not been rejected by any IRB.

Additional delays to the completion of clinical studies may result from modifications being made to the protocol during the clinical trial, if such modifications are warranted and/or required by the occurrences in the given trial.

Each such modification has 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 clearance or approval of a product candidate.

There can be no assurance that the data generated using modified protocols will be acceptable to FDA.

There can be no assurance that the data generated using modified protocols will be acceptable to FDA or that if future modifications during the trial are necessary, that any such modifications will be acceptable to FDA. 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 drug candidates during current or future clinical trials could also result in the FDA delaying our clinical trials or denying or delaying clearance or approval of a product.

The ongoing Phase I clinical trial for Actimab™-A conducted at MSKCC 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 so far 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 the failure of our drug candidate, 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, 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. 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 Actimab™-A, or any other product candidate for which we might seek clearance, have failed to demonstrate safety and effectiveness, we would not receive FDA clearance 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 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.

Actimab™-A and future product candidates may never achieve market acceptance.

Actimab™-A and future product candidates that we may develop may never gain market acceptance among physicians, patients and the medical community. The degree of market acceptance of any of 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 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 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.

Even if our product candidates are approved by regulatory authorities, if we or our suppliers fail to comply with ongoing FDA regulation or if we experience unanticipated problems with our products, these products could be subject to restrictions or withdrawal from the market.

Any product candidate for which we obtain FDA clearance or approval, and the manufacturing processes, reporting requirements, post-approval clinical data and promotional activities for such product candidate, will be subject to continued regulatory review, oversight and periodic inspections by the FDA. In particular, we and our suppliers are required to comply with FDA's Quality System Regulations, or QSR, and International Standards Organization, or ISO, regulations for the manufacture of products and other regulations which cover the methods and documentation of the design, testing, production, control, quality assurance, labeling, packaging, storage and shipping of any product candidate for which we obtain clearance or approval. 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. Regulatory bodies, such as the FDA, enforce these regulations through periodic inspections. The failure by us or one of our suppliers to comply with applicable statutes and regulations administered by the FDA and other regulatory bodies, or the failure to timely and adequately respond to any adverse inspectional observations or safety issues, could result in, among other things, enforcement actions by the FDA and/or other regulatory bodies.

If any of these actions were to occur, it would harm our reputation and cause our future product sales and profitability to suffer and may prevent us from generating revenue. Furthermore, our key component suppliers may not currently be or may not continue to be in compliance with all applicable regulatory requirements which could result in our failure to produce our product candidates on a timely basis and in the required quantities, if at all.

Even if regulatory clearance or approval of a product candidate is granted, such clearance or 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.

In addition, we may be required to conduct costly post-market testing and surveillance to monitor the safety or effectiveness of our products, and we must comply with adverse event and phamacovigilence reporting requirements, including the reporting of adverse events which occur in connection with, and whether or not directly related to, our products. Later discovery of previously unknown problems with our products, including unanticipated adverse events or adverse events of unanticipated severity or frequency, manufacturing problems, or failure to comply with regulatory requirements, may result in changes to labeling, restrictions on such products or manufacturing processes, withdrawal of the products from the market, voluntary or mandatory recalls, a requirement to recall, replace or refund the cost of any product we manufacture or distribute, fines, suspension of regulatory approvals, product seizures, injunctions or the imposition of civil or criminal penalties which would adversely affect our business, operating results and prospects.

Our revenue stream will depend upon third party reimbursement.

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 an NDA for that product and may not be granted until many months after NDA approval. In order to obtain reimbursement arrangements 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 are dependent on third parties for manufacturing and marketing of our proposed proprietary products. If we are not able to secure favorable arrangements with such third parties, our business and financial condition would be harmed.

We will not manufacture any of our proposed proprietary products for commercial sale nor do we have the resources necessary to do so. In addition, we currently do not have the capability to market drug products ourselves. We intend to contract with specialized manufacturing companies to manufacture our proposed proprietary products and partner with larger pharmaceutical companies for their commercialization. In connection with our efforts to commercialize our proposed proprietary products, 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 proposed proprietary products, 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 proprietary 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 proposed proprietary products, 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 proposed proprietary products 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 proposed proprietary products 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 receive 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 II 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 Schering Pharma AG, GlaxoSmithKline Plc, Spectrum Pharmaceuticals, Inc. and Algeta ASA.

Adverse events involving our products may lead the FDA to delay or deny clearance for our product candidates or result in product recalls that could harm our reputation, business and financial results.

Once a product candidate receives FDA clearance or approval, the agency has the authority to require the recall of commercialized products in the event of adverse side effects, material deficiencies or defects in design or manufacture. The authority to require a recall must be based on an FDA finding that there is a reasonable probability that the device would cause serious injury or death. Manufacturers may, under their own initiative, recall a product if any material deficiency in a product is found. A government-mandated or voluntary recall by us or one of our distributors could occur as a result of adverse side effects, impurities or other product contamination, manufacturing errors, design or labeling defects or other deficiencies and issues. Recalls of any of our products would divert managerial and financial resources and have an adverse effect on our financial condition and results of operations. The FDA requires that certain classifications of recalls be reported to FDA within 10 working days after the recall is initiated. Companies are required to maintain certain records of recalls, even if they are not reportable to the FDA. We may initiate voluntary recalls involving our products in the future that we determine do not require notification of the FDA. If the FDA disagrees with our determinations, they could require us to report those actions as recalls. A future recall announcement could harm our reputation with customers and negatively affect our sales. In addition, the FDA could take enforcement action for failing to report the recalls when they were conducted.

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 the Company does 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 guaranty 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 issued patents, which are licensed by API for the HuM-195 antibody, our acute myeloid leukemia targeting antibody, will begin to 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 Abbott Laboratories ("Facet"). Some of those patents will begin to expire in 2013. After these patents expire, others may be eventually able to use an antibody with the same sequence in alpha particle drug products based on alpha particle emitters other than actinium 225 and bismuth 213. Any process that would enable such a competition as described above 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, API expects that in order to attract a commercialization partner for that product candidate, it will may need to reach an agreement with Facet to reduce the milestone payments and royalties currently required to be paid under our license agreement for HuM-195. 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 API's ability to find a commercialization partner for Actimab™-A which may materially harm our business.

The BC8 antibody utilized in Iomab™-B is not patent protected.

The antibody we use in the conjugated Iomab™ product candidate is not covered by the claims of any issued or pending patents. Accordingly, others may be eventually able to use an antibody with the same sequence in alpha particle drug products based on alpha particle emitters. Any process that would enable such a competition as described above 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

There are limited quantities of Ac-225 available today. The existing supplier of Ac-225 to the Company is Oak Ridge National Laboratory (ORNL). It 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 for as long as we do not have a commercial 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, the Company has developed what it believes 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. API is now in possession of detailed descriptions of all the developed manufacturing procedures and has 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, the Company does not currently have a relationship with any entity that owns or controls a suitable cyclotron. It has identified possible sources and estimates that it could secure the necessary beam time when needed at a cost of approximately $2 million per year. The Company's contract for supply of this isotope from ORNL extends through the end of 2012, is renewable for future years, and has already been renewed for several consecutive years. However, there can be no assurance that ORNL will decide to renew the contract or that the U.S. Department of Energy will not change its policies that allow for the sale of isotope to API. Failure to acquire sufficient quantities of medical grade Ac-225 would make it impossible to effectively complete clinical trials and to commercialize Actimab™-A and would materially harm our business.

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, in particular Mr. Jack V. Talley, our President and Chief Executive Officer and Dr. Dragan Cicic, our Chief Operating Officer and Chief Medical Officer. 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.

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 drug 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 drug 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

Shares of our capital stock are not registered under the Securities Act of 1933 and there is a lack of liquidity for our securities.

Though our Common Stock is listed on the OTC Bulletin Board (the "OTCBB"), there is little to no market for our Common Stock. Investors may have to bear the economic risk of an investment in the Company for an indefinite period of time. At this time, the offer and sale of our securities will not be registered under the Securities Act or any state securities laws. Each purchaser of Common Stock will be required to represent that it is purchasing such stock for its own account for investment purposes and not with a view to resale or distribution. No transfer of Common Stock issued may be made unless such transfer is registered under the Securities Act and applicable state securities laws, or an exemption therefrom is available, which will be noted on a restrictive legend placed on each Common Stock certificate. In connection with any such transfer, we may require the transferor to provide us with an opinion of legal counsel stating that the transfer complies with such securities laws and to pay any costs we incur in connection with such transfer and our review thereof as a precondition to the effectiveness of the transfer. There is no public trading market for the shares of Common Stock issued or issuable upon the exercise of the Warrants and such trading market may never exist.

Resale of our securities is subject to significant restrictions.

Any of our securities that are sold are under exemptions from registration under applicable federal and state securities laws, as none of our securities have not been registered under the Securities Act or any state securities laws. Until our securities have been registered, they may not be transferred or resold except in a transaction exempt from or not subject to the registration requirements of the Securities Act and applicable state securities laws. The SEC has broad discretion to determine whether any registration statement will be declared effective and may delay or deny the effectiveness of any registration statement filed by us for a variety of reasons. In the event that the effectiveness of any registration statement relating to resales of the shares of our securities is delayed or denied, or the registration statement, once effective, becomes unavailable for use by selling security holders, the transferability of the shares of Common Stock may be restricted and the value of such securities could be materially adversely affected.

If our ability to register our shares is limited, the ability of holders of our shares to sell them may be subject to substantial restrictions, and you may be required to hold such securities for a period of time prior to sale, in which case you could suffer a substantial loss on such shares.

If our ability to register the resale of shares of our Common Stock is limited, you may not be able to exercise all or some of your Warrants for shares of our Common Stock that are registered for resale. There will be substantial restrictions on your ability to transfer any shares which are not registered for resale, and you may be required to hold the shares you receive upon exercise of your Warrants for some period of time after exercise. During such time, the market price of our Common Stock may fluctuate and you could suffer a substantial or total loss with respect to such shares.

Because we became public by means of a "reverse merger," we may not be able to attract the attention of major brokerage firms.

Additional risks may exist since we will become public through a "reverse merger." Securities analysts of major brokerage firms may not provide coverage of us since there is little incentive to brokerage firms to recommend the purchase of our common stock. We cannot assure you that brokerage firms will want to conduct any secondary offerings on behalf of our company in the future. On December 19, 2012 and in contemplation of the closing of the Share Exchange, Actinium closed on the Minimum Offering Amount selling an aggregate of 9,366,273Units to Investors, pursuant to Subscription Agreements and Unit Purchase Agreements for gross proceeds in the amount of $5,151,450, and net proceeds in the amount of $4,469,776 after legal and other fees and expenses remitted to the Placement Agent. Post the closing of the Share Exchange, the Offering will continue on the same terms on a pro-forma basis with the common shares offered at $1.65 per share, the 120 day warrants exercise price at $1.65 per share and the 5 year warrants exercise price at $2.48 per share.

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.

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, by acquiring subscribers email lists, 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.

Future sales of our common stock in the public market could lower the price of our common stock and impair our ability to raise funds in future securities offerings.

Future sales of a substantial number of shares of our common stock in the public market, or the perception that such sales may occur, could adversely affect the then prevailing market price of our common stock and could make it more difficult for us to raise funds in the future through a public offering of our securities.

Our Common Stock is quoted on the OTCBB which may have an unfavorable impact on our stock price and liquidity.

Our common stock is quoted on the OTCBB, which is a significantly more limited trading market than the New York Stock Exchange or The NASDAQ Stock Market. The quotation of the Company's shares on the OTCBB may result in a less liquid market available for existing and potential stockholders to trade shares of our common stock, could depress the trading price of our common stock and could have a long-term adverse impact on our ability to raise capital in the future.

There is limited liquidity on the OTCBB which may result in stock price volatility and inaccurate quote information.

When fewer shares of a security are being traded on the OTCBB, volatility of prices may increase and price movement may outpace the ability to deliver accurate quote information. Due to lower trading volumes in shares of our common stock, there may be a lower likelihood of one's orders for shares of our common stock being executed, and current prices may differ significantly from the price one was quoted at the time of one's order entry.

Our common stock is extremely thinly traded, so you may be unable to sell at or near asking prices or at all if you need to sell your shares to raise money or otherwise desire to liquidate your shares.

Currently, the Company's common stock is quoted in the OTCBB and future trading volume may be limited by the fact that many major institutional investment funds, including mutual funds, as well as individual investors follow a policy of not investing in OTCBB stocks and certain major brokerage firms restrict their brokers from recommending OTCBB stocks because they are considered speculative, volatile and thinly traded. The OTCBB market is an inter-dealer market much less regulated than the major exchanges and our common stock is subject to abuses, volatility and shorting. Thus, there is currently no broadly followed and established trading market for the Company's common stock. An established trading market may never develop or be maintained. Active trading markets generally result in lower price volatility and more efficient execution of buy and sell orders. Absence of an active trading market reduces the liquidity of the shares traded there.

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 the Company's common stock on the OTCBB may not necessarily be a reliable indicator of its fair market value. Further, if we cease to be quoted, holders would find it more difficult to dispose of our common stock or to obtain accurate quotations as to the market value of the Company's common stock and as a result, the market value of our common stock likely would decline.

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

After the closing of the Share Exchange 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. In addition, the OTCBB is subject to extreme price and volume fluctuations in general. 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.

We are subject to penny stock regulations and restrictions and you may have difficulty selling shares of our common stock.

We are subject to the provisions of Section 15(g) and Rule 15g-9 of the Exchange Act, commonly referred to as the "penny stock rule." Section 15(g) sets forth certain requirements for transactions in penny stock, and Rule 15g-9(d) incorporates the definition of "penny stock" that is found in Rule 3a51-1 of the Exchange Act. The SEC generally defines a penny stock to be any equity security that has a market price less than $5.00 per share, subject to certain exceptions. We will be subject to the SEC's penny stock rules.

Since our Common Stock is deemed to be penny stock, trading in the shares of our common stock is subject to additional sales practice requirements on broker-dealers who sell penny stock to persons other than established customers and accredited investors. "Accredited investors" are persons with assets in excess of $1,000,000 (excluding the value of such person's primary residence) or annual income exceeding $200,000 or $300,000 together with their spouse. For transactions covered by these rules, broker-dealers must make a special suitability determination for the purchase of such security and must have the purchaser's written consent to the transaction prior to the purchase. Additionally, for any transaction involving a penny stock, unless exempt the rules require the delivery, prior to the first transaction of a risk disclosure document, prepared by the SEC, relating to the penny stock market. A broker-dealer also must disclose the commissions payable to both the broker-dealer and the registered representative and current quotations for the securities. Finally, monthly statements must be sent disclosing recent price information for the penny stocks held in an account and information to the limited market in penny stocks. Consequently, these rules may restrict the ability of broker-dealer to trade and/or maintain a market in our common stock and may affect the ability of the Company's stockholders to sell their shares of common stock.

There can be no assurance that our shares of common stock will qualify for exemption from the Penny Stock Rule. In any event, even if our common stock was exempt from the Penny Stock Rule, we would remain subject to Section 15(b)(6) of the Exchange Act, which gives the SEC the authority to restrict any person from participating in a distribution of penny stock if the SEC finds that such a restriction would be in the public interest.

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 the Company's 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 Articles of Incorporation and Bylaws and Nevada 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.

Our Articles of Incorporation and Bylaws and certain provisions of Nevada State law could have the effect of making it more difficult or more expensive for a third party to acquire, or from discouraging a third party from attempting to acquire, control of the Company, even when these attempts may be in the best interests of our stockholders. For example, Nevada law provides that approval of a majority of the stockholders is required to remove a director, which may make it more difficult for a third party to gain control of the Company. This concentration of ownership limits the power to exercise control by the minority shareholders.

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

When we become a public reporting company in the United States, we will be 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 been assessing our internal controls to identify areas that need improvement. 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 NDA 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 the our industry;
- additions or departures of key personnel;
- introduction of new products by us or our competitors;
- sales of the 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.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The information and financial data discussed below is derived from the audited consolidated financial statements of Actinium for its fiscal years ended December 31, 2011 and 2010, and the unaudited consolidated financial statements of Actinium for its nine month periods ended September 30, 2012 and 2011. The consolidated financial statements of Actinium were prepared and presented in accordance with generally accepted accounting principles in the United States. The information and financial data discussed below is only a summary and should be read in conjunction with the historical financial statements and related notes of Actinium contained elsewhere in this Report. The financial statements contained elsewhere in this Report fully represent Actinium's financial condition and operations; however, they are not indicative of the Company's future performance. See "Cautionary Note Regarding Forward Looking Statements" above for a discussion of forward-looking statements and the significance of such statements in the context of this Report.

This discussion contains forward-looking statements reflecting our current expectations that involve risks and uncertainties. Actual results may differ materially from those discussed in these forward-looking statements due to a number of factors, including those set forth in the section entitled "**Risk Factors**" and elsewhere herein.

Overview

We develop drugs for treatment of cancer with intent to cure or significantly improve survival of the affected patients. As of now 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 alpha particle immunotherapy or 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 whose immediate proximity they are released. Monoclonal antibodies are genetically engineered proteins that target specifically certain cells, and can target 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 Abbott Laboratories and BC8 in 2012 with the Fred Hutchinson Cancer Research Center. 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 four product candidates in active clinical trials: Actimab™-A (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 BC8-Y-90 and BC8-SA are in physician sponsored clinical phase I trials at the Fred Hutchinson Cancer Research Center.

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 treating acute myeloid leukemia (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 have 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 I/II trial will be approximately US $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 I and Phase II clinical trials in approximately 250 patients with different blood cancer indications who were in need of a hematopoietic stem cell transplantation (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 50 with active acute myeloid leukemia in relapse and/or refractory to existing treatments. Our intention is to request the FDA in 2013 to allow us to enter into a pivotal trial with Iomab™-B. We estimate the direct costs of such a trial to completion anticipated in 2015 will be approximately US $15-20 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 has been conducted at Memorial Sloan-Kettering Cancer Center in New York. The Company has also made clinical trial arrangements with other well known cancer centers.

Our Actimab™-A drug candidate and its components are contract manufactured and maintained under our supervision by specialized contract manufacturers and suppliers in the U.S., including IsoTex Diagnostics, Oak Ridge National Laboratory, Pacific GMP, Fischer Bioservices, BioReliance and others.

The Company was established in 1993 in the Netherlands under the name of "Alphamedical Holding B.V." and the Company was subsequently re-incorporated in Delaware in September 2000 as "Actinium Pharmaceuticals, Inc.".

We are a development stage company and have never generated revenue. Currently we do not have a stable recurring source of revenues sufficient to cover our operating costs. As of December 31, 2011, we had an accumulated deficit of $47.4 million. We incurred net losses of $3.4 million, $0.5 million, $3.4 million, $5.6 million and $5.6 million in the years ending December 31, 2011, 2010, 2009, 2008 and 2007, respectively.

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 company regularly acquire products in development, with preference given to products in Phase II or later clinical trials. These deals 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 II 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 Memorial Sloan-Kettering Cancer Center and our Clinical Advisory Board members, and to continue and expand other research and clinical trial collaborations. In addition, 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 the goals discussed above 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 to large pharmaceutical and biotechnology companies.

Results of Operations

Nine Months Ended September 30, 2012 Compared to Nine Months Ended September 30, 2011

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

	For the Nine Months Ended September 30,		
	2012	2011	Change
Revenues	$ -	$ -	$ -
Operating expenses:			
Research and development, net	2,723,459	231,640	2,491,819
General and administrative	1,520,221	376,748	1,143,473
Depreciation and amortization	429	477	(48)
Total operating expenses	4,244,109	608,865	3,635,244
Loss from operations	(4,244,109)	(608,865)	(3,635,244)
Other (income) expense:			
Interest expense	952,241	-	952,241
Change in fair value of derivative liabilities	287,604	-	287,604
Total other (income) expense	1,239,845	-	1,239,845
Net loss	$ (5,483,954)	$ (608,865)	$ (4,875,089)

Revenues

We recorded no commercial revenues for the nine months ended September 30, 2012 and 2011.

Research and Development Expense

Research and development expenses increased by to $2,491,819 to $2,723,459 for the nine months ended September 30, 2012 compared to $231,640 for the nine months ended September 30, 2011. The increase is attributable to the costs incurred on initiation of the multi-center clinical trial for Actimab™-A. The Company also made its first milestone payment of $750,000 to Abbott Biotherapeutics Corp. upon reaching the milestone. The increase also reflected in an agreement the Company made with MSKCC as of April 2010, in which MSKCC agreed to pay or reimburse the Company for certain costs and expenses related to the Company's drug development and clinical study program. This agreement expired on October 5, 2011. No reimbursement was due for the nine months ended September 30, 2012 and $966,341 was due with respect to the nine months ended September 30, 2011.

General and Administrative Expenses

Overall, total general and administrative expenses increased by $1,143,473 to $1,520,221 for the nine months ended September 30, 2012 compared to $376,748 for the nine months ended September 30, 2011. The increase was largely attributable to increases in professional fees and the stock-based compensation incurred by the Company as discussed below.

In connection with the offering of the Series E Preferred Stock, in January 2012, we issued warrants to purchase 400,013 shares (pre-Actinium Share exchange) of common stock to the transaction manager for consulting services related to assisting the Company in preparing to become a publicly traded company. The fair value of $144,501, or $0.36 per share, was a noncash charge to general and administrative expenses for the nine months ended September 30, 2012.

In February 2012, the Company granted options to purchase 2,125,000 shares of common stock to its employees and consultants with a fair value of $531,913. In July 2012, the Company granted options to purchase 90,000 shares of common stock to its consultants with a fair value of $23,700. In August 2012, the Company granted options to purchase 2,875,000 shares of common stock to its employees and consultants with a fair value of $724,784. For the nine months ended September 30, 2012, the Company recorded amortization of stock-based compensation of $312,500 as a noncash charge to general and administrative expenses.

The increase can also be attributed to additional professional fees of $555,782 related to the year-end audit, the quarterly review, legal fees, and management fees associated with the Company going public. In addition to the professional fees incurred, we increased our personnel. As such, payroll-related expenses for the nine months ended September 30, 2012 increased compared to the same period in 2011.

Interest Expense

Interest expense increased by $952,241 for the nine months ended September 30, 2012 compared to the nine months ended September 30, 2011. The increase in interest expense is directly attributable to interest accrued on the convertible debt, amortization of the convertible debt discount and deferred financing costs related to the convertible debt.

Net Loss

Net loss increased by $4,875,089 to $5,483,954 for the nine months ended September 30, 2012 compared $608,865 for to the nine months ended September 30, 2011. The increase was primarily due to additional costs incurred by the Company in research and development expenses, noncash stock-based compensation costs and professional fees as discussed above.

Year Ended December 31, 2011 Compared to Year Ended December 31, 2010

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

	For the Years Ended December 31,		
	2011	2010	Change
Revenues	$ -	$ -	$ -
Operating expenses:			
Research and development, net	323,788	93,117	230,671
General and administrative	2,959,246	561,970	2,397,276
Depreciation and amortization	633	72,101	(71,468)
Total operating expenses	3,283,667	727,188	2,556,479
Loss from operations	(3,283,667)	(727,188)	(2,556,479)
Other (income) expense:			
Interest expense	175,094	78	175,016
Gain on extinguishment of liabilities	-	(260,000)	260,000
Change in fair value of derivative liabilities	(13,966)	-	(13,966)
Total other (income) expense	161,128	(259,922)	421,050
Net loss	$ (3,444,795)	$ (467,266)	$ (2,977,529)

Revenues

We recorded no commercial revenues for the years ended December 31, 2011 and 2010.

Research and Development Expense

Research and development expenses increased by $230,671 to $323,788 for the year ended December 31, 2011 compared to $93,117 for the year ended December 31, 2010. The increase is directly attributable to the initiation of the multi-center trial for Actimab™-A.

General and Administrative Expenses

Overall, general and administrative expenses increased by $2,397,276 to $2,959,246 for the year ended December 31, 2011 compared to $561,970 for the year ended December 31, 2010. The increase was largely attributable to increases in professional fees and the stock-based compensation incurred by the Company as discussed below.

In connection with the offering of the Series E Preferred Stock, we issued warrants to purchase 930,272 shares (pre-Actinium share exchange) of common stock to the transaction manager for consulting services related to preparing the Company to become a publically traded company. The fair value of $2,153,442, was a noncash charge to general and administrative expenses for the year ended December 31, 2011.

The increase can also be attributed to additional professional fees of $121,774 related to the management fees incurred associated with the Company going public.

Interest Expense

Interest expense was $175,094 for the year ended December 31, 2011 compared to $78 for the same period of 2010, an increase of $175,016. The increase in interest expense is directly attributable to interest accrued on the convertible debt, amortization of the convertible debt discount and deferred financing costs related to the convertible debt.

Net Loss

Net loss increased by $2,977,529 to $3,444,795 for the year ended December 31, 2011 compared to $467,266 for the year ended December 31, 2010. The increase was primarily due to additional costs incurred by the Company in research and development expenses, noncash stock-based compensation costs and professional fees as discussed above.

Liquidity and Capital Resources

We have financed our operations primarily through sales of the Company's Common Stock and Preferred Stock and the issuance of Convertible Promissory Notes.

We did not have any cash or cash equivalents held in financial institutions located outside of the United States as of September 30, 2012 and December 31, 2011. 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 Nine Months Ended September 30,	
	2012	2011
Cash provided by (used in) operating activities	$ (3,795,480)	$ 31,215
Cash provided by (used in) investing activities	(1,812)	-
Cash provided by (used in) financing activities	660,163	-
Net increase (decrease) in cash	$ (3,137,129)	$ 31,215

	For the Years Ended December 31,	
	2011	2010
Cash provided by (used in) operating activities	$ (517,592)	$ (609,740)
Cash provided by (used in) investing activities	-	-
Cash provided by (used in) financing activities	6,025,255	-
Net increase (decrease) in cash	$ 5,507,663	$ (609,740)

Nine Months Ended September 30, 2012 Compared to Nine Months Ended September 30, 2011

Cash and cash equivalents as of September 30, 2012 were $2,566,669.

Net cash used in operating activities was $3,795,480 for the nine months ended September 30, 2012 compared to $31,215 provided by operations for the same period in 2011. Cash used in operations increased due to the increase in spending related to preparations and eventual launch and conduct of a multicenter trial and an increase in spending related to professional fees combined with an increase in payroll-related expenses. Cash provided by operating activities for the nine months ended September 30, 2011 came from the R&D reimbursements received by the Company under the agreement with MSKCC.

Net cash provided by financing activities was $660,163 for the nine months ended September 30, 2012 compared to $0 for the same period in 2011. In January 2012, we sold 2,909,187 shares of Series E Preferred Stock at $0.26 per share. We raised funds through sale of the Company's preferred stock to finance the expansion of our research and development efforts.

Year Ended December 31, 2011 Compared to Year Ended December 31, 2010

Cash and cash equivalents as of December 31, 2011 were $5,703,798 compared to $196,135 as of December 31, 2010. The increase in cash was mainly due to proceeds from sale of Series E Preferred Stock, net of offering costs and 8% Senior Subordinated Unsecured Convertible Promissory Notes.

Net cash used in operating activities was $517,592 for the year ended December 31, 2011 compared to $609,740 for the year ended December 31, 2010. Cash used in the operation activities is primarily the result of the costs the Company incurred on research and development activities, net of reimbursements received from MSKCC.

Net cash provided by financing activities was $6,025,255 for the year ended December 31, 2011 compared to $0 for the year ended December 31, 2010. In 2011, we sold 23,697,119 shares of Series E Preferred Stock at $0.26 per share and raised $750,000 through a private offering of 8% Senior Subordinated Unsecured Convertible Promissory Notes. We raised funds through sale of the Company's preferred stock and the convertible notes in order to finance the expansion of our research and development activities and the costs associated the preparation for becoming a publicly traded company.

We have experienced cumulative losses of approximately $52,672,612 from inception (September 13, 2000) through September 30, 2012, and have a stockholders' deficit of $3,820,812. In addition, the Company has not completed its efforts to establish a stable recurring source of revenues sufficient to cover its operating costs for the next twelve months. These factors raise substantial doubt regarding the Company's ability to continue as a going concern.

Recent Debt and Equity Offerings

During 2011, the Company raised $6,184,967 through an offering of 23,697,119 shares (pre-Actinium share exchange) of the 2011 Series E preferred shares and 5,924,285 warrants (pre-Actinium share exchange). A net amount of $5,379,367 was received by the Company in 2011. Pursuant to the agreement, the Company paid Laidlaw & Company (UK) Ltd. ("Laidlaw & Co."), the placement agent, total cash fees of $742,196, which consisted of placement agent commission of $618,497 and expense reimbursement of $123,699. In addition, the Company paid Laidlaw & Co.'s outside counsel, McCormick & O'Brien PLLC, $60,904 for its services as the placement agent's legal counsel and Signature Bank $2,500 for the bank escrow fee.

On December 27, 2011, the Company completed a private offering of 8% Senior Subordinated Unsecured Convertible Promissory Notes ("Convertible Notes") in the amount of $900,000 and received net proceeds of $750,000. The convertible notes were issued at 83.33% of the principal amount resulting in an original issue discount of $150,000.The Convertible Notes mature one year from the date of issuance. Interest accrues at the rate of 8% per year on the outstanding principal amount, accrued semi-annually and to be paid at maturity.

In January 2012, the Company raised $759,300 through its final offering of the 2011 Series E preferred shares. A net amount of $660,163 was received by the Company. Pursuant to the agreement, the Company paid Laidlaw & Company (UK) Ltd. ("Laidlaw & Co."), the placement agent, total cash fees of $99,137, which consisted of placement agent commission of $91,116 and expense reimbursement of $8,021.

Actinium intends to increase funds available to continue our research and development efforts, which include material supply, manufacturing, clinical development and pre-clinical trials and working capital. In 2013, we expect cash needs of up to $20,000,000 to finance research and development, which include material supply, manufacturing, clinical trials and pre-clinical trials and to cover our ongoing working capital needs. If all of the securities offered hereunder are sold, we believe that the net proceeds from this offering will provide us with the capital needed for these plans.

In the event we do not meet our cash needs of $20,000,000, it may be necessary for us to delay the timing of various product development efforts and focus on our ongoing clinical trial with Actimab™-A.

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 revenues and operating results are generally derived evenly throughout the calendar year.

Critical Accounting Policies

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

Derivatives

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

Fair Value of Financial Instruments

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

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

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

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

Income Taxes

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.

Grant Proceeds

The Company received a grant on qualified therapeutic discovery project from the U.S Internal Revenue Service pursuant to the Protection and Affordable Care Credit. The grant was recorded by the Company as a reduction of R&D costs.

Research and Development Costs

Research and development costs are expensed as incurred.

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 and common shares based on the last common stock valuation done by third party valuation expert of the Company’s common stock on the date of the share grant. The fair value determined represents the cost for the award and is recognized over the vesting period during which an employee is required to provide service in exchange for the award. 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 May 2011, the Financial Accounting Standards Board (the “FASB”) provided amendments to achieve common fair value measurement and disclosure requirements in U.S. GAAP and IFRS. The amendments provide clarification and/or additional requirements relating to the following: (a) application of the highest and best use and valuation premise concepts, (b) measurement of the fair value of instruments classified in an entity’s shareholders’ equity, (c) measurement of the fair value of financial instruments that are managed within a portfolio, (d) application of premiums and discounts in a fair value measurement, and (e) disclosures about fair value measurements. These amendments will be effective prospectively for interim and annual periods beginning after December 15, 2011. The Company does not expect the adoption of the amendments to have a material impact on its financial position, results of operations or cash flows.

In September 2011, the FASB provided amendments requiring an entity to present the total of comprehensive income, the components of net income, and the components of other comprehensive income either in a singular continuous statement of comprehensive income or in two separate but continuous statements, eliminating the option to present the components of other comprehensive income as part of the statement of changes in stockholders' equity. Additionally, the amendments require an entity to present reclassification adjustments on the face of the financial statements from other comprehensive income to net income. These amendments will be effective retrospectively for fiscal years, and interim periods within those years, beginning after December 15, 2011. The Company does not expect the adoption of the amendments to have a material impact on its financial position, results of operations, or cash flows, but will require the Company to present the statements of comprehensive income separately from its statements of equity, as these are currently presented on a combined basis.

In December 2011, the FASB issued amended guidance to ASC 210, "*Balance Sheet*", with respect to disclosure of offsetting assets and liabilities as part of the effort to establish common requirements in accordance with U.S. GAAP and IFRS. This amended guidance requires the disclosure of both gross information and net information about both financial statements and derivative instruments eligible for offset in the Company's balance sheet and instruments and transactions subject to an agreement similar to a master netting arrangements. This guidance is effective for periods beginning on or after January 1, 2012, with respective disclosures required retrospectively for all comparative periods presented. The adoption of this guidance effective January 1, 2012 is not expected to have a material effect on the Company's financial statements.

There were various accounting standards and interpretations issued during 2012 and 2011, none of which are expected to have a material impact on the Company's financial position, operations or cash flows.

DESCRIPTION OF PROPERTY

The Company does not own any property. The Company has a short-term lease of its office space at 501 Fifth Avenue, 3rd Floor, New York, NY 10017 through January 31, 2013. Thereafter, it becomes a month to month agreement. The Company pays $4,376 monthly.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table shows the beneficial ownership of our Common Stock as of December 28, 2012 held by (i) each person known to us to be the beneficial owner of more than five percent (5%) of our Common and Preferred Stock; (ii) each director; (iii) each executive officer; and (iv) all directors and executive officers as a group.

Beneficial ownership is determined in accordance with the rules of the SEC, and generally includes voting power and/or investment power with respect to the securities held. Shares of Common Stock subject to options and warrants currently exercisable or which may become exercisable within 60 days of December 28, 2012, are deemed outstanding and beneficially owned by the person holding such options or warrants for purposes of computing the number of shares and percentage beneficially owned by such person, but are not deemed outstanding for purposes of computing the percentage beneficially owned by any other person. Except as indicated in the footnotes to this table, the persons or entities named have sole voting and investment power with respect to all shares of our Common Stock shown as beneficially owned by them.

The percentages below are based on fully diluted shares of our Common Stock equivalents, assuming a 100% share exchange by Actinium shareholders, as of December 28, 2012. Unless otherwise indicated, the principal address of each of the persons below is c/o Actinium Pharmaceuticals, Inc., 501 Fifth Avenue, New York, NY 10017.

Executive Officers and Directors	**Number of Shares of Common Stock and Preferred Stock Beneficially Owned**	**Percentage of Ownership(a)**
Jack V. Talley	0(1)	0.0%
Dragan Cicic, MD	163,037(2)	0.8%
Enza Guagenti	2,248(3)	0.0%
Rosemary Mazanet	48,285(4)	0.2%
David Nicholson	3,996(5)	0.0%
Sandesh Seth	164,365(6)	0.8%
Sergio Traversa	0(7)	0.0%
All Directors and Officers as a Group (7 persons)	**381,931**	**1.8%**
All other 5% holders		
Actinium Holdings, Ltd. (8) c/o Michael B. Sheffery 767 Third Avenue 30th Floor New York, NY 10017	5,697,504	21.4%

(a) Based on 21,262,367 shares of Common Stock outstanding as of December 20, 2012.

(1) Options granted to purchase an aggregate of 699,300 shares of Common Stock of the Company at an exercise price of $0.784 per share. All shares are subject to vesting. No shares of Common Stock have vested as of December 20, 2012.

(2) Options granted to purchase an aggregate of 414,785 shares of Common Stock of the Company at an exercise price of $0.784 per share and options to purchase an aggregate of 99,900 shares of Common Stock of the Company at an exercise price of $1.50 per share. All shares are subject to vesting. 163,037 shares of Common Stock have vested as of December 20, 2012.

(3) Options granted to purchase an aggregate of 33,300 shares of Common Stock of the Company at an exercise price of $0.784 per share. All shares are subject to vesting. 2,248 shares of Common Stock have vested as of December 20, 2012.

(4) Options granted to purchase an aggregate of 83,250 shares of Common Stock of the Company at an exercise price of $0.784 per share and options to purchase an aggregate of 49,950 shares of Common Stock of the Company at an exercise price of $1.50 per share. All shares are subject to vesting. 48,285 shares of Common Stock have vested as of December 20, 2012.

(5) Options to purchase an aggregate of 49,950 shares of Common Stock of the Company at an exercise price of $0.784 per share and options to purchase an aggregate of 49,950 shares of Common Stock of the Company at an exercise price of $1.50 per share. All shares are subject to vesting. 3,996 shares of Common Stock have vested as of December 20, 2012.

(6) Warrants to purchase an aggregate of 64,747 shares of Common Stock of the Company at an exercise price of $0.784 per share, exercisable on a cashless basis and warrants to purchase an aggregate of 99,618 of Common Stock of the Company at an exercise price of $0.784 per share, exercisable on a cashless basis issued to Amrosan, LLC, a partnership in which the majority member interest is owned by the family of Mr. Seth. Excludes warrants to purchase an aggregate of 373,442 shares of Common Stock of the Company at par value per share, exercisable on a cashless basis issued to Amrosan, LLC as the warrants are not exercisable upon less than 90 days notice. The holder may waive the 90 day exercise notice requirement by giving 65 days prior notice of such waiver. The shares available by exercise of this Warrant are also restricted and may not be sold or otherwise transferred until the earlier of twelve months from the closing date of the going public transaction; or for six months after the planned Registration Statement is declared effective. Excludes 351,035 warrants issued to Carnegie Hill Asset Partners and irrevocable trust linked to Mr. Seth's family whose terms are the same as those issued to Amrosan, LLC. Also excludes warrants held by the Placement Agent or its affiliates in connection with the Offering, the Bridge Notes Financing, the Series E financing and by designees of Jamess Capital Group, LLC in connection with the going public transaction. Also excludes options to purchase an aggregate of 49,950 shares of Common Stock of the Company at an exercise price of $1.50 per share. All shares are subject to vesting. No shares of Common Stock have vested as of December 20, 2012.

(7) Options to purchase an aggregate of 49,950 shares of Common Stock of the Company at an exercise price of $1.50 per share. No shares of Common Stock have vested as of December 20, 2012.

(8) Mr. Sheffery, a partner of Orbimed Advisors LLC, is the President and director of Actinium Holdings Ltd. (AHL). AHL is wholly-owned by AHLB Holdings, LLC (AHLB), which is, in turn, wholly-owned by MSKCC. Accordingly, such parties may be deemed to share beneficial ownership of the Common Stock of the Company held by AHL. Investment power with respect to the shares of the Company held by AHL is limited by AHL's agreement, on December 31, 2012, not to transfer shares of Common Stock held by AHL, subject to exceptions for certain related-party transfers, transfers to trusts and other private transfers, until, in general, the earlier of (i) twelve (12) months from the Closing Date; or (ii) six (6) months following the effective date of the Registration Statement; however, the AHL "lock-up" agreement has not been finalized as of the date of this filing. AHL has certain registration rights with respect to its shares; however, such rights are, in certain respects subordinate to those of investors in certain recent private placements.

DIRECTORS AND EXECUTIVE OFFICERS

Effective following the expiration of the ten day period following the mailing of the information statement required by Rule 14f-1 under the Exchange Act Diane S. Button has resigned from her position as member of the Board of Directors of the Company. Effective upon the closing of the Share Exchange, Diane S. Button resigned as an officer of the Company. Also effective upon the closing of the Share Exchange, Jack V. Talley was appointed to our Board of Directors. Effective as of the expiration of the ten day period following the mailing of the information statement required by Rule 14f-1 under the Exchange Act Dr. Rosemary Mazanet, David Nicholson, Sandesh Seth and Sergio Traversa were appointed to our Board of Directors. In addition, our Board of Directors appointed Jack V. Talley to serve as our President and Chief Executive Officer, Dragan Cicic to serve as our Chief Operating Officer and Chief Medical Officer, and Enza Guagenti to serve as our Chief Financial Officer, effective immediately upon the closing of the Share Exchange.

The following sets forth information about our directors and executive officers as of the closing of the Share Exchange and following the expiration of the ten day period following the mailing of the information statement required by Rule 14f-1 under the Exchange Act:

Name	Age	Position
Jack V. Talley	56	Chief Executive Officer, President, and Director
Dragan Cicic, MD	49	Chief Operating Officer and Chief Medical Officer
Enza Guagenti, CPA	50	Chief Financial Officer
Rosemary Mazanet, MD, PhD	57	Director
David Nicholson, PhD	58	Director
Sandesh Seth, MS, MBA	48	Director
Sergio Traversa, MBA	52	Director

Jack V. Talley, Chief Executive Officer, President and Director

Jack V. Talley is the CEO, President and a Director of Actinium Pharmaceuticals, Inc. (API). Mr. Talley recently joined API from the position of President, Chief Executive Officer and a Director at EpiCept Corporation. Mr. Talley has more than 30 years of experience in the pharmaceutical industry. Prior to EpiCept, Mr. Talley was the Chief Executive Officer of Consensus Pharmaceuticals, Inc., a biotechnology drug discovery start-up company that developed a proprietary peptide-based combinatorial library screening process. Prior to joining Consensus, Mr. Talley led Penwest Ltd.'s efforts in its spin-off of its subsidiary Penwest Pharmaceuticals Co. in 1998 and served as President and Chief Operating Officer of Penwest Pharmaceuticals. Mr. Talley started his career at Sterling Drug Inc., where he was responsible for all U.S. marketing activities for prescription drugs, helped launch various new pharmaceutical products and participated in the 1988 acquisition of Sterling Drug by Eastman Kodak Co. Mr. Talley received his B.S. in Chemistry from the University of Connecticut and completed coursework towards an M.B.A. in Marketing from New York University, Graduate School of Business.

Dragan Cicic, MD, MBA, Chief Operating Officer and Chief Medical Officer

Dragan Cicic is the COO and CMO of Actinium Pharmaceuticals, Inc. (API). He joined the company in 2005 and previously held the position of the CEO and prior to that of the Medical Director at API. Dr. Cicic joined API from the position of Project Director of QED Technologies Inc., a life sciences strategic consulting and transactional group focused on emerging biotech, pharmaceuticals and medical devices companies. Dr. Cicic prepared business and strategic plans on behalf of those clients and assisted them in raising funding. He also represented corporate and private investors in identifying acquisition and/or investment targets and negotiating, structuring and consummating deals. Prior to joining QED Technologies, Dr. Cicic was an investment banker with SG Cowen Securities.

Dr. Cicic graduated as a Medical Doctor from the School of Medicine at The Belgrade University, and received his MBA from Wharton School at The University of Pennsylvania. He was also a Nieman Fellow at Harvard University.

Enza Guagenti, CPA, Chief Financial Officer

Enza Guagenti, CPA, is the CFO of Actinium Pharmaceuticals, Inc. (API). Ms. Guagenti has over 25 years of experience in health care management and accounting. Prior to becoming the CFO, Ms. Guagenti worked for API as the corporate accounting consultant for eight years. Ms. Guagenti held a senior management level position as Administrator for of an out-patient medical facility that services approximately 8,000 patients per year. She was responsible for all aspects of operations, which included financial oversight and reporting and maintaining regulatory compliance as mandated by CMS, NJDHSS and The Joint Commission. Ms. Guagenti implemented a financial reporting structure, financial and clinical benchmarks and processes that enhanced operations, controlled costs and improved patient care. Prior experience also includes serving as corporate controller for one of the largest infertility practices in NJ. As corporate controller, she was responsible for reporting on and consolidating four profit centers.

Ms. Guagenti served as President of the NJ Association of Ambulatory Surgery Center from 2003-2008. She has served on the Legal & Regulatory Committee of Governor Corzine's Commission on Rationing of Healthcare Resources, 2008, and has served on various committees at the NJDHSS.

Ms. Guagenti received her Bachelor of Science in Accounting from Bloomfield College and graduated Magna Cum Laude. She is a Certified Public Accountant licensed in the state of NJ.

Rosemary Mazanet MD, PhD, Director

Rosemary Mazanet is a Director of the Company and a life sciences investment professional and executive with management and drug development experience. She is a Co-Founder and CSO of Apelles Investment Management, LLC, a public and private equity investment firm, focused on healthcare and the CEO of Diabetes America, Inc., the premier network of diabetes care and management centers. Prior to that, Dr. Mazanet was a General Partner, Director of Research and CSO of Oracle Partners, LP, a $1 Billion healthcare hedge fund. Dr. Mazanet has also been the CEO of several life sciences companies, including Breakthrough Therapeutics LLC and Access Pharmaceuticals (OTC: ACCP). She started her career in business as a Sr. Director of Clinical Research with Amgen, Inc.

In addition, Dr. Mazanet is a trustee of the University of Pennsylvania School of Medicine/Hospital and a director with and Cellumen, Inc. She trained in internal medicine at the Brigham and Women's Hospital and in oncology at the Dana Farber Cancer Institute, both part of the Harvard Medical system, where she was a staff physician prior to joining Amgen. Dr. Mazanet holds a B.A. in Biology from the University of Virginia and an M.D. and a Ph.D. from the University of Pennsylvania.

C. David Nicholson, BS, PhD, Director

C. David Nicholson is a Director of the Company and joined the Executive Committee of Bayer CropScience on March 5, 2012 as Head of Research & Development responsible for the integration of the company's R&D activities into one global organization. Dr. Nicholson graduated in pharmacology, earning his B.Sc. from the University of Manchester (1975) and his Ph.D. from the University of Wales (1980). Between 1978 and 1988, Dr. Nicholson worked in the pharmaceutical industry for the British company Beecham-Wülfing in Gronau, Germany. The main emphasis of his activities as group leader in a multidisciplinary project group was the development of cardiovascular drugs.

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

Sandesh Seth, MS, MBA, Director

Mr. Sandesh Seth is a Director of the Company and the Head of Healthcare Investment Banking at Laidlaw & Company (UK) Ltd. Mr. Seth has over 20 years of experience which includes investment banking at Cowen & Co., equity research at Bear Stearns and Commonwealth Associates and in the pharmaceutical industry at Pfizer, Warner-Lambert, and SmithKline Beecham in strategic planning, business development and R&D project management respectively. Mr. Seth's financial services experience includes 75+ completed transactions in which $5 billion+ in capital was raised. Transactions included venture investments, private placements, IPOs, FOs, PIPEs, Convertible and High-Yield Debt. Mr. Seth was also involved with various strategic initiatives such as mergers and acquisitions, leveraged and management buy-outs, and licensing and joint ventures, including the $100 billion merger of Pfizer and Warner-Lambert and the $20 billion merger of Pharmacia & Upjohn with Monsanto. 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. He also holds the following Securities Industry Licenses: Series 7, 79 and 63.

Sergio Traversa, PharmD, MBA, Director

Mr. Traversa is a Director of the Company and the Chief Executive Officer of Relmada Therapeutics Inc. Previously, he was the co-founder and CEO of Medeor Inc. a spinoff pharmaceutical company from Cornell University. Dr. Traversa has over 25 years of experience in the healthcare sector in the United States and Europe, ranging from management positions in the pharmaceutical industry to investing and strategic advisory roles. He has held financial analyst, portfolio management and strategic advisory positions at large U.S. investment firms specializing in healthcare, including Mehta and Isaly and Mehta partners, ING Barings, Merlin BioMed and Rx Capital. Dr. Traversa was a founding partner of Ardana Capital, a pharmaceutical and biotechnology investment advisory firm. In Europe, he held the position of Area Manager for Southern Europe (Italy, Spain, Greece and Portugal) of Therakos Inc., a cancer and immunology division of Johnson & Johnson. Prior to Therakos, Dr. Traversa was at Eli Lilly, where he served as Marketing Manager of the Hospital Business Unit. He was also a member of the CNS team at Eli Lilly, where he participated in the launch of Prozac and the early development of Zyprexa and Cymbalta. Dr. Traversa started his career as a sales representative at Farmitalia Carlo Erba, the largest pharmaceutical company in Italy later sold to Pharmacia and now part of Pfizer. Dr. Traversa holds a Laurea degree in Pharmacy from the University of Turin (Italy) and an MBA in Finance and International Business from the New York University Leonard Stern School of Business.

Corporate Governance

The business and affairs of the Company are managed under the direction of the Board of Directors (the "Board"), which following the expiration of the ten day period following the mailing of the information statement required by Rule 14f-1 under the Exchange Act, will be comprised of Jack V. Talley, Rosemary Mazanet, MD, PhD, David Nicholson, PhD, Sandesh Seth, MS, MBA, and Sergio Traversa, MBA.

Term of Office

Directors are appointed for a one-year term to hold office until the next annual general meeting of stockholders or until removed from office in accordance with our bylaws. Our officers are appointed by our Board and hold office until removed by our Board.

All officers and directors listed above will remain in office until the next annual meeting of our stockholders, and until their successors have been duly elected and qualified. Our bylaws provide that officers are appointed annually by our Board and each executive officer serves at the discretion of our Board.

Director Independence

We use the definition of "independence" of The NASDAQ Stock Market to make this determination. NASDAQ Listing Rule 5605(a)(2) provides that an "independent director" is a person other than an officer or employee of the company or any other individual having a relationship which, in the opinion of the Company's Board, would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. The NASDAQ listing rules provide that a director cannot be considered independent if:

- the director is, or at any time during the past three years was, an employee of the company;
- the director or a family member of the director accepted any compensation from the company in excess of $120,000 during any period of 12 consecutive months within the three years preceding the independence determination (subject to certain exclusions, including, among other things, compensation for board or board committee service);
- a family member of the director is, or at any time during the past three years was, an executive officer of the company;
- the director or a family member of the director is a partner in, controlling stockholder of, or an executive officer of an entity to which the company made, or from which the company received, payments in the current or any of the past three fiscal years that exceed 5% of the recipient's consolidated gross revenue for that year or $200,000, whichever is greater (subject to certain exclusions);
- the director or a family member of the director is employed as an executive officer of an entity where, at any time during the past three years, any of the executive officers of the company served on the compensation committee of such other entity; or
- the director or a family member of the director is a current partner of the company's outside auditor, or at any time during the past three years was a partner or employee of the company's outside auditor, and who worked on the company's audit.

Our Common Stock is not currently quoted or listed on any national exchange or interdealer quotation system with a requirement that a majority of our board of directors be independent and, therefore, the Company is not subject to any director independence requirements. Under the following three NASDAQ director independence rules a director is not considered independent: (a) NASDAQ Rule 5605(a)(2)(A), a director is not considered to be independent if he or she also is an executive officer or employee of the corporation, (b) NASDAQ Rule 5605(a)(2)(B), a director is not consider independent if he or she accepted any compensation from the company in excess of $120,000 during any period of twelve consecutive months within the three years preceding the determination of independence, and (c) NASDAQ Rule 5605(a)(2)(D), a director is not considered to be independent if he or she is a partner in, or a controlling shareholder or an executive officer of, any organization to which the company made, or from which the company received, payments for property or services in the current or any of the past three fiscal years that exceed 5% of the recipient's consolidated gross revenues for that year, or $200,000. Under such definitions, David Nicholson and Sergio Traversa are the only independent directors.

Committees of the Board of Directors

On December 28, 2012, our board of directors formed two standing committees: audit and compensation, . Actions taken by our committees are reported to the full board. Each of our committees has a charter and each charter is posted on our website.

Audit Committee	Compensation of Committee
David Nicholson*	David Nicholson*
Sergio Traversa	Dr. Rosemary Mazanet
Dr. Rosemary Mazanet	Sandesh Seth

***** Indicates committee chair

Audit Committee

Our audit committee, which currently consists of three directors, provides assistance to our board in fulfilling its legal and fiduciary obligations with respect to matters involving the accounting, financial reporting, internal control and compliance functions of the company. Our audit committee employs an independent registered public accounting firm to audit the financial statements of the company and perform other assigned duties. Further, our audit committee provides general oversight with respect to the accounting principles employed in financial reporting and the adequacy of our internal controls. In discharging its responsibilities, our audit committee may rely on the reports, findings and representations of the company's auditors, legal counsel, and responsible officers. Our board has determined that all members of the audit committee are financially literate within the meaning of SEC rules and under the current listing standards of the Nasdaq Capital Market. Our board has also determined that Mr. Nicholson qualifies as an "audit committee financial expert."

Compensation Committee

Our compensation committee, which currently consists of three directors, establishes executive compensation policies consistent with the company's objectives and stockholder interests. Our compensation committee also reviews the performance of our executive officers and establishes, adjusts and awards compensation, including incentive-based compensation, as more fully discussed below. In addition, our compensation committee generally is responsible for:

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

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

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

Family Relationships

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

Involvement in Certain Legal Proceedings

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

- been convicted in a criminal proceeding or been subject to a pending criminal proceeding (excluding traffic violations and other minor offenses);
- had any bankruptcy petition filed by or against the business or property of the person, or of any partnership, corporation or business association of which he was a general partner or executive officer, either at the time of the bankruptcy filing or within two years prior to that time;
- been subject to any order, judgment, or decree, not subsequently reversed, suspended or vacated, of any court of competent jurisdiction or federal or state authority, permanently or temporarily enjoining, barring, suspending or otherwise limiting, his involvement in any type of business, securities, futures, commodities, investment, banking, savings and loan, or insurance activities, or to be associated with persons engaged in any such activity;
- been found by a court of competent jurisdiction in a civil action or by the SEC or the Commodity Futures Trading Commission to have violated a federal or state securities or commodities law, and the judgment has not been reversed, suspended, or vacated;
- been the subject of, or a party to, any federal or state judicial or administrative order, judgment, decree, or finding, not subsequently reversed, suspended or vacated (not including any settlement of a civil proceeding among private litigants), relating to an alleged violation of any federal or state securities or commodities law or regulation, any law or regulation respecting financial institutions or insurance companies including, but not limited to, a temporary or permanent injunction, order of disgorgement or restitution, civil money penalty or temporary or permanent cease-and-desist order, or removal or prohibition order, or any law or regulation prohibiting mail or wire fraud or fraud in connection with any business entity; or
- been the subject of, or a party to, any sanction or order, not subsequently reversed, suspended or vacated, of any self-regulatory organization (as defined in Section 3(a)(26) of the Exchange Act), any registered entity (as defined in Section 1(a)(29) of the Commodity Exchange Act), or any equivalent exchange, association, entity or organization that has disciplinary authority over its members or persons associated with a member.

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

Code of Ethics

The Company has adopted a code of ethics, a copy of which is attached hereto at Exhibit 14.1.

EXECUTIVE COMPENSATION

The following table provides information regarding the compensation earned during the fiscal years ended December 31, 2011 and December 31, 2010 and expected to be earned for the fiscal year ended December 31, 2012 by our Chief Executive Officer and the two next most highly compensated executive officers.

Name/Position	Year	Salary	Bonus	Option Awards	Other Compensation	Total
Jack Talley, CEO	**2012**	**$ 250,000**	**$ 0.00**	**$ 58,412**	**$ 0.00**	**$ 308,412**
	2011	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	2010	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Dragan Cicic, COO	**2012**	**$ 190,658**	**$ 0.00**	**$ 58,426**	**$ 0.00**	**$ 249,084**
	2011	**190,658**	**50,000**	**9,717**	**0.00**	**250,375**
	2010	**190,658**	**0.00**	**9,717**	**0.00**	**200,375**
Enza Guagenti, CFO	**2012**	**$ 90,000**	**$ 0.00**	**$ 3,394**	**$ 0.00**	**$ 93,394**
	2011	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	2010	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Under the terms of Dr. Cicic's employment contract and the agreed upon written terms of employment for Mr. Talley and Ms Guagenti, these employees are entitled to receive severance of twelve months, twelve months and three months base salary, respectively, upon termination by the Company without cause, or upon resignation within thirty days after a change in job responsibilities and a reduction in base salary.

Director Compensation

Historical non-management Directors of the Company do not receive any cash compensation. Commencing October 1, 2012, non-management Directors of the Company will receive a quarterly cash retainer of $7,500 per calendar quarter for their service on the Board of Directors. They also receive reimbursement for out-of-pocket expenses and certain directors have received stock option grants for shares of Company Common Stock as described in the beneficial ownership table in the section titled "SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT."

Outstanding Equity Awards at Fiscal Year-End Table

At December 31, 2011, Cactus had no outstanding equity awards.

CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Related Party Transactions

On January 18, 2001, API entered in a Clinical Trial Agreement with Memorial Sloan-Kettering Cancer Center (MSKCC) and Sloan-Kettering Institute of Cancer Research (SKI), an entity related to MSKCC. Through an indirect subsidiary, Actinium Holdings Ltd. (AHL), MSKCC has been a principal stockholder of the Company since April 2010. The agreement provided for the conduct by SKI/MSKCC of Phase I/II clinical trials of the use of 213Bi-Hu195and cytarabine for the treatment of acute myeloid leukemia and for API's partial sponsorship of the study in exchange for access to data resulting from the study. API was obligated to pay SKI (a) $10,000 for each completed case report on a completed subject, and (b) $2,500 for each case report on an incomplete subject. The trial enrolled 31 patients, was completed in 2007 and all the money due to Memorial Sloan-Kettering Cancer Center (MSKCC) and Sloan-Kettering Institute of Cancer Research ("SKI") were paid in full.

On February 11, 2002, API entered in a License, Development and Commercialization Agreement with SKI. The agreement was amended in August 2006. Pursuant to the agreement, API licenses certain intellectual property from SKI, including critical patents with respect to API's core technology, and also supports ongoing research and clinical development of API related drug candidates. Certain amounts due under this agreement were deferred and then forgiven under the forbearance-related arrangements described below. On June 19, 2011, API nonetheless agreed to pay SKI (a) $50,000 in 2011, (b) $200,000 in 2012 and (c) $250,000 in 2013 under this agreement, in respect of the $50,000 annual maintenance fees and research payments. Since January 1, 2011, API has paid $50,000 for 2011 and $50,000 for 2012 under this Agreement and as of December 21, 2012, and an additional
$150, 000 was due from API under this agreement.

On February 25, 2006, API entered in a Clinical Trial Agreement with MSKCC and SKI. The agreement provides for the conduct by SKI/MSKCC of a Phase I clinical trials of the use of Actinium 225-HuM195 for the treatment of advanced myeloid malignancy and for API's partial sponsorship of the study in exchange for access to data resulting from the study. API is obligated to pay SKI (a) $10,000 for each completed case report on a completed subject, and (b) $2,500 for each case report on an incomplete subject. As of December 21, 2012, 18 subjects had been enrolled in this study, and the parties intend to attempt to enroll and additional 3 subjects. The maximum compensation for which API is responsible for under the agreement is $328,000. Since the inception of the trial in 2006, API has paid $180,000 and since January 1, 2011, API has paid $70,000 under the agreement.As of December 31, 2012, no monies were due under this agreement. The trial is ongoing and further fees are likely to be accrued as patients are enrolled. We anticipate enrollment of up to 3 additional patients under this agreement in 2012 and closing of the trial after that.

In April 2010, SKI agreed, on behalf of itself and its related or affiliated entities, including MSKCC, to forbear from collecting or otherwise enforcing API's then outstanding obligations to those entities and similar obligations arising during a defined forbearance period. The initial outstanding obligations consisted of approximately $260,000 due under API's license and clinical trials agreements with those entities. In June 2011, SKI agreed to forgive all current and future obligations subject to the forbearance in order to facilitate API's financing efforts. The forbearance period terminated on October 30, 2011, when the Company satisfied a financing condition to the termination of the forbearance period by raising in excess of $3,000.000 in new equity financing. The total amount forgiven was approximately $360,000.

In April, 2011, SKI agreed to lend API $215,100 in order to fund current operating expenses and addition essential expenditures due over the ensuing six-month period. As of October 30, 2012, API had repaid $171,000 of such loans; the balance is due in January 2013. The largest aggregate amount of these loans outstanding at any time was $215,100.

MSKCC agreed, subject to certain conditions, to utilize donated funds for certain clinical and preclinical programs and activities related to Actinium's drug development and clinical study programs, including the payment of certain costs and expenses that would otherwise have been borne by Actinium. The following is a summary of activities related to the MSKCC arrangements at December 31, 2011 and 2010:

	2011	2010
Qualified R&D costs incurred by API	$ 655,786	$ 528,319
Cash received from MSKCC	966,341	248,418

As of December 31, 2011 and 2010, the Company had reimbursement receivables for costs incurred of $237,834 and $279,401 from MSKCC, respectively. These amounts have since been paid.

In October 2011, AHL agreed, in connection with API's concurrent private offering, to waive its rights to anti-dilution adjustments in respect of its outstanding preferred stock and its preemptive rights to purchase the Series E Preferred Stock. AHL also agreed to the restructuring of its registration rights in favor of the private placement purchasers and to the amendment of the stockholders agreement of API to permit, among other transactions, the share exchange and to relinquish its rights to Board representation, although one director originally nominated by MSKCC continued to serve. API agreed (i) not to reduce the indemnification, advancement of expenses and similar rights of present and former directors and officers of API, (ii) until April 30, 2016 to maintain directors' and officers' liability insurance at least in the same manner and to the same extent as then in effect, and (iii) following any merger, asset transfer and certain other transactions to provide for the parity of such directors and officers in respect of indemnification, advancement of expenses and d&o insurance with such rights applicable to the non-continuing directors following such transactions.

On March 27, 2012, Actinium entered into an additional clinical trial agreement with Memorial Sloan-Kettering Cancer Center with respect to conducting a Phase I/II trial of combination therapy of low dose cytarabine and fractionated dose of Lintuzumab-Ac225. Actinium will pay $31,185 for each patient that has completed the clinical trial. Upon execution of the agreement, Actinium was required to pay a start-up fee of $79,623, which was paid on July 10, 2012. The total number of patients anticipated to be enrolled at MSKCC in this trial is 15.

On December 31, 2012, AHL agreed not to transfer its shares of Common Stock of the Company, subject to exceptions for certain related-party transfers, transfers to trusts and other private transfers, until, in general, the earlier of (i) twelve (12) months from the Closing Date; or (ii) six (6) months following the effective date of the Registration Statement; however, the AHL "lock-up" agreement has not been finalized as of the date of this filing. AHL has certain registration rights with respect to its shares; however, such rights are, in certain respects, subordinate to those of investors in certain recent private placements.

On January 1, 2012, API entered into a Consulting Services Agreement with Dr. Rosemary Mazanet, a director of Cactus. Pursuant to the agreement, Dr. Mazanet is to provide, among other things, consulting services in the areas of implementation of the Actimab trial including all aspects of study initiation until first patient in at each clinical site. Dr. Mazanet receives compensation of $100,000 per year and may receive additional compensation in the form of options at determined by the board of API. Since January 1, 2011, Dr. Mazanet has received options to purchase 225,000 shares of common stock of API.

Jack Talley, Chief Executive Officer of Cactus, has an agreement pursuant to which he will maintain a 3% equity ownership on a fully diluted basis in Cactus up to the final closing of the Offering. The maximum offering amount with greenshoe option of the Offering is $20,000,000. As of December 28, 2012, a total $5,151,450 has been raised in the Offering.

On August 7, 2012, API entered into an engagement agreement with the Placement Agent, which is affiliated with Mr. Seth, a director of Cactus Ventures, Inc. by virtue of the acquisition transaction of Actinium Pharmaceuticals, Inc. Mr. Seth is Head of Healthcare Investment Banking for the Placement Agent. Pursuant to the agreement, the Placement Agent was engaged as the exclusive agent for the Offering of the Units by API. None of Cactus' current officers or directors had a prior relationship or affiliation with Cactus prior to the closing of the Share Exchange. In consideration for its services, the Placement Agent will receive (a) a cash fee equal to 10% of the gross proceeds raised in the Offering, (b) a non-accountable expense reimbursement equal to 2% of the gross proceeds raised in the Offering, and (c) reimbursement of $100,000 for legal expenses incurred by the Placement Agent. The Placement Agent or its designees have also received warrants to purchase shares of API's Common Stock in an amount equal to 10% of the shares of Common Stock issued as part of the Units sold in the Offering and the shares of Common Stock issuable upon exercise of the B Warrants included in such Units. The Placement Agent will also receive the same fee and expense schedule for any cash exercise of Warrants within 6 months of the final closing of the Offering and a 5% solicitation fee for any Warrants exercised as a result of being called for redemption by the Company. Upon the final closing of the Offering of the Units the Placement Agent has been engaged by API to provide certain financial advisory services to API for a period of at least 6 months for a monthly fee of $25,000. The agreement also provides that (i) if API consummates any merger, acquisition, business combination or other transaction (other than the Share Exchange) with any party introduced to it by the Placement Agent, the Placement Agent would receive a fee equal to 10% of the aggregate consideration in such transactions, and (ii) if, within a period of 12 months after termination of the advisory services described above, API requires a financing or similar advisory transaction the Placement Agent will have the right to act as API's financial advisor and investment banker in such financing or transaction pursuant to a set fee schedule set forth in the August 7, 2012 engagement agreement. For a period ending one year after the expiration of all lock-up agreements entered into in connection with the Share Exchange, any change in the size of the API board of directors must be approved by the Placement Agent. The Placement Agent also was engaged by API as placement agent for its Series E Preferred and notes financing in 2011 and, as a part of the fee for that engagement, designees of the Placement Agent also hold warrants to purchase 1,245,226 shares of API's Common Stock.

On May 9, 2011, API entered into a transaction management agreement with Jamess Capital Group, LLC. (formerly known as Amerasia Capital Group, LLC), a consulting firm affiliated with Mr. Sandesh Seth, a director of the Cactus by virtue of his position as a director of Actinium Pharmaceuticals. Mr. Seth is a Managing Partner of the consulting firm some of whose member interests are held by entities owned by officers and employees of the Placement Agent. None of Cactus' current officers or directors had a prior relationship or affiliation with Cactus prior to the closing of the Share Exchange. Pursuant to the agreement, the management firm was engaged to provide consulting services to API related to the consummation of a going public transaction for API. The management firm received a monthly fee of $12,500 which is terminable by API three months after the effective date of the going public transaction and designees of Jamess, including entities affiliated with Mr. Seth, were issued warrants to purchase common stock equal to 10% of the fully-diluted capital stock of API as of the effective date of the going public transaction. The fully diluted shares for this calculation included all issued and outstanding shares as well as those reserved under the Employee Stock Option Plan. Jamess Capital Group does not retain beneficial ownership of the warrants as they were issued to designess of the members in amounts which do not qualify either Jamess or the warrant holders for inclusion in the beneficial ownership table. The warrants contain a provision wherein the holder may waive the 90 day exercise notice requirement by giving 65 days prior notice of such waiver. The shares available by exercise of this Warrant are also restricted and may not be sold or otherwise transfered until the earlier of twelve months from the closing date of the Pubco Transaction; or for six months after the planned Registration Statement is declared effective. The consulting firm is also eligible to be reimbursed upon the submission of proper documentation for ordinary and necessary out-of-pocket expenses not to exceed $5,000 per month.

In 2010, API entered into an agreement with Guagenti & Associates LLC ("G&A"). G&A is affiliated with Enza Guagenti, the Chief Financial Officer of Cactus. Pursuant to the agreement, API leases storage space in Newark, NJ from G&A. The rent is $300 per month. Since January 1, 2011, API has paid $3,600 pursuant to this agreement.

Non-Competition Agreements

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

LEGAL PROCEEDINGS

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

MARKET PRICE AND DIVIDENDS ON OUR COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

Market Information

Our common stock is listed on OTCBB, under the symbol "CTVN". However, there is no active market for our Common Stock and trading has been extremely limited. The last quoted price for our Common Stock was $0.10 for a trade on June 1, 2012, as reported on www.otcbb.com. However, as there is currently little to no market for our Common Stock, we believe that this last reported price does not accurately reflect the value of the Common Stock or the Company, and it may not be possible to sell Common Stock at this price.

Holders

As of the Closing Date and after giving effect to the Share Exchange, 4,709,015 shares of Common Stock were issued and outstanding, which were held by 118 holders of record. There are no shares of Preferred Stock outstanding.

Of the 4,709,015 shares of Common Stock issued and outstanding, 4,309,015 of such shares are restricted shares under the Securities Act. None of these restricted shares are eligible for resale absent registration or an exemption from registration under the Securities Act. As of the date hereof, the exemption from registration provided by Rule 144 under the Securities Act is not available for these shares pursuant to Rule 144(i).

Registration Rights

The Subscribers are entitled to certain registration rights, including piggy-back registration rights, with respect to the shares of Common Stock purchased in the Offering.

Dividends

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

Penny Stock

Our Common Stock is subject to provisions of Section 15(g) and Rule 15g-9 of the Exchange Act, commonly referred to as the "penny stock rule." Section 15(g) sets forth certain requirements for transactions in penny stock, and Rule 15g-9(d) incorporates the definition of "penny stock" that is found in Rule 3a51-1 of the Exchange Act. The SEC generally defines a penny stock to be any equity security that has a market price less than $5.00 per share, subject to certain exceptions. The Company is subject to the SEC's penny stock rules.

Since the Common Stock will be deemed to be penny stock, trading in the shares of our common stock is subject to additional sales practice requirements on broker-dealers who sell penny stock to persons other than established customers and accredited investors. "Accredited investors" are persons with assets in excess of $1,000,000 or annual income exceeding $200,000 or $300,000 together with their spouse. For transactions covered by these rules, broker-dealers must make a special suitability determination for the purchase of such security and must have the purchaser's written consent to the transaction prior to the purchase. Additionally, for any transaction involving a penny stock, unless exempt the rules require the delivery, prior to the first transaction of a risk disclosure document, prepared by the SEC, relating to the penny stock market. A broker-dealer also must disclose the commissions payable to both the broker-dealer and the registered representative and current quotations for the securities. Finally, monthly statements must be sent disclosing recent price information for the penny stocks held in an account and information to the limited market in penny stocks. Consequently, these rules may restrict the ability of broker-dealer to trade and/or maintain a market in our common stock and may affect the ability of the Company's stockholders to sell their shares of common stock.

Securities Authorized for Issuance under Equity Compensation Plans

We do not have in effect any compensation plans under which our equity securities are authorized for issuance. The Company intends to adopt an equity compensation plan in which its directors, officers, employees and consultants shall be eligible to participate. However, no formal steps have been taken as of the date of this Report to adopt such a plan.

RECENT SALES OF UNREGISTERED SECURITIES

Reference is made to the disclosure set forth under Item 3.02 of this Report, which disclosure is incorporated by reference into this section.

DESCRIPTION OF SECURITIES

Introduction

In the discussion that follows, we have summarized selected provisions of our articles of incorporation, bylaws and Nevada law relating to our capital stock. This summary is not complete. This discussion is subject to the relevant provisions of Nevada law and is qualified in its entirety by reference to our articles of incorporation and our bylaws. You should read the provisions of our certificate of incorporation and our bylaws as currently in effect for provisions that may be important to you.

Authorized Capital Stock

The total authorized shares of capital stock of the Company currently consists of 100,000,000 shares of common stock, par value $0.01 per share, and 10,000,000 shares of preferred stock, par value $0.01 per share.

Common Stock

Holders of our common stock are entitled to receive notice of and to attend all meetings of our stockholders, and to one vote for each share on all matters submitted to a stockholder vote. Holders of common stock do not have cumulative voting rights. Therefore, holders of a majority of the shares of common stock voting for the election of directors can elect all of the directors. Holders of our common stock representing a majority of the voting power of our capital stock issued, outstanding and entitled to vote, represented in person or by proxy, are necessary to constitute a quorum at any meeting of our stockholders. A vote by the holders of a majority of our outstanding shares is required to effectuate certain fundamental corporate changes such as liquidation, merger or an amendment to our articles of incorporation.

In the event of liquidation, dissolution or winding up, each outstanding share entitles its holder to participate pro rata in all assets that remain after payment of liabilities and after providing for each class of stock, if any, having preference over the common stock. Holders of our common stock have no pre-emptive rights, no conversion rights and there are no redemption provisions applicable to our common stock.

As of December 28, 2012, 4,709,015 shares of common stock are held by 118 stockholders.

Dividends

Holders of common stock are entitled to share in all dividends that the board of directors, in its discretion, declares from legally available funds. We have not paid any cash dividends on our Common Stock and do not plan to pay any such dividends in the foreseeable future. We currently intend to use all available funds to develop our business. We can give no assurances that we will ever have excess funds available to pay dividends.

Preferred Stock

We are authorized to issue up to 10,000,000 shares of preferred stock, par value $0.01 per share, in one or more series as may be determined by our Board of Directors, who may establish, from time to time, the number of shares to be included in each series, may fix the designation, powers, preferences and rights of the shares of each such series and any qualifications, limitations or restrictions thereof. Any preferred stock so issued by the Board may rank senior to the common stock with respect to the payment of dividends or amounts upon liquidation, dissolution or winding up of us, or both. Moreover, while providing desirable flexibility in connection with possible acquisitions and other corporate purposes, under certain circumstances, the issuance of preferred stock or the existence of the unissued preferred stock might tend to discourage or render more difficult a merger or other change of control. We currently do not have any preferred stock outstanding.

Anti-takeover Effects of Our Articles of Incorporation and By-laws

Our Articles of Incorporation and Bylaws contain certain provisions that may have anti-takeover effects, making it more difficult for or preventing a third party from acquiring control of our Company or changing our Board of Directors and management. According to our Bylaws and Articles of Incorporation, neither the holders of our common stock nor the holders of our preferred stock have cumulative voting rights in the election of our directors. The combination of the present ownership by a few stockholders of a significant portion of our issued and outstanding common stock and lack of cumulative voting makes it more difficult for other stockholders to replace our Board of Directors or for a third party to obtain control of our Company by replacing our Board of Directors.

Anti-takeover Effects of Nevada Law

Business Combinations

The “business combination” provisions of Sections 78.411 to 78.444, inclusive, of the Nevada Revised Statutes, or NRS, generally prohibit a Nevada corporation with at least 200 stockholders of record, a “resident domestic corporation,” from engaging in various “combination” transactions with any “interested stockholder” unless certain conditions are met or the corporation has elected in its articles of incorporation to not be subject to these provisions.

A “combination” is generally defined to include (a) a merger or consolidation of the resident domestic corporation or any subsidiary of the resident domestic corporation with the interested stockholder or affiliate or associate of the interested stockholder; (b) any sale, lease, exchange, mortgage, pledge, transfer, or other disposition, in one transaction or a series of transactions, by the resident domestic corporation or any subsidiary of the resident domestic corporation to or with the interested stockholder or affiliate or associate of the interested stockholder having: (i) an aggregate market value equal to 5% or more of the aggregate market value of the assets of the resident domestic corporation, (ii) an aggregate market value equal to 5% or more of the aggregate market value of all outstanding shares of the resident domestic corporation, or (iii) 10% or more of the earning power or net income of the resident domestic corporation; (c) the issuance or transfer in one transaction or series of transactions of shares of the resident domestic corporation or any subsidiary of the resident domestic corporation having an aggregate market value equal to 5% or more of the resident domestic corporation to the interested stockholder or affiliate or associate of the interested stockholder; and (d) certain other transactions with an interested stockholder or affiliate or associate of the interested stockholder.

An “interested stockholder” is generally defined as a person who, together with affiliates and associates, owns (or within three years, did own) 10% or more of a corporation’s voting stock. An “affiliate” of the interested stockholder is any person that directly or indirectly through one or more intermediaries is controlled by or is under common control with the interested stockholder. An “associate” of an interested stockholder is any (a) corporation or organization of which the interested stockholder is an officer or partner or is directly or indirectly the beneficial owner of 10% or more of any class of voting shares of such corporation or organization; (b) trust or other estate in which the interested stockholder has a substantial beneficial interest or as to which the interested stockholder serves as trustee or in a similar fiduciary capacity; or (c) relative or spouse of the interested stockholder, or any relative of the spouse of the interested stockholder, who has the same home as the interested stockholder.

If applicable, the prohibition is for a period of two years after the date of the transaction in which the person became an interested stockholder, unless such transaction is approved by the board of directors prior to the date the interested stockholder obtained such status; or the combination is approved by the board of directors and thereafter is approved at a meeting of the stockholders by the affirmative vote of stockholders representing at least 60% of the outstanding voting power held by disinterested stockholders; and extends beyond the expiration of the two-year period, unless (a) the combination was approved by the board of directors prior to the person becoming an interested stockholder; (b) the transaction by which the person first became an interested stockholder was approved by the board of directors before the person became an interested stockholder; (c) the transaction is approved by the affirmative vote of a majority of the voting power held by disinterested stockholders at a meeting called for that purpose no earlier than two years after the date the person first became an interested stockholder; or (d) if the consideration to be paid to all stockholders other than the interested stockholder is, generally, at least equal to the highest of: (i) the highest price per share paid by the interested stockholder within the three years immediately preceding the date of the announcement of the combination or in the transaction in which it became an interested stockholder, whichever is higher, plus compounded interest and less dividends paid, (ii) the market value per share of common shares on the date of announcement of the combination and the date the interested stockholder acquired the shares, whichever is higher, plus compounded interest and less dividends paid, or (iii) for holders of preferred stock, the highest liquidation value of the preferred stock, plus accrued dividends, if not included in the liquidation value. With respect to (i) and (ii) above, the interest is compounded at the rate for one-year United States Treasury obligations from time to time in effect.

Applicability of the Nevada business combination law would discourage parties interested in taking control of our company if they cannot obtain the approval of our board of directors. These provisions could prohibit or delay a merger or other takeover or change in control attempt and, accordingly, may discourage attempts to acquire our company even though such a transaction may offer our stockholders the opportunity to sell their stock at a price above the prevailing market price. The Company has elected to not be governed by the Nevada business combination provisions.

Control Share Acquisitions

The “control share” provisions of Sections 78.378 to 78.3793, inclusive, of the NRS, apply to “issuing corporations,” which are Nevada corporations with at least 200 stockholders of record, including at least 100 stockholders of record who are Nevada residents, and which conduct business directly or indirectly in Nevada, unless the corporation has elected to not be subject to these provisions.

The control share statute prohibits an acquirer of shares of an issuing corporation, under certain circumstances, from voting its shares of a corporation’s stock after crossing certain ownership threshold percentages, unless the acquirer obtains approval of the target corporation’s disinterested stockholders. The statute specifies three thresholds: (a) one-fifth or more but less than one-third, (b) one-third but less than a majority, and (c) a majority or more, of the outstanding voting power. Generally, once a person acquires shares in excess of any of the thresholds, those shares and any additional shares acquired within 90 days thereof become “control shares” and such control shares are deprived of the right to vote until disinterested stockholders restore the right. These provisions also provide that if control shares are accorded full voting rights and the acquiring person has acquired a majority or more of all voting power, all other stockholders who do not vote in favor of authorizing voting rights to the control shares are entitled to demand payment for the fair value of their shares in accordance with statutory procedures established for dissenters’ rights.

A corporation may elect to not be governed by, or "opt out" of, the control share provisions by making an election in its articles of incorporation or bylaws, provided that the opt-out election must be in place on the 10th day following the date an acquiring person has acquired a controlling interest, that is, crossing any of the three thresholds described above. We have opted out of the control share statutes, and, provided the "opt out" election remains in place, we will not be subject to the control share statutes.

The effect of the Nevada control share statute is that the acquiring person, and those acting in association with the acquiring person, will obtain only such voting rights in the control shares as are conferred by a resolution of the stockholders at an annual or special meeting. The Nevada control share law, if applicable, could have the effect of discouraging takeovers of our company.

INDEMNIFICATION OF DIRECTORS AND OFFICERS

We are a Nevada corporation and generally governed by the Nevada Private Corporations Code, Title 78 of the Nevada Revised Statutes, or NRS.

Section 78.138 of the NRS provides that, unless the corporation's Articles of Incorporation provide otherwise, a director or officer will not be individually liable unless it is proven that (i) the director's or officer's acts or omissions constituted a breach of his or her fiduciary duties, and (ii) such breach involved intentional misconduct, fraud, or a knowing violation of the law. Our Articles of Incorporation provide that no director or officer shall be personally liable to the corporation or any of its stockholders for damages for any breach of fiduciary duty as a director or officer except for liability of a director or officer for (i) acts or omissions involving intentional misconduct, fraud, or a knowing violation of law or (ii) payment of dividends in violation of Section 78-300 of the NRS.

Section 78.7502 of the NRS permits a company to indemnify its directors and officers against expenses, judgments, fines, and amounts paid in settlement actually and reasonably incurred in connection with a threatened, pending, or completed action, suit, or proceeding, if the officer or director (i) is not liable pursuant to NRS 78.138, or (ii) acted in good faith and in a manner the officer or director reasonably believed to be in or not opposed to the best interests of the corporation and, if a criminal action or proceeding, had no reasonable cause to believe the conduct of the officer or director was unlawful. Section 78.7502 of the NRS also precludes indemnification by the corporation if the officer or director has been adjudged by a court of competent jurisdiction, after exhaustion of all appeals, to be liable to the corporation or for amounts paid in settlement to the corporation, unless and only to the extent that the court determines that in view of all the circumstances, the person is fairly and reasonably entitled to indemnity for such expenses and requires a corporation to indemnify its officers and directors if they have been successful on the merits or otherwise in defense of any claim, issue, or matter resulting from their service as a director or officer.

Section 78.751 of the NRS permits a Nevada company to indemnify its officers and directors against expenses incurred by them in defending a civil or criminal action, suit, or proceeding as they are incurred and in advance of final disposition thereof, upon determination by the stockholders, the disinterested board members, or by independent legal counsel. Section 78.751 of NRS requires a corporation to advance expenses as incurred upon receipt of an undertaking by or on behalf of the officer or director to repay the amount if it is ultimately determined by a court of competent jurisdiction that such officer or director is not entitled to be indemnified by the company if so provided in the corporations articles of incorporation, bylaws, or other agreement. Section 78.751 of the NRS further permits the company to grant its directors and officers additional rights of indemnification under its articles of incorporation, bylaws, or other agreement.

Section 78.752 of the NRS provides that a Nevada company may purchase and maintain insurance or make other financial arrangements on behalf of any person who is or was a director, officer, employee, or agent of the company, or is or was serving at the request of the company as a director, officer, employee, or agent of another company, partnership, joint venture, trust, or other enterprise, for any liability asserted against him and liability and expenses incurred by him in his capacity as a director, officer, employee, or agent, or arising out of his status as such, whether or not the company has the authority to indemnify him against such liability and expenses.

The Bylaws implement the indemnification and insurance provisions permitted by Chapter 78 of the NRS by providing that the Company:

- shall, to the maximum extent and in the manner specified in the [NRS], indemnify each of its directors and officers against expenses, judgments, fines, settlements, and other amounts actually and reasonably incurred in connection with any proceeding arising by reason of the fact that any such person is or was a director or officer of the Corporation. The Corporation shall have the power to advance expenses incurred in defending any proceeding prior to the disposition of the proceeding upon receipt of an undertaking by or on behalf of the director or officer to repay that amount if it shall be determined ultimately that the person is not entitled to indemnification.

Actinium Holdings Ltd. Indemnification

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

entitled to be indemnified or advanced expenses under applicable law, API's or any such subsidiaries' certificate or articles of incorporation or bylaws or equivalent documents or any applicable contract (collectively, the "Applicable Documents"), in each case, as in effect on the date thereof.

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

CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None

Item 3.02 Unregistered Sales of Equity Securities.

The information contained in Item 1.01 above is incorporated herein by reference in response to this Item 3.02.

The shares of common stock issued to the former shareholders of Actinium in connection with the Share Exchange were offered and sold in a private transaction in reliance upon exemptions from registration pursuant to Section 4(2) of the Securities Act and Regulation S promulgated under the Securities Act. Our reliance on Section 4(2) of the Securities Act was based upon the following factors: (a) the issuance of the securities was an isolated private transaction by us which did not involve a public offering; (b) there were only a limited number of offerees; (c) there were no subsequent or contemporaneous public offerings of the securities by us; (d) the securities were not broken down into smaller denominations; and (e) the negotiations for the sale of the stock took place directly between the offerees and us. Our reliance on Regulation S was based on that such shareholders were not a "U.S. person" as that term is defined in Rule 902(k) of Regulation S under the Act, and that such shareholders were acquiring our common stock, for investment purposes for their own respective accounts and not as nominees or agents, and not with a view to the resale or distribution thereof, and that the shareholders understood that the shares of our common stock may not be sold or otherwise disposed of without registration under the Securities Act or an applicable exemption therefrom.

The securities were offered and sold in reliance upon exemptions from registration pursuant to Section 4(2) of the Securities Act and Rule 506 of Regulation D ("Regulation D") promulgated under the Securities Act. The Company made this determination based on the representations of the investors which included, in pertinent part, that each such investor was an "accredited investor" within the meaning of Rule 501 of Regulation D and upon such further representations from each investor that (i) such investor is acquiring the securities for its own account for investment and not for the account of any other person and not with a view to or for distribution, assignment or resale in connection with any distribution within the meaning of the Securities Act, (ii) such investor agrees not to sell or otherwise transfer the purchased securities or shares underlying such securities unless they are registered under the Securities Act and any applicable state securities laws, or an exemption or exemptions from such registration are available, (iii) such investor has knowledge and experience in financial and business matters such that such investor is capable of evaluating the merits and risks of an investment in us, (iv) such investor had access to all of the Company's documents, records, and books pertaining to the investment and was provided the opportunity to ask questions and receive answers regarding the terms and conditions of the Offering and to obtain any additional information which the Company possessed or was able to acquire without unreasonable effort and expense, and (v) such investor has no need for the liquidity in its investment in us and could afford the complete loss of such investment. In addition, there was no general solicitation or advertising for securities issued in reliance upon Regulation D.

Item 4.01. Changes in Registrant's Certifying Accountant.

(a) Dismissal of Independent Accountant Previously Engaged as Principal Accountant.

On December 28, 2012, the Company dismissed R.R. Hawkins & Associates International, a PC ("Hawkins"), as the independent registered public accounting firm of the Company. The dismissal was approved by the Board of Directors.

The reports of Hawkins on the financial statements of the Company for the fiscal years ended December 31, 2011 and 2010, did not contain any adverse opinion or a disclaimer of opinion, and were not qualified or modified as to uncertainty, audit scope or accounting principles except an explanatory paragraph as to an uncertainty with respect to the Company's ability to continue as a going concern.

During the fiscal years ended December 31, 2011 and 2010, and through the date of this report, there were no (1) disagreements with Hawkins on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedure, which disagreements if not resolved to the satisfaction of Hawkins, would have caused them to make reference thereto in their reports on the financial statements for such years; or (2) "reportable events" as defined in Item 304(a)(1)(v) of Regulation S-K.

The Company has requested that Hawkins furnish it with a letter addressed to the SEC stating whether or not it agrees with the above statements and, if not, stating the respects in which it does not agree. A copy of such letter, dated December 28, 2012, indicating that it is in agreement with such disclosures is filed as Exhibit 16.1 to this Form 8-K.

(b) Engagement of New Independent Accountant as Principal Accountant.

On December 28, 2012, the Board of Directors approved the appointment of GBH CPAs, PC ("GBH") as the independent registered public accounting firm of the Company.

During the Company's two most recent fiscal years and the subsequent interim periods preceding GBH's engagement, neither the Company nor anyone on behalf of the Company consulted with GBH regarding the application of accounting principles to any specific completed or contemplated transaction, or the type of audit opinion that might be rendered on the Company's financial statements, and GBH did not provide any written or oral advice that was an important factor considered by the Company in reaching a decision as to any accounting, auditing or financial reporting issue or any matter that was the subject of a "disagreement" or a "reportable event," as such terms are defined in Item 304(a)(1) of Regulation S-K.

Item 5.01 Changes in Control of Registrant.

Reference is made to the disclosure set forth under Item 2.01 of this report, which disclosure is incorporated herein by reference.

Prior to the Share Exchange, Diane S. Button, the former sole officer and director of Cactus, owned 10,000,000 shares of Common Stock, comprising approximately 89.65%, of the issued and outstanding shares, and Bruce Holden owned 926,600, comprising approximately 8.3% of the issued and outstanding shares.

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

On the Closing Date, Diane S. Button submitted a resignation letter to Cactus resigning from her position as the sole director and officer, effective upon the closing of the Share Exchange. The resignation of Ms. Button was not in connection with any known disagreement with us on any matter.

On the Closing Date, Jack V. Talley, Rosemary Mazanet, MD, PhD, David Nicholson, PhD, Sandesh Seth, MS, MBA, and Sergio Traversa, MBA were appointed by our Board of Directors to fill the vacancies created by the resignation of Ms. Button, effective upon the closing of the Share Exchange.

In addition, on the Closing Date, the Board of Directors appointed Jack V. Talley as the President and Chief Executive Officer, Dragan Cicic, MD as the Chief Operating Officer and Chief Medical Officer, and Enza Guagenti, CPA as the Chief Financial Officer, effective upon the closing of the Share Exchange.

For certain biographical and other information regarding the new directors and officers of the Company, see the disclosure under "Item 2.01 —Directors and Executive Officers" of this Report, which disclosure is incorporated herein by reference.

Item 5.05 Amendments to the Registrant's Code of Ethics, Waiver of the Code of Ethics.

On December 28, 2012, the Cactus Board of Directors adopted a Code of Ethics that applies to its executive officers and directors.

The foregoing description of the Code of Ethics is qualified in its entirety by reference to the provisions of the Code of Ethics filed as Exhibit 14.1 to this Report, which is incorporated by reference herein.

Item 5.06 Change in Shell Company Status.

To the extent that we might have been deemed to be a shell company prior to the closing of the Share Exchange, reference is made to the disclosure set forth under Items 2.01 and 5.01 of this Report, which disclosure is incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(a) Financial Statements of Business Acquired.

In accordance with Item 9.01(a), the Audited Consolidated Financial Statements for the years ended December 31, 2011 and 2010, and the Unaudited Interim Consolidated Financial Statements for the periods ended September 30, 2012 and 2011 for Actinium are included with this Current Report as exhibit 99.1 and 99.2.

(b) Pro Forma Financial Information.

In accordance with Item 9.01(b), unaudited pro forma combined financial information of Cactus are included with this Current Report as exhibit 99.3.

(c) Shell Company Transactions.

Reference is made to Items 9.01(a) and 9.01(b) and the exhibits referred to therein which are incorporated herein by reference.

(d) Exhibits.

Certain of the agreements filed as exhibits to this Report contain representations and warranties by the parties to the agreements that have been made solely for the benefit of the parties to the agreement. These representations and warranties:

- may have been qualified by disclosures that were made to the other parties in connection with the negotiation of the agreements, which disclosures are not necessarily reflected in the agreements;
- may apply standards of materiality that differ from those of a reasonable investor; and
- were made only as of specified dates contained in the agreements and are subject to subsequent developments and changed circumstances.

Accordingly, these representations and warranties may not describe the actual state of affairs as of the date that these representations and warranties were made or at any other time. Investors should not rely on them as statements of fact.

Exhibit Number	Description
2.1	Share Exchange Agreement, dated December 28, 2012, by and among Cactus Ventures, Inc., Actinium Pharmaceuticals, Inc., Diane S. Button, and the shareholders of Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 2.1 to Form 8-K filed on January 2, 2013).
3.1	Articles of Incorporation of Cactus Ventures, Inc.(incorporated by reference to Exhibit 3.01 of the Company's Registration Statement on Form 10-SB filed with the SEC on February 5, 2007).
3.2	Amendment No. 1 to the Articles of Incorporation of Cactus Ventures, Inc. (incorporated by reference to Exhibit 3.02 of the Company's Registration Statement on Form 10-SB filed with the SEC on February 5, 2007).
3.3	Amendment No. 2 to the Articles of Incorporation of Cactus Ventures, Inc. (incorporated by reference to Exhibit 3.03 of the Company's Registration Statement on Form 10-SB filed with the SEC on February 5, 2007).
3.4	Amendment No. 3 to the Articles of Incorporation of Cactus Ventures, Inc. (incorporated by reference to Exhibit 3.04 of the Company's Registration Statement on Form 10-SB filed with the SEC on February 5, 2007).
3.5	Fifth Restated Certificate of Incorporation of Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 3.5 to Form 8-K filed on January 2, 2013).
3.6	Bylaws of Cactus Ventures, Inc. (incorporated by reference to Exhibit 3.05 of the Company's Registration Statement on Form 10-SB filed with the SEC on February 5, 2007).
3.7	Bylaws of Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 3.7 to Form 8-K filed on January 2, 2013).
4.1	Form of A Warrant, dated December 19, 2012 (incorporated by reference to Exhibit 4.1 to Form 8-K filed on January 2, 2013).
4.2	Form of B Warrant, dated December 19, 2012 (incorporated by reference to Exhibit 4.2 to Form 8-K filed on January 2, 2013).
4.3	Form of Lock Up Agreement, dated December ____, 2012 (incorporated by reference to Exhibit 4.3 to Form 8-K filed on January 2, 2013).
10.1	Registration Rights Agreement, by and among Actinium Pharmaceuticals, Inc., General Atlantic Investments Limited, and Certain Stockholders, dated June 30, 2000 (incorporated by reference to Exhibit 10.1 to Form 8-K filed on January 2, 2013).
10.2	Amendment No. 1 to June 30, 2000 Registration Rights Agreement, dated September 29, 2011.
10.3	First Amended and Restated Stockholders Agreement, by and among Actinium Pharmaceuticals, Inc., Actinium Holdings Limited, N.V. Organon, and the Stockholders Listed Therein, dated October 5, 2011.
10.4	Second Amended and Restated Investor Rights Agreement, by and among Actinium Pharmaceuticals, Inc., Actinium Holdings Limited, and the Investors Listed Therein, dated October 5, 2011.
10.5	Placement Agent Engagement Agreement, by and between Laidlaw & Company (UK) Ltd. and Actinium Pharmaceuticals, Inc., dated August 7, 2012.
10.6	Form of Subscription Agreement, dated December 19, 2012 (incorporated by reference to Exhibit 10.6 to Form 8-K filed on January 2, 2013).
10.7	Form of Unit Purchase Agreement, dated December 19, 2012 (incorporated by reference to Exhibit 10.7 to Form 8-K filed on January 2, 2013).
10.8	Employment Agreement, dated January 2, 2006, between Actinium Pharmaceuticals, Inc. and Dragan Cicic
10.9	License, Development and Commercialization Agreement between Sloan-Kettering Institute of Cancer Research, and Actinium Pharmaceuticals, Inc., dated February 11, 2002; as amended by the First Amendment dated August 7, 2006
10.10	Phase I/II Study on the safety and efficiency of 225ACAc-HuM195 in patients with advanced Myeloid malignancies with Millennix Oncology, Averion Project, dated December 6, 2006.
10.11	Product Development and Patent License Agreement, dated February 27, 2003, by and between Abbott Biotherapeutics and Actinium Pharmaceuticals, Inc.
10.12	Clinical Trial Agreement, dated July 19, 2012, by and between Fred Hutchinson Cancer Center and Actinium Pharmaceuticals, Inc.
10.13	Employment Letter between Jack V. Talley and Actinium Pharmaceuticals, Inc., effective August 15, 2012.
10.14	Employment Letter between Enza Guagenti and Actinium Pharmaceuticals, Inc., effective August 15, 2012.
10.15	Clinical Trial Agreement, dated January 18, 2001, between Actinium Pharmaceuticals, Inc. and Memorial Sloan Kettering Cancer Center for the purpose of conducting a clinical trial entitled "Phase I/II trial of 213Bi-M195 and cytarabine for Acute Myeloid Leukemia."
10.16	Clinical Trial Agreement with The Trustees of the University of Pennsylvania, dated November 8, 2012.
10.17	Clinical Trial Agreement, dated March 27, 2012, with Memorial Sloan-Kettering Cancer Center.
10.18	Clinical Trial Agreement, dated September 22, 2012, with Johns Hopkins University, dated September 24, 2012.
10.19	License Agreement, dated June 14, 2012, for BC8 antibody with Fred Hutchinson Cancer Research Center.
10.20	2012 Unit Investor Rights Agreement, dated December 19, 2012, by and among Actinium Pharmaceuticals, Inc., the persons identified on Exhibit A attached thereto hereto, and the Placement Agent (defined below).
10.21	Project Agreement, dated September 30, 2011, between Actinium Pharmaceuticals, Inc. and Aptiv Solutions, Inc.
10.22	Proposal, dated March 30, 2007, with IsoTherapeutics Group, LLC.
10.23	Clinical Trial Agreement with The University of Texas M.D. Anderson Cancer, dated March 1, 2012.
10.24	Amendment No. 1 to Research Agreement, dated November 7, 2012, between Actinium Pharmaceuticals, Inc. and The University of Texas M.D. Anderson Cancer.

10.25	Letter Agreement, dated June 19, 2011, between Actinium Pharmaceuticals, Inc. and Sloan-Kettering Institute for Cancer Research.
10.26	Letter Agreement, dated April 9, 2010, between Actinium Pharmaceuticals, Inc. and Sloan-Kettering Institute for Cancer Research.
10.27	Letter Agreement, dated July __, 2010, between Actinium Pharmaceuticals, Inc. and Actinium Holdings Limited (Waiver of Anti-Dilution Rights).
10.28	Clinical Trial Agreement, dated April 12, 2006, with Sloan-Kettering Institute for Cancer Research and Memorial Hospital for Cancer and Allied Diseases.
10.29	Letter Agreement, dated __, 2011, between Actinium Pharmaceuticals, Inc. and Actinium Holdings Limited (Waiver of Registration Rights).
14.1	Code of Ethics (incorporated by reference to Exhibit 14.1 to Form 8-K filed on January 2, 2013).
16.1	Letter from R.R. Hawkins & Associates International, a PC (incorporated by reference to Exhibit 16.1 to Form 8-K filed on January 2, 2013).
99.1	Audited Consolidated Financial Statements for the years ended December 31, 2011 and 2010 for Actinium (incorporated by reference to Exhibit 99.1 to Form 8-K filed on January 2, 2013).
99.2	Unaudited Interim Consolidated Financial Statements for the periods ended September 30, 2012 and 2011 for Actinium (incorporated by reference to Exhibit 99.2 to Form 8-K filed on January 2, 2013).
99.3	Unaudited pro forma combined financial information of Cactus Ventures, Inc. and Actinium Pharmaceuticals, Inc.

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 hereunto duly authorized.

Dated: January 4, 2013

CACTUS VENTURES, INC.

By: */s/ Jack V. Talley*
Name: Jack V. Talley
Title: President and Chief Executive Officer

Exhibit 10.1

REGISTRATION RIGHTS AGREEMENT

among

ACTINIUM PHARMACEUTICALS, INC.,

GENERAL ATLANTIC INVESTMENTS LIMITED,

N.V. ORGANON,

ISOTOPIA B.V.

DR. MAURITS W. GEERLINGS, SR.,

DR. MAURITS W. GEERLINGS, JR.

and

KENNETH R. GIVENS

Dated: June __, 2000

TABLE OF CONTENTS

REGISTRATION RIGHTS AGREEMENT

REGISTRATION RIGHTS AGREEMENT, dated [ ], 2000 (this "Agreement"), among ACTINIUM PHARMACEUTICALS, INC., a Delaware corporation (the "Company"), GENERAL ATLANTIC INVESTMENTS LIMITED, a Bermuda corporation ("General Atlantic"), N.V. ORGANON, a Netherlands corporation, ISOTOPIA B.V., a private limited company established under Netherlands law ("Isotopia"), DR. MAURITS W. GEERLINGS, SR., DR. MAURITS W. GEERLINGS, JR. and KENNETH R. GIVENS.

WHEREAS, pursuant to the Stock Purchase Agreement, dated the date hereof (the "Stock Purchase Agreement"), among the Company, Actinium Pharmaceuticals, Inc. and General Atlantic, the Company has agreed to issue and sell to General Atlantic, (a) an aggregate of up to 1,000,000 shares of Series A Convertible Participating Preferred Stock, par value $.01 per share, of the Company (the "Preferred Stock");

WHEREAS, concurrently herewith, the Company, Actinium Pharmaceuticals, Inc., General Atlantic and the Major Stockholders (as hereinafter defined) are entering into the Stockholders Agreement (as hereinafter defined), pursuant to which the parties thereto have agreed to, among other things, certain first offer, drag-along and tag-along rights, preemptive rights and certain corporate governance rights and obligations; and

WHEREAS, in order to induce General Atlantic to purchase its shares of Preferred Stock and to induce the parties hereto to enter into the Stockholders Agreement, the Company has agreed to grant registration rights with respect to the Registrable Securities (as hereinafter defined) as set forth in this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and agreements set forth herein and for good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the parties hereto agree as follows:

1. Definitions. As used in this Agreement the following terms have the meanings indicated:

"Affiliate" means any Person who is an "affiliate" as defined in Rule 12b-2 of the General Rules and Regulations under the Exchange Act.

"Approved Underwriter" has the meaning set forth in Section 3(f) of this Agreement.

"Business Day" means any day other than a Saturday, Sunday or other day on which commercial banks in the State of New York are authorized or required by law or executive order to close.

"Closing Price" means, with respect to the Registrable Securities, as of the date of determination, (a) if the Registrable Securities are listed on a national securities exchange, the closing price per share of a Registrable Security on such date published in The Wall Street Journal (National Edition) or, if no such closing price on such date is published in The Wall Street Journal (National Edition), the average of the closing bid and asked prices on such date, as officially reported on the principal national securities exchange on which the Registrable Securities are then listed or admitted to trading; or (b) if the Registrable Securities are not then listed or admitted to trading on any national securities exchange but are designated as national market system securities by the NASD, the last trading price per share of a Registrable Security on such date; or (c) if there shall have been no trading on such date or if the Registrable Securities are not designated as national market system securities by the NASD, the average of the reported closing bid and asked prices of the Registrable Securities on such date as shown by The Nasdaq Stock Market, Inc. (or its successor) and reported by any member firm of The New York Stock Exchange, Inc. selected by the Company; or (d) if none of (a), (b) or (c) is applicable, a market price per share determined in good faith by the Company's Board of Directors or, if such determination is not satisfactory to the Designated Holder for whom such determination is being made, by a nationally recognized investment banking firm selected by the Company and such Designated Holder, the expenses for which shall be borne equally by the Company and such Designated Holder. If trading is conducted on a continuous basis on any exchange, then the closing price shall be at 4:00 P.M. New York City time.

"Commission" means the Securities and Exchange Commission or any similar agency then having jurisdiction to enforce the Securities Act.

"Common Stock" means the Common Stock, par value $.01 per share, of the Company or any other capital stock of the Company into which such stock is reclassified or reconstituted and any other common stock of the Company.

"Company" has the meaning set forth in the preamble to this Agreement.

"Company Underwriter" has the meaning set forth in Section 4(a) of this Agreement.

"Demand Registration" has the meaning set forth in Section 3(a) of this Agreement.

"Designated Holder" means each of the General Atlantic Stockholders, the Major Stockholders and any transferee of any of them to whom Registrable Securities have been transferred in accordance with Section 10(f) of this Agreement, other than a transferee to whom Registrable Securities have been transferred pursuant to a Registration Statement under the Securities Act or Rule 144 or Regulation S under the Securities Act (or any successor rule thereto).

"Exchange Act" means the Securities Exchange Act of 1934, as amended, and the rules and regulations of the Commission thereunder.

"General Atlantic Stockholders" means General Atlantic and any Permitted Transferee thereof to whom Registrable Securities are transferred in accordance with Section 2.2 of the Stockholders Agreement (so long as such agreement is in effect) and Section 10(f) of this Agreement.

"Holders' Counsel" has the meaning set forth in Section 7(a)(i) of this Agreement.

"Incidental Registration" has the meaning set forth in Section 4(a) of this Agreement.

"Indemnified Party" has the meaning set forth in Section 8(c) of this Agreement.

"Indemnifying Party" has the meaning set forth in Section 8(c) of this Agreement.

"Initial Public Offering" means the initial public offering of the shares of Common Stock of the Company pursuant to an effective Registration Statement filed under the Securities Act.

"Initiating Holders" has the meaning set forth in Section 3(a) of this Agreement.

"Inspector" has the meaning set forth in Section 7(a)(vii) of this Agreement.

"IPO Effectiveness Date" means the date upon which the Company closes its Initial Public Offering.

"Liability" has the meaning set forth in Section 8(a) of this Agreement.

"Major Stockholders" means N.V. Organon, a Netherlands corporation, Isotopia, Dr. Maurits W. Geerlings, Sr., Dr. Maurits W. Geerlings, Jr., Kenneth R. Givens and any Permitted Transferee thereof to whom Registrable Securities are transferred in accordance with Section 2.2 of the Stockholders Agreement (so long as such agreement is in effect) and Section 10(f) of this Agreement.

"Market Price" means, on any date of determination, the average of the daily Closing Price of the Registrable Securities for the immediately preceding thirty (30) days on which the national securities exchanges are open for trading.

"NASD" means the National Association of Securities Dealers, Inc.

"Person" means any individual, firm, corporation, partnership, limited liability company, trust, incorporated or unincorporated association, joint venture, joint stock company, limited liability company, government (or an agency or political subdivision thereof) or other entity of any kind, and shall include any successor (by merger or otherwise) of such entity.

"Preferred Stock" has the meaning set forth in the recitals to this Agreement.

"Records" has the meaning set forth in Section 7(a)(vii) of this Agreement.

"Registrable Securities" means each of the following: (a) any and all shares of Common Stock owned by the Designated Holders or issued or issuable upon conversion of shares of Preferred Stock and any shares of Common Stock issued or issuable upon conversion of any shares of preferred stock acquired by any of the Designated Holders after the date hereof, (b) any other shares of Common Stock acquired or owned by any of the Designated Holders prior to the IPO Effectiveness Date, or acquired or owned by any of the Designated Holders after the IPO Effectiveness Date if such Designated Holder is an Affiliate of the Company and (c) any shares of Common Stock issued or issuable to any of the Designated Holders with respect to the Registrable Securities by way of stock dividend or stock split or in connection with a combination of shares, recapitalization, merger, consolidation or other reorganization or otherwise and any shares of Common Stock or voting common stock issuable upon conversion, exercise or exchange thereof.

"Registration Expenses" has the meaning set forth in Section 7(d) of this Agreement.

"Registration Statement" means a Registration Statement filed pursuant to the Securities Act.

"S-3 Initiating Holders" has the meaning set forth in Section 5(a) of this Agreement.

"S-3 Registration" has the meaning set forth in Section 5(a) of this Agreement.

"Securities Act" means the Securities Act of 1933, as amended, and the rules and regulations of the Commission promulgated thereunder.

"Stock Purchase Agreement" has the meaning set forth in the recitals to this Agreement.

"Stockholders Agreement" means the Stockholders Agreement, dated the date hereof, among the Company, General Atlantic, the Major Stockholders and the stockholders listed on Schedule A thereto.

"Valid Business Reason" has the meaning set forth in Section 3(a) of this Agreement.

2. General: Securities Subject to this Agreement.

(a) Grant of Rights. The Company hereby grants registration rights to the Designated Holders upon the terms and conditions set forth in this Agreement.

(b) Registrable Securities. For the purposes of this Agreement, Registrable Securities will cease to be Registrable Securities, when (i) a Registration Statement covering such Registrable Securities has been declared effective under the Securities Act by the Commission and such Registrable Securities have been disposed of pursuant to such effective Registration Statement, (ii) (x) the entire amount of the Registrable Securities may be sold in a single sale, in the opinion of counsel satisfactory to the Company and the Designated Holder, each in their reasonable judgment, without any limitation as to volume pursuant to Rule 144 (or any successor provision then in effect) under the Securities Act and (y) the Designated Holder owning such Registrable Securities owns less than one percent (1%) of the outstanding shares of Common Stock on a fully diluted basis, or (iii) the Registrable Securities are proposed to be sold or distributed by a Person not entitled to the registration rights granted by this Agreement.

(c) Holders of Registrable Securities. A Person is deemed to be a holder of Registrable Securities whenever such Person owns of record Registrable Securities, or holds an option to purchase, or a security convertible into or exercisable or exchangeable for, Registrable Securities whether or not such acquisition or conversion has actually been effected. If the Company receives conflicting instructions, notices or elections from two or more Persons with respect to the same Registrable Securities, the Company may act upon the basis of the instructions, notice or election received from the registered owner of such Registrable Securities. Registrable Securities issuable upon exercise of an option or upon conversion of another security shall be deemed outstanding for the purposes of this Agreement.

3. Demand Registration.

(a) Request for Demand Registration. At any time commencing after the end of the applicable lock-up period following the IPO Effectiveness Date, the holders of 25% of the shares of common stock held by General Atlantic and the Major Stockholders, collectively (the "Initiating Holders"), may make a written request to the Company to register, and the Company shall register, under the Securities Act (other than pursuant to a Registration Statement on Form S-4 or S-8 or any successor thereto) (a "Demand Registration"), the number of Registrable Securities stated in such request; provided, however, that the Company shall not be obligated to effect more than one such Demand Registration for the Initiating Holders. For purposes of the preceding sentence, two or more Registration Statements filed in response to one demand shall be counted as one Demand Registration. If the Board of Directors of the Company, in its good faith judgment, determines that any registration of Registrable Securities should not be made or continued because it would materially interfere with any material financing, acquisition, corporate reorganization or merger or other material transaction involving the Company (a "Valid Business Reason"), the Company may (x) postpone filing a registration statement relating to a Demand Registration until such Valid Business Reason no longer exists, but in no event for more than ninety (90) days, and (y) in case a registration statement has been filed relating to a Demand Registration, if the Valid Business Reason has not resulted from actions taken by the Company, the Company, upon the approval of a majority of the Company's Board of Directors, such majority to include the General Atlantic Director (as defined in the Stockholders Agreement), may cause such registration statement to be withdrawn and its effectiveness terminated or may postpone amending or supplementing such registration statement. The Company shall give written notice of its determination to postpone or withdraw a registration statement and of the fact that the Valid Business Reason for such postponement or withdrawal no longer exists, in each case, promptly after the occurrence thereof. Notwithstanding anything to the contrary contained herein, the Company may not postpone or withdraw a filing under this Section 3(a) more than once in any twelve (12) month period. Each request for a Demand Registration by the Initiating Holders shall state the amount of the Registrable Securities proposed to be sold and the intended method of disposition thereof.

(b) Incidental or "Piggy-Back" Rights with Respect to a Demand Registration. Each of the Designated Holders (other than Initiating Holders which have requested a registration under Section 3(a)) may offer its or his Registrable Securities under any Demand Registration pursuant to this Section 3(b). Within five (5) days after the receipt of a request for a Demand Registration from an initiating Holder, the Company shall (i) give written notice thereof to all of the Designated Holders (other than Initiating Holders which have requested a registration under Section 3(a)) and (ii) subject to Section 3(e), include in such registration all of the Registrable Securities held by such Designated Holders from whom the Company has received a written request for inclusion therein within ten (10) days of the receipt by such Designated Holders of such written notice referred to in clause (i) above. Each such request by such Designated Holders shall specify the number of Registrable Securities proposed to be registered. The failure of any Designated Holder to respond within such 10-day period referred to in clause (ii) above shall be deemed to be a waiver of such Designated Holders rights under this Section 3 with respect to such Demand Registration. Any Designated Holder may waive its rights under this Section 3 prior to the expiration of such 10-day period by giving written notice to the Company, with a copy to the Initiating Holders. If a Designated Holder sends the Company a written request for inclusion of part or all of such Designated Holders Registrable Securities in a registration, such Designated Holder shall not be entitled to withdraw or revoke such request without the prior written consent of the Company in its sole discretion unless, as a result of facts or circumstances arising after the date on which such request was made relating to the Company or to market conditions, such Designated Holder reasonably determines that participation in such registration would have a material adverse effect on such Designated Holder.

(c) Effective Demand Registration. The Company shall use its reasonable best efforts to cause any such Demand Registration to become and remain effective not later than sixty (60) days after it receives a request under Section 3(a) hereof A registration shall not constitute a Demand Registration until it has become effective and remains continuously effective for the lesser of (i) the period during which all Registrable Securities registered in the Demand Registration are sold and (ii) 120 days; provided, however, that a registration shall not constitute a Demand Registration if (x) after such Demand Registration has become effective, such registration or the related offer, sale or distribution of Registrable Securities thereunder is interfered with by any stop order, injunction or other order or requirement of the Commission or other governmental agency or court for any reason not attributable to the Initiating Holders and such interference is not thereafter eliminated or (y) the conditions specified in the underwriting agreement, if any, entered into in connection with such Demand Registration are not satisfied or waived, other than by reason of a failure by the Initiating Holder.

(d) Expenses. The Company shall pay all Registration Expenses in connection with a Demand Registration, whether or not such Demand Registration becomes effective.

(e) Underwriting Procedures. If the Company or the Initiating Holders holding a majority of the Registrable Securities held by all of the Initiating Holders so elect, the Company shall use its reasonable best efforts to cause such Demand Registration to be in the form of a firm commitment underwritten offering and the managing underwriter or underwriters selected for such offering shall be the Approved Underwriter selected in accordance with Section 3(f). In connection with any Demand Registration under this Section 3 involving an underwritten offering, none of the Registrable Securities held by any Designated Holder making a request for inclusion of such Registrable Securities pursuant to Section 3(b) hereof shall be included in such underwritten offering unless such Designated Holder accepts the terms of the offering as agreed upon by the Company, the Initiating Holders and the Approved Underwriter, and then only in such quantity as will not, in the opinion of the Approved Underwriter, jeopardize the success of such offering by the Initiating Holders. If the Approved Underwriter advises the Company that the aggregate amount of such Registrable Securities requested to be included in such offering is sufficiently large to have a material adverse effect on the success of such offering, then the Company shall include in such registration only the aggregate amount of Registrable Securities that the Approved Underwriter believes may be sold without any such material adverse effect and shall reduce the amount of Registrable Securities to be included in such registration, first as to the Company, second as to the Designated Holders (who are not Initiating Holders and who requested to participate in such registration pursuant to Section 3(b) hereof) as a group, if any, and third as to the Initiating Holders as a group, pro rata within each group based on the number of Registrable Securities owned by each such Designated Holder or Initiating Holder, as the case may be.

(f) Selection of Underwriters. If any Demand Registration or S-3 Registration, as the case may be, of Registrable Securities is in the form of an underwritten offering, the Company shall select and obtain an investment banking firm of national reputation to act as the managing underwriter of the offering (the "Approved Underwriter"); provided, however, that the Approved Underwriter shall, in any case, also be approved by the Initiating Holders or S-3 Initiating Holders, as the case may be, such approval not to be unreasonably withheld.

4. Incidental or "Piggy-Back" Registration.

(a) Request for Incidental Registration. At any time after the IPO Effectiveness Date, if the Company proposes to file a Registration Statement under the Securities Act with respect to an offering by the Company for its own account (other than a Registration Statement on Form S-4 or S-8 or any successor thereto) or for the account of any stockholder of the Company other than the Designated Holders, then the Company shall give written notice of such proposed filing to each of the Designated Holders at least twenty (20) days before the anticipated filing date, and such notice shall describe the proposed registration and distribution and offer such Designated Holders the opportunity to register the number of Registrable Securities as each such Designated Holder may request (an "Incidental Registration"). The Company shall use its reasonable best efforts (within twenty (20) days of the notice provided for in the preceding sentence) to cause the managing underwriter or underwriters in the case of a proposed underwritten offering (the "Company Underwriter") to permit each of the Designated Holders who have requested in writing to participate in the Incidental Registration to include its or his Registrable Securities in such offering on the same terms and conditions as the securities of the Company or the account of such other stockholder, as the case may be, included therein.

In connection with any Incidental Registration under this Section 4(a) involving an underwritten offering, the Company shall not be required to include any Registrable Securities in such underwritten offering unless the Designated Holders thereof accept the terms of the underwritten offering as agreed upon between the Company, such other stockholders, if any, and the Company Underwriter, and then only in such quantity as the Company Underwriter believes will not jeopardize the success of the offering by the Company. If the Company Underwriter determines that the registration of all or part of the Registrable Securities which the Designated Holders have requested to be included would materially adversely affect the success of such offering, then the Company shall be required to include in such Incidental Registration, to the extent of the amount that the Company Underwriter believes may be sold without causing such adverse effect, first, all of the securities to be offered for the account of the Company; second, the Registrable Securities to be offered for the account of the Designated Holders pursuant to this Section 4, pro rata based on the number of Registrable Securities owned by each such Designated Holder; and third, any other securities requested to be included in such offering.

(b) Expenses. The Company shall bear all Registration Expenses in connection with any Incidental Registration pursuant to this Section 4, whether or not such incidental Registration becomes effective.

5. Form S-3 Registration.

(a) Request for a Form S-3 Registration. Upon the Company becoming eligible for use of Form S-3 (or any successor form thereto) under the Securities Act in connection with a public offering of its securities, in the event that the Company shall receive from the holders of 25% of the shares of common stock held by General Atlantic and the Major Stockholders, collectively (the "S-3 Initiating Holders"), a written request that the Company register, under the Securities Act on Form S-3 (or any successor form then in effect) (an "S-3 Registration"), all or a portion of the Registrable Securities owned by such S-3 Initiating Holders, the Company shall give written notice of such request to all of the Designated Holders (other than S-3 Initiating Holders which have requested an S-3 Registration under this Section 5(a)) at least ten (10) days before the anticipated filing date of such Form S-3, and such notice shall describe the proposed registration and offer such Designated Holders the opportunity to register the number of Registrable Securities as each such Designated Holder may request in writing to the Company, given within ten (10) days after their receipt from the Company of the written notice of such registration. With respect to each 5-3 Registration, the Company shall, subject to Section 5(b), (i) include in such offering the Registrable Securities of the S-3 Initiating Holders and (ii) use its reasonable best efforts to (x) cause such registration pursuant to this Section 5(a) to become and remain effective as soon as practicable, but in any event not later than forty-five (45) days after it receives a request therefor and (y) include in such offering the Registrable Securities of the Designated Holders (other than 5-3 Initiating Holders which have requested an S-3 Registration under this Section 5(a)) who have requested in writing to participate in such registration on the same terms and conditions as the Registrable Securities of the S-3 Initiating Holders included therein.

(b) Form S-3 Underwriting Procedures. If the S-3 Initiating Holders holding a majority of the Registrable Securities held by all of the S-3 Initiating Holders so elect, the Company shall use its reasonable best efforts to cause such S-3 Registration pursuant to this Section 5 to be in the form of a firm commitment underwritten offering and the managing underwriter or underwriters selected for such offering shall be the Approved Underwriter selected in accordance with Section 3(f). In connection with any S-3 Registration under Section 5(a) involving an underwritten offering, the Company shall not be required to include any Registrable Securities in such underwritten offering unless the Designated Holders thereof accept the terms of the underwritten offering as agreed upon between the Company, the Approved Underwriter and the S-3 Initiating Holders, and then only in such quantity as such underwriter believes will not jeopardize the success of such offering by the S-3 Initiating Holders. If the Approved Underwriter believes that the registration of all or part of the Registrable Securities which the S-3 Initiating Holders and the other Designated Holders have requested to be included would materially adversely affect the success of such public offering, then the Company shall be required to include in the underwritten offering, to the extent of the amount that the Approved Underwriter believes may be sold without causing such adverse effect, first, all of the Registrable Securities to be offered for the account of the S-3 Initiating Holders, pro rata based on the number of Registrable Securities owned by such S-3 Initiating Holders; second, the Registrable Securities to be offered for the account of the other Designated Holders who requested inclusion of their Registrable Securities pursuant to Section 5(a), pro rata based on the number of Registrable Securities owned by such Designated Holders; and third, any other securities requested to be included in such offering.

(c) Limitations on Form S-3 Registrations. If the Board of Directors of the Company has a Valid Business Reason, the Company may (x) postpone filing a registration statement relating to a S-3 Registration until such Valid Business Reason no longer exists, but in no event for more than ninety (90) days, and (y) in case a registration statement has been filed relating to a S-3 Registration, if the Valid Business Reason has not resulted from actions taken by the Company, the Company, upon the approval of a majority of the Company's Board of Directors, such majority to include the General Atlantic Director, may cause such registration statement to be withdrawn and its effectiveness terminated or may postpone amending or supplementing such registration statement. The Company shall give written notice of its determination to postpone or withdraw a registration statement and of the fact that the Valid Business Reason for such postponement or withdrawal no longer exists, in each case, promptly after the occurrence thereof. Notwithstanding anything to the contrary contained herein, the Company may not postpone or withdraw a filing due to a Valid Business Reason more than once in any twelve (12) month period. In addition, the Company shall not be required to effect any registration pursuant to Section 5(a), (i) within ninety (90) days after the effective date of any other Registration Statement of the Company, (ii) if the Company has already effected two (2) registrations on Form S-3 pursuant to Section 5(a), or (iii) if Form S-3 is not available for such offering by the S-3 Initiating Holders.

(d) Expenses. The Company shall bear all Registration Expenses in connection with any S-3 Registration pursuant to this Section 5, whether or not such S-3 Registration become effective.

(e) No Demand Registration. No registration requested by any Designated Holder pursuant to this Section 5 shall be deemed a Demand Registration pursuant to Section 3.

6. Holdback Agreements.

(a) Restrictions on Public Sale by Designated Holders. To the extent (i) requested (A) by the Company, the Initiating Holders or the S-3 Initiating Holders, as the case may be, in the case of a non-underwritten public offering and (B) by the Approved Underwriter or the Company Underwriter, as the case may be, in the case of an underwritten public offering and (ii) all of the Company's officers, directors and holders in excess of one percent (1%) of its outstanding capital stock execute agreements identical to those referred to in this Section 6(a), each Designated Holder of Registrable Securities agrees (x) not to effect any public sale or distribution of any Registrable Securities or of any securities convertible into or exchangeable or exercisable for such Registrable Securities, including a sale pursuant to Rule 144 under the Securities Act, and (y) not to make any request for a Demand Registration or S-3 Registration under this Agreement, during the ninety (90) day period or such shorter period, if any, mutually agreed upon by such Designated Holder and the requesting party beginning on the effective date of such Registration Statement (except as part of such registration). No Designated Holder of Registrable Securities subject to this Section 6(a) shall be released from any obligation under any agreement, arrangement or understanding entered into pursuant to this Section 6(a) unless all other Designated Holders of Registrable Securities subject to the same obligation are also released.

(b) Restrictions on Public Sale by the Company. The Company agrees not to effect any public sale or distribution of any of its securities, or any securities convertible into or exchangeable or exercisable for such securities (except pursuant to registrations on Form S-4 or S-8 or any successor thereto), during the period beginning on the effective date of any Registration Statement in which the Designated Holders of Registrable Securities are participating and ending on the earlier of (i) the date on which all Registrable Securities registered on such Registration Statement are sold and (ii) 120 days after the effective date of such Registration Statement (except as part of such registration).

7. Registration Procedures.

(a) Obligations of the Company. Whenever registration of Registrable Securities has been requested pursuant to Section 3, Section 4 or Section 5 of this Agreement, the Company shall use its reasonable best efforts to effect the registration and sale of such Registrable Securities in accordance with the intended method of distribution thereof as quickly as practicable, and in connection with any such request, the Company shall, as expeditiously as possible:

(i) prepare and file with the Commission a Registration Statement on any form for which the Company then qualifies or which counsel for the Company shall deem appropriate and which form shall be available for the sale of such Registrable Securities in accordance with the intended method of distribution thereof, and cause such Registration Statement to become effective; provided, however, that (x) before filing a Registration Statement or prospectus or any amendments or supplements thereto, the Company shall provide counsel selected by the Designated Holders holding a majority of the Registrable Securities being registered in such registration ("Holders Counsel") and any other Inspector with an adequate and appropriate opportunity to review and comment on such Registration Statement and each prospectus included therein (and each amendment or supplement thereto) to be filed with the Commission, subject to such documents being under the Companys control, and (y) the Company shall notify the Holders Counsel and each seller of Registrable Securities of any stop order issued or threatened by the Commission and take all action required to prevent the entry of such stop order or to remove it if entered;

(i i) prepare and file with the Commission such amendments and supplements to such Registration Statement and the prospectus used in connection therewith as may be necessary to keep such Registration Statement effective for the lesser of (x) 120 days and (y) such shorter period which will terminate when all Registrable Securities covered by such Registration Statement have been sold, and comply with the provisions of the Securities Act with respect to the disposition of all securities covered by such Registration Statement during such period in accordance with the intended methods of disposition by the sellers thereof set forth in such Registration Statement;

(iii) furnish to each seller of Registrable Securities, prior to filing a Registration Statement, at least one copy of such Registration Statement as is proposed to be filed, and thereafter such number of copies of such Registration Statement, each amendment and supplement thereto (in each case including all exhibits thereto), and the prospectus included in such Registration Statement (including each preliminary prospectus) and any prospectus filed under Rule 424 under the Securities Act as each such seller may reasonably request in order to facilitate the disposition of the Registrable Securities owned by such seller;

(iv) register or qualify such Registrable Securities under such other securities or "blue sky" laws of such jurisdictions as any seller of Registrable Securities may request, and to continue such qualification in effect in such jurisdiction for as long as permissible pursuant to the laws of such jurisdiction, or for as long as any such seller requests or until all of such Registrable Securities are sold, whichever is shortest, and do any and all other acts and things which may be reasonably necessary or advisable to enable any such seller to consummate the disposition in such jurisdictions of the Registrable Securities owned by such seller; provided, however, that the Company shall not be required to (x) qualify generally to do business in any jurisdiction where it would not otherwise be required to qualify but for this Section 7(a)(iv), (y) subject itself to taxation in any such jurisdiction or (z) consent to general service of process in any such jurisdiction;

(v) notify each seller of Registrable Securities at any time when a prospectus relating thereto is required to be delivered under the Securities Act, upon discovery that, or upon the happening of any event as a result of which, the prospectus included in such Registration Statement contains an untrue statement of a material fact or omits to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading and the Company shall promptly prepare a supplement or amendment to such prospectus and furnish to each seller of Registrable Securities a reasonable number of copies of such supplement to or an amendment of such prospectus as may be necessary so that, after delivery to the purchasers of such Registrable Securities, such prospectus shall not contain an untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading;

(vi) enter into and perform customary agreements (including an underwriting agreement in customary form with the Approved Underwriter or Company Underwriter, if any, selected as provided in Section 3, Section 4 or Section 5, as the case may be) and take such other actions as are prudent and reasonably required in order to expedite or facilitate the disposition of such Registrable Securities, including causing its officers to participate in "road shows" and other information meetings organized by the Approved Underwriter or Company Underwriter;

(vii) make available at reasonable times for inspection by any seller of Registrable Securities, any managing underwriter participating in any disposition of such Registrable Securities pursuant to a Registration Statement, Holders Counsel and any attorney, accountant or other agent retained by any such seller or any managing underwriter (each, an "Inspector" and collectively, the "Inspectors"), all financial and other records, pertinent corporate documents and properties of the Company and its subsidiaries (collectively, the "Records") as shall be reasonably necessary to enable them to exercise their due diligence responsibility, and cause the Company }s and its subsidiaries officers, directors and employees, and the independent public accountants of the Company, to supply all information reasonably requested by any such Inspector in connection with such Registration Statement. Records that the Company determines, in good faith, to be confidential and which it notifies the Inspectors are confidential shall not be disclosed by the Inspectors (and the Inspectors shall confirm their agreement in writing in advance to the Company if the Company shall so request) unless (x) the disclosure of such Records is necessary, in the Company's judgment, to avoid or correct a misstatement or omission in the Registration Statement, (y) the release of such Records is ordered pursuant to a subpoena or other order from a court of competent jurisdiction after exhaustion of all appeals therefrom or (z) the information in such Records was known to the Inspectors on a non-confidential basis prior to its disclosure by the Company or has been made generally available to the public. Each seller of Registrable Securities agrees that it shall, upon learning that disclosure of such Records is sought in a court of competent jurisdiction, give notice to the Company and allow the Company, at the Company's expense, to undertake appropriate action to prevent disclosure of the Records deemed confidential;

(viii) if such sale is pursuant to an underwritten offering, obtain a "cold comfort" letters dated the effective date of the registration statement and the date of the closing under the underwriting agreement from the Company's independent public accountants in customary form and covering such matters of the type customarily covered by "cold comfort" letters as Holders' Counsel or the managing underwriter reasonably requests;

(ix) furnish, at the request of any seller of Registrable Securities on the date such securities are delivered to the underwriters for sale pursuant to such registration or, if such securities are not being sold through underwriters, on the date the Registration Statement with respect to such securities becomes effective, an opinion, dated such date, of counsel representing the Company for the purposes of such registration, addressed to the underwriters, if any, and to the seller making such request, covering such legal matters with respect to the registration in respect of which such opinion is being given as the underwriters, if any, and such seller may reasonably request and are customarily included in such opinions;

(x) comply with all applicable rules and regulations of the Commission, and make available to its security holders, as soon as reasonably practicable but no later than fifteen (15) months after the effective date of the Registration Statement, an earnings statement covering a period of twelve (12) months beginning after the effective date of the Registration Statement, in a manner which satisfies the provisions of Section 11(a) of the Securities Act and Rule 158 thereunder;

(xi) cause all such Registrable Securities to be listed on each securities exchange on which similar securities issued by the Company are then listed, provided that the applicable listing requirements are satisfied;

(xii) keep Holders Counsel advised in writing as to the initiation and progress of any registration under Section 3, Section 4 or Section 5 hereunder;

(xiii) cooperate with each seller of Registrable Securities and each underwriter participating in the disposition of such Registrable Securities and their respective counsel in connection with any filings required to be made with the NASD; and

(xiv) take all other steps reasonably necessary to effect the registration of the Registrable Securities contemplated hereby.

(b) Seller Information. The Company may require each seller of Registrable Securities as to which any registration is being effected to furnish, and such seller shall furnish, to the Company such information regarding the distribution of such securities as the Company may from time to time reasonably request in writing.

(c) Notice to Discontinue. Each Designated Holder of Registrable Securities agrees that, upon receipt of any notice from the Company of the happening of any event of the kind described in Section 7(a)(v), such Designated Holder shall forthwith discontinue disposition of Registrable Securities pursuant to the Registration Statement covering such Registrable Securities until such Designated Holder } s receipt of the copies of the supplemented or amended prospectus contemplated by Section 7(a)(v) and, if so directed by the Company, such Designated Holder shall deliver to the Company (at the Company's expense) all copies, other than permanent file copies then in such Designated Holders possession, of the prospectus covering such Registrable Securities which is current at the time of receipt of such notice. If the Company shall give any such notice, the Company shall extend the period during which such Registration Statement shall be maintained effective pursuant to this Agreement (including, without limitation, the period referred to in Section 7(a)(ii)) by the number of days during the period from and including the date of the giving of such notice pursuant to Section 7(a)(v) to and including the date when sellers of such Registrable Securities under such Registration Statement shall have received the copies of the supplemented or amended prospectus contemplated by and meeting the requirements of Section 7(a)(v).

(d) Registration Expenses. The Company shall pay all expenses arising from or incident to its performance of, or compliance with, this Agreement, including, without limitation, (i) Commission, stock exchange and NASD registration and filing fees, (ii) all fees and expenses incurred in complying with securities or "blue sky" laws (including reasonable fees, charges and disbursements of counsel to any underwriter incurred in connection with "blue sky" qualifications of the Registrable Securities as may be set forth in any underwriting agreement), (iii) all printing, messenger and delivery expenses, (iv) the fees, charges and disbursements of counsel to the Company and of its independent public accountants and any other accounting fees, charges and expenses incurred by the Company (including, without limitation, any expenses arising from any "cold comfort" letters or any special audits incident to or required by any registration or qualification) and any legal fees, charges and expenses incurred by the Company and, in the case of a Demand Registration or an S-3 Registration, the Initiating Holders or the S-3 Initiating Holders, as the case may be, and (v) any liability insurance or other premiums for insurance obtained in connection with any Demand Registration or piggy-back registration thereon, Incidental Registration or S-3 Registration pursuant to the terms of this Agreement, regardless of whether such Registration Statement is declared effective. All of the expenses described in the preceding sentence of this Section 7(d) are referred to herein as "Registration Expenses." The Designated Holders of Registrable Securities sold pursuant to a Registration Statement shall bear the expense of any brokers commission or underwriters discount or commission relating to registration and sale of such Designated Holders Registrable Securities and, subject to clause (iv) above, shall bear the fees and expenses of their own counsel.

8. Indemnification; Contribution.

(a) Indemnification by the Company. The Company agrees to indemnify and hold harmless each Designated Holder, its partners, directors, officers, affiliates and each Person who controls (within the meaning of Section 15 of the Securities Act) such Designated Holder from and against any and all losses, claims, damages, liabilities and expenses (including reasonable costs of investigation) (each, a "Liability" and collectively, "Liabilities"), arising out of or based upon any untrue, or allegedly untrue, statement of a material fact contained in any Registration Statement, prospectus or preliminary prospectus or notification or offering circular (as amended or supplemented if the Company shall have furnished any amendments or supplements thereto) or arising out of or based upon any omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading under the circumstances such statements were made, except insofar as such Liability arises out of or is based upon any untrue statement or alleged untrue statement or omission or alleged omission contained in such Registration Statement, preliminary prospectus or final prospectus in reliance and in conformity with information concerning such Designated Holder furnished in writing to the Company by such Designated Holder expressly for use therein, including, without limitation, the information furnished to the Company pursuant to Section 8(b). The Company shall also provide customary indemnities to any underwriters of the Registrable Securities, their officers, directors and employees and each Person who controls such underwriters (within the meaning of Section 15 of the Securities Act) to the same extent as provided above with respect to the indemnification of the Designated Holders of Registrable Securities.

(b) Indemnification by Designated Holders. In connection with any Registration Statement in which a Designated Holder is participating pursuant to Section 3, Section 4 or Section 5 hereof, each such Designated Holder shall promptly furnish to the Company in writing such information with respect to such Designated Holder as the Company may reasonably request or as may be required by law for use in connection with any such Registration Statement or prospectus and all information required to be disclosed in order to make the information previously furnished to the Company by such Designated Holder not materially misleading or necessary to cause such Registration Statement not to omit a material fact with respect to such Designated Holder necessary in order to make the statements therein not misleading. Each Designated Holder agrees to indemnify and hold harmless the Company, any underwriter retained by the Company and each Person who controls the Company or such underwriter (within the meaning of Section 15 of the Securities Act) to the same extent as the foregoing indemnity from the Company to the Designated Holders, but only if such statement or alleged statement or omission or alleged omission was made in reliance upon and in conformity with information with respect to such Designated Holder furnished in writing to the Company by such Designated Holder expressly for use in such registration statement or prospectus, including, without limitation, the information furnished to the Company pursuant to this Section 8(b); provided, however, that the total amount to be indemnified by such Designated Holder pursuant to this Section 8(b) shall be limited to the net proceeds received by such Designated Holder in the offering to which the Registration Statement or prospectus relates.

(c) Conduct of Indemnification Proceedings. Any Person entitled to indemnification hereunder (the "Indemnified Party") agrees to give prompt written notice to the indemnifying party (the "Indemnifying Party") after the receipt by the Indemnified Party of any written notice of the commencement of any action, suit, proceeding or investigation or threat thereof made in writing for which the Indemnified Party intends to claim indemnification or contribution pursuant to this Agreement; provided, however, that the failure so to notify the Indemnifying Party shall not relieve the Indemnifying Party of any Liability that it may have to the Indemnified Party hereunder (except to the extent that the Indemnifying Party is materially prejudiced or otherwise forfeits substantive rights or defenses by reason of such failure). If notice of commencement of any such action is given to the Indemnifying Party as above provided, the Indemnifying Party shall be entitled to participate in and, to the extent it may wish, jointly with any other Indemnifying Party similarly notified, to assume the defense of such action at its own expense, with counsel chosen by it and reasonably satisfactory to such Indemnified Party. The Indemnified Party shall have the right to employ separate counsel in any such action and participate in the defense thereof, but the fees and expenses of such counsel shall be paid by the Indemnified Party unless (i) the Indemnifying Party agrees to pay the same, (ii) the Indemnifying Party fails to assume the defense of such action with counsel reasonably satisfactory to the indemnified Party or (iii) the named parties to any such action (including any impleaded parties) include both the indemnifying Party and the Indemnified Party and such parties have been advised by such counsel that either (x) representation of such Indemnified Party and the Indemnifying Party by the same counsel would be inappropriate under applicable standards of professional conduct or (y) there may be one or more legal defenses available to the indemnified Party which are different from or additional to those available to the Indemnifying Party. In any of such cases, the Indemnifying Party shall not have the right to assume the defense of such action on behalf of such Indemnified Party, it being understood, however, that the Indemnifying Party shall not be liable for the fees and expenses of more than one separate firm of attorneys (in addition to any local counsel) for all Indemnified Parties. No Indemnifying Party shall be liable for any settlement entered into without its written consent, which consent shall not be unreasonably withheld. No Indemnifying Party shall, without the consent of such Indemnified Party, effect any settlement of any pending or threatened proceeding in respect of which such Indemnified Party is a party and indemnity has been sought hereunder by such Indemnified Party, unless such settlement includes an unconditional release of such Indemnified Party from all liability for claims that are the subject matter of such proceeding.

(d) Contribution. If the indemnification provided for in this Section from the Indemnifying Party is unavailable to an Indemnified Party hereunder in respect of any Liabilities referred to herein, then the Indemnifying Party, in lieu of indemnifying such Indemnified Party, shall contribute to the amount paid or payable by such Indemnified Party as a result of such Liabilities in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party and Indemnified Party in connection with the actions which resulted in such Liabilities, as well as any other relevant equitable considerations. The relative faults of such Indemnifying Party and Indemnified Party shall be determined by reference to, among other things, whether any action in question, including any untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact, has been made by, or relates to information supplied by, such Indemnifying Party or Indemnified Party, and the parties relative intent, knowledge, access to information and opportunity to correct or prevent such action. The amount paid or payable by a party as a result of the Liabilities referred to above shall be deemed to include, subject to the limitations set forth in Sections 8(a), 8(b) and 8(c), any legal or other fees, charges or expenses reasonably incurred by such party in connection with any investigation or proceeding; provided that the total amount to be contributed by such Designated Holder shall be limited to the net proceeds received by such Designated Holder in the offering.

The parties hereto agree that it would not be just and equitable if contribution pursuant to this Section 8(d) were determined by pro rata allocation or by any other method of allocation which does not take account of the equitable considerations referred to in the immediately preceding paragraph. No Person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation.

9. Rule 144. The Company covenants that from and after the IPO Effectiveness Date it shall (a) file any reports required to be filed by it under the Exchange Act and (b) take such further action as each Designated Holder of Registrable Securities may reasonably request (including providing any information necessary to comply with Rule 144 under the Securities Act), all to the extent required from time to time to enable such Designated Holder to sell Registrable Securities without registration under the Securities Act within the limitation of the exemptions provided by (i) Rule 144 under the Securities Act, as such rule may be amended from time to time, or Regulation S under the Securities Act or (ii) any similar rules or regulations hereafter adopted by the Commission. The Company shall, upon the request of any Designated Holder of Registrable Securities, deliver to such Designated Holder a written statement as to whether it has complied with such requirements.

10. Miscellaneous.

(a) Recapitalizations, Exchanges, etc.The provisions of this Agreement shall apply to the full extent set forth herein with respect to (i) the shares of Common Stock, (ii) any and all shares of voting common stock of the Company into which the shares of Common Stock are converted, exchanged or substituted in any recapitalization or other capital reorganization by the Company and (iii) any and all equity securities of the Company or any successor or assign of the Company (whether by merger, consolidation, sale of assets or otherwise) which may be issued in respect of, in conversion of, in exchange for or in substitution of, the shares of Common Stock and shall be appropriately adjusted for any stock dividends, splits, reverse splits, combinations, recapitalizations and the like occurring after the date hereof. The Company shall cause any successor or assign (whether by merger, consolidation, sale of assets or otherwise) to enter into a new registration rights agreement with the Designated Holders on terms substantially the same as this Agreement as a condition of any such transaction.

(b) No Inconsistent Agreements. The Company represents and warrants that it has not granted to any Person the right to request or require the Company to register any securities issued by the Company, other than the rights granted to the Designated Holders herein. The Company shall not enter into any agreement with respect to its securities that is inconsistent with the rights granted to the Designated Holders in this Agreement or grant any additional registration rights to any Person or with respect to any securities which are not Registrable Securities which are prior in right to or inconsistent with the rights granted in this Agreement.

(c) Remedies and Termination. The Designated Holders, in addition to being entitled to exercise all rights granted by law, including recovery of damages, shall be entitled to specific performance of their rights under this Agreement. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Agreement and hereby agrees to waive in any action for specific performance the defense that a remedy at law would be adequate. This Agreement may be terminated by any of the Major Stockholders by giving written notice to the Company and General Atlantic in the event General Atlantic has failed to purchase additional shares of Preferred Stock when required to do so pursuant to Section 2.5(b) of the Stock Purchase Agreement and such breach remains uncured after General Atlantic has been given written notice and five (5) business days to cure such breach.

(d) Amendments and Waivers. Except as otherwise provided herein, the provisions of this Agreement may not be amended, modified or supplemented, and waivers or consents to departures from the provisions hereof may not be given unless consented to in writing by (i) the Company, (ii) the General Atlantic Stockholders holding Registrable Securities representing (after giving effect to any adjustments) at least a majority of the aggregate number of Registrable Securities owned by all of the General Atlantic Stockholders and (iii) the Major Stockholders holding Registrable Securities representing (after giving effect to any adjustments) at least a majority of the aggregate number of Registrable Securities owned by all of the Major Stockholders. Any such written consent shall be binding upon the Company and all of the Designated Holders.

(e) Notices. All notices, demands and other communications provided for or permitted hereunder shall be made in writing and shall be made by registered or certified first-class mail, return receipt requested, telecopier, courier service or personal delivery:

(i) if to the Company:

Actinium Pharmaceuticals, Inc.
Sterling House
16 Wesley Street
Hamilton
Bermuda MM MX
Telecopy: (414) 295-4897
Attention: Sarah Cooke

with a copy to:

Akin, Gump, Strauss, Hauer & Feld, L.L.P.
Robert E. Strauss Building
1333 New Hampshire Avenue, N.W.
Washington, D.C. 20036
Telecopy: (202) 887-4288
Attention: Robert G. Pinco

(ii) if to General Atlantic:

c/o General Atlantic Group Limited
P.O. Box HM 2265
Hamilton, Bermuda
Telecopy: (441) 295-4314
Attention: Craig P. Mayor

with a copy to:

Paul, Weiss, Rifkind, Wharton & Garrison
1285 Avenue of the Americas
New York, NY 10019-6064
Telecopy: (212) 757-3990
Attention: Marilyn Sobel, Esq.

(iii) if to a Major Stockholder:

N.V. Organon
Kloosterstraat 6
5349 AB Oss
The Netherlands
Telecopy: 31 412 664 6923
Attention: K. Luijben

(iv) if to any other Designated Holder, at its address as it appears on the record books of the Company.

All such notices, demands and other communications shall be deemed to have been duly given when delivered by hand, if personally delivered; when delivered by courier, if delivered by commercial courier service; five (5) Business Days after being deposited in the mail, postage prepaid, if mailed; and when receipt is mechanically acknowledged, if telecopied.

(f) Successors and Assigns; Third Party Beneficiaries. This Agreement shall inure to the benefit of and be binding upon the heirs, legatees, legal representatives, successors and permitted assigns of each of the parties hereto as hereinafter provided. The Demand Registration rights and the S-3 Registration rights and related rights of the General Atlantic Stockholders contained in Sections 3 and 5 hereof, shall be (i) with respect to any Registrable Security that is transferred to an Affiliate of a General Atlantic Stockholder or Major Stockholder, automatically transferred to such Affiliate and (ii) with respect to any Registrable Security that is transferred in all cases to a non-Affiliate, transferred only with the consent of the Company which consent shall not be unreasonably withheld. The incidental or "piggy-back" registration rights of the Designated Holders contained in Sections 3(b), 4 and 5 hereof and the other rights of each of the Designated Holders with respect thereto shall be, with respect to any Registrable Security, automatically transferred to any Person who is the transferee of such Registrable Security, but only if transferred in compliance with the Stockholders Agreement. All of the obligations of the Company hereunder shall survive any such transfer. Except as provided in Section 8, no Person other than the parties hereto and their heirs, legatees, legal representatives, successors and permitted assigns is intended to be a beneficiary of any of the rights granted hereunder.

(g) Counterparts. This Agreement may be executed in any number of counterparts and by the parties hereto in separate counterparts, each of which when so executed shall he deemed to be an original and all of which taken together shall constitute one and the same agreement.

(h) Headings. The headings in this Agreement are for convenience of reference only and shall not limit or otherwise affect the meaning hereof.

(i) **GOVERNING LAW. THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK, WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW OF ANY JURISDICTION.**

(j) Severability. If any one or more of the provisions contained herein, or the application thereof in any circumstance, is held invalid, illegal or unenforceable in any respect for any reason, the validity, legality and enforceability of any such provision in every other respect and of the remaining provisions hereof shall not be in any way impaired, it being intended that all of the rights and privileges of the Designated Holders shall be enforceable to the fullest extent permitted by law.

(k) Entire Agreement. This Agreement is intended by the parties as a final expression of their agreement and intended to be a complete and exclusive statement of the agreement and understanding of the parties hereto in respect of the subject matter contained herein. There are no restrictions, promises, warranties or undertakings, other than those set forth or referred to herein and in the Stock Purchase Agreement and Stockholders Agreement. This Agreement supersedes all prior agreements and understandings among the parties with respect to such subject matter.

(l) Further Assurances. Each of the parties shall execute such documents and perform such fiuther acts as may be reasonably required or necessary to carry out or to perform the provisions of this Agreement.

(m) Other Agreements. Nothing contained in this Agreement shall be deemed to be a waiver of, or release from, any obligations any party hereto may have under, or any restrictions on the transfer of Registrable Securities or other securities of the Company imposed by, any other agreement including, but not limited to, the Stock Purchase Agreement or the Stockholders Agreement.

IN WITNESS WHEREOF, the undersigned have executed, or have caused to be executed, this Registration Rights Agreement on the date first written above.

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Maurits W. Geerlings, Sr.
Name: Maurits W. Geerlings, Sr.
Title: President & CEO

GENERAL ATLANTIC INVESTMENTS LIMITED

By: /s/
Name:
Title:

N.V. ORGANON

By: /s/ T. KAIFF
Name: T. KAIFF
Title: President

By: /s/
Name:
Title: Director Finance & Control

ISOTOPIA B.V.

By: /s/ Dr. Maurits W. Geerlings, Sr.
Dr. Maurits W. Geerlings, Sr.
Title: President

Dr. Maurits W. Geerlings, Jr.

Kenneth R. Givens

Dr. Maurits W. Geerlings, Sr.

Exhibit 10.2

AMENDMENT No. 1 TO

REGISTRATION RIGHTS AGREEMENT AMONG ACTINIUM PHARMACEUTICALS, INC., ACTINIUM HOLDINGS LIMITED (FORMERLY GENERAL ATLANTIC INVESTMENTS LIMITED) AND CERTAIN STOCKHOLDERS, DATED JUNE 30, 2000

THIS AMENDMENT No. 1 **("Amendment No.1")** t o **t h e** REGISTRATION RIGHTS AGREEMENT among ACTINIUM PHARMACEUTICALS, INC. ("API"), ACTINIUM HOLDINGS LIMITED("AHL") and certain STOCKHOLDERS of API, dated June 30, 2000 **("Agreement"),** is made and entered into as of September 29, 2011 **("Effective Date")** by and among API, AHL and the Stockholders of API who are signatories to this Amendment No. 1, all collectively referred to herein as the **"parties,"** with each being a **"party."** Capitalized terms not otherwise defined herein shall have the same meaning ascribed to such terms in the Agreement.

WITNESSETH:

WHEREAS, the parties agree that certain additional funding is necessary in order to continue the clinical and other programs of API; and

WHEREAS, the parties wish to incentivize investment in API by third parties,

WHEREAS, the signatures of the parties hereto satisfy the requirements for an amendment of the Agreement pursuant to Section 10(d) thereof, and

WHEREAS, the parties therefore have agreed to amend the Agreement as set forth in this First Amendment:

NOW, THEREFORE, in consideration of the mutual promises and covenants set forth herein and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree to amend the Agreement as follows:

Section 3 of the Agreement is amended by adding the following sub-section (c):

"No registration rights granted to the Designated Holders under the terms of this Agreement (including without limitation the rights granted pursuant to Sections 3,4 and 5 hereof) shall be exercisable by any Designated Holder for any Registrable Securities unless and until all shares of the Company's Series E Preferred Stock have been registered as provided in the Second Amended and Restated Investor Rights Agreement ("Investor Agreement") between the Company, Actinium Holdings Limited and the Investors listed on Schedule A to the Investor Agreement.

In the event of any conflict or inconsistency between the Agreement and this Amendment No.1, this Amendment No.1 shall prevail and control. Except as amended hereby, all provisions of the Agreement shall remain unchanged and in full force and effect. This Amendment No. 1 and all acts and transactions pursuant hereto shall be governed, construed and interpreted in accordance with the laws of the State of Delaware, without giving effect to principles of conflicts of laws. This Amendment No. 1 may be executed in two or more counterparts and by facsimile, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. This Amendment No. 1 shall become effective as of the Effective Date.

* * *

[*The remainder of this page is intentionally left blank*]

AMENDMENT NO. I TO API REGISTRATION RIGHTS AGREEMENT

IN WITNESS WHEREOF, the parties hereto have executed this Amendment No. 1 to the Registration RightsAgreement as of the date and year first written above.

ACTINIUM PHARMACEUTICALS, INC.

/s/ Dragan Cicic

Dragan Cicic, M.D.
President and CEO

ACTINIUM HOLDINGS, LTD.

By:

Title:

N.V. ORGANON

By:

Title:

MAURITS GEERLINGS, JR., M.D.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment No. 1 to the Registration RightsAgreement as of the date and year first written above.

ACTINIUM PHARMACEUTICALS, INC.

Dragan Cicic, M.D.
President and CEO

ACTINIUM HOLDINGS, LTD.

By: 

Title: President

N.V. ORGANON

By:

Title:

MAURITS GEERLINGS, JR., M.D.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment No. 1 to the Registration RightsAgreement as of the date and year first written above.

ACTINIUM PHARMACEUTICALS, INC.

Dragan Cicic, M.D.
President and CEO

ACTINIUM HOLDINGS, LTD.

By:

Title:

N.V. ORGANON

By: David Nicholson, Ph.D.

Title: Sr. VP, Worldwide Licensing
and Knowledge Management

MAURITS GEERLINGS, JR., M.D.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment No. 1 to the Registration RightsAgreement as of the date and year first written above.

ACTINIUM PHARMACEUTICALS, INC.

_____

Dragan Cicic, M.D.
President and CEO

ACTINIUM HOLDINGS, LTD.

By:

Title:

N.V. ORGANON

By:

Title:

MAURITS GEERLINGS, JR., M.D.

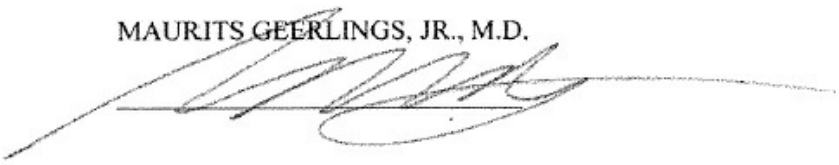


Exhibit 10.3

FIRST AMENDED AND RESTATED STOCKHOLDERS AGREEMENT

AMONG

ACTINIUM PHARMACEUTICALS, INC.,

ACTINIUM HOLDINGS LIMITED (FORMERLY GENERAL ATLANTIC INVESTMENTS LIMITED),

N.V. ORGANON

AND

THE STOCKHOLDERS LISTED ON SCHEDULE A HERETO

Dated: October 5, 2011

AMENDED AND RESTATED STOCKHOLDERS AGREEMENT (this "Agreement"), dated October 5, 2011, among ACTINIUM PHARMACEUTICALS, INC., a Delaware corporation (the "Company"), ACTINIUM HOLDINGS LIMITED (formerly named General Atlantic Investments Limited), a Bermuda corporation ("AHL"), N.V. ORGANON, a Netherlands corporation ("Organon" and together with AHL, the "Initial Investors") and the other stockholders of the Company listed on Schedule A hereto (collectively, the "Existing Stockholders"). The Initial Investors, the Existing Stockholders and any other stockholder of the Company who agrees in writing to become bound by the terms and conditions of this Agreement are herein referred to collectively as the "Stockholders" and each individually as a "Stockholder".

RECITALS

WHEREAS, the Company, Actinium Pharmaceuticals, Ltd., a Bermuda corporation (the "Actinium Bermuda"), and the Existing Stockholders are parties to that certain Stockholders Agreement dated as of June 30, 2000 (the "Prior Stockholders Agreement");

WHEREAS, on July 5, 2007, Actinium Bermuda merged with and into the Company, thereby causing the Company to succeed to all of the rights and obligations of Actinium Bermuda under the Prior Stockholders Agreement;

WHEREAS, pursuant to the Series E Preferred Stock Purchase Agreement, dated the date hereof (the "Preferred Stock Purchase Agreement"), among the Company and the investors listed in and executing the Preferred Stock Purchase Agreement (the "Series E Investors"), the Company proposes to issue and sell to such Series E Investors up to an aggregate of 27,586,203 shares, par value $.01 per share, of its Series E Preferred Stock (the "Series E Preferred Stock");

WHEREAS, each Stockholder owns the respective number of Shares (as hereinafter defined) of the Company (after giving effect to the transactions contemplated by the Preferred Stock Purchase Agreement) set forth opposite such Stockholder's name on Schedule A hereto;

WHEREAS, this Agreement is being entered into contemporaneously with, and as a condition to, the Series E Investors' consummation of the transactions contemplated by the Preferred Stock Purchase Agreement; and

WHEREAS, (a) AHL is the holder of a majority of the voting power of the "Shares" held by the "General Atlantic Stockholders" (as each such term is defined in the Stockholders Agreement) and (b) Organon and Dr. Maurits Geerlings, Jr. ("Geerlings") are the holders of a majority of the voting power of the "Shares" held by the "Major Stockholders" (as each such term is defined in the Stockholders Agreement); therefore, the Company, AHL, Organon and Geerlings together have the power and right to amend and restate the Stockholders Agreement pursuant to Section 8.3(b) thereof.

NOW, THEREFORE, in consideration of the mutual covenants and agreements set forth herein and for good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the parties hereto agree as follows:

1. Definitions. As used in this Agreement, the following terms shall have the meanings set forth below:

"AHL" has the meaning set forth in the introduction to this Agreement.

"Affiliate" means any Person who is an "affiliate" as defined in Rule 12b-2 of the General Rules and Regulations under the Exchange Act.

"Agreement" means this Agreement as the same may be amended, supplemented or modified in accordance with the terms hereof.

"Board of Directors" means the Board of Directors of the Company.

"Business Day" means any day other than a Saturday, Sunday or other day on which commercial banks in the State of New York are authorized or required by law or executive order to close.

"CEO Director" has the meaning set forth in Section 6.2(b)(ii) of this Agreement.

"Certificate" means the Fourth Amended and Restated Certificate of Incorporation of the Company as in effect on the date hereof, as the same may be amended, supplemented or modified.

"Charter Documents" means the Certificate and the By-laws of the Company as in effect on the date hereof, as the same may be amended, supplemented or modified.

"Code" means the Internal Revenue Code of 1986, as amended, or any successor statute thereto.

"Commission" means the Securities and Exchange Commission or any similar agency then having jurisdiction to enforce the Securities Act.

"Common Stock" means the Common Stock, par value $.01 per share, of the Company and any other common stock of the Company or any other capital stock into which such stock is reclassified or reconstituted, whether by way of recapitalization, merger, consolidation or other reorganization or otherwise.

"Common Stock Equivalents" means any security or obligation which is by its terms convertible into, or exercisable or exchangeable for, shares of Common Stock, including, without limitation the Preferred Stock, and any option, warrant or other subscription or purchase right with respect to Common Stock or any such convertible, exercisable or exchangeable security or obligation.

"Company" has the meaning set forth in the introduction to this Agreement.

"Company Option" has the meaning set forth in Section 3.1(b) of this Agreement.

"Company Option Period" has the meaning set forth in Section 3.1(b) of this Agreement.

"Designating Party" has the meaning set forth in Section 6.3(a) of this Agreement.

"Drag-Along Event" has the meaning set forth in Section 3.1(g)(i) of this Agreement.

"Drag-Along Notice" has the meaning set forth in Section 3.1(g)(n) of this Agreement.

"Drag-Along Rights" has the meaning set forth in Section 3.1(g)(i) of this Agreement.

"Drag-Along Stockholders" has the meaning set forth in Section 3.1(g)(i) of this Agreement.

"Eligible Investor" means a Stockholder that is (i) a Series E Investor who or which, at the time in question, holds any of the issued and outstanding Series E Preferred Stock, (ii) an Initial Investor, or (iii) a Major Stockholder.

"Excess New Securities" has the meaning set forth in Section 4.2(a) of this Agreement.

"Excess Offered Securities" has the meaning set forth in Section 3.1(c)(i) of this Agreement.

"Exchange Act" means the Securities Exchange Act of 1934, as amended, and the rules and regulations of the Commission thereunder.

"Exempt Issuances" has the meaning set forth in Section 4.1 of this Agreement.

"Existing Stockholders" has the meaning set forth in the introduction to this Agreement.

"Fair Value" has the meaning set forth in Section 3.2(b) of this Agreement.

"Family Members" has the meaning set forth in Section 2.2 of this Agreement.

"Governmental Authority" means the government of any nation, state, city, locality or other political subdivision thereof, any entity exercising executive, legislative, judicial, regulatory or administrative functions of or pertaining to government, and any corporation or other entity owned or controlled, through stock or capital ownership or otherwise, by any of the foregoing.

"Initial Investors" has the meaning set forth in the introduction to this Agreement.

"Investors" means the Initial Investors, the Series E Investors and any Transferees of any Initial Investor's Shares and any subsequent Transferees of any of such Shares, in any case to whom Shares are Transferred in accordance with Section 2.4 of this Agreement, and the term "Investor" shall mean any such Person.

"Involuntary Transfer" means any Transfer, proceeding or action by or in which a Stockholder shall be deprived or divested of any right, title or interest in or to any of the Shares, including, without limitation, (i) any seizure under levy of attachment or execution, (ii) any Transfer in connection with bankruptcy (whether pursuant to the filing of a voluntary or an involuntary petition under the United States Bankruptcy Code of 1978, or any modifications or revisions thereto) or other court proceeding to a debtor in possession, trustee in bankruptcy or receiver or other officer or agency, (iii) any Transfer to a state or to a public officer or agency pursuant to any statute pertaining to escheat or abandoned property, (iv) any Transfer pursuant to a divorce or separation agreement or a final decree of a court in a divorce action and (v) any Transfer resulting from the death of a Stockholder.

"Involuntary Transferee" has the meaning set forth in Section 3.2(a) of this Agreement.

"IPO Effectiveness Date" means the date upon which the Company closes its Qualified Initial Public Offering.

"Isotopia" means Isotopia B.V., a private limited company established under Netherlands law.

"Liens" means any mortgage, deed of trust, pledge, hypothecation, assignment, encumbrance, lien (statutory or other) or preference, priority, right or other security interest or preferential arrangement of any kind or nature whatsoever (excluding preferred stock and equity-related preferences).

"Major Stockholders" means Isotopia, Dr. Maurits W. Geerlings, Sr., Dr. Maurits W. Geerlings, Jr., Kenneth R. Givens, and any Permitted Transferee thereof to whom Shares are Transferred in accordance with Section 2.3 of this Agreement, and the term "Major Stockholder" shall mean any such Person.

"New Issuance Notice" has the meaning set forth in Section 4.1 of this Agreement.

"New Securities" has the meaning set forth in Section 4.1 of this Agreement.

"Organon" has the meaning set forth in the introduction to this Agreement.

"Offer Price" has the meaning set forth in Section 3.1(a) of this Agreement.

"Offered Securities" has the meaning set forth in Section 3.1(a) of this Agreement.

"Offering Notice" has the meaning set forth in Section 3.1(a) of this Agreement.

"Permitted Transferee" has the meaning set forth in Section 2.2 of this Agreement.

"Person" means any individual, firm, corporation, partnership, trust, company, Governmental Authority or other entity of any kind, and shall include any successor (by merger or otherwise) of such entity.

"Preemptive Rightholder(s)" has the meaning set forth in Section 4.1 of this Agreement.

"Preferred Stock" means collectively the shares of Series A Preferred Stock, the Series B Preferred Stock, the Series C Preferred Stock, the Series D Preferred Stock and the Series E Preferred Stock.

"Preferred Stock Purchase Agreement" has the meaning set forth in the Recitals to this Agreement.

"Price Negotiation Period" has the meaning set forth in Section 3.2(a) of this Agreement.

"Prior Stockholders Agreement" has the meaning set forth in the Recitals of this Agreement.

"Proportionate Percentage" has the meaning set forth in Section 4.2(a) of this Agreement.

"Proposed Price" has the meaning set forth in Section 4.1 of this Agreement.

"Pubco Transaction" means (i) a reverse merger or similar transaction between the Company and a corporation whose securities are publicly traded in the U.S. or other mutually agreed upon jurisdiction(**"Pubco"**), or (ii) the quotation (a **"Public Quotation")** of the Company's securities for purchase and sale on a U.S. quotation service (iii) any filing with an applicable regulatory body which will result in the Company becoming an entity whose securities are traded on a public exchange in the U.S. or other mutually agreed upon jurisdiction (any of the foregoing, a **"Pubco Transaction").**

"Qualified Initial Public Offering" means the closing of the Company's initial direct public offering or underwritten public offering on a reasonable efforts basis pursuant to an effective registration statement filed pursuant to the Securities Act, covering the offer and sale of the Company's Common Stock for the account of the Company (a) in which (i) the Company actually receives gross proceeds equal to or greater than $5,000,000, calculated before deducting underwriters' discounts and commissions and other offering expenses, and (ii) a per share offering price equal to or greater than the product of (A) the Applicable Per Share Stated Value, as such term is defined in the Certificate, of the Series E Preferred Stock, multiplied by (B) two (2), and (b) following which the Company's Common Stock is listed on a national securities exchange or approved for quotation on a Nasdaq Market.

"Rightholder(s)" has the respective meanings set forth in Sections 3.1(c)(and 3.2(a) of this Agreement.

"Rightholder Option Period" has the meaning set forth in Section 3.1(c)(i) of this Agreement.

"Sale Majority" has the meaning set forth in Section 3.1(g)(i) of this Agreement.

"Securities Act" means the Securities Act of 1933, as amended, and the rules and regulations of the Commission promulgated thereunder.

"Selling Stockholder" has the meaning set forth in Section 3.1(a) of this Agreement.

"Series A Preferred Stock " means the Company's Series A Convertible Participating Preferred Stock, par value $0.01 per share.

"Series B Preferred Stock" means the Company's Series B Preferred Stock, par value $0.01 per share.

"Series C Preferred Stock" means any series of the Company's Series C-1 Preferred Stock, par value $0.01 per share, Series C-2 Preferred Stock, par value $0.01 per share, Series C-3 Preferred Stock, par value $0.01 per share, and Series C-4 Preferred Stock, par value $0.01 per share, collectively.

"Series D Preferred Stock" means the Company's Series D Preferred Stock, par value $0.01 per share.

"Series E Investor" means an Investor who owns any shares of Series E Preferred Stock.

"Series E Preferred Directors" has the meaning set forth in Section 6.2(b)(i) of this Agreement.

"Series E Preferred Stock" has the meaning set forth in the Recitals to this Agreement.

"Shares" means, with respect to each Stockholder, all shares, whether now owned or hereafter acquired, of Common Stock and Preferred Stock, owned by such Stockholder; provided, however, for the purposes of any computation of the number of "Shares" owned by any Stockholder pursuant to the definition of "Eligible Investor" and any of Sections 2, 3, 4.1, 4.2, 6 and 8.3, all outstanding Common Stock Equivalents owned by any Stockholder shall be deemed converted, exercised or exchanged as applicable and the shares of Common Stock issuable upon such conversion, exercise or exchange shall be deemed outstanding and owned by such Stockholder, whether or not such conversion, exercise or exchange has actually been effected.

"Stock Option Plan" means any stock option plan of the Company pursuant to which Common Stock or options to purchase shares of Common Stock in such amounts as are determined from time to time by the Board of Directors in its discretion are reserved and available for grant to officers, directors, employees and consultants of the Company and its subsidiaries.

"Stockholders" has the meaning set forth in the Recitals to this Agreement.

"Stockholders Agreement" has the meaning set forth in the Recitals to this Agreement.

"Stockholders Meeting" has the meaning set forth in Section 6.1 of this Agreement.

"Subject Purchaser" has the meaning set forth in Section 4.1 of this Agreement.

"Tag-Along Rightholder" has the meaning set forth in Section 3.1(f)(i) of this Agreement.

"Third-Party Purchaser" means any Person to whom any Stockholder wishes to Transfer all or any portion of its or his Shares other than a Person which is a Permitted Transferee of such Stockholder.

"Transfer" has the meaning set forth in Section 2.1 of this Agreement.

"Transferred Shares" has the meaning set forth in Section 3.2(a) of this Agreement.

"Transferring Stockholder" has the meaning set forth in Section 3.1(f)(i) of this Agreement.

"Written Consent" has the meaning set forth in Section 6.1 of this Agreement.

2. Restrictions on Transfer of Shares.

2 . 1 Limitation on Transfer. No Stockholder shall sell, give, assign, hypothecate, pledge, encumber, grant a security interest in or otherwise dispose of (whether by operation of law or otherwise) (each a "Transfer") any Shares or any right, title or interest therein or thereto, except in accordance with the provisions of this Agreement, including, without limitation, Section 2.4. Any attempt to Transfer any Shares or any rights thereunder in violation of the preceding sentence shall be null and void *abinitio.*

2 . 2 Permitted Transfers. Notwithstanding anything to the contrary contained in this Agreement, but subject to Sections 2.1, 2.3 and 2.4, at any time: (a) each of the Major Stockholders who is an individual may Transfer all or a portion of his Shares to or among (i) a member of such Major Stockholder's immediate family, which shall include his spouse, siblings, children or grandchildren ("Family Members") or (ii) a trust, corporation, partnership, limited liability company, or other legal entity, all of the beneficial interests in which shall be held by such Major Stockholder or one or more Family Members of such Major Stockholder; provided, however, that during the period that any such trust, corporation, partnership, limited liability company, or other legal entity holds any right, title or interest in any Shares, no Person other than such Major Stockholder or one or more Family Members of such Major Stockholder may be or may become beneficiaries, stockholders, limited or general partners or members thereof; (b) each of the Investors may Transfer all or a portion of his Shares to any of its Affiliates, to any other Investor or to any Affiliate of any other Investor; (c) Isotopia may Transfer all or a portion of its Shares to Dr. Maurits W. Geerlings, Sr., or any of his Family Members; and (d) Maurits Geerlings, Sr. may Transfer up to 17,500 of his Shares (subject to appropriate and proportionate adjustment for stock dividends payable in shares of, stock splits and other subdivisions and combinations of, and recapitalizations and like occurrences with respect to, the Common Stock) to a non-Family Member if and to the extent he has not already Transferred such number of Shares prior to the date hereof (the Persons referred to in the preceding clauses (a), (b) and (c) are each referred to hereinafter as a "Permitted Transferee"). A Permitted Transferee of Shares pursuant to this Section 2.2 may Transfer its Shares pursuant to this Section 2.2 only to the Transferor Stockholder or to a Person that is a Permitted Transferee of such Transferor Stockholder.

2.3 Permitted Transfer Procedures. If any Stockholder wishes to Transfer Shares to a Permitted Transferee under Section 2.2, such Stockholder shall give notice to the Company of its intention to make any Transfer permitted under Section 2.2 not less than ten (10) days prior to effecting such Transfer, which notice shall state the name and address of each Permitted Transferee to whom such Transfer is proposed, the relationship of such Permitted Transferee to such Stockholder, and the number of Shares proposed to be Transferred to such Permitted Transferee.

2.4 Transfers in Compliance with Law; Substitution of Transferee. Notwithstanding any other provision of this Agreement, no Transfer may be made unless (a) the Transferee has agreed in writing to be bound by the terms and conditions of this Agreement pursuant to an instrument substantially in the form attached hereto as Exhibit A, (b) the Transfer complies in all respects with the applicable provisions of this Agreement and (c) the Transfer complies in all respects with applicable federal and state securities laws, including, without limitation, the Securities Act. If requested by the Company, an opinion of counsel to such Transferring Stockholder shall be supplied to the Company at such Transferring Stockholder's expense, to the effect that such Transfer complies with the applicable federal and state securities laws; provided, that no opinion of counsel shall be required for any Transfer by any Investor to any Permitted Transferee of such Investor. Upon becoming a party to this Agreement, (i) a Permitted Transferee of a Major Stockholder shall be substituted for, and shall enjoy the same rights and be subject to the same obligations as, the Transferring Major Stockholder hereunder with respect to the Shares Transferred to such Permitted Transferee, (ii) a Transferee of an Investor shall be substituted for, and shall enjoy the same rights and be subject to the same obligations as, the Transferring Investor hereunder with respect to the Shares Transferred to such Transferee, (iii) a Transferee other than a Permitted Transferee of a Major Stockholder shall be subject to the same obligations as, but none of the rights of, the Transferring Major Stockholder hereunder with respect to the Shares Transferred to such Transferee, and (iv) a Transferee of any Stockholder (other than a Stockholder which is a Major Stockholder or an Investor) shall be substituted for, and shall be entitled to the same obligations as, the Transferring Stockholder hereunder with respect to the Shares Transferred to such Transferee.

3. Right of First Refusal, Drag-Along and Tag-Along Rights.

3.1 Proposed Voluntary Transfers.

(a) Offering Notice. Subject to Section 2, if any Stockholder, other than a Series E Investor as to Shares of Series E Preferred Stock, (a "Selling Stockholder") wishes to Transfer all or any portion of its or his Shares, to any Third-Party Purchaser, such Selling Stockholder shall offer such Shares first to the Company by sending written notice (an "Offering Notice") to the Company, which shall state: (a) the name and address of the Third-Party Purchaser; (b) the number of Shares proposed to be Transferred (the "Offered Securities"); (c) the proposed purchase price per Share for the Offered Securities (the "Offer Price") and the type of consideration offered (including, if the consideration consists in whole or in part of non-cash consideration, such information available to the Selling Stockholder as is necessary for the Company and the Rightholders (as hereinafter defined) under this Section 3.1 to analyze the economic value and investment risk of such non-cash consideration); and (d) the other terms and conditions of such sale. Upon delivery of the Offering Notice, such offer shall be irrevocable unless and until the rights of first offer provided for herein shall have been waived or shall have expired. The Company shall promptly deliver a copy of the Offering Notice to each of the Rightholders under this Section 3.1. The Offering Notice shall include a copy of the agreement between the Selling Stockholder and the Third-Party Purchaser pertaining to the proposed Transfer of the Offered Securities to the Third-Party Purchaser.

(b) Company Option; Exercise. For a period of fifteen (15) days after the giving of the Offering Notice pursuant to Section 3.1(a) (the "Company Option Period"), the Company shall have the right (the "Company Option") but not the obligation to purchase any or all of the Offered Securities at a purchase price per share equal to the Offer Price and upon the terms and conditions set forth in the Offering Notice, except that the Company may, at its option, substitute cash consideration for non-cash consideration (other than notes) based upon the value of such non-cash consideration (as determined in good faith by a majority of the entire Board of Directors, which determination must include the Series E Preferred Directors). The right of the Company to purchase any or all of the Offered Securities under this Section 3.1(b) shall be exercisable by delivering written notice of the exercise thereof, prior to the expiration of the Company Option Period, to the Selling Stockholder, with a copy to the Eligible Investors and the Major Stockholders, which notice shall state the number of Offered Securities, respectively, proposed to be purchased by the Company. The failure of the Company to respond within the Company Option Period shall be deemed to be a waiver of the Company Option, provided that the Company may waive its rights under this Section 3.1(b) prior to the expiration of the Company Option Period by giving written notice to the Selling Stockholder, with a copy to the Eligible Investors and the Major Stockholders.

(c) Rightholder Option; Exercise.

(i) If the Company does not elect to purchase all of the Offered Securities, then for a period of thirty (30) days after the earlier to occur of (a) the expiration of the Company Option Period and (b) the date upon which the Selling Stockholder shall have received written notice from the Company of its exercise of the Company Option pursuant to Section 3.1(b) or its waiver thereof (the "Rightholder Option Period"), each of the Eligible Investors and those of the Major Stockholders who is not a Selling Stockholder (for the purpose of Section 3.1, (each, a "Rightholder" and collectively, the "Rightholders") shall have the right to purchase all, but not less than all, of the remaining Offered Securities at a per share purchase price equal to the Offer Price and upon the terms and conditions set forth in the Offering Notice, except that each Rightholder may, at its option, substitute cash consideration for non-cash consideration (other than notes) based upon the value of such non-cash consideration (as determined in good faith by a majority of the entire Board of Directors, which determination must include the Series E Preferred Directors). Each such Rightholder shall have the right to purchase that percentage of the Offered Securities determined by dividing (i) the total number of Shares then owned by such Rightholder by (ii) the total number of Shares then owned by all such Rightholders. If any Rightholder does not fully subscribe for the number or amount of Offered Securities it or he is entitled to purchase, then each other fully participating Rightholder shall have the right to purchase that percentage of the Offered Securities not so subscribed for (for the purposes of this Section 3.1(c), the "Excess Offered Securities") determined by dividing (x) the total number of Shares then owned by such fully participating Rightholder by (y) the total number of Shares then owned by all fully participating Rightholders who elected to purchase Excess Offered Securities. The procedure described in the preceding sentence shall be repeated until there are no remaining Excess Offered Securities. If the Company and/or the Rightholders do not purchase all of the Offered Securities pursuant to Section 3.1(b) and/or Section 3.1(c), then the Selling Stockholder may, subject to Section 3.1(f), sell the Offered Securities to a Third-Party Purchaser in accordance with Section 3.1(e).

(ii) The right of each Rightholder to purchase all of the remaining Offered Securities under subsection (i) above shall be exercisable by delivering written notice of the exercise thereof, prior to the expiration of the Rightholder Option Period, to the Selling Stockholder with a copy to the Company. Each such notice shall state (a) the number of Shares held by such Rightholder and (b) the number of Shares that such Rightholder is willing to purchase pursuant to this Section 3.1(c). The failure of a Rightholder to respond within the Rightholder Option Period to the Selling Stockholder shall be deemed to be a waiver of such Rightholder's rights under subsection (i) above, provided that each Rightholder may waive its rights under subsection (ii) above prior to the expiration of the Rightholder Option Period by giving written notice to the Selling Stockholder, with a copy to the Company.

(d) Closing. The closing of the purchases of Offered Securities subscribed for by the Company under Section 3.1(b) and/or the Rightholders under Section 3.1(c) shall be held at the executive offices of the Company at 11:00 a.m., local time, on the 60th day after the giving of the Offering Notice pursuant to Section 3.1(a) or at such other time and place as the parties to the transaction may agree. At such closing, the Selling Stockholder shall deliver certificates representing the Offered Securities, duly endorsed for Transfer and accompanied by all requisite Transfer taxes, if any, and such Offered Securities shall be free and clear of any Liens (other than those arising hereunder and those attributable to actions by the purchasers thereof) and the Selling Stockholder shall so represent and warrant, and shall further represent and warrant that it is the sole beneficial and record owner of such Offered Securities. The Company and/or each Rightholder, as the case may be, purchasing Offered Securities shall deliver at the closing consideration to be paid in full and the cash portion of such consideration shall be paid in immediately available funds for the Offered Securities purchased by it or him. At such closing, all of the parties to the transaction shall execute such additional documents as are otherwise necessary or appropriate.

(e) Sale to the Third-Party Purchaser. Unless the Company and/or the Rightholders elect to purchase all, but not less than all, of the Offered Securities under Sections 3.1(b) and 3.1(c), the Selling Stockholder may, subject to Section 3.1(f), sell all, but not less than all, the Offered Securities to the Third-Party Purchaser and not to any assignee or designee of such Third-Party Purchaser at a purchase price per share equal to the Offer Price and on the terms and conditions set forth in the Offering Notice; provided, however, that such sale is bona fide and consummated within sixty (60) days after the earlier to occur of (i) the waiver by the Company and all of the Rightholders of their options to purchase the Offered Securities and (ii) the expiration of the Rightholder Option Period; and provided further, that such sale shall not be consummated unless and until (x) such Third-Party Purchaser shall represent in writing to the Company and each Rightholder that it is aware of the rights of the Company and the Stockholders contained in this Agreement and (y) prior to the purchase by such Third-Party Purchaser of any of such Offered Securities, such Third-Party Purchaser shall become a party to this Agreement and shall agree to be bound by the terms and conditions hereof in accordance with Section 2.4 hereof. If such sale is not consummated within such sixty (60) day period for any reason, then the restrictions provided for herein shall again become effective, and no Transfer of such Offered Securities may be made thereafter by the Selling Stockholder without again offering the same to the Company and the Rightholders in accordance with this Section 3.1.

(f) Tag-Along Rights.

(i) If any Stockholder (a "Transferring Stockholder") wishes to Transfer all or any portion of its or his Shares to a Third-Party Purchaser, then each of the Stockholders (other than the Transferring Stockholder) (each, a "Tag-Along Rightholder") shall have the right to sell to such Third-Party Purchaser, upon the same terms and conditions as the Transferring Stockholder, up to that number of Shares held by such Tag-Along Rightholder equal to that percentage of the number of Shares proposed to be Transferred by the Transferring Stockholder determined by dividing (i) the total number of Shares then owned by such Tag-Along Rightholder by (ii) the sum of (x) the total number of Shares then owned by all such Tag-Along Rightholders exercising their rights pursuant to this Section 3.1(f) and (y) the total number of Shares then owned by the Transferring Stockholder. To the extent that the Tag-Along Rightholders exercise their rights pursuant to this Section 3.1(f), the number of Shares proposed to be Transferred by the Transferring Stockholder shall be reduced accordingly.

(ii) The Transferring Stockholder shall give written notice to each Tag-Along Rightholder of each proposed sale by it of Shares which gives rise to the rights of the Tag-Along Rightholders set forth in this Section 3.1(f) at least fifteen (15) days prior to the proposed consummation of such sale, setting forth the name of such Transferring Stockholder, the number of Shares proposed to be sold, the name and address of the proposed Third-Party Purchaser, the proposed amount and form of consideration and terms and conditions of payment offered by such Third-Party Purchaser, the percentage of Shares that such Tag-Along Rightholder may sell to such Third-Party Purchaser (determined in accordance with Section 3.1(0(0), and a representation that such Third-Party Purchaser has been informed of the "tag-along" rights provided for in this Section 3.1(f) and has agreed to purchase Shares in accordance with the terms hereof. The tag-along rights provided by this Section 3.1(0 must be exercised by any Tag-Along Rightholder wishing to sell Shares pursuant to this Section 3.1(f) within ten (10) days following receipt of the notice required by the preceding sentence, by delivery of a written notice to the Transferring Stockholder indicating such Tag-Along Rightholder's wish to exercise its rights and specifying the number of Shares (up to the maximum number of Shares owned by such Tag-Along Rightholder required to be purchased by such Third-Party Purchaser) it wishes to sell. The failure of a Tag-Along Rightholder to respond within such 10-day period shall be deemed to be a waiver of such Tag-Along Rightholder's rights under this Section 3.1(f), provided that any Tag-Along Rightholder may waive its rights under this Section 3.1(0 prior to the expiration of such 10-day period by giving written notice to the Transferring Stockholder, with a copy to the Company. If a Third-Party Purchaser fails to purchase Shares from any Tag-Along Rightholder that has properly exercised its tag-along rights pursuant to this Section 3.1(f)(ii), then the Transferring Stockholder shall not be permitted to consummate the proposed sale of his or its Shares unless and until, simultaneous with such sale, the Transferring Stockholder purchases from such Tag-Along Rightholder the number of Shares such Tag-Along Rightholder is entitled to sell under this Section 3.1(1) on the same terms and conditions as the Transferring Stockholder is Transferring his or its Shares to the Third-Party Purchaser.

(g) Drag-Along Rights.

(i) If the Stockholders holding a majority of the voting power of the Shares (the "Sale Majority") approve a bona tide sale or exchange, whether directly or pursuant to a sale, merger, consolidation or other business combination, of all or substantially all of the Shares to a Third-Party Purchaser (a "Drag-Along Event"), then the Stockholders comprising a part of the Sale Majority shall have the right, subject to all of the provisions of this Section 3.1(g) ("Drag-Along Rights"), to require all of the other Stockholders (the "Drag-Along Stockholders" and each individually a "Drag-Along Stockholder") to (A) if such Drag-Along Event is structured as a sale of Shares, sell, Transfer and deliver or cause to be sold, Transferred and delivered to such Third-Party Purchaser all Shares and Common Stock Equivalents owned by the Drag-Along Stockholders or (B) if such Drag-Along Event is structured as a merger, consolidation or other business combination requiring the consent or approval of the Drag-Along Stockholders, vote their Shares in accordance with the written instructions of the Stockholders comprising a part of the Sale Majority in favor thereof, and otherwise consent to and raise no objection to such transaction, and waive any dissenters' rights, appraisal rights or similar rights which the Drag-Along Stockholders may have in connection therewith; and, in any such event, subject to the provisions of subsection (iii) of this Section 3.1(g), the Drag-Along Stockholders shall agree to and shall be bound by the same terms, provisions and conditions in respect of the Drag-Along Event. The provisions of Section 3.1 (f) shall not apply to any transaction to which this Section 3.1(g) applies to the extent the Stockholders comprising a part of the Sale Majority shall have in fact exercised their Drag-Along Rights under this Section 3.1(g).

(ii) If the Stockholders comprising a part of the Sale Majority desire to exercise their Drag-Along Rights, they shall give written notice to the Drag-Along Stockholders ("Drag-Along Notice") of the Drag-Along Event which gives rise to the obligations of the Drag-Along Stockholders set forth in this Section 3.1(g), at least thirty (30) days prior to the proposed consummation of the transaction. The Drag-Along Notice shall set forth (A) the name and address of the Third-Party Purchaser, (B) the date on which such transaction is proposed to be consummated, (C) the proposed amount and form of consideration and terms and conditions of payment offered by the Third-Party Purchaser and (D) a representation that the Third-Party Purchaser has been informed of the Drag-Along Rights provided for in this Section 3.1(g) and has agreed to purchase Shares in accordance with the terms hereof.

(iii) In connection with a Drag-Along Event pursuant to this Section 3.1(g), the Drag-Along Stockholders shall make substantially the same representations, warranties, covenants and indemnities and other similar agreements as the Stockholders comprising a part of the Sale Majority agree to make in connection with the proposed Transfer by them relating to the ownership of and title to their Shares. No Drag-Along Stockholder shall be subject to the requirements of this Section 3.1(g) with respect to a Drag-Along Event if such Drag-Along Event (A) requires that the payment with respect to each share of Common Stock or Preferred Stock, as applicable, held by such Drag-Along Stockholder is not in accordance with the Certificate if such Drag-Along Event were deemed a "Liquidation" or "Acquisition Transaction" for purposes of Article IV, Section 3 thereof (or such equivalent Article and Section thereof), (B) provides that such Drag-Along Stockholder will not receive the same form of consideration or the same per share consideration for their shares of Common Stock or Preferred Stock, as applicable, as all other holders of such shares of Common Stock or Preferred Stock, as applicable, or (C) requires such Drag-Along Stockholder to agree to any indemnification obligations which (1) are for breaches of representations and warranties of any Person other than the Company or such Drag-Along Stockholder, (2) provide for indemnification other than in proportion to such Drag-Along Stockholder's ownership interest in the Company, determined on a fully-diluted basis as-converted to Common Stock basis (excluding: (a) all Shares issuable pursuant to the exercise of an option wherein such right of exercise has not yet vested as of the closing of the Drag-Along Event, (b) all Shares exercisable pursuant to either a warrant or an option for which the exercise price is greater than the fair market value of the underlying Shares as of the closing of the Drag-Along Event; and (c) all options and Shares reserved for the issuance of options under the Stock Option Plan for which options have not yet issued as of the closing of the Drag-Along Event), and (3) are not limited to the value of the consideration actually received by such Drag-Along Stockholder pursuant to such Drag-Along Event (excluding liability for such Drag-Along Stockholder's own fraud or malfeasance). In addition and without limitation to the foregoing, no Drag-Along Stockholder shall be subject to the requirements of this Section 3.1(g) with respect to a Drag-Along Event if such Drag-Along Stockholder is required to provide indemnification in connection with such Drag-Along Event and any of the Stockholders comprising a part of the Sale Majority are not required to provide indemnification or such Drag-Along Stockholder's indemnification obligations in connection with such Drag-Along Event are upon terms and conditions which are less favorable to such Drag-Along Stockholder than the terms and conditions upon which any of the Stockholders comprising a part of the Sale Majority are obligated to provide indemnification in connection with such Drag-Along Event.

3.2 Involuntary Transfers.

(a) Rights of First Offer upon Involuntary Transfer. If an Involuntary Transfer of any Shares (the "Transferred Shares") owned by any Stockholder other than an Eligible Investor shall occur, then the Company and the Stockholders other than the Stockholder who suffered or will suffer such Involuntary Transfer (for the purpose of Section 3.2, each, a "Rightholder" and collectively, the "Rightholders") shall have the same rights as specified in Sections 3.1(b) and 3.1(c), respectively, with respect to such Transferred Shares as if the Involuntary Transfer had been a proposed voluntary Transfer by a Selling Stockholder and shall be governed by Section 3.1 except that (i) the time periods shall run from the date of receipt by the Company of actual notice of the Involuntary Transfer (and the Company shall immediately give notice to the Rightholders of the date of receipt of such notice), (ii) such rights shall be exercised by notice to the Transferee of such Transferred Shares (the "InvoluntaryTransferee") rather than to the Stockholder who suffered or will suffer the Involuntary Transfer and (iii) the purchase price per Transferred Share shall be agreed upon by the Involuntary Transferee and the Company and/or the purchasing Rightholders purchasing a majority of the Transferred Shares, as the case may be; provided, however, that if such parties fail to agree as to such per share purchase price within thirty (30) days after the date on which the Company or the last of the Rightholders exercised its rights under this Section 3.2(a), whichever is later (such period, the "Price Negotiation Period"), the per share purchase price shall be the Fair Value thereof as determined in accordance with Section 3.2(b).

(b) Fair Value. If the parties fail to agree upon the per share purchase price of the Transferred Shares in accordance with Section 3.2(a) hereof, then the Company or the Rightholders, as the case may be, shall purchase the Transferred Shares at a per share purchase price equal to the Fair Value (as hereinafter defined) thereof. The Fair Value of the Transferred Shares shall be determined by a panel of three independent appraisers, which shall be nationally recognized investment banking firms or nationally recognized experts experienced in the valuation of corporations engaged in the business conducted by the Company. Within five (5) Business Days after the last day of the Price Negotiation Period or such earlier date as the applicable parties determine that they cannot agree as to the per share purchase price, the Involuntary Transferee and the Board of Directors (in the case of a purchase by the Company), or the purchasing Rightholders purchasing a majority of the Transferred Shares being purchased by the purchasing Rightholders (if the Company is not purchasing any Transferred Shares), or the Board of Directors and such purchasing Rightholders jointly (in the case of a purchase by the Company and Rightholders), as the case may be, shall each designate one such appraiser that is willing and able to conduct such determination. If either the Involuntary Transferee or the Board of Directors or the purchasing Rightholders or both, as the case may be, fails to make such designation within such period, then the other party that has made the designation shall have the right to make the designation on its behalf. The two appraisers designated shall, within a period of five (5) Business Days after the designation of the second appraiser, designate a mutually acceptable third appraiser. The three appraisers shall conduct their determination as promptly as practicable, and the Fair Value of the Transferred Shares shall be the average of the determination of the two appraisers that are closer to each other than to the determination of the third appraiser, which third determination shall be discarded; provided, however, that if the determination of two appraisers are equally close to the determination of the third appraiser, then the Fair Value of the Transferred Shares shall be the average of the determination of all three appraisers. Such determination shall be final and binding on the Involuntary Transferee, the Company and the Rightholders. The Involuntary Transferee shall be responsible for the fees and expenses of the appraiser designated by or on behalf of it, and the Company or the purchasing Rightholders (if both the Company and the purchasing Rightholders), or the purchasing Rightholders (if the Company is not purchasing any Transferred Shares) for the fees and expenses of the appraiser designated by or on behalf of the Board of Directors or the purchasing Rightholders (if the Company is not purchasing any Transferred Shares), as the case may be. The Involuntary Transferee and the Company or the purchasing Rightholders, as the case may be, shall each share half the fees and expenses of the appraiser designated by the appraisers. For purposes of this Section 3.2(b), the "Fair Value" of the Transferred Shares means the per share fair market value of such Transferred Shares determined in accordance with this Section 3.2(b) based upon all considerations that the appraisers determine to be relevant. All expenses to be shared by the Company and the purchasing Rightholders, or among the purchasing Rightholders (if the Company is not purchasing any Transferred Shares), shall be shared in proportion to the number of Transferred Shares purchased.

(c) Closing. The closing of any purchase under this Section 3.2 shall be held at the offices of the Company's legal counsel or such other location as may be designated by the Company at 11:00 a.m., local time, on the earlier to occur of (i) the fifth Business Day after the purchase price per Transferred Share shall have been agreed upon by the Involuntary Transferee and the Company or the purchasing Rightholders, as the case may be, in accordance with Section 3.2(a)(iii), or (ii) the fifth Business Day after the determination of the Fair Value of the Transferred Shares in accordance with Section 3.2(b), or at such other time and place as the parties to the transaction may agree. At such closing, the Involuntary Transferee shall deliver certificates, if applicable, or other instruments or documents representing the Transferred Shares being purchased under this Section 3.2, duly endorsed with a signature guarantee for Transfer and accompanied by all requisite Transfer taxes, if any, and such Transferred Shares shall be free and clear of any Liens (other than those arising hereunder) arising through the action or inaction of the Involuntary Transferee and the Involuntary Transferee shall so represent and warrant, and further represent and warrant that it is the beneficial owner of such Transferred Shares. The Company or each Rightholder, as the case may be, purchasing such Transferred Shares shall deliver at closing payment in full in immediately available funds for such Transferred Shares. At such closing, all parties to the transaction shall execute such additional documents as are otherwise necessary or appropriate.

(d) General. In the event that the provisions of this Section 3.2 shall be held to be unenforceable with respect to any particular Involuntary Transfer, the Company and the Rightholders shall have the rights specified in Sections 3.1(b) and 3.1(c), respectively, with respect to any Transfer by an Involuntary Transferee of such Shares, and each Rightholder agrees that any Involuntary Transfer shall be subject to such rights, in which case the Involuntary Transferee shall be deemed to be the Selling Stockholder for purposes of Section 3.1 of this Agreement and shall be bound by the provisions of Section 3.1 and other related provisions of this Agreement.

4. Future Issuance of Shares; Preemptive Rights.

4.1 Offering Notice. Except for the issuance of (a) any Excluded Securities of any kind described in clauses (A) through (F) of Section C.5.3(a)(vii) of Article IV of the Certificate, (b) any of the Series E Preferred Stock issued pursuant to the Preferred Stock Purchase Agreement, or (c) any shares of Common Stock issued pursuant to any Extraordinary Event (as defined in the Certificate) (such issuances described in (a) through (c) of this Section 4.1 being referred to collectively as "Exempt Issuances"), if the Company wishes to issue any capital stock or any other securities or obligations convertible into, or exercisable or exchangeable for, any capital stock of the Company or any option, warrant or other subscription or purchase right with respect to any capital stock of the Company or any such convertible, exercisable or exchangeable securities or obligations (collectively, "New Securities") to any Person (the "Subject Purchaser"), then the Company shall offer such New Securities, in accordance with Section 4.2(a), first to each of the Eligible Investors (each, a "Preemptive Rightholder" and collectively, the "Preemptive Rightholders") by sending written notice (the "New Issuance Notice") to the Preemptive Rightholders, which New Issuance Notice shall state (x) the number of New Securities proposed to be issued and (y) the proposed purchase price per security of the New Securities (the "Proposed Price"). Upon delivery of the New Issuance Notice, such offer shall be irrevocable unless and until the rights provided for in Section 4.2 shall have been waived or shall have expired.

4.2 Preemptive Rights; Exercise.

(a) For a period of twenty (20) days after the giving of the New Issuance Notice pursuant to Section 4.1, each of the Preemptive Rightholders shall have the right to purchase up to its Proportionate Percentage (as hereinafter defined) of the New Securities at a purchase price equal to the Proposed Price and upon the same terms and conditions set forth in the New Issuance Notice, except that if all or any part of the consideration to be paid by a Subject Purchaser is not cash, then the value of the non-cash consideration (other than notes) shall be determined in good faith by a majority of the entire Board of Directors (which determination must include the Series E Preferred Directors) and any Preemptive Rightholder electing to purchase any New Securities may pay the cash equivalent thereof. Each such Preemptive Rightholder shall have the right to purchase that percentage of the New Securities determined by dividing (x) the total number of Shares then owned by such Preemptive Rightholder exercising its rights under this Section 4.2 by (y) the total number of shares of Common Stock then issued and outstanding (assuming for such purpose, the complete exercise, exchange or conversion of all then issued and outstanding Common Stock Equivalents) (the "Proportionate Percentage"). If any Preemptive Rightholder does not fully subscribe for the number or amount of New Securities that it or he is entitled to purchase pursuant to the preceding sentence, then each other fully participating Preemptive Rightholder shall have the right to purchase that percentage of the remaining New Securities not so subscribed for (for the purposes of this Section 4.2(a), the "Excess New Securities") determined by dividing (x) the total number of Shares then owned by such fully participating Preemptive Rightholder by (y) the total number of Shares then owned by all fully participating Preemptive Rightholders who elected to purchase Excess New Securities. The procedure described in the preceding sentence shall be repeated until there are no remaining Excess New Securities.

(b) The right of each Preemptive Rightholder to purchase the New Securities under Section 4.2(a) above shall be exercisable by delivering written notice of the exercise thereof, prior to the expiration of the 20-day period referred to in Section 4.2(a) above, to the Company, which notice shall state the amount of New Securities that such Preemptive Rightholder elects to purchase pursuant to Section 4.2(a). The failure of a Preemptive Rightholder to respond within such 20-day period shall be deemed to be a waiver of such Preemptive Rightholder's rights under Section 4.2(a), provided that each Preemptive Rightholder may waive its rights under Section 4.2(a) prior to the expiration of such 20-day period by giving written notice to the Company.

4.3 Closing. The closing of the purchase of New Securities subscribed for by the Preemptive Rightholders under Section 4.2 shall be held at the executive offices of the Company at 11:00 a.m., local time, on (a) the date of the initial closing of the sale to the Subject Purchaser made pursuant to Section 4.4 if the Preemptive Rightholders elect to purchase some, but not all, of the New Securities under Section 4.2, or (b) at another time and place if the the parties to the transaction so agree in writing. At such closing, the Company shall deliver certificates representing the New Securities, and such New Securities shall be issued free and clear of all Liens (other than those arising hereunder and those attributable to actions by the purchasers thereof) and the Company shall so represent and warrant, and further represent and warrant that such New Securities shall be, upon issuance thereof to the Preemptive Rightholders and after payment therefor, duly authorized, validly issued, fully paid and non-assessable. Each Preemptive Rightholder purchasing the New Securities shall deliver at the closing payment in full in immediately available funds for the New Securities purchased by him or it. At such closing, all of the parties to the transaction shall execute such additional documents as are otherwise necessary or appropriate.

4 . 4 Sale to Subject Purchaser. The Company may sell to the Subject Purchaser all of the New Securities not purchased by the Preemptive Rightholders pursuant to Section 4.2 on terms and conditions that are no more favorable to the Subject Purchaser than those set forth in the New Issuance Notice; provided, however, that such sale is bona tide and consummated within ninety (90) days following the earlier to occur of (i) the waiver by the Preemptive Rightholders of their option to purchase New Securities pursuant to Section 4.2, and (ii) the expiration of the 20-day period referred to in Section 4.2. If such sale is not consummated within such 90-day period for any reason, then the restrictions provided for herein shall again become effective, and no issuance and sale of New Securities may be made thereafter by the Company without again offering the same in accordance with this Section 4. The closing of any issuance and purchase pursuant to this Section 4.4 shall be held at a time and place as the parties to the transaction may agree within such 90-day period.

5. After-Acquired Securities Agreement to be Bound.

5 . 1 After-Acquired Securities. All of the provisions of this Agreement shall apply to all of the Shares and Common Stock Equivalents now owned or which may be issued or Transferred hereafter to a Stockholder in consequence of any additional issuance, purchase, exchange or reclassification of any of such Shares or Common Stock Equivalents, corporate reorganization, or any other form of recapitalization, consolidation, merger, share split or share dividend, or which are acquired by a Stockholder in any other manner.

5 . 2 Agreement to be Bound. The Company shall not issue any shares of capital stock or any Common Stock Equivalents to any Person not a party to this Agreement, other than any Common Stock Equivalents issued to directors, officers, employees or consultants of the Company pursuant to the Stock Option Plan, unless either (a) such Person has agreed in writing to be bound by the terms and conditions of this Agreement pursuant to an instrument substantially in the form attached hereto as Exhibit B, or (b) such Person has otherwise entered into an agreement with the Company restricting the Transfer of its or his Shares in form and substance reasonably satisfactory to the Eligible Investors holding a majority of the voting power of the Shares held by the Eligible Investors. Upon the exercise of any Common Stock Equivalents under the Stock Option Plan, the holder of such Common Stock Equivalents shall agree in writing to be bound by the terms and conditions of this Agreement pursuant to an instrument substantially in the form attached hereto as Exhibit B. Upon becoming a party to this Agreement, such Person shall be deemed to be a party to, and bound by, the provisions of this Agreement. Any issuance of Shares or any Common Stock Equivalents by the Company in violation of this Section 5.2 shall be null and void *abinitio.*

6. Corporate Governance.

6 . 1 General. From and after the execution of this Agreement, each Stockholder shall vote its Shares at any regular or special meeting of stockholders of the Company (a "Stockholders Meeting") or in any written consent executed in lieu of such a meeting of stockholders (a "Written Consent"), and shall take all other actions necessary, to give effect to the provisions of this Agreement (including, without limitation, Section 6.2 hereof).

6.2 Election of Directors; Number and Composition.

(a) Number. Each Stockholder shall vote its Shares at any Stockholders Meeting, or act by Written Consent with respect to such Shares, and take all other actions necessary to ensure that the number of directors constituting the entire Board of Directors shall consist of such number of directors as is authorized in accordance with the Charter Documents.

(b) Composition. Each Stockholder shall vote its Shares at any Stockholders Meeting called for the purpose of filling the positions on the Board of Directors, or in any Written Consent executed for such purpose, and take all other actions necessary to ensure: (i) the nomination and election to the Board of Directors of two individuals designated by the holders of at least a majority of the issued and outstanding Series E Preferred Stock (the "Series E Preferred Director"); (ii) the nomination and election to the Board of Directors of one individual who shall be the then current chief executive officer of the Company (the "CEO Director"), who shall initially be Dragan Cicic, M.D., (iii) the nomination and election to the Board of Directors of two individuals who are not employees, officers or directors of any of the Investors or any of their respective Affiliates.

6.3 Removal and Replacement of Directors.

(a) Replacement of Directors. If at any time, a vacancy is created on the Board of Directors by reason of the incapacity, death, removal or resignation of a director designated by the Stockholders entitled to designate directors under Section 6.2(b) (each a "Designating Party"), then the Designating Party shall promptly designate a new director and, after written notice to each of the other Stockholders and the Company of such new designee, each Stockholder shall vote all of its or his Shares so as to elect such new designee to the Board of Directors.

(b) Removal of Directors. Each Designating Party may remove its designated director at any time and for any reason (or no reason) in such Designating Party's sole discretion and, after written notice to each of the other Stockholders and the Company of the new designee to replace such removed director, each Stockholder shall vote all of its Shares so as to elect such new designee to the Board of Directors.

6.4 Reimbursement of Expenses; D&O Insurance. The Company shall reimburse the members of the Board of Directors for all reasonable travel and accommodation expenses incurred by the directors in connection with the performance of their duties as directors of the Company upon presentation of appropriate documentation therefor.

6.5 Annual Budget. Not less than thirty (30) days prior to the end of each fiscal year, the Company shall prepare and submit to the Board of Directors for its approval an annual operating budget for the next succeeding fiscal year in reasonable detail.

6.6 Books and Records. The Company shall, and shall cause its subsidiaries to, keep proper books of records and account, in which full and correct entries shall be made of all financial transactions and the assets and business of the Company and each of its subsidiaries in accordance with generally accepted accounting principles consistently applied.

7. Stock Certificate Legend. A copy of this Agreement shall be filed with the Secretary of the Company and kept with the records of the Company. Each certificate representing Shares now held or hereafter acquired by any Stockholder shall for as long as this Agreement is effective bear legends substantially in the following forms:

> THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE " ACT"), OR THE SECURITIES LAWS OF ANY STATE. THE SECURITIES MAY NOT BE TRANSFERRED EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER SUCH ACT AND APPLICABLE STATE SECURITIES LAWS OR PURSUANT TO AN APPLICABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF SUCH ACT AND SUCH LAWS.
>
> THE SALE, ASSIGNMENT, HYPOTHECATION, PLEDGE, ENCUMBRANCE OR OTHER DISPOSITION (EACH A "TRANSFER") AND VOTING OF ANY OF THE SECURITIES REPRESENTED BY THIS CERTIFICATE ARE RESTRICTED BY THE TERMS OF THE AMENDED AND RESTATED STOCKHOLDERS AGREEMENT, DATED AS OF THE DATE HEREOF, AMONG THE COMPANY AND THE STOCKHOLDERS NAMED THEREIN, A COPY OF WHICH MAY BE INSPECTED AT THE COMPANY'S PRINCIPAL OFFICE. THE COMPANY WILL NOT REGISTER THE TRANSFER OF SUCH SECURITIES ON THE BOOKS OF THE COMPANY UNLESS AND UNTIL THE TRANSFER HAS BEEN MADE IN COMPLIANCE WITH THE TERMS OF THE AMENDED AND RESTATED STOCKHOLDERS AGREEMENT.

8. Miscellaneous.

8.1 Recapitalizations, Exchanges, etc. The provisions of this Agreement shall apply to the full extent set forth herein with respect to (a) the shares of Common Stock and Preferred Stock, (b) any and all shares of capital stock of the Company into which the shares of Common Stock or Preferred Stock, as applicable, are converted, exchanged or substituted in any recapitalization or other capital reorganization by the Company and (c) any and all equity securities of the Company or any successor or assign of the Company (whether by merger, consolidation, sale of assets or otherwise) which may be issued in respect of, in conversion of, in exchange for or in substitution of, the shares of Common Stock and Preferred Stock, as applicable, and shall be appropriately adjusted for any stock dividends, splits, reverse splits, combinations, recapitalizations and the like occurring after the date hereof. The Company shall cause any successor or assign (whether by merger, consolidation, sale of assets or otherwise) to enter into a stockholders agreement with the Investors and other Stockholders on terms substantially the same as this Agreement as a condition of any such transaction.

8.2 Notices. All notices, demands or other communications provided for or permitted hereunder shall be made in writing and shall be sent by registered or certified first class mail, return receipt requested, telecopier, courier service, overnight mail or personal delivery:

(a) if to the Company:

Actinium Pharmaceuticals, Inc.
_____
_____
U.S.A.
Telefax:_____
Attention: Dragan Cicic, M.D.

with a copy to:

_____
_____
_____

(b) if to AHL:

Actinium Holdings Limited
_____
_____
Telefax _____
Attention: [_____]

with a copy to:

_____
_____

(c) if to Organon:

N.V. Organon
[_____]
Telecopy: [_____]
Attention: [_____]

(d) if to any Major Stockholder or Stockholder, at its address as it appears on the record books of the Company.

Any party may, by notice given in accordance with this Section 8.2, designate another address or Person for receipt of notices hereunder. All such notices, demands and other communications shall be deemed to have been duly given when delivered by hand, if personally delivered; when delivered by courier, if delivered by commercial courier service; five (5) Business Days after being deposited in the mail, postage prepaid, if mailed; and when receipt is mechanically acknowledged, if telecopied or sent by electronic mail.

8 . 3 Successors and Assigns. This Agreement shall be binding upon andinure to the benefit of the parties and their respective successors, heirs, legatees and legal representatives. This Agreement is not assignable except in connection with a Transfer of Shares in accordance with this Agreement.

8.4 Amendment and Waiver.

(a) Except as specifically set forth in this Agreement, no failure or delay on the part of any party hereto in exercising any right, power or remedy hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any such right, power or remedy preclude any other or further exercise thereof or the exercise of any other right, power or remedy. The remedies provided for herein are cumulative and are not exclusive of any remedies that may be available to the parties hereto at law, in equity or otherwise.

(b) Any amendment, supplement or modification of or to any provision of this Agreement, any waiver of any provision of this Agreement, and any consent to any departure by any party from the terms of any provision of this Agreement, shall be effective only if it is made or given in writing and signed by the Company, the Stockholders holding a majority of the voting power of the Shares held by the Stockholders, and Series E Investors holding a majority of the voting power of the Shares held by the Series E Investors. Any such amendment, supplement, modification, waiver or consent shall be binding upon the Company and all of the Stockholders.

8.5 Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, and all of which taken together shall constitute one and the same instrument. This Agreement may be executed by facsimile signature(s) which shall be binding on the party delivering same, to be followed by delivery of originally executed signature pages.

8.6 Specific Performance. The parties hereto intend that each of the parties have the right to seek damages or specific performance in the event that any other party hereto fails to perform such party's obligations hereunder. Therefore, if any party shall institute any action or proceeding to enforce the provisions hereof, any party against whom such action or proceeding is brought hereby waives any claim or defense therein that the plaintiff party has an adequate remedy at law.

8.7 Headings. The headings in this Agreement are for convenience of reference only and shall not limit or otherwise affect the meaning hereof.

8 . 8 GOVERNING LAW. THIS AGREEMENT SHALL BE GOVERNED AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK, WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW OF ANY JURISDICTION.NO SUIT, ACTION OR PROCEEDING WITH RESPECT TO THIS AGREEMENT MAY BE BROUGHT IN ANY COURT OR BEFORE ANY SIMILAR AUTHORITY OTHER THAN IN A COURT OF COMPETENT JURISDICTION IN THE STATE OF NEW YORK AND THE PARTIES HEREBY SUBMIT TO THE EXCLUSIVE JURISDICTION OF SUCH COURTS FOR THE PURPOSE OF SUCH SUIT, PROCEEDING OR JUDGMENT. EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY WAIVES ANY RIGHT WHICH IT MAY HAVE HAD TO BRING SUCH AN ACTION IN ANY OTHER COURT, DOMESTIC OR FOREIGN, OR BEFORE ANY SIMILAR DOMESTIC OR FOREIGN AUTHORITY AND AGREES NOT TO CLAIM OR PLEAD THE SAME. EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY AND UNCONDITIONALLY WAIVES TRIAL BY JURY IN ANY LEGAL ACTION OR PROCEEDING IN RELATION TO THIS AGREEMENT AND FOR ANY COUNTERCLAIM THEREIN.

8 . 9 Severability. If any one or more of the provisions contained herein, or the application thereof in any circumstance, is held invalid, illegal or unenforceable in any respect for any reason, the validity, legality and enforceability of any such provision in every other respect and of the remaining provisions hereof shall not be in any way impaired, unless the provisions held invalid, illegal or unenforceable shall substantially impair the benefits of the remaining provisions hereof.

8.10 Entire Agreement. This Agreement, together with the exhibits hereto, is intended by the parties as a final expression of their agreement and intended to be a complete and exclusive statement of the agreement and understanding of the parties hereto in respect of the subject matter contained herein and therein. There are no restrictions, promises, warranties or undertakings, other than those set forth or referred to herein or therein. This Agreement, together with the exhibits hereto, supersedes all prior agreements and understandings among the parties with respect to such subject matter, including the Prior Stockholders Agreement.

8.11 Term of Agreement. This Agreement shall become effective upon the execution hereof and shall terminate upon the first to occur of (a) the consummation of the Qualified Initial Public Offering or b) the consummation of a Pubco Transaction.

8.12 Further Assurances. Each of the parties shall, and shall cause their respective Affiliates to, execute such instruments and take such action as may be reasonably required or desirable to carry out the provisions hereof and the transactions contemplated hereby.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the undersigned have executed, or have caused to be executed, this Amended and Restated Stockholders Agreement on the date first written above.

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Dragan Cicic
Name: Dragan Cicic
Title: President and CEO

ACTINIUM HOLDINGS LIMITED

By: _____
Name:
Title:

N.V. ORGANON

By: _____
Name:
Title:

DR. MAURITS GEERLINGS, JR.

_____

The Purchasers of Series E Preferred Shares, to be set forth on Schedule A to this Agreement, have executed a Subscription Agreement with the Company which provides, among other things, that by executing the Subscription Agreement each Purchaser is deemed to have executed the AMENDED AND RESTATED STOCKHOLDERS AGREEMENT in all respects.

IN WITNESS WHEREOF, the undersigned have executed, or have caused to be executed, this Amended and Restated Stockholders Agreement on the date first written above.

ACTINIUM PHARMACEUTICALS, INC.

By: _____
Name:
Title:

ACTINIUM HOLDINGS LIMITED

By: /s/ Michael Shettay
Name: Michael Shettay
Title: President

N.V. ORGANON

By: _____
Name:
Title:

DR. MAURITS GEERLINGS, JR.

_____

The Purchasers of Series E Preferred Shares, to be set forth on Schedule A to this Agreement, have executed a Subscription Agreement with the Company which provides, among other things, that by executing the Subscription Agreement each Purchaser is deemed to have executed the AMENDED AND RESTATED STOCKHOLDERS AGREEMENT in all respects.

IN WITNESS WHEREOF, the undersigned have executed, or have caused to be executed, this Amended and Restated Stockholders Agreement on the date first written above.

ACTINIUM PHARMACEUTICALS, INC.

By: _____
Name:
Title:

ACTINIUM HOLDINGS LIMITED

By: _____
Name:
Title:

N.V. ORGANON

By: /s/ David Nicholson
Narne: David Nicholson, Ph.D
Title: Sr. VP, Worldwide Licensing
& Knowledge Management

DR. MAURITS GEERLINGS, JR.

_____

The Purchasers of Series E Preferred Shares, to be set forth on Schedule A to this Agreement, have executed a Subscription Agreement with the Company which provides, among other things, that by executing the Subscription Agreement each Purchaser is deemed to have executed the AMENDED AND RESTATED STOCKHOLDERS AGREEMENT in all respects.

IN WITNESS WHEREOF, the undersigned have executed, or have caused to he executed, this Amended and Restated Stockholders Agreement on the date first written above.

ACTINIUM PHARMACEUTICALS, INC.

By: _____
Name:
Title:

ACTINIUM HOLDINGS LIMITED

By: _____
Name:
Title:

N.V. ORGANON

By: _____
Narne:
Title:

DR. MAURITS GEERLINGS, JR.

/s/ Maurits Geerlings, Jr.

The Purchasers of Series F Preferred Shares, to be set forth on Schedule A to this Agreement, have executed a Subscription Agreement with the Company which provides, among other things, that by executing the Subscription Agreement each Purchaser is deemed to have executed the AMENDED AND RESTATED STOCKHOLDERS AGREEMENT in all respects.

SCHEDULE A

SCHEDULE OF PURCHASERS

Initial Closing (October 5, 2011)

Name of Purchaser	Series E Shares	Warrants
Baker, Adam	191,570	47,892
Barber, Michael K. and Julia K (JTWROS)	114,942	28,735
Beam, George B.	38,314	9,578
Blank, Robert N.	95,785	23,946
Brawley, William Wade	95,785	23,946
Byer, Scott	95,785	23,946
Carroll, Michael and Sheila (JTWROS)	670,496	167,623
Chambers, Michael R.	95,785	23,946
Conan, Roger	191,570	47,892
Craig, Ron D.	383,141	95,785
Davis, Frank	95,785	23,946
Dunn, Robert	383,141	95,785
Duty, Clint N.	191,570	47,892
Eckert, Douglas E.	95,785	23,946
Elefther, George IRA (Stern, Agee & Leach Inc C/F)	471,263	117,815
Engdall, Michael and Susan	191,570	47,892
Fischgrund, Stephen	57,471	14,367
Fox, L. Dean	766,282	191,570
Hanks, Bryan J. and Michelle B. (JTWROS)	95,785	23,946
Hasley, Jimmy R. IRA	335,248	83,811
Hasty, Benjamin	114,942	28,735
Herweck, Richard L.	38,314	9,578
Johnston, Christopher M.	95,785	23,946
Johnston, Timothy P.	181,991	45,497
Konetzni, Albert H., Jr. and Shirley A. (JTWROS)	95,785	23,946
Krauch, Robert H.	766,282	191,570
Kuhar, David A.	57,471	14,367
Laflash, Harold 0. and Greta G. (JTWROS)	95,785	23,946
Larsen, Kenneth N. Trust U/A/D 9/25/09, Kenneth	191,570	47,892

N. Larsen Trustee		
Laskowski, Jan J. and Sofia M. (JTWROS)	191,570	47,892
Lees, James W.	95,785	23,946
Lemaster, Timothy E.	210,727	52,681
Levine, Richard	1,149,423	287,355
Magolske, Charles J.	38,314	9,578
McCarthy, Kevin P.	191,570	47,892
Miller, Brian IRA (Robert W. Baird & Co., Inc. TTEE, FBO Brian Miller IRA Acct # 6144 2867)	383,141	95,785
Muckenhin, Carl F.	95,785	23,946
Murray, Ian H.	383,141	95,785
O'Brien, Denis	1,915,800	478,948
Oppito, Joseph T.	57,471	14,367
Paull, Burton Mark	191,570	47,892
Pellegrini, Timothy J. and Catherine A. (JTWROS)	95,785	23,946
Pimpinella, John and Mueller, Bernadette (jtwros)	38,314	9,578
Reed, Clayton A. and Stephanie S.	95,785	23,946
Reid, Matthew	191,570	47,892
Richardson, Earl R.	287,355	71,838
Rinker, Timothy J.	95,785	23,946
Rosen, Marvin S.	103,448	25,861
Scheck, Dianne M.	383,141	95,785
Soicher, Ronald	134,099	33,524
Smith, Sharon M.	38,314	9,578
Sommer, John L. IRA (Sterne, Agee & Leach Inc. C/F)	574,711	143,677
Stapell, Robert T.	95,785	23,946
Turner, Michael L.	76,628	19,157
Valka, William A. and Barbara B. (JTWROS)	95,785	23,946
Washauer, Gary A.	95,785	23,946
Weidner, Charles L. and Weidner, Alice N. Barnett, TTEE fbo The Weidner Family Revocable Trust dtd 8/13/07	383,141	95,785
Whitley, Michael E.	95,785	23,946

Wieghaus, Timothy	95,785	23,946
Wikel, Daniel P.	191,570	47,892
Wilson, William, III and Wilson, Patricia White COTTEE of The Wilson Family Restated Living Trust UTA dtd 04/2004	383,141	95,785
Wimberly, James M.	95,785	23,946
Zaborowski, Peter J. and Tiffany B. (JTWROS)	383,141	95,785
Zar, Keith A.	191,570	47,892
Zelinski, George M.	383,141	95,785
Total Number of Purchasers: 65	**TOTAL:** 15,804,644	**TOTAL:** 3,951,131

First Subsequent Closing (October 31, 2011)

Name of Purchaser	Series E Shares	Warrants
Borbolla, Jorge	95,785	23,946
Cantwell, David	402,298	100,574
Chandler, Andrew	95,643	23,910
Eilers Jr., John W.	95,785	23,946
Matter, Dr. Richard and Anita (JTWROS)	95,785	23,946
Mendez, Eliana Cardenas and Roberto (JTWROS)	95,785	23,946
Park, Stephen and Tracy (JTWROS)	114,942	28,735
Stanley, Conor	306,436	76,608
Total Number of Purchasers: 8	**TOTAL:** 1,302,459	**TOTAL:** 325,611

Second Subsequent Closing (November 17, 2011)

Name of Purchaser	Series E Shares	Warrants
Craig, Ron D.	383,141	95,785
Hart, Michael M.	38,314	9,578
Sullivan, Brendan	19,157	4,789
Sullivan, Gregory F., MD and Gene M.	229,884	57,471
Variety Investments Limited	1,149,423	287,355
Total Number of Purchasers: 5	**TOTAL:** 1,819,919	**TOTAL:** 454,978

Third Subsequent Closing (November 30, 2011)

Name of Purchaser	Series E Shares	Warrants
Einstein, Christina G. IRA (Stern Agee & Leach Inc. C/F)	191,570	47,892
Ferriter, Dr. John M.	95,785	23,946
Jones, Rex. A.	766,282	191,570
Mehos, Christopher J.	191,570	47,892
Murray, Ian H.	172,413	43,103
Murray, Thomas and Lillian (JTWROS)	38,314	9,578
Stanley, Michael	114,942	28,735
Total Number of Purchasers: 7	**TOTAL:** 1,570,876	**TOTAL:** 392,716

Fourth Subsequent Closing (December 12, 2011)

Name of Purchaser	Series E Shares	Warrants
Cady, Roger K. IRA (Sterne Agee & Leach Inc. C/F Roger K. Cady RIO IRA)	191,570	47,892
Chaban, Bohdan	191,570	47,892
Duffy, John M.	38,314	9,578
Guscott, Simon C.	114,942	28,735
Jones, Brian E. and Peggy A. (JTWROS)	766,282	191,570
Kane, Timothy J. and Annette K. (JTWROS)	114,942	28,735
Poe, Steven W. and Judith L.	38,314	9,578
Poe, Tracy N.	191,570	47,892
Sullivan, Jared MD	38,314	9,578
Weidner (Charles L. Weidner TTEE & Alice N. Barrett Weidner TTEE FBO The Weidner Family Revocable Trust Dtd. 8/13/07)	287,355	71,838
Total Number of Purchasers: 10	**TOTAL:** 1,973,173	**TOTAL:** 493,288

Fifth Subsequent Closing (December 28, 2011)

Name of Purchaser	Series E Shares	Warrants
Herndon, Phillip Todd	287,355	71,838
Katz, Deborah L.	95,785	23,946
Klimitchek, Ken R.	191,570	47,892
LARK Enterprises, Ltd.	191,570	47,892
Lytle, Jon H. and Carrie M. (JTWROS)	191,570	47,892
Minta Group LLC	95,785	23,946
Tomlinson, Sandra F.	76,628	19,157
Welsh, John H. IRA (Sterne Agee & Leach Inc. C/F John H. Welsh Roth IRA)	95,785	23,946
Total Number of Purchasers: 8	**TOTAL:** 1,226,048	**TOTAL:** 306,509

Sixth Subsequent Closing (January 31, 2012)

Name of Purchaser	Series E Shares	Warrants
Conan, Roger	95,785	23,946
D'Amato, Anthony	76,628	19,157
Duffy, John M.	38,314	9,578
Ganse, Charles W.	95,785	23,946
Harvest Financial Services Ltd. as Qualifying Fund Manager of the Chris McHugh ARF	479,119	119,779
Holroyd, Douglas R. & Jill K.	153,256	38,314
Levine, Richard	766,282	191,570
McHugh, Chris	536,397	134,099
Plaschika, Gerhard	38,314	9,578
Poe, Tracy (Sterne Agee & Leach Inc. C/F Tracy N. Poe R/O IRA)	114,942	28,735
Rajan, Srinivasa	19,157	4,789
Ray Sinnott Pension Fund	49,808	12,452
Ray Sinnott	57,375	14,343
Sullivan, Brendan	38,314	9,578
Sterne Agee & Leach Inc. C/F Gregory F. Sullivan II IRA	19,157	4,789
Syntec Scientific Ltd. by Ray	191,474	47,868

Sinnott		
Sterne Agee & Leach Inc. CT JB Trahern Bene Owner Ann Trahern DCSD IRA	100,766	25,191
Ziaks, Lance and Jannet	38,314	9,578
Total Number of Purchasers: 18	**TOTAL:** 2,909,187	**TOTAL:** 727,290

EXHIBIT A1

ACKNOWLEDGMENT AND AGREEMENT

The undersigned wishes to receive from _____ ("Transferor") _____ shares, par value **$[insert number]** per share, of [Common Stock] [Preferred Stock] or certain options, warrants or other rights to purchase shares of [Common Stock] [Preferred Stock] (the "Shares") of Actinium Pharmaceuticals, Inc., a Delaware corporation (the "Company");

The Shares are subject to the Amended and Restated Stockholders Agreement, dated] (the "Agreement"), among the Company and the other parties listed on the signature pages thereto;

The undersigned has been given a copy of the Agreement and afforded ample opportunity to read and to have counsel review it, and the undersigned is thoroughly familiar with its terms;

Pursuant to the terms of the Agreement, the Transferor is prohibited from Transferring such Shares and the Company is prohibited from registering the Transfer of the Shares unless and until a Transfer is made in accordance with the terms and conditions of the Agreement and the recipient of such Shares acknowledges the terms and conditions of the Agreement and agrees to be bound thereby; and

The undersigned wishes to receive such Shares and have the Company register the Transfer of such Shares.

[1]For Transfers of previously issued stock.

In consideration of the mutual promises contained herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and to induce the Transferor to Transfer such Shares to the undersigned and the Company to register such Transfer, the undersigned does hereby acknowledge and agree that (i) he[/she] has been given a copy of the Agreement and afforded ample opportunity to read and to have counsel review it, and the undersigned is thoroughly familiar with its terms, (ii) the Shares are subject to the terms and conditions set forth in the Agreement, and (iii) the undersigned does hereby agree fully to be bound thereby as a "Stockholder" and as [SELECT AS APPROPRIATE] [an "Investorl [an "Eligible Investor"] [a "Major Stockholder"] (as therein defined).

This _____ day of _____, 20 __.

_____

EXHIBIT B [1/]

ACKNOWLEDGMENT AND AGREEMENT

The undersigned wishes to receive from Actinium Pharmaceuticals, Inc., a Delaware corporation (the "Company"), _____ shares, par value **$[insert number]** per share, of [Common Stock] [Preferred Stock], or certain newly issued options, warrants or other rights to purchase _____ shares of [Common Stock] [Preferred Stock] (the "Shares"), of the Company;

The Shares are subject to the Amended and Restated Stockholders Agreement, dated [ ] (the "Agreement"), among the Company and the other parties listed on the signature pages thereto;

The undersigned has been given a copy of the Agreement and afforded ample opportunity to read and to have counsel review it, and the undersigned is thoroughly familiar with its terms;

Pursuant to the terms of the Agreement, the Company is prohibited from issuing the Shares unless and until a Transfer is made in accordance with the terms and conditions of the Agreement and the recipient of such Shares acknowledges the terms and conditions of the Agreement and agrees to be bound thereby; and

The undersigned wishes to receive such Shares.

1/ For newly issued stock.

In consideration of the mutual promises contained herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and to induce the Company to issue such Shares, the undersigned does hereby acknowledge and agree that (i) he[/she] has been given a copy of the Agreement and afforded ample opportunity to read and to have counsel review it, and the undersigned is thoroughly familiar with its terms, (ii) the Shares are subject to terms and conditions set forth in the Agreement, and (iii) the undersigned does hereby agree fully to be bound thereby as a "Stockholder".

This _____ day of _____, 20 __.

TABLE OF CONTENTS

Exhibit 10.4

SECOND AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

BY AND AMONG

ACTINIUM PHARMACEUTICALS, INC.

ACTINIUM HOLDINGS LIMITED

AND

THE INVESTORS PARTY HERETO

October 5, 2011

SECOND AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

THIS SECOND AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT (the ***"Agreement")*** is entered into as of October 5, 2011, by and among Actinium Pharmaceuticals, Inc., a Delaware corporation (the ***"Company"),*** Actinium Holdings Limited (formerly named General Atlantic Investments Limited"), a Bermuda corporation ***("AHL"),*** and the persons identified on Exhibit A hereto (together with AHL, the ***"Investors").***

BACKGROUND

WHEREAS, the Company, Actinium Pharmaceuticals, Ltd., a Bermuda corporation ***("Actinium Bermuda"),*** APL and N.V. Organon, a Netherlands corporation ***("Organon"),*** entered into an Investor Rights Agreement dated as of October 24, 2006 (the ***"Original Investor Rights Agreement");***

WHEREAS, on July 5, 2007, Actinium Bermuda merged with and into the Company, thereby causing the Company to succeed to all of the rights and obligations of Actinium Bermuda under the Original Investor Rights Agreement;

WHEREAS, upon the initial closing of the Company's Series D Preferred financing on March 8, 2008, the Company, AHL and Organon entered into an Amended and Restated Investor Rights Agreement (the ***"First Amended Investor Rights Agreement")*** which amended, restated and replaced in its entirety the Original Investor Rights Agreement;

WHEREAS, the Investors are purchasing or otherwise acquiring shares of the Company's Series E Preferred Stock, par value $0.01 per share pursuant to that certain Series E Preferred Stock Purchase Agreement (the ***"Purchase Agreement"),*** dated as of the date hereof, by and among the Investors and the Company;

WHEREAS, as a condition of entering into the Purchase Agreement, the Investors have requested that the Company agree to amend and restate in its entirety the First Amended Investor Rights Agreement to read as set forth in this Agreement; and

WHEREAS, AHL constitutes the sole holder of the Series D Preferred Shares (as defined in the Existing Investor Rights Agreement) and, therefore, the Company and AHL have the power and right to amend the First Amended Investor Rights Agreement pursuant to Section 4.6 thereof.

NOW, THEREFORE, in consideration of the mutual promises, representations, warranties, covenants and conditions set forth in this Agreement and in the Purchase Agreement, the parties, intending to be legally bound, mutually agree as follows:

Section 1 GENERAL

1.1 Definitions. As used in this Agreement the following terms shall have the following respective meanings:

"Affiliate" means, with respect to any Person, any other Person who is an "affiliate" of such Person within the meaning of Rule 12b-2 of the General Rules and Regulations under the Exchange Act.

"Board" means the Board of Directors of the Company.

"Certificate" means the Company's Fourth Amended and Restated Certificate of Incorporation, as such may be amended from time to time in accordance with the provisions thereof.

"Charter Documents" means the Certificate and the Bylaws of the Company as in effect on the date hereof, and as may be amended from time to time in accordance with the provisions thereof.

"Common Stock" means the shares of the Common Stock, $0.01 par value per share, of the Company.

"Counterpart" means a counterpart signature page to this Agreement in substantially the same form as Exhibit B attached to this Agreement.

"Exchange Act" means the Securities Exchange Act of 1934, as amended, and any rules or regulations promulgated thereunder, all as the same is in effect from time to time.

"Form S-3" means such form under the Securities Act as in effect on the date hereof or any successor form under the Securities Act that permits significant incorporation by reference of the Company's subsequent public filings under the Exchange Act

"Holder" means any Investor owning of record any Preferred Stock and any assignee of record of such Preferred Stock of the Company.

"Indemnifiable Losses" means shall mean all losses, liabilities, obligations, claims, demands, damages, penalties, settlements, causes of action, costs and expenses, including, without limitation, the actual reasonable costs paid in connection with an Indemnitee's investigation and evaluation of any claim or right asserted against such Indemnitee Party and all reasonable attorneys', experts' and accountants' fees, expenses and disbursements and court costs including, without limitation, those incurred in connection with the Indemnitee's enforcement of this Agreement and the indemnification provisions of Section 7 of this Agreement

"IPO" means the Company's sale of its Common Stock its first underwritten public offering of its Common Stock registered under the Securities Act (as defined below) in connection with which all the then-outstanding shares of Preferred Stock are converted into shares of Common Stock pursuant to the Company's Certificate of Incorporation, as it may be amended from time to time.

"Major Holder" means (a) AHL, (b) any Holder in the aggregate of at least 500,000 shares of (i) Series B Preferred Stock, (ii) Series D Preferred Stock, or (iii) Series B Preferred Stock and Series D Preferred Stock, and (c) any Holder of at least 100,000 shares of Series E Preferred Stock

The number of shares of ***"Registrable Securities then outstanding"*** shall be determined by the number of shares of Common Stock of the Company outstanding which are Registrable Securities plus the number of shares of Common stock of the Company issuable pursuant to then exercisable, convertible or exchangeable securities which are Registrable Securities

"Person" means any natural person, corporation, general partnership, limited partnership, limited liability partnership, limited liability company, proprietorship, joint venture, trust, association, union, entity or other form of business organization or any governmental or regulatory authority whatsoever.

"Preferred Stock" means shares of the Company's Series A Preferred Stock, Series B Preferred Stock, Series C-1, C-2, C-3 and C-4 Preferred Stock, Series D Preferred Stock and Series E Preferred Stock collectively.

"Qualified Initial Public Offering" means the closing of the Company's initial direct public offering or underwritten public offering on a firm commitment basis pursuant to an effective registration statement filed pursuant to the Securities Act, covering the offer and sale of the Company's Common Stock for the account of the Company (a) in which (i) the Company actually receives gross proceeds equal to or greater than $5,000,000, calculated before deducting underwriters' discounts and commissions and other offering expenses, and (ii) a per share offering price equal to or greater than the product of (A) the Applicable Per Share Stated Value, as such term is defined in the Certificate, of the Series E Preferred Stock, multiplied by (B) two (2), and (b) following which the Company's Common Stock is listed on a national securities exchange or approved for quotation on the Nasdaq National Market.

"Register," "registered" and ***"registration"*** refer to a registration effected by preparing and filing a registration statement in compliance with the Securities Act, and the declaration or ordering of the effectiveness of such registration statement.

"Registrable Securities" means the following shares of the Company's Common Stock (referred to herein collectively as the "Stock"): (i) the shares of Common Stock of the Company issued or issuable upon conversion of shares of the Series A Preferred Stock, the Series B Preferred Stock, the Series C-1 Preferred Stock, the Series C-2 Preferred Stock, the Series C-3 Preferred Stock, the Series C-4 Preferred Stock, Series D Preferred Stock and/or the Series E Preferred Stock of the Company issued and outstanding as of the date of this Agreement, and (ii) the shares of Common Stock issued or issuable upon exercise of the Warrants issued pursuant to the Purchase Agreement, but shall not include shares for which registration rights have terminated pursuant to Section 10.6 hereof, or (iii) any other shares of the Company's Common Stock issued as (or issuable upon conversion or exercise of any warrant, right or other security which is issued as) a dividend or other distribution with respect to or in exchange for or replacement of any existing series of the Company's Preferred Stock of the Company, excluding in all cases, however, any Registrable Securities sold by a person in a transaction in which an Investor's rights under this Agreement are not assigned; provided, however, that Registrable Securities shall not include any securities (A) sold to or through a broker or dealer or underwriter in a public distribution or a public securities transaction, (B) sold in a transaction exempt from the registration and prospectus delivery requirements of the Securities Act under Section 4(1) thereof so that all transfer restrictions and restrictive legends with respect thereto are removed upon the consummation of such sale, or (C) if the Investor thereof is no longer entitled to exercise any right provided in Sections 2, 3 or 4 in accordance with Section 10.6 hereof.

"SEC" or ***"Commission"*** means the Securities and Exchange Commission.

"Securities Act" means the Securities Act of 1933, as amended, and any rules or regulations promulgated thereunder, all as the same is in effect from time to time.

"Series A Preferred Stock" means the Company's Series A Preferred Stock, par value $0.01 per share.

"Series B Preferred Stock" means the Company's Series B Preferred Stock, par value $0.01 per share.

"Series C Preferred Stock" means any series of the Company's Series C-1 Preferred Stock, par value $0.01 per share, Series C-2 Preferred Stock, par value $0.01 per share, Series C-3 Preferred Stock, par value $0.01 per share, and Series C-4 Preferred Stock, par value $0.01 per share, collectively.

"Series D Preferred Stock" means the Company's Series D Preferred Stock, par value $0.01 per share.

"Series E Directors" means those certain directors elected to the Board by the holders of the Series E Preferred Shares.

"Series E Preferred Stock" means the Company's Series E Preferred Stock, par value $0.01 per share.

"Series E Preferred Shares" means any shares of Series E Preferred Stock issued to and held by the Holders and their permitted assigns.

"Subsidiaries" means any Person of which a Company, directly or indirectly, through one or more intermediaries owns or controls at the time at least fifty percent (50%) of the outstanding voting equity or similar interests or the right to receive at least fifty percent (50%) of the profits or earnings or aggregate equity value.

"Transaction Documents" has the meaning ascribed to it in the Purchase Agreement.

Section 2 PIGGYBACK RIGHTS

2.1. Notice of Registration. If at any time or from time to time, the Company shall determine to register any of its equity securities for its own account in a direct public offering or an underwritten public offering, the Company will:

(i) prior to the filing of such registration give to the Holders written notice thereof; and

(ii) include in such registration (and any related qualification under blue sky laws or other compliance), and underwriting, all the Registrable Securities (subject to cutback as set forth in Section 2.2) specified in a written request or requests made within thirty (30) days after receipt of such written notice from the Company by any Holder.

2.2. Underwriting. The right of any Holder to registration pursuant to this Section 2 shall be conditioned upon such Holder's participation in such offering and the inclusion of Registrable Securities in the offering to the extent provided herein. If any Holder proposes to distribute its securities through an underwritten offering, such Holder shall (together with the Company and any other stockholders distributing their securities through such underwriting) enter into an underwriting agreement in customary form with the underwriter or underwriters selected for such underwriting by the Company. Notwithstanding any other provision of this Section 2, if the Company or the managing underwriter determines that marketing factors require a limitation of the number of shares to be underwritten, the managing underwriter may limit the Registrable Securities to be included in such registration. The Company shall so advise the Holders and the other stockholders distributing their securities through such offering pursuant to piggyback registration rights , and the number of shares of Registrable Securities and other securities that may be included in the registration and underwriting shall be allocated among the Holders (i) of Series E Preferred Shares, and (ii) only after all Series E Preferred Shares have been registered, among the Holders of Series D Preferred Shares, Series C Preferred Shares, Series B Preferred Shares and Series A Preferred Shares and any other participating stockholders in proportion, in each case as nearly as practicable, to the respective amounts of Registrable Securities held by such Holders and other securities held by other stockholders at the time of filing the registration statement, provided that the aggregate amount of Registrable Securities held by selling Holders included in the offering shall not be reduced below thirty percent (30%) of the total amount of securities included in that offering unless the offering is the IPO of the Company's securities, in which case all Registrable Securities held by Holders may be excluded. In the event the Company or the managing underwriter does determine that marketing factors require a limitation of the number of shares to be underwritten (the "Cutback"), such Cutback shall be applied first to reduce, pro rata, Holders of Series A Preferred Shares, Series B Preferred Shares, Series C Preferred Shares, and Series D Preferred Shares before it shall be applied pro rata to Holders of Series E Preferred Shares, subject to the above mentioned thirty percent (30%) reduction limit, if at all. To facilitate the allocation of shares in accordance with the above provisions, the Company or the underwriters may round the number of shares allocated to each Holder or other stockholder to the nearest 100 shares. If any Holder or other stockholder disapproves of the terms of any such underwriting, he or she may elect to withdraw therefrom by written notice to the Company and the managing underwriter, Any securities excluded or withdrawn from such offering shall be withdrawn from such registration, and shall not be transferred in a public distribution prior to one-hundred eighty (180) days after the effective date of the registration statement relating thereto.

2.3. Right to Terminate Registration. The Company shall have the right to terminate or withdraw any registration initiated by it under this Section 2 prior to the effectiveness of such registration, whether or not any Holder has elected to include securities in such registration.

Section 3 DEMAND REGISTRATION

3.1. Demand Registration. If at any time after the earlier of (i) the third anniversary of the date hereof, or (ii) three (3) months after the Company's Common Stock becomes publicly traded (whether through a Qualified Initial Public Offering, a Pubco Transaction (as defined below) or otherwise, (the "Start Date")) , whichever is earlier, Holders of at least thirty-five percent (35%) of the Registrable Securities then outstanding request in writing that the Company file a registration statement under the Securities Act covering the registration of at least 20% of the then outstanding Registrable Securities, or a lesser percentage if the anticipated aggregate offering price, net of underwriting discounts and commissions, would exceed $10,000,000, then the Company will (i) give written notice of the proposed registration to all other Holders within 10 days of receipt of such request, and (ii) use its best efforts to cause such shares to be registered (together with any Registrable Securities of any Holder or Holders joining in such request as are specified in a written request received by the Company) within twenty (20) days of the mailing of such written notice by the Company; provided, however, that (a) the Company shall not be required to effect any such registration (i) within one-hundred eighty (180) days prior to the filing of, and one-hundred eighty (180) days following the effective date of, a registration statement pertaining to a direct or underwritten public offering of the Company's securities in which Registrable Securities were or will be registered; provided that the Company is actively employing in good faith all reasonable efforts to cause such registration statement to become effective, (ii) if, within thirty (30) days of receipt of the written request from the Holders pursuant to this Section 3.1, the Company gives notice to the Holders of the Company's intention to make a public offering within sixty (60) days or (iii) if the Holders making the request propose to dispose of shares of Registrable Securities that may be immediately registered on Form S-3 pursuant to a request made pursuant to Section 4 below, (b) if the Company furnishes the requesting Holders with a certificate of the President of the Company stating that in the good faith judgment of the Board of Directors it would be materially detrimental to the Company and its stockholders for a registration statement to be filed in the near future, such registration obligation shall be deferred for not more than ninety (90) days, but the Company shall not be entitled to such deferral more than once in any 12-month period and (c) the Company shall not be obligated to effect more than a total of two (2) demand registrations pursuant to this Section 3, and (d) the Company shall not be required to effect a registration in any particular jurisdiction in which the Company would be required to execute a general consent to service of process in effecting such registration, unless the Company is already subject to service in such jurisdiction and except as may be required under the Act. Any such registration shall be firmly underwritten by an underwriter of nationally recognized standing which shall be mutually agreeable to the Company and a majority in interest of the Holders requesting the registration. If any Holder disapproves of the terms of the underwriting, such person may elect to withdraw therefrom by written notice to the Company, the managing underwriter and the Holders making the request. The Registrable Securities so withdrawn shall also be withdrawn from registration, and such Registrable Securities shall not be transferred in a public distribution prior to ninety (90) days after the effective date of such registration; provided, however, that, if by the withdrawal of such Registrable Securities, a greater number of Registrable Securities held by other Holders may be included in such registration (up to the maximum of any limitation imposed by the underwriters), then the Company shall offer to all Holders who have included Registrable Securities in the registration the right to include additional Registrable Securities. Holders shall be so entitled to include additional Registrable Securities in the registration upon written notice within 10 days of such offer being made.

3.2. Underwritten Public Offering. In the event the Company offers its equity securities in an underwritten offering, the Company shall enter into an underwriting agreement with an investment banking firm or firms containing representations, warranties, indemnities and agreements then customarily included by an issuer in underwriting agreements with respect to secondary distributions. The Company shall not cause the registration under the Securities Act of any other shares of its Common Stock to become effective (other than registration of an employee stock plan, or registration in connection with any Rule 145 or similar transaction) during the effectiveness of a registration requested hereunder for an underwritten public offering if, in the judgment of the underwriter or underwriters, marketing factors would materially adversely affect the price of the Registrable Securities subject to such underwritten registration.

Section 4 FORM S-3 REGISTRATION

Holders of at least thirty percent (30%) of the Registrable Securities shall be entitled to request in writing (each, an "S-3 Registration Request") registrations of Registrable Securities then owned by such requesting Holders on a Form S-3 registration statement or any successor form under the Securities Act (an "S-3 Registration"). The Company shall pay for the expenses of such request as provided in Section 6. The S-3 Registration Request must be made in writing, and the S-3 Registration Request shall: (i) specify the number of shares intended to be offered and sold; (ii) express the present intention of the requesting Holders to offer or cause the offering of such shares for distribution; and (iii) contain the undertaking of the requesting Holders to provide all such information and materials and take all such action as may be required in order to permit the Company to comply with all applicable requirements of the SEC and to obtain any desired acceleration of the effective date of such registration statement. The Company shall, as soon as practicable, (a) promptly give written notice of the proposed registration to all other Holders, and (b) tile an S-3 Registration and obtain all such qualifications and compliance as may be so requested and as would permit or facilitate the sale and distribution of all or such portion of the requesting Holders' Registrable Securities as are specified in the S-3 Registration Request (together with any Registrable Securities of any Holder or Holders joining in such request as are specified in a written request received by the Company within twenty (20) days after receipt of such written notice from the Company), within 15 days after receipt of such written notice by the Company; provided, however, that the Company shall not be obligated to effect any such registration, qualification or compliance, pursuant to this Section 4: (i) if Form S-3 is not available for such offering by the requesting Holders; (ii) the requesting Holders, together with the holders of any other securities of the Company entitled to inclusion in such registration, propose to sell Registrable Securities and such other securities (if any) at an aggregate gross price to the public of less than $1,000,000; (iii) if within thirty (30) days of receipt of a written request from the requesting Holders, the Company gives notice to the Holders of the Company's intention to make its IPO or a public offering within sixty (60) days; (iv) if the Company furnishes the requesting Holders with a certificate of the President, Chief Executive Officer or Chairman of the Board of the Company stating that in the good faith judgment of the Board of Directors it would be seriously detrimental to the Company and its stockholders for a registration statement to be filed in the near future, such registration obligation shall be deferred for not more than ninety (90) days, but the Company shall not be entitled to such deferral more than once in any 12-month period, (iv) if in any particular jurisdiction in which the Company would be required to qualify to do business or to execute a general consent to service or process in effecting such registration, qualification or compliance; or (v) the Company has, within the twelve (12) month period preceding the date of such request, already effected two registrations on Form S-3 for any Holder pursuant to this Section 4.

Section 5 OBLIGATIONS OF COMPANY

Whenever the Company is required by the provisions of this Agreement to effect the registration of the Registrable Securities, the Company shall: (i) prepare and, as soon as possible, file with the SEC a registration statement with respect to the Registrable Securities, and use its reasonable best efforts to cause such registration statement to become effective and, upon the request of the Holders of a majority of the Registrable Securities registered thereunder, to remain effective until the earlier of the completion of the distribution of the Registrable Securities so registered or one hundred twenty (120) days subsequent to the effective date of such registration; (ii) prepare and file with the SEC such amendments and supplements to such registration statement and the prospectus used in connection therewith as may be necessary to make and to keep such registration statement effective and to comply with the provisions of the Securities Act with respect to the sale or other disposition of all securities proposed to be registered in such registration statement for the period covered under clause (i) above; (iii) furnish to any Holder such number of copies of any prospectus (including any preliminary prospectus and any amended or supplemented prospectus), in conformity with the requirements of the Securities Act, as such Holder may reasonably request in order to effect the offering and sale of the Registrable Securities to be offered and sold; (iv) use its best efforts to register or qualify the Registrable Securities covered by such registration statement under the securities or blue sky laws of such states as the Holders shall reasonably request, maintain any such registration or qualification current for the period covered under clause (i) above, and take any and all other actions either necessary or reasonably advisable to enable Holders to consummate the public sale or other disposition of the Registrable Securities in jurisdictions where such Holders desire to effect such sales or other disposition; (v) take all such other actions either necessary or reasonably desirable to permit the Registrable Securities held by a Holder to be registered and disposed of in accordance with the method of disposition described herein; (vi) in the event of any underwritten public offering, enter into and perform its obligations under an underwriting agreement, in usual and customary form, with the managing underwriter of such offering; (vii) notify each Holder of Registrable Securities covered by such registration statement at any time when a prospectus relating thereto is required to be delivered under the Securities Act of the happening of any event as a result of which the prospectus included in such registration statement, as then in effect, includes an untrue statement of a material fact or omits to state a material fact required to be stated therein or necessary to make the statements therein not misleading in the light of the circumstances then existing, such obligation to continue for 120 days from the date of effectiveness of the registration statement; (viii) cause all such Registrable Securities registered pursuant hereunder to be listed on each securities exchange on which similar securities issued by the Company are then listed; (ix) provide a transfer agent and registrar for all Registrable Securities registered pursuant hereunder and a CUSIP number for all such Registrable Securities, in each case not later than the effective date of such registration; and (x) use its best efforts to furnish, at the request of any Holder requesting registration of Registrable Securities pursuant to Section 3, if such securities are being sold through underwriters, or if such securities are not being sold through underwriters, on the date that the registration statement with respect to such securities becomes effective, (A) an opinion, dated such date as registration statement becomes effective, of the counsel representing the Company for the purposes of such registration, in form and substance as is customarily given to underwriters in an underwritten public offering, addressed to the underwriters and to the Holders requesting registration of Registrable Securities and (B) a letter dated such date as registration statement becomes effective, from the independent certified public accountants of the Company, in form and substance as is customarily given by independent certified public accountants to underwriters in an underwritten public offering and reasonably satisfactory to the Holders of a majority of the Registrable Securities being registered, addressed to the underwriters, if any, and to the Holders requesting registration of Registrable Securities. Notwithstanding the foregoing, the Company shall not be required to register or to qualify an offering of the Registrable Securities under the laws of a state if as a condition to so doing the Company is required to qualify to do business or to file a general consent to service of process in any such state or jurisdiction, unless the Company is already subject to service in such jurisdiction.

Subject to the volume limitations and other underwriting conditions set forth in Sections 2.2 and 3.1, above, in the event a registration statement is not filed with the SEC including all the Registrable Securities no later than ninety (90) days after the Start Date (as defined in Section 3 above) or if such registration statement is not declared effective by the SEC within 180 days following the Start Date (or is declared effective but can no longer be used to sell Registrable Securities), the Company shall pay to each Holder of Registrable Securities one (1%) percent of such Holder's purchase price of that holder's unregistered Registrable Securities for each thirty (30) days (pro rata for shorter periods) until such registration statement is filed with the SEC and/or declared effective or is able to be reused by the holders of Registrable Securities, or such Holder is able to sell its shares, pursuant to Rule 144 or otherwise, as the case may be.

SECTION 6 EXPENSES OF REGISTRATION

The Company shall pay all of the fees and expenses (exclusive of underwriting discounts and commission and stock transfer taxes) incurred by the Company in complying with Sections 2, 3, 4 and 5 hereof in connection with any registration statement that is initiated pursuant to this Agreement, including, without limitation, all SEC and blue sky registration and filing fees, printing expenses, transfer agent and registrar fees, the fees and disbursements of the Company's outside counsel, the reasonable fees and disbursements of one special counsel to the Holders (not to exceed $20,000), and the expense of any special audits not to exceed twenty thousand dollars ($20,000) incident to or required by any such registration (the "Registration Expenses"). If a registration proceeding is begun upon the request of Holders pursuant to Sections 3 or 4 but such request is subsequently withdrawn, then the Holders of Registrable Securities to have been registered may either: (i) bear all Registration Expenses of such proceeding, pro rata on the basis of the number of shares to have been registered, in which case the Company shall be deemed not to have effected a registration pursuant to Sections 3 or 4, as applicable, of this Agreement; or (ii) require the Company to bear all Registration Expenses of such proceeding, in which case the Company shall be deemed to have effected a registration pursuant to Section 3 or 4, as applicable, of this Agreement. Notwithstanding the foregoing, however, if at the time of the withdrawal, the Holders have learned of a material adverse change in the condition, business or prospects of the Company from that known to the Holders at the time of their request, then the Holders shall not be required to pay any of said Registration Expenses. In such case, the Company shall be deemed not to have effected a registration pursuant to Sections 3 or 4, as applicable, of this Agreement. Any underwriting discounts, fees and disbursements of any additional counsel to the Holders, selling commissions and stock transfer taxes applicable to the Registrable Securities registered on behalf of Holders shall be borne by the Holders of the Registrable Securities included in such registration. The expenses of any legal services or special audit required in connection with any registration, qualification or compliance pursuant to Section 3 or 4 in excess of twenty thousand dollars ($20,000) shall be borne pro rata by the Holders of Registrable Securities proposing to distribute such shares of Registrable Securities in such registration.

SECTION 7 INDEMNIFICATION

7.1. The Company. To the extent permitted by law, the Company will indemnify Holders and each person controlling Holders within the meaning of Section 15 of the Securities Act, and each underwriter if any, of the Company's securities, with respect to any registration, qualification or compliance which has been effected pursuant to this Agreement, against all expenses, claims, losses, damages or liabilities (or actions in respect thereof), including any of the foregoing incurred in settlement of any litigation, commenced or threatened, arising out of or based on any untrue statement (or alleged untrue statement) of a material fact contained in any registration statement, prospectus, offering circular or other document, or any amendment or supplement thereto, incident to any such registration, qualification or compliance, or based on any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading, or any violation by the Company of any rule or regulation promulgated under the Securities Act or Exchange Act or state securities law applicable to the Company in connection with any such registration, qualification or compliance, and the Company will reimburse Holders and each person controlling Holders, and each underwriter, if any, for any legal and any other expenses reasonably incurred in connection with investigating, preparing or defending any such claim, loss, damage, liability or action, provided that the Company will not be liable in any such case to the extent that any such claim, loss, damage, liability or expense arises out of or is based on any untrue statement or omission or alleged untrue statement or omission, made in reliance upon and in conformity with written information expressly furnished to the Company by such Holder or controlling person or underwriter seeking indemnification for use in connection with such registration by any such Holder, underwriter or controlling person.

7.2. Holders. To the extent permitted by law, each Holder shall, if Registrable Securities held by such Holder are included in the securities as to which such registration, qualification or compliance is being effected (the "Indemnifying Holder"), indemnify the Company, each of its directors and officers and each person who controls the Company within the meaning of Section 15 of the Securities Act, and each underwriter, if any, of the Company's securities with respect to any registration, qualification or compliance which has been effected pursuant to this Agreement, against all expenses, claims, losses, damages and liabilities (or actions in respect thereof), arising out of or based on any untrue statement (or alleged untrue statement) of a material fact contained in any such registration statement, prospectus, offering circular or other document, or any amendment or supplement thereto, incident to any such registration, qualification or compliance, or based on any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, or any violation by such Indemnifying Holder of any rule or regulation promulgated under the Securities Act applicable to such Indemnifying Holder in connection with any such registration, qualification or compliance, and the Indemnifying Holder will reimburse the Company, such directors and officers and each person controlling Company and each underwriter, if any, for any legal or any other expenses reasonably incurred in connection with investigating, preparing or defending any such claim, loss, damage, liability or action, in each case to the extent, but only to the extent, that such untrue statement (or alleged untrue statement) or omission (or alleged omission) is made in such registration statement, prospectus, offering circular or other document, or any amendment or supplement thereto, incident to any such registration, qualification or compliance, in reliance upon and in conformity with written information furnished to the Company by such Indemnifying Holder, provided that in no event shall any indemnity under this Section 7.2 exceed the net proceeds of the offering received by such Indemnifying Holder; provided, further, that the indemnity agreement contained in this Section 7.2 shall not apply to amounts paid in settlement of any such loss, claim, damage, liability or action if such settlement is effected without the consent of the Indemnifying Holder (which consent shall not be unreasonably withheld); provided further, however, that the indemnity agreement contained in this Section 7.2 with respect to any preliminary prospectus shall not inure to the benefit of any Holder or underwriter, or any person controlling such Holder or underwriter, from whom the person asserting any such losses, claims, damages or liabilities purchased shares in the offering, if a copy of the prospectus (as then amended or supplemented if the Company shall have furnished any amendments or supplements thereto) was not sent or given by or on behalf of such Holder or underwriter to such person, if required by law so to have been delivered, at or prior to the written confirmation of the sale of the shares to such person, and if the prospectus (as so amended or supplemented) would have cured the defect giving rise to such loss, claim, damage or liability.

7.3. Defense of Claims. Each party entitled to indemnification under this Section 7 (the "Indemnified Party") shall give notice to the party required to provide indemnification (the "Indemnifying Party") promptly after such Indemnified Party has actual knowledge of any claim as to which indemnity may be sought, and shall permit the Indemnifying Party to assume the defense of any such claim or any litigation resulting therefrom, provided that counsel for the Indemnifying Party, who shall conduct the defense of such claim or litigation, shall be approved by the Indemnified Party (whose approval shall not unreasonably be withheld), and the Indemnified Party may participate in such defense at such party's expense; provided, however, that the Indemnifying Party shall pay such expense if representation of the Indemnified Party by counsel retained by the Indemnifying Party would be inappropriate due to actual or potential differing interests between the Indemnified Party and any other party represented by such counsel in such proceeding, and provided further that the failure of any Indemnified Party to give notice as provided herein shall not relieve the Indemnifying Party of its obligations under this Section 7 unless the failure to give such notice is materially prejudicial to an Indemnifying Party's ability to defend such action. No Indemnifying Party, in the defense of any such claim or litigation shall, except with the written consent of each Indemnified Party which consent shall not be unreasonably withheld, consent to entry of any judgment or enter into any settlement which does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party of a release from all liability in respect to such claim or litigation. No Indemnifying Party shall be required to indemnify any Indemnified Party with respect to any settlement entered into without the Indemnifying Party's prior written consent.

7.4. Contribution. If the indemnification provided for in this Section 7 is held by a court of competent jurisdiction to be unavailable to an Indemnified Party with respect to any losses, claims, damages or liabilities referred to herein, the Indemnifying Party, in lieu of indemnifying such Indemnified Party thereunder, shall to the extent permitted by applicable law contribute to the amount paid or payable by such Indemnified Party as a result of such loss, claim, damage or liability in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party on the one hand and of the Indemnified Party on the other, in connection with the violations that resulted in such loss, claim, damage or liability, as well as any other relevant equitable considerations. The relative fault of the Indemnifying Party and of the Indemnified Party shall be determined by a court of law by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission to state a material fact relates to information supplied by the Indemnifying Party or by the Indemnified Party and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission; provided, that in no event shall any contribution by a Holder exceed the net proceeds from the offering received by such Holder.

7.5. Conflict; Survival. Notwithstanding the foregoing, to the extent that the provisions on indemnification and contribution contained in the underwriting agreement entered into in connection with the underwritten public offering are in conflict with the foregoing provisions, the provisions in the underwriting agreement shall control. The obligations of the Company and Holders under Section 7 shall survive the completion of any offering of Registrable Securities in a registration statement.

SECTION 8 RULE 144 REPORTING

With a view to making available the benefits of certain rules and regulations of the SEC which may at any time permit the sale of the Registrable Securities to the public without registration, the Company agrees to:

(a) Make and keep public information available, as those terms are understood and defined in Rule 144 under the Securities Act, at all times from and after ninety (90) days following the effective date of the IPO;

(b) File with the SEC in a timely manner all reports and other documents required of the Company under the Securities Act and the Exchange Act at any time after it has become subject to such reporting requirements;

(c) So long as a Holder owns any Registrable Securities, furnish to such Holder forthwith upon request a written statement by the Company as to its compliance with the reporting requirements of said Rule 144 of the Securities Act (at any time from and after ninety (90) days following the effective date of the IPO) and of the Exchange Act (at any time after it has become subject to such reporting requirements), a copy of the most recent annual or quarterly report of the Company, and such other reports and documents of the Company, and such other reports and documents so filed as a Holder may reasonably request in availing itself of any rule or regulation of the SEC allowing such Holder to sell any such securities without registration; and

(d) Take such action, including the voluntary registration of its Common Stock under Section 12 of the Exchange Act, as is necessary to enable the Holders to utilize Form S-3 for the sale of their Registrable Securities, such action to be taken as soon as practicable after the end of the fiscal year in which the first registration statement filed by the Company for the offering of its securities to the general public is declared effective.

SECTION 9 STANDOFF AGREEMENT

Upon the effectiveness of any registration statement for the offering of equity securities of the Company, if requested by the Company and the managing underwriter, each Holder agrees not to offer to sell or sell, make any short sale of, loan, grant any option for the purchase of, or otherwise dispose of any securities of the Company held by the Holder at any time during such period (other than (i) those included in the offering or (ii) those unregistered shares of Series E Preferred Stock which are sold under Rule 144, if any), directly or indirectly, without the prior written consent of the Company or the underwriters for such period of time following the effective date of the registration statement(not to exceed one-hundred eighty (180) days) as may be requested by the Company and the managing underwriter, provided that the foregoing obligations shall apply only if all directors and executive officers of the Company and all other stockholders holding greater than one percent (1%) of the outstanding Registrable Securities of the Company, and all other persons with registration rights (whether or not pursuant to this Agreement), enter into similar agreements. This Section 9 shall not apply to a registration relating solely to employee benefit plans, or to a registration relating solely to a transaction pursuant to Rule 145 under the Securities Act. In order to enforce the foregoing, the Company may impose stop-transfer instructions with respect to the Registrable Securities of each Holder (and the share or securities of every other person subject to the foregoing restrictions) until the end of such period.

From and after the date of this Agreement, the Company shall not, without the prior written consent of at least a majority of the outstanding Registrable Securities (the "Required Vote"), grant to future investors any registration rights on parity with or more favorable than the registration rights granted to the Holders hereunder. Without limiting the foregoing, the Company shall not, without the prior written consent of the Holders of at least the Required Vote, allow future investors to make a demand registration which could result in such registration statement being declared effective prior to the earlier of either of the dates set forth in subsection 3.1 or within 120 days of the effective date of any registration effected pursuant to Section 3.

SECTION 10 COVENANTS OF THE COMPANY

10.1 Financial Information and Reporting.

(a) The Company and its Subsidiaries shall maintain accurate books and records of account in which complete entries shall be made pursuant to a system of accounting established and administered in accordance with generally accepted accounting principles consistently applied, and shall set aside on their books all such proper accruals and reserves as shall be required under generally accepted accounting principles consistently applied.

(e) As soon as practicable after the end of each fiscal year of the Company, and in any event within one hundred twenty (120) days thereafter, the Company shall furnish each Major Holder (other than a Major Holder reasonably deemed by the Board to be a competitor of the Company) a consolidated balance sheet of the Company and its Subsidiaries, as at the end of such fiscal year, and a consolidated statement of income and a consolidated statement of cash flows and changes in stockholders' equity of the Company and its Subsidiaries, for such year, all prepared in accordance with generally accepted accounting principles consistently applied and setting forth in each case in comparative form the figures for the previous fiscal year, all in reasonable detail (the ***"Audited Financial Statements").*** The Audited Financial Statements shall be accompanied by a report and opinion thereon by a firm of independent public accountants of national standing or such other independent public accounting firm approved by the Holders of a majority of the then outstanding Series E Preferred Shares and selected by the Board (the ***"Audit Report")*** and a certificate of the Chief Executive Officer (or principal operating officer) of the Company certifying that no information inconsistent with that set forth in the information in the Audited Financial Statements and the Audit Report has been filed with any governmental agency or given to the Company's or its Subsidiaries' lenders.

(f) The Company shall furnish to each Major Holder (other than a Major Holder reasonably deemed by the Board to be a competitor of the Company), as soon as practicable after the end of each quarterly accounting periods in each fiscal year of the Company and its Subsidiaries, and in any event within forty-five (45) days thereafter, an unaudited consolidated balance sheet of the Company and its Subsidiaries, and an unaudited consolidated statement of income and an unaudited consolidated statement of cash flows and changes in stockholders' equity of the Company and its Subsidiaries for such quarterly period, and for the current fiscal year to date, including a comparison of the current fiscal year to date to the Company's annual budget with any variances between such figures so listed and setting forth, in each case, comparable figures for the prior year, all prepared in accordance with generally accepted accounting principles and in reasonable detail, with the exception that no notes need be attached to such statements.

(g) The Company shall furnish to each Major Holder (other than a Major Holder reasonably deemed by the Board to be a competitor of the Company), concurrently with the Company's furnishing to the Board, but in no event later than thirty (30) days before the end of each fiscal year, an annual budget, including projected income, cash flow and balance sheet statements on at least a monthly basis for the ensuing fiscal year, and operating plans, including a brief qualitative description of the Company's plan by its Chief Executive Officer in support of the annual budget of the Company and its Subsidiaries for such fiscal year (the ***"Budget").*** In addition, the Company shall furnish concurrently with its furnishing to the Board, any proposed material revision to the Budget. The Budget and each proposed material revision to the Budget shall be deemed accepted as a Company's budget for such fiscal year only when it has been approved by a majority of the entire Board (which majority must include the Series E Directors).

(h) The Company shall furnish to each Major Holder (other than a Major Holder reasonably deemed by the Board to be a competitor of the Company), no later than five (5) days after an executive officer of the Company or its Subsidiaries, as the case may be, first has knowledge of any of the following: (i) the occurrence of a default hereunder, or under any material agreement of the Company or its Subsidiaries, including without limitation any loan or financing agreement, (ii) the commencement of any legal proceeding against the Company or any of its Subsidiaries, or (iii) the occurrence of any effect, event, condition, or circumstance, in any case, that individually or in the aggregate with any one or more other effects, events, conditions or circumstances, with or without the passage of time, the giving of notice or both, has had or could reasonably be expected to have a material and adverse effect on the business, properties, assets, financial condition, results of operations, prospects or liabilities of the Company or its Subsidiaries, a statement from the Company's Chief Executive Officer describing such occurrence and management's anticipated response.

(i) The Company shall furnish to each Major Holder (other than a Major Holder reasonably deemed by the Board to be a competitor of the Company), such other financial and other information of the Company and its Subsidiaries the Holders of a majority of the then outstanding Series E Preferred Shares may reasonably request pursuant to this Section 10.1Error! **Reference source not found.** in writing; provided, that the Company generates such information in the ordinary course of its business and the Company shall not be required to provide any information if and to the extent that such information would lose its privilege under the attorney-client privilege between the Company and its counsel as a result of such information being furnished to the Major Holders.

(j) The Company shall furnish to each Major Holder (other than a Major Holder reasonably deemed by the Board to be a competitor of the Company), concurrently with the Company's furnishing to the Board, but in no event later than five (5) business days after the date of filing or delivery, copies of all materials of whatsoever nature filed or delivered by the Company or its Subsidiaries thereof (i) with the Commission; (ii) with any national or foreign securities exchange or quotation bureau; and (iii) to holders of any class of its capital stock or other securities.

(k) The Company shall furnish to each Major Holder (other than a Major Holder reasonably deemed by the Board to be a competitor of the Company), concurrently with the Company's furnishing to the Board, but in no event later than five (5) business days after the date of delivery, any and all management letters provided by the Company's accountants to the Company.

(l) In the event the Company or any of its Subsidiaries fails to timely provide each Major Holder (other than a Major Holder reasonably deemed by the Board to be a competitor of the Company) with the reports and information required by this Section 10.1, the Holders of a majority of the then outstanding Series E Preferred Shares may, after thirty (30) days after providing written notice of such failure to the Company, during which period the Company shall have the opportunity to cure such deficiency, request that an independent accounting firm of such Holder's choice and as to which the Company has no reasonable objection audit the Company and its Subsidiaries, at the Company's expense, which audit shall be limited to the production of such reports in a manner satisfactory to the Holders of a majority of the then outstanding Series E Preferred Shares in their reasonable discretion. The Company and its Subsidiaries shall cooperate in good faith in any such audit.

10.2 Reservation of Common Stock.

The Company shall (and shall use its best efforts to cause its stockholders to) take any and all action necessary to reserve for issuance the number of shares of Common Stock into which all of the shares of Preferred Stock then outstanding are convertible, and shall (and shall use its best efforts to cause its stockholders to) increase the number of shares of Common Stock reserved for issuance as required by any increase in the number of shares of Common Stock into which the shares of Preferred Stock may then be converted.

10.3 Board of Directors.

The Company shall call, and shall use its best efforts to have, regular meetings of the Board not less often than once each quarter. The Board may conduct meetings by any means of communication by which all directors participating may simultaneously hear each other during the meeting. In the event a director's presence in person at a meeting is desirable or necessary, the Company shall pay all reasonable and appropriately documented travel expenses and other out-of-pocket expenses incurred by directors who are not employed by the Company in connection with attendance at such meeting of the Board or any committee thereof.

10.4 Negative Covenants.

For so long as at 500,000 shares of Series E Preferred Stock is outstanding, the Company shall not (and shall not cause or permit any of the Company's Subsidiaries to) take, directly or indirectly, any actions involving any of the matters specified in Section C.6 of Article IV of the Certificate without first obtaining the approval of the holders of at least 51% in voting power of the then outstanding Series E Preferred Stock voting as a single class (with each share of Series E Preferred Stock having a number of votes equal to the number of shares of Common Stock into which such share of Series E Preferred Stock is then convertible).

10.5 Real Property Holding Corporation.

The Company covenants that it will operate in a manner such that it will not become a "United States real property holding corporation" as that term is defined in Section 897(c)(2) of the Internal Revenue Code of 1986, as amended, and the regulations thereunder (a "USRPHC"). The Company agrees to make determinations as to its status as a USRPHC, and will file statements concerning those determinations with the Internal Revenue Service, in the manner and at the times required under Reg. § 1.897-2(h), or any supplementary or successor provision thereto. Within 30 days of a request from the Investors or any of their respective partners, the Company will inform the requesting party, in the manner set forth in Reg, § 1.897- 2(h)(1)(iv) or any supplementary or successor provision thereto, whether that party's interest in the Company constitutes a United States real property interest (within the meaning of Internal Revenue Code Section 897(c)(1) and the regulations thereunder) and whether the Company has provided to the Internal Revenue Service all required notices as to its USRPHC status.

10.6 Termination of Covenants.

Except for the covenants set forth in Section 10.2, 10.7, 10.8, 10.9 and 10.10**Error! Reference source not found.,** all covenants of the Company and its Subsidiaries contained in this Section 10 of this Agreement shall expire and terminate as to the Holders upon the first to occur of (a) the consummation of the Qualified Initial Public Offering or (b) the time at which the Company first becomes subject to the reporting provisions of the Exchange Act. Unless otherwise specified herein, the rights and provisions of this Agreement shall terminate as to all Holders on the fifth anniversary of the closing date of the Qualified Initial Public Offering.

10.7 Restrictive Agreements.

Neither the Company nor any of its Subsidiaries will, without the prior written approval of the holders of a majority of the then outstanding Series E Preferred Shares, enter into or become obligated under any agreement or contract (excluding sales agreements executed in the ordinary course of business) including, without limitation, any loan agreement, promissory note (or other evidence of indebtedness), mortgage, security agreement or lease, which by its terms prevents or restricts the Company or its Subsidiaries from performing its obligations under this Agreement.

10.8 Limitation on Subsequent Registration Rights.

After the date of this Agreement, the Company shall not, without the prior written consent of the Holders of a majority of the then outstanding Series E Preferred Shares enter into any agreement with any holder or prospective holder of any securities of the Company that would grant such holder any registration rights.

10.9 D&O Insurance.

The Company will maintain a Directors' and Officers' insurance policy on the Directors and Officers of the Company in an aggregate amount of at least Two Million Dollars ($2,000,000). The Company will provide a copy of the insurance certificate regarding the insurance described in this Section 10.9 to any Holder upon its request.

10.10 Indemnification.

The Company shall indemnify and hold harmless each Holder, each of their respective direct and indirect subsidiaries and Affiliates, and each of the respective partners, members, stockholders, equity holders, officers, directors, trustees and other fiduciaries, employees, agents, and representatives of any of the foregoing (collectively, referred to as the ***"Indemnitees"*** and individually as a ***"Indemnitee")*** from and against any and all Indemnifiable Losses resulting from, relating to or arising out of any claim or claims made against such Indemnitee in connection with any threatened, pending or completed action, suit, arbitration, investigation or other proceeding arising out of, or relating to the any Indemnitee's performance of its obligations or the exercise of any Indemnitee's rights in accordance with the terms of this Agreement, including actions taken in their capacity as directors or stockholders of the Company; provided, however, that the Company shall not be obligated to indemnify or hold harmless any Indemnitee under this Section 10.10 against any Indemnifiable Losses resulting from or arising out of any such action or claim if it has been adjudicated by a final and non-appealable determination of a court or other trier of fact of competent jurisdiction that such Indemnifiable Losses were the result of (a) a breach of such Indemnitee's fiduciary duty to the Company, (b) any action or omission made by the Indemnitee in bad faith, (c) any criminal action on the part of such Indemnitee or (d) such lndemnitee's willful misconduct.

The Company shall reimburse, promptly following request therefor, all reasonable expenses incurred by an Indemnitee in connection with any threatened, pending or completed action, suit, arbitration, investigation or other proceeding arising out of, or relating to, the Indemnitees' actions in connection with any transaction undertaken in connection with this Agreement.

10.11 Pubco Transaction

The Company will utilize its reasonable commercial efforts to undertake either (i) a reverse merger or similar transaction between the Company and a corporation whose shares of common stock are publicly traded in the United States or other mutually agreed jurisdiction ("Pubco"), or (ii) any filing with an applicable regulatory body which will result in the Company becoming an entity traded on a public exchange (the "Pubco Transaction"). The Pubco Transaction (unless mutually agreed upon by the Company and Laidlaw & Company (UK) Ltd. ("Laidlaw"), shall (a) be on a U.S. stock exchange, (b) have no less than the OTCQB, (c) be with an entity which must, among other criteria, (i) be fully reporting, (ii) have no material liabilities or contingent liabilities, (iii) be Depository Trust Company eligible, (iv) have no mature or unmatured rescission rights, (v) have not been late in any SEC filing for the last one (1) year, and (vi) be in good standing in its place of incorporation and on such other terms and conditions (including normal and customary due diligence) reasonably satisfactory to Laidlaw and Company no later than one year (twelve months) after the final Closing of the no less than $4,000,000 of gross proceeds from the sale of the Company's Series E Preferred Stock, and the receipt (for the purpose of financing the Company's transaction costs of the Pubco Transaction) of no less than $750,000 in convertible bridge financing simultaneous with or subsequent to such final Closing.

In the event that the Company does not fulfill its obligations as set forth in this Section 10.11 with respect to the Pubco Transaction or otherwise (itself or through a successor) become a public entity, then upon written demand of Laidlaw or holders of Series E Preferred Shares, the Company shall (i) issue to Laidlaw and the holders of Series E Preferred Shares warrants to purchase an additional number of shares of Common Stock of Company equal to 25% of the common share equivalents of the Series E Preferred Shares plus common stock warrants ("Warrants") issued at the Closings (as defined in the Purchase Agreement), on the same terms including the exercise price as the Warrants and (ii) increase the dividend rate on the Series E Preferred Stock to 8.75%. The parties agree that this additional warrant issuance and increased dividend by the Company shall be in full satisfaction of its obligations to Laidlaw and holders of Series E Preferred Shares with respect to such Pubco Transaction.

SECTION 11 COVENANTS OF THE HOLDERS

11.1 Confidentiality of Records.

Each Holder agrees that it will keep confidential and not disclose, divulge or use for any purpose other than to evaluate and monitor its investment in the Company any confidential or proprietary information ("Confidential Information") which such party obtains from the Company pursuant to financial statements, reports and other information submitted by the Company to such party pursuant to this Agreement or the Purchase Agreement; *provided, however,* that the Investors may disclose Confidential Information (a) to their respective general partners, limited partners, members, stockholders, equity holders, Affiliates and any of the directors, officers and other representatives of any of the foregoing in accordance with their respective normal reporting practices, and to their respective attorneys, accountants, consultants and other professionals under an obligation of confidentiality and (b) to any prospective purchaser of any securities of the Company so long as such prospective purchaser is obligated not to disclose, divulge or use such Confidential Information to the same extent as the disclosing Investor. Each Holder shall use the same level of care with the Confidential Information that it uses with its own confidential information. "Confidential Information" shall not include the following: (i) information that is now in, or hereafter enters, the public domain through no fault of the Holder; (ii) information that previously was known by the Holder independently of the Company; (iii) information that is independently developed by the Holder without reference to Confidential Information; (iv) information that is disclosed with the written approval of the Company; or (v) information that is received from a third party without a duty of confidentiality. Notwithstanding the foregoing, no Holder shall be prohibited from disclosing Confidential Information that is required to be disclosed pursuant to any legal process or subpoena from any court, arbitrator, governmental body, official or authority or by applicable law; provided that the disclosing Holder takes reasonable steps to minimize the extent of such disclosure and provides the Company with reasonably prompt notice after becoming required to disclose such Confidential Information to afford the Company an opportunity to intervene and oppose such disclosure. This provision shall survive any termination of this Agreement.

SECTION 12 MISCELLANEOUS

12.1 Governing Law.

This Agreement shall be governed by and construed under the laws of the State of New York, notwithstanding the conflicts of laws principles of the State of New York or any other jurisdiction. No suit, action or proceeding with respect to this Agreement may be brought in any court or before any similar authority other than in a court of competent jurisdiction in the State of New York and the parties hereby submit to the exclusive jurisdiction of such courts for the purpose of such suit, proceeding or judgment. Each of the parties hereto hereby irrevocably waives any right which it may have had to bring such an action in any other court, domestic or foreign, or before any similar domestic or foreign authority and agrees not to claim or plead the same. Each of the parties hereto hereby irrevocably and unconditionally waives trial by jury in any legal action or proceeding in relation to this Agreement and for any counterclaim therein.

12.2 Survival.

The representations, warranties, covenants, and agreements made herein shall survive any investigation made by any Holder and the closing of the transactions contemplated hereby. All statements as to factual matters contained in any certificate or other instrument delivered by or on behalf of the Company or its Subsidiaries or the Investors pursuant hereto in connection with the transactions contemplated hereby shall be deemed to be representations and warranties by the Company or its Subsidiaries or the Investors, as applicable, hereunder solely as of the date of such certificate or instrument.

12.3 Successors and Assigns.

Except as otherwise expressly provided herein, the provisions hereof shall inure to the benefit of, and be binding upon, the successors and permitted assigns of the parties hereto and shall inure to the benefit of and be enforceable by each person who shall be a Holder of Preferred Stock from time to time; *provided, however,* that each such successor and permitted assign the transferee has agreed in writing to be bound by the terms of this Agreement as if such successor and permitted assign were an original Holder by executing the Counterpart.

12.4 Entire Agreement.

This Agreement and each of the Exhibits hereto, the Purchase Agreement and each of the Exhibits and Schedules thereto, the other Transaction Documents and each of the exhibits, schedules, and appendices thereto, constitute the full and entire understanding and agreement between the parties hereto with regard to the subject matter hereof and thereof and no party hereto shall be liable or bound to any other party hereto in any manner by any representations, warranties, covenants and agreements except as specifically set forth herein and therein.

12.5 Severability.

If any provision of the Agreement is held to be invalid, illegal, or unenforceable, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

12.6 Amendment and Waiver.

Any provision of this Agreement may be amended and the observance thereof may be waived (either generally or in a particular instance and either retroactively or prospectively), only with the written consent of the Company and the Holders of a majority of each of the then outstanding Series E Preferred Shares and any amendment or waiver so made shall be binding upon each Holder and the Company. In addition, any provision of this Agreement and the observance thereof may be waived (either generally or in a particular instance and either retroactively or prospectively) by any party so waiving in writing, such waiver to be enforceable solely against such party.

12.7 Delays or Omissions.

No delay or omission to exercise any right, power, or remedy accruing to any party hereto, upon any breach, default or noncompliance of any party under this Agreement shall impair any such right, power, or remedy, nor shall it be construed to be a waiver of any such breach, default or noncompliance, or any acquiescence therein, or of any similar breach, default or noncompliance thereafter occurring. Any waiver, permit, consent, or approval of any kind or character on part of any party hereto of any breach, default or noncompliance under the Agreement or any waiver on such party's part of any provisions or conditions of this Agreement must be in writing and shall be effective only to the extent specifically set forth in such writing. All remedies, either under this Agreement, by law, or otherwise afforded to the parties hereto, shall be cumulative and not alternative.

12.8 Notices.

All notices, requests, demands and other communications given or made in accordance with the provisions of this Agreement shall be addressed (i) if to a Holder, at such Holder's address, fax number or email address furnished on the signature pages hereof or such Holder's Counterpart hereto or as otherwise furnished to the Company by the Holder in writing, or (ii) if to the Company, to the attention of the President at such address, fax number or email address furnished on the signature page below or as otherwise furnished by the Company in writing, and shall be made or sent by a personal delivery or overnight courier, by registered, certified or first class mail, postage prepaid, or by facsimile or electronic mail with confirmation of receipt, and shall be deemed to be given on the date of delivery when made by personal delivery or overnight courier, 48 hours after being deposited in the U.S. mail, or upon confirmation of receipt when sent by facsimile or electronic mail. Any party may, by written notice to the other, alter its address, number or respondent, and such notice shall be considered to have been given three (3) days after the overnight delivery, airmailing, faxing or sending via e-mail thereof.

12.9 Titles and Subtitles.

The titles of the sections and subsections of this Agreement are for convenience of reference only and are not to be considered in construing this Agreement.

12.10 Counterparts; Execution by Facsimile Signature.

This Agreement may be executed in any number of counterparts, each of which shall be an original, but all of which together shall constitute one instrument. This Agreement may be executed by facsimile signature(s) which shall be binding on the party delivering same, to be followed by delivery of originally executed signature pages.

[*SIGNATURES ON FOLLOWING PAGES*]

IN WITNESS WHEREOF, the parties hereto have executed this Investor Rights Agreement as of the date set forth in the first paragraph hereof.

COMPANY:

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Dragan Cicic
Name: Dragan Cicic, M.D.
Title: President

Address: 391 Lafayette Street
Newark, NJ 07105

Tel: (973) 344 6500
Fax: (973) 344 2539
email: dcicic@actiniumpharmaceuticals.com

[Signature Page to Second Amended and Restated Investor Rights Agreement]

IN WITNESS WHEREOF, the parties hereto have executed this First Amended and Restated Investor Rights Agreement as of the date set forth in the first paragraph hereof,

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Michael Sheffey
Name: Michael Sheffey
Title: President

Address:

Actinium Holdings Limited
c/o Michael Sheffery, Ph.D
OrbiMed Advisors LLC
767 Third Avenue, 30th Floor
New York, NY 10017

with a copy to:

Shalom Leaf, Esq,
Shalom Leaf, PC
600 Madison Avenue, 22nd Floor
New York, NY 10022

AMERASIA CAPITAL GROUP LLC (AS TO SECTION 10.10 ONLY)

BY: /s/ Sandesh Seth
NAME: SANDESH SETH
TITLE: MANAGING PARTNER

ADDRESS: 244 FIFTH Avenue, Suite 5217, New York, NY 10001,

TEL: 6468272460
FAX: 6468957678
EMAIL: sseth@amerasiacapital.com

[Signature Page to Second Amended and Restated Investor Rights Agreement]

IN WITNESS WHEREOF, the parties hereto have executed this Second Amended and Restated Investor Rights Agreement as of the date set forth in the first paragraph hereof.

N.V. ORGANON

/s/ David Nicholson
By: David Nicholson, Ph.D.
Name:
Title: Sr. VP, Worldwide Licensing
& Knowledge Management

Address: 126 E. LINCOLN AVE.
RAILWAY INS 07065

Tel: 732-594-5520
Fax: 732-594-5392
email: DAVID.NICHOLSON@MERCK.COM

MAURITS GEERLINGS M.D.

_____

ADDRESS: _____

_____

TEL: _____
FAX: _____
EMAIL: _____

SECTION 2 The Investors listed on Exhibit A to the Agreement, other than NV Organon, have executed a Subscription Agreement with the Company which provides, among other things, that by executing the Subscription Agreement each Investor is deemed to have executed the SECOND AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT in all respects and is bound to the terms and conditions thereof as set forth in such Subscription Agreement.

[Signature Page to Second Amended and Restated Investor Rights Agreement]

IN WITNESS WHEREOF, the parties hereto have executed this Second Amended and Restated Investor Rights Agreement as of the date set forth in the first paragraph hereof.

N.V. ORGANON

By: _____
Name:
Title:

ADDRESS: _____

_____

TEL: _____
FAX: _____
EMAIL: _____

MAURITS GEERLINGS M.D.

/s/ Maurits Geerlings, Jr.

ADDRESS: 220 FOREST HILLSCIRCLE
DEVON, PA 19333 USA

TEL: +1-610-293-0111
FAX: +1-610-293-0111
EMAIL: MGEERLINGS@COMCAST.NET

SECTION 2 The Investors listed on Exhibit A to the Agreement, other than NV Organon, have executed a Subscription Agreement with the Company which provides, among other things, that by executing the Subscription Agreement each Investor is deemed to have executed the SECOND AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT in all respects and is bound to the terms and conditions thereof as set forth in such Subscription Agreement.

[Signature Page to Second Amended and Restated Investor Rights Agreement]

Exhibit A
List of Investors

N.V. Organon
Baker, Adam
Barber, Michael K. and Julia K (JTWROS)
Beam, George B.
Blank, Robert N.
Brawley, William Wade
Byer, Scott
Carroll, Michael and Sheila (JTWROS)
Chambers, Michael R.
Conan, Roger
Craig, Ron D.
Davis, Frank
Dunn, Robert
Duty, Clint N.
Eckert, Douglas E.
Elefther, George IRA (Stern, Agee & Leach Inc C/F)
Engdall, Michael and Susan
Fischgrund, Stephen
Fox, L. Dean
Hanks, Bryan J. and Michelle B. (JTWROS)
Hasley, Jimmy R. IRA
Hasty, Benjamin
Herweck, Richard L.
Johnston, Christopher M.
Johnston, Timothy P.
Konetzni, Albert H., Jr. and Shirley A. (JTWROS)
Krauch, Robert H.
Kuhar, David A.
Laflash, Harold 0. and Greta G. (JTWROS)
Larsen, Kenneth N. Trust U/A/D 9/25/09, Kenneth N. Larsen Trustee
Laskowski, Jan J. and Sofia M. (JTWROS)
Lees, James W.
Lemaster, Timothy E.
Levine, Richard
Magolske, Charles J.
McCarthy, Kevin P.
Miller, Brian IRA (Robert W. Baird & Co., Inc. TTEE, FBO Brian Miller IRA Acct # 6144 2867)
Muckenhin, Carl F.
Murray, Ian H.
O'Brien, Denis

Oppito, Joseph T.
Paull, Burton Mark
Pellegrini, Timothy J. and Catherine A. (JTWROS)
Pimpinella, John and Mueller, Bernadette (jtwros)
Reed, Clayton A. and Stephanie S.
Reid, Matthew
Richardson, Earl R.
Rinker, Timothy J.
Rosen, Marvin S.
Scheck, Dianne M.
Soicher, Ronald
Smith, Sharon M.
Sommer, John L. IRA (Sterne, Agee & Leach Inc. C/F)
Stapell, Robert T.
Turner, Michael L.
Valka, William A. and Barbara B. (JTWROS)
Washauer, Gary A.
Weidner, Charles L. and Weidner, Alice N. Barnett, TTEE fbo The Weidner Family Revocable Trust dtd 8/13/07
Whitley, Michael E.
Wieghaus, Timothy
Wikel, Daniel P.
Wilson, William, III and Wilson, Patricia White COTTEE of The Wilson Family Restated Living Trust UTA dtd 04/2004
Wimberly, James M.
Zaborowski, Peter J. and Tiffany B. (JTWROS)
Zar, Keith A.
Zelinski, George M.
Borbolla, Jorge
Cantwell, David
Chandler, Andrew
Eilers Jr., John W.
Matter, Dr. Richard and Anita (JTWROS)
Mendez, Eliana Cardenas and Roberto (JTWROS)
Park, Stephen and Tracy (JTWROS)
Stanley, Conor
Craig, Ron D.
Hart, Michael M.
Sullivan, Brendan
Sullivan, Gregory F., MD and Gene M.
Variety Investments Limited
Einstein, Christina G. IRA (Stern Agee & Leach Inc. CIF)
Ferriter, Dr. John M.
Jones, Rex. A.

Mehos, Christopher J.
Murray, Ian H.
Murray, Thomas and Lillian (JTWROS)
Stanley, Michael
Cady, Roger K. IRA (Sterne Agee & Leach Inc. C/F Roger K. Cady R/O IRA)
Chaban, Bohdan
Duffy, John M.
Guscott, Simon C.
Jones, Brian E. and Peggy A. (JTWROS)
Kane, Timothy J. and Annette K. (JTWROS)
Poe, Steven W. and Judith L.
Poe, Tracy N.
Sullivan, Jared MD
Weidner (Charles L. Weidner TTEE & Alice N. Barrett Weidner TTEE FBO The Weidner Family Revocable Trust Dtd. 8/13/07)
Herndon, Phillip Todd
Katz, Deborah L.
Klimitchek, Ken R.
LARK Enterprises, Ltd.
Lytle, Jon H. and Carrie M. (JTWROS)
Minta Group LLC
Tomlinson, Sandra F.
Welsh, John H. IRA (Sterne Agee & Leach Inc. C/F John H. Welsh Roth IRA)
Conan, Roger
D'Amato, Anthony
Duffy, John M.
Ganse, Charles W.
Harvest Financial Services Ltd. as Qualifying Fund Manager of the Chris McHugh ARF
Holroyd, Douglas R. & Jill K.
Levine, Richard
McHugh, Chris
Plaschika, Gerhard
Poe, Tracy (Sterne Agee & Leach Inc. C/F Tracy N. Poe R/O IRA)
Rajan, Srinivasa
Ray Sinnott Pension Fund
Ray Sinnott
Sullivan, Brendan
Sterne Agee & Leach Inc. C/F Gregory F. Sullivan II IRA
Syntec Scientific Ltd. by Ray Sinnott
Sterne Agee & Leach Inc. C/F JB Trahern Bene Owner Ann Trahern DCSD IRA
Ziaks, Lance and Jannet

Exhibit B

Counterpart Signature Page

to

Second Amended and Restated Investor Rights Agreement dated July___, 2011

for

Actinium Pharmaceuticals, Inc.

The undersigned hereby acknowledges receipt of a copy of that certain Second Amended and Restated Investor Rights Agreement, dated July ____, 2011, as amended to date, among Actinium Pharmaceuticals, Inc., a Delaware corporation, Actinium Holdings Limited, the Investors referred to therein and the undersigned (as hereafter amended from time to time, the ***"Investor Rights Agreement")***, and hereby certifies to the other parties thereto that it has read and fully understands the Investor Rights Agreement, that it has had an opportunity to review and discuss the terms and conditions of the Investor Rights Agreement with its legal counsel and other advisors, and that it agrees to be bound by the terms and conditions of the Investor Agreement as if it were an original signatory thereto.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed on this day of _____, 20_.

INVESTOR:

SECTION 3 The Investors listed on Exhibit A to the Agreement, other than NV Organon, have executed a Subscription Agreement with the Company which provides, among other things, that by executing the Subscription Agreement each Investor is deemed to have executed the SECOND AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT in all respects and is bound to the terms and conditions thereof as set forth in such Subscription Agreement,

Exhibit 10.5

LAIDLAW & COMPANY (UK) LTD.

90 Park Avenue
New York, NY 10016

41 Dover Street
W1S 4NS London

August 7, 2012

Actinium Pharmaceuticals Inc.
391 Lafayette Street
Newark, NJ 07105

Attention: Dragan Cicic, MD, CEO

ENGAGEMENT AGREEMENT

Pursuant to this exclusive ENGAGEMENT AGREEMENT (the **"Agreement")** by and between Laidlaw & Company (UK) Ltd., a United Kingdom corporation with offices at 90 Park Avenue, New York, New York 10016 **("Laidlaw")** and Actinium Pharmaceuticals Inc. (the **"Client", "API"** or the **"Company"),** Laidlaw is engaged by the Client to perform the services (the **"Services")** agreed to hereby on the terms set forth herein.

1. **The Services.** Laidlaw shall assist Client as follows:

a) *The Financing.* As a Placement Agent, Laidlaw will assist Client on a "reasonable efforts" basis in connection with a proposed private placement of a minimum (the **"Minimum Offering Amount")** of USD $5 (five) million up to a maximum (the **"Maximum Offering Amount")** of USD $15 (fifteen) million (the **"Capital Raise")** of securities of the Company (the **"Securities")** as summarized in Schedule D (the **"Financing").** Laidlaw will at least once a month on or before the first business day thereof provide to the Client a progress report on the Financing. Laidlaw will not disclose to any person or entity, whether for purposes of a Financing, financial advisory services or otherwise, any Information (as defined in **Schedule A)** (i) unless such person or entity has executed a confidentiality agreement in the form of **Schedule E** or other confidentiality agreement approved in writing by Client; provided that no such agreement shall be required with respect to Laidlaw's retail investors; or (ii) without Client's prior written approval of the disclosure and the form thereof, if such Information (including, without limitation, any Offering Materials referred to below) is in written, audio and/or video form (including, without limitation, in any program format or other electronic form).

b) *Financial Advisory Services.* Subsequent to the closing of the Financing, Laidlaw will provide financial advisory services for an anticipated term of six months beginning at the closing of the Financing ("**Advisory Period**"). The scope of the advisory services would be to continue to work with the Client to:

i. Review and analyze all aspects of the Company's business and financial plans;

ii. Make recommendations to better prepare and position the Company for any future institutional financing including;

   a. Company presentation and investor marketing materials

   b. Management coaching

   c. Investor communications strategy (non-deal roadshows, conferences, etc.)

iii. Advise the Company on how to improve its capital structure in order to prepare for anyfuture institutional financing by making available its capital markets expertise;

   a. Exchange uplisting options in the US and listing options overseas

   b. Options to improve trading volume in the Company's shares

c) *Strategic Advisory Services.* Laidlaw, will, when the Client explores strategic alternatives, assist Client in the review and possible restructuring of its current capitalization, focusing on but not necessarily limited to its balance sheet, financing needs, senior debt facilities; possible identification and analysis, as needed, of suitable merger and acquisition candidates; and introduction of possible add-on business lines or strategic partnering relationships.

Notwithstanding Laidlaw's role as a placement agent in the Financing, and as independent Strategic Advisor on general merger, acquisition and other advisory services the Client has advised Laidlaw that is has previously engaged Jamess Capital Group, LLC ("**JCG**") formerly known as AmerAsia Capital Group, LLC as its exclusive financial advisor for the following transactions: (i) any reverse merger, reverse acquisition or similar transaction between the Client and an entity whose securities are publicly traded in the United States or other jurisdiction mutually agreed upon between the Client and JCG, (ii) the quotation of the Client's securities for purchase and sale on a U.S. quotation service or (iii) any filing with an applicable regulatory body which will result in the Company becoming an entity whose securities are traded on a public exchange in the U.S. or other jurisdiction mutually agreed upon by Client and JCG (any of the foregoing, the "**Pubco Transaction**"). Laidlaw will at least once a month on or before the first business day thereof provide to the Client a progress report in connection with its strategic advisory services.

d) Pursuant to this Agreement, Laidlaw will work with the Client in connection with, among other things, assisting the Client with respect to:

i. providing advice in connection with the structure of the Capital Raise to be offered to prospective investors (the **"Offering");**

ii. preparing Offering Materials for use in soliciting the Financing from prospective investors (the **"Offerees");**

iii. identifying prospective participating broker-dealers, if so requested, to act as participating dealers in the sale of Securities in the Offering; and

iv. using its reasonable efforts to complete the Minimum Offering Amount by the later of (i) October 21st, 2012 or (ii) twelve weeks from the anticipated September 5th, 2012 date targeted for initiating marketing of the transaction.

In connection with the offering of Securities pursuant to this Agreement, the Client hereby represents, warrants and agrees that it will (x) comply in all material respects with all applicable federal, state and foreign securities laws and regulations applicable to the Offering and (y) to the best of its knowledge none of the documents and materials to be used in making the Offering will contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading. Client herein agrees that it will be fully responsible for the preparation and filing in a timely fashion of any necessary "blue sky" documents in connection with the Offering and confirm such to Laidlaw in writing, the legal fees and expenses of any such work to be paid by the Client as provided herein in Section 2(b)(i)(d). Prior to any closing involving the issuance of the Securities (a **"**Closing" and, collectively, the **"Closings"),** the Client will make its management, including officers responsible for financial affairs, available to prospective investors to address investor inquiries regarding the Client in a manner consistent with the requirements of all applicable rules and regulations. All Closings will be pursuant to documentation, which documentation shall include normal and customary representations and warranties, in form reasonably satisfactory to Laidlaw and, upon any such Closing, Laidlaw will be furnished with a favorable opinion to Investors of the Client's outside counsel containing items customary in connection with the Offering contemplated herein.

2. **Compensation and Client Expenses.** The Client shall be obligated pay directly certain expenses related to the Offering and to pay Laidlaw under this Agreement as follows:

a) **Activation Fee:** On signing of this Agreement, Client shall pay Laidlaw a non-refundable Activation Fee of $75,000 .

b) **Additional Fees and Expenses:** The Client shall be obligated to pay the following to Laidlaw in connection with the financial advisory services being performed herein and Closing(s) of the Offering.

i. **Cash Fees:**

a. *The Financing Fees*. At each Closing, the Client shall pay Laidlaw a cash fee equal in the aggregate to 10% (ten percent) of the gross proceeds delivered on a Closing Date; Client shall also be obligated to pay Laidlaw at each Closing in cash a non-allocable expense reimbursement equal to 2% (two percent) of the gross amount raised in a Closing. Client shall also pay Laidlaw per the same fee and expense schedule for any cash exercise of Warrants within six Months of the final closing of the Financing and a 5% (five percent) Solicitation Fee for any Warrants exercised as a result of being called for redemption by the Client. The Financing fees would exclude any fees from an Advisory Transaction for which Laidlaw is to be compensated as provided in Subparagraph c. below.

b. *Financial Advisory Fees*. The start of the Advisory Period is conditioned upon; i) the raising of a minimum of $5,000,000 (five million) of capital for the Financing, and ii) after the Financing has been deemed closed. At the start of the Advisory Period and every month thereafter on a pro-rata basis for the term of the Advisory Period, Client will pay Laidlaw a monthly Financial Advisory fee of $25,000. If the Client extends the Advisory Period, the same monthly Advisory Fee will apply.

c. *Strategic Advisory Fee*. If the Client consummates any merger, acquisition, business combination or other transaction ("**Advisory Transaction**"), but specifically excluding a Pubco Transaction, with any party introduced to it by Laidlaw, it shall be liable to compensate Laidlaw a fee of 10% (ten percent) of the Aggregate Consideration underlying the Advisory Transaction as defined at the time. This would exclude the Pubco Transaction for which JCG is engaged as an advisor and any Closing in which Laidlaw is compensated as provided in clause a. above.

d. *'Blue Sky' and Legal Fees*. In addition to any fees due to Laidlaw, Client will be responsible for the prompt payment of all legal fees, and filing and blue sky fees in any states in which Laidlaw reasonably requests that such filings be made in connection with the Financings. In the interest of efficiency and expense management, and because time "is of the essence", Laidlaw has agreed to use its best efforts to 'cap' the legal fees of its securities counsel to $35,000, subject to the Client's commitment to require a 'cap' on the fees of its securities counsel.

e. *Advisory Expenses*. The Client shall pay all reasonable and necessary out of pocket expenses incurred by Laidlaw in connection with providing the financial and strategic advisory services per Section lb) and 1 c). Any expenses above $1,000 per month would be subject to specific written approval by the Client.

ii. **Laidlaw Warrants**: At each Closing of a Financing, the Client shall issue Laidlaw and or its designee(s) warrants (the "**Laidlaw Warrants**") equal to 10% (ten percent) of the Securities sold in the Offering, including any Common Shares issued or issuable (the "Laidlaw Warrant Shares"). The Laidlaw Warrants shall have an exercise price equal to the lowest price per share of the shares or warrants issued or issuable to Investors in the Offering (the "**Investor Warrants**"). The Laidlaw Warrants will contain normal and customary provisions for dilution protection, cashless exercise and registration rights in respect of the Laidlaw Warrant Shares, all to be the same as provided for in respect of the Securities issued in the Offering with the exception that the Laidlaw Warrants shall have cashless exercise provisions even if the Investor Warrants do not.

iii. **Issuance of Common Shares**: In the event that the Client does not fulfill its obligations with respect to Summary Terms of the Offering and the Pubco Transaction as outlined in **Schedule D** attached, or otherwise (itself or through a successor) become a publicly traded entity, then upon written demand of Laidlaw, it herein agrees to issue to Laidlaw and all Investors in the Offering, in satisfaction of its obligations herein to Laidlaw and to Investors with respect to such reverse merger, additional warrants to purchase an additional number of shares of Common Stock of the Company equal to Five (5%) Percent of the common shares issued or issuable in the Offering on the same terms and conditions, including the exercise price, as the Offering.

iv. **Subsequent Transaction**: Client understands and agrees that if, within a period of twelve (12) months following the termination of this advisory engagement, the Client shall require a Financing or an Advisory Transaction ("**Subsequent Transactions**"), Laidlaw shall have the right to act as the Company's financial advisor and investment banker, on such Subsequent Transactions (which right Laidlaw may exercise within 30 days of the receipt of notice by the Company as well as any reasonable requested due diligence of its decision to pursue a Subsequent Transaction). If Laidlaw elects to proceed, the Client agrees to retain it under separate cover to advise it in respect to such Financing or Advisory Transaction, subject to the execution of a mutually acceptable separate agreement which shall include terms customary for the type of Subsequent Transaction being sought and compensation per the fee schedule below. An Advisory Transaction without limitation is a merger, acquisition, licensing transaction or its equivalent other than those conducted in the ordinary course of the Clients' business; a sale, or exchange of assets (other than those sold, assigned or exchanged in the ordinary course of its business) or shares for cash (other than cash raised in a financing transaction) or for other consideration (other than consideration paid for services in the ordinary course of business).

Laidlaw Fee Structure

Financing Size/Transaction Value[1]	Retainer[2]	Cash Success Fees [3]	Warrants [4]
First USD $10 million	USD $50,000	10 (ten)%	10 (ten)%
Next USD $15 million	USD $50,000	7 (seven)%	7 (seven)%
Next USD $25 million	USD $60,000	5 (five)%	5 (five)%
> USD $50 million	USD $75,000	3 (three)%	3 (three)%

1. Initial Term 6 months, extendable to 12 months upon mutual agreement for an Advisory Transaction for an exclusive engagement, similar tail as current engagement.
2. Payable equally at the start and three months after the Effective Date of the Engagement
3. Applies to both Financing and Advisory Transactions. Client shall also be obligated to pay Laidlaw in cash a non-allocable expense reimbursement equal to 2% (two percent) of, as applicable, the gross amount raised in a Closing for a Financing Transaction or the Transaction Value
4. At each Closing of a Financing or Advisory Transaction, the Client shall issue Laidlaw and or its designee(s) warrants equal to the percentage specified in the table above, of the Securities, issued or issuable as a result of the Closing of the Financing or Advisory Transaction at a price or an exercise price, as applicable, equal to the lowest price per share of the shares or warrants issued or issuable to investors in the Closing or counterparty in an Advisory Transaction. Any warrants will contain normal and customary provisions for dilution protection, cashless exercise, and registration rights in respect of the underlying warrant shares, all to be the same as provided for in respect of the Securities issued in each Financing or Advisory Transaction. In the case of Advisory Transactions based on cash and/or stock, Laidlaw may elect to take an additional portion of its compensation in warrants.

3. **Provision for Alternative Outcomes**: In the event that either services are requested by the Client and/or transactions result therefrom that are not as contemplated herein, the parties hereto shall negotiate in good faith to determine a mutually acceptable level of compensation to be paid to Laidlaw in such an eventuality but in no event less than any other comparable advisory person or entity receives.

4. **Term of Agreement**: The term of this Agreement (the "**Term**") will commence on the date of this Agreement (the "**Effective Date**") and will terminate on the later to occur of (i) the Final Closing Date (provided that definitive stock purchase agreement for the Capital Raise has been executed by all parties on or before October 31, 2012) or (ii) six (6) months after final documents for the Capital Raise are delivered to Laidlaw for distribution to its clients and are in form and substance reasonably satisfactory to Laidlaw (the "**Termination Date**"). The Company has agreed to provide Laidlaw with documentation of shareholder consent for the Financing as a pre-requisite to Laidlaw marketing the Financing to investors. The term of this agreement will be extended commensurate with any delay in Laidlaw receiving the shareholder consent documentation.

In the event that this Agreement shall terminate pursuant to Section 4 above and, provided that such termination did not result for reasons of Laidlaw failing to discharge its material obligations hereunder, which does not include the failure of a Closing on one or more of the Financings, the following provisions (the "**Tail Provisions**") shall survive the termination of this Agreement:

a) If the Client shall, within a period of 24 months of the Termination Date, consummate a financing transaction with any investor introduced to the Client during the Term or enter into a definitive agreement during such 24 month period to consummate a financing transaction with any such investor introduced to the Client by Laidlaw prior to or during the Term, which transaction is consummated within twenty-seven (27) months following the Termination Date, the Client shall pay Laidlaw the same compensation and expenses provided for in Section 2(b) as would have been due had such financing occurred during the Term of this Agreement (the **"Tail Period"**). For the purposes hereof, a **"Financing Transaction"** shall mean the sale by the Client or any affiliate thereof controlled by Client of any securities or similar transactions that results in the Client obtaining funding from any such investor.

b) If, during the period of 24 months following the Termination Date, the Client shall initiate or consummate any eligible transaction under Section lb) or lc) (other than a Pubco Transaction) with any company or party introduced by Laidlaw during the Term of this Agreement, Client shall be obligated to pay the full amount of the Advisory Transaction Fee provided for in Section 2(b)(i)(b) hereof on the eligible transaction closing date.

5. **Post-Closing Obligations.** As outlined in Schedule C herein **("Schedule C"),** the Client will be obligated to conform to a series of requirements which are incorporated herein by reference as covenants of the Securities. Failure to materially comply will be considered a breach of the terms of this Agreement and of the terms of the Securities specifically and the Offering in general.

6. **Confidentiality.** The Client and Laidlaw agree to the confidentiality and other provisions of **Schedule A.**

7. **Indemnification.** Laidlaw and the Client (collectively, the **"Parties")** agree to indemnify the other in accordance with the indemnification letter annexed hereto as **Schedule B,** the provisions of which are incorporated herein in their entirety, and shall survive the termination, expiration or supersession of this Agreement. Said indemnification shall apply regardless of whether the Offering is consummated and Client's obligations hereunder shall survive.

8. **Termination; Survival.** In the event this Agreement shall be terminated in accordance with the provisions of Section 4(ii) or otherwise, the sections headed "Confidentiality", "Indemnification", the applicable financial obligations set forth in Section 2, and the Tail Period provisions set forth under Section 4 and the provisions of Section 11 hereof will survive the Term or any earlier termination hereunder.

9. **Affiliate.** For purposes of this Agreement, **"Affiliate",** as such term is used with reference to the Client, means any entity directly or indirectly controlling or controlled by the Client.

10. **Laidlaw Obligations.** By accepting this Agreement, Laidlaw represents and warrants to the Client that, now and during the term of this Agreement:

- Laidlaw is an entity organized, validly existing and in good standing under the laws of the state or country of its formation, with all requisite power and authority to enter into this Agreement and to carry out its obligations hereunder;

- this Agreement, when executed by Laidlaw, will have been duly authorized, executed and delivered by Laidlaw and will be a valid and binding agreement of Laidlaw, enforceable against Laidlaw in accordance with its terms except no obligation to raise funds other than on a best efforts basis; and

- Laidlaw is registered as a broker-dealer under the Securities Exchange Act of 1934, as amended; is qualified to act as a broker/dealer in the states or other jurisdictions in which Laidlaw offers the Securities and is a member of the Financial Industry Regulatory Authority.

- Laidlaw agrees to pay any third parties retained by it in connection with this Agreement and to hold Client harmless against any such claims, provided Client pays Laidlaw its fees due hereunder.

11 **.Governing Law.** This Agreement shall be deemed to have been made and delivered in New York City and shall be governed as to validity, interpretation, construction, effect and in all other respects by the internal laws of the State of New York. The Client (1) agrees that any legal suit, action or proceeding arising out of or relating to this letter shall be instituted exclusively in New York State Supreme Court, County of New York, or in the United States District Court for the Southern District of New York, (2) waives any objection which the Client may have now or hereafter to the venue of any such suit, action or proceeding, and (3) irrevocably consents to the jurisdiction of the New York State Supreme Court, County of New York, and the United States District Court for the Southern District of New York in any such suit, action or proceeding. The Client further agrees to accept and acknowledge service of any and all process which may be served in any such suit, action or proceeding in the New York State Supreme Court, County of New York, or in the United States District Court for the Southern District of New York. THE PARTIES HERETO AGREE TO WAIVE THEIR RESPECTIVE RIGHTS TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION BASED UPON OR ARISING OUT OF THIS AGREEMENT OR ANY DOCUMENT OR AGREEMENT CONTEMPLATED HEREBY.

12 .<u>Miscellaneous</u>. This Agreement, including the Schedules annexed, constitutes (i) the entire understanding of the parties with respect to the subject matter hereof and may not be altered or amended except in a writing signed by both parties and (ii) supersedes and cancels any prior or contemporaneous arrangements, understandings and agreements, whether written or oral, between the parties in respect of the matters provided for herein. The Client expressly acknowledges that the execution of this Agreement does not constitute a commitment by Laidlaw to consummate any transaction contemplated hereunder and does not ensure any Closing of the Financings or the success of Laidlaw with respect to securing any financing on behalf of the Client.

Nothing contained in this agreement shall be construed to place Laidlaw and the Client in the relationship of partners or joint venturers. Neither Laidlaw nor the Client shall represent itself as the agent or legal representative of the other for any purpose whatsoever nor shall either have the power to obligate or bind the other in any manner whatsoever. The Client's engagement of Laidlaw is not intended to confer rights upon any person not a party hereto (including shareholders, directors, officers, employees or creditors of the Client) as against Laidlaw or its affiliates, its daughter companies or their respective directors, officers, employees or agents, successors or assigns. Laidlaw, in performing its services hereunder, shall at all times be an independent contractor. No promises or representations have been made except as expressly set forth in this Agreement and the parties have not relied on any promises or representations except as expressly set forth in this agreement. Nothing contained herein should be construed as creating any fiduciary duties between the parties hereto and/or any of their respective subsidiaries or representatives.

Neither the execution and delivery of this Agreement by the Client nor the consummation of the transactions contemplated hereby will, directly or indirectly, with or without the giving of notice or lapse of time, or both: (i) violate any provisions of the Certificate of Incorporation or By-laws of the Client provided, however, that the authorization of additional shares or classes of shares, the issuance of additional shares and the rights and material terms of such shares may require shareholder approval and/or amendment of the Certificate of Incorporation which must be done before any closing of any of the Financings; or (ii) violate, or be in conflict with, or constitute a default under, any agreement, lease, mortgage, debt or obligation of the Client or, require the payment, any pre-payment or other penalty with respect thereto, provided, however, that (as reflected in Schedule D), the issuance of shares may be subject to the approval of certain shareholders of the Client and such shareholders may have certain rights to participate as Investors in the Financing, all as set forth in the First Amended and Restated Stockholders Agreement dated October 5, 2011. The Client has all requisite power and authority to enter into and perform its obligations under this Agreement. This Agreement has been duly executed and delivered and constitutes valid and binding obligations of the Client, enforceable against the Client in accordance with its terms.

The rights and obligations of a Party under this Agreement may not be assigned by that Party (other than by operation of law) without the prior written consent of the other Party and any other purported assignmentshall be null and void. The Client acknowledges that any advice given by Laidlaw to the Client pursuant to this Agreement is solely for the benefit and use of the Client and its Board of Directors.

If any provision of this Agreement is determined to be invalid or unenforceable in any respect, then such determination will not affect such provision in any other respect or any other provision of this Agreement, which will remain in full force and effect.

The parties hereto being in agreement with the terms and provisions set forth herein so indicate by signing in the spaces provided below.

LAIDLAW & COMPANY (UK) LTD.

By: /s/ Hugh Regan
Hugh Regan
Executive Director
Investment Banking

ACCEPTED AND AGREED as of
this 7th day of August, 2012 (the "**Effective Date**"):

By: /s/ Dragan Cicic
Dragan Cicic, MD, CEO

SCHEDULE A

INFORMATION TO BE SUPPLIED; CONFIDENTIALITY

In connection with Laidlaw's activities on behalf of the Client, the Client will furnish Laidlaw with all financial and other information regarding the Client that Laidlaw reasonably believes appropriate to its assignment (all such information so furnished by the Client, whether furnished before or after the date of this Agreement, being referred to herein as the "**Information**"). The Client hereby warrants that any Information furnished to Laidlaw by or on behalf of the Client will be accurate and complete and, with respect to information concerning the Client, will not contain any material omissions or misstatements of fact in each case, in light of the circumstance under which the statements therein were made. The Client will advise Laidlaw immediately of the occurrence of any event or any other change known to the Client which results in the Information containing an untrue statement of a material fact or omitting to state a material fact required to be stated therein or necessary to make the statements therein or previously made, in light of the circumstance under which they were made, not misleading. The Client will provide Laidlaw with reasonable access to the officers, directors, employees, independent accountants, legal counsel and other advisors and consultants of the Client. The Client recognizes and agrees that Laidlaw (i) will use and rely primarily on the Information and information available from generally recognized public sources in performing the services contemplated by this Agreement without independently verifying the Information or such other information, (ii) does not assume responsibility for the accuracy of the Information or such information, and (iii) will not make an appraisal of any assets or liabilities owned or controlled by the Client or its market competitors.

For the purpose of the Agreement, "**Information**" shall mean and include, without limitation, all contracts and agreements and the terms there of, to which the Client may be a party; all internal non-public business, financial, intellectual property, technical and scientific information, analyses, forecasts and projections of the business of the Client and any direct or indirect operating subsidiary; all business plans of the Client and its subsidiaries; all pending or proposed proposals for new or renewed contracts; the names, business and financial arrangements to which the Client is a party; the names and terms of employment relationships between the Client and any of its employees and/or operating subsidiaries; all detail and back up information relating to actual, pro forma or forecasted operations supplied to Laidlaw by the Client; and all data or information prepared by the Client at the request Laidlaw; and any other non-public information of Client or others furnished to Laidlaw or its representatives in connection with any of the transactions contemplated by this Agreement.

Laidlaw will maintain the confidentiality of the Information and, unless and until such Information shall have been made publicly available by the Client or by others without breach of a confidentiality agreement or obligation, shall disclose the information only as authorized by the Client or as required by law including by order of a governmental authority or court of competent jurisdiction. In the event that Laidlaw is legally required to make disclosure of any of the Information, Laidlaw will give notice to the Client prior to such disclosure, to the extent that Laidlaw can practically do so.

The foregoing paragraph shall not apply to information that:

(i) at the time of disclosure by the Client is, or when it thereafter becomes, generally available to the public or within the industries in which the Client or Laidlaw or its affiliates conduct business, other than as a direct result of a breach by Laidlaw of its obligations under this Agreement;

(ii) prior to or at the time of disclosure by the Client, was already in the possession of, or, conceived by, Laidlaw or any of its affiliates, or could have been developed by them from information then in their possession, by the application of other information or techniques in their possession, generally available to the public, or available to Laidlaw or its affiliates other than from the Client;

(iii) at the time of disclosure by the Client or thereafter, is obtained by Laidlaw or any of its affiliates from a third party who has represented to Laidlaw that it is, and whom Laidlaw reasonably believes to be, in possession of the information and not in violation of any contractual, legal or fiduciary obligation to the Client with respect to that information; or

(iv) is independently developed by Laidlaw or its affiliates.

Without limitations as to the foregoing, nothing in this Agreement shall be construed to limit the ability of Laidlaw or its affiliates to pursue, investigate, analyze, invest in, or engage in investment banking, financial advisory or any other business relationship with entities other than the Client, notwithstanding that such entities may be engaged in a business which is similar to or competitive with the business of the Client, and notwithstanding that such entities may have actual or potential operations, products, services, plans, ideas, customers or supplies similar or identical to the Client's, or may have been identified by the Client as potential merger or acquisition targets or potential candidates for some other business combination, cooperation or relationship. The Client expressly acknowledges and agrees that it does not claim any proprietary interest in the identity of any other entity in its industry or otherwise, and that the identity of any such entity is not confidential information.

SCHEDULE B

INDEMNIFICATION

Recognizing that matters of the type contemplated in this engagement sometimes result in litigation, the Client agrees to indemnify and hold harmless Laidlaw, its affiliates and their respective officers, directors, employees, agents and controlling persons (collectively, the "**Indemnified Parties**"), from and against any losses, claims, damages and liabilities, joint or several, related to or arising in any manner out of any transaction, financing, proposal or any other matter (collectively, the "**Matters**") contemplated by the engagement of Laidlaw hereunder, whether or not such Matters occur prior, during or after the Term of this Agreement, and will promptly reimburse the Indemnified Parties for all expenses (including reasonable fees and expenses of legal counsel) as and when incurred in connection with the investigation of, preparation for or defense of any pending or threatened claim related to or arising in any manner out of any Matter contemplated by the engagement of Laidlaw hereunder, or any action or proceeding arising therefrom (collectively, "**Proceedings**"), whether or not such Indemnified Party is a formal party to any such Proceeding. For the purposes hereof, Client's obligations to the Indemnified Parties hereunder shall include any and all Matters arising in connection with or derivative from the reverse merger shell company and its shareholders.

Notwithstanding the foregoing, and subject to the following paragraph, the Client shall not be liable to the extent that any losses, claims, damages, liabilities or expenses resulted directly from the gross negligence or willful misconduct of an Indemnified Party as determined by a court of competent jurisdiction after all appeals have run. The Client further agrees that it will not, without the prior written consent of Laidlaw, which consent will not be unreasonably withheld, conditioned or delayed, settle, compromise or consent to the entry of any judgment in any pending or threatened Proceeding in respect of which indemnification may be sought hereunder (whether or not Laidlaw or any Indemnified Party is an actual or potential party to such Proceeding), unless such settlement, compromise or consent includes an unconditional release of Laidlaw and each other Indemnified Party hereunder from all liability arising out of such Proceeding.

Laidlaw will indemnify and hold harmless the Client, its officers, directors, employees and each person, if any, who controls the Client within the meaning of the Securities Act of 1933 (the "**Act**") against, and pay or reimburse any such person for, any and all losses, claims, damages or liabilities or expenses whatsoever (or actions, proceedings or investigations in respect thereof) to which the Client or any such person may become subject under the Act or otherwise, whether such losses, claims, damages, liabilities or expenses (or actions, proceedings or investigations in respect thereof) shall result from any claim of the Client, any of its officers, directors, employees, agents, any person who controls the Client within the meaning of the Act or any third party, insofar as such losses, claims, damages or liabilities resulted directly from any untrue statement of material fact contained in the Memorandum but not if such statement or omission was included in the Memorandum based upon specific written information furnished to the Client by Laidlaw (or any of its controlling persons, officers, directors, employees or affiliates or their respective agents) which Laidlaw expressly in writing informed the Client that such information was for use in the Memorandum. Notwithstanding the foregoing, in no event shall Laidlaw's indemnification obligation hereunder exceed the amount of Laidlaw's cash fees and commissions actually received by it in connection with the Offering.

Each party agrees that if any indemnification or reimbursement sought pursuant to this Agreement were for any reason not to be available to the other party or insufficient to hold it harmless as and to the extent contemplated by this letter, then the indemnifying party shall contribute to the amount paid or payable by such indemnified party in respect of losses, claims, damages and liabilities in such proportion as is appropriate to reflect the relative benefits to the indemnifying party on the one hand, and the indemnified party on the other, in connection with the matters to which such indemnification or reimbursement relates or, if such allocation is not permitted by applicable law, not only such relative benefits but also the relative faults of such parties as well as any other equitable considerations. It is hereby agreed that the relative benefits to the Client and to Laidlaw with respect to Laidlaw's engagement shall be deemed to be in the same proportion as (i) the total value paid or received or to be paid or received by the Client pursuant to the matters (whether or not consummated) for which Laidlaw is engaged to render services bears to (ii) the Fees and Commissions paid to the Laidlaw in connection with such engagement.

The indemnity, reimbursement, contribution provisions set forth herein shall remain operative and in full force and effect regardless of (i) any withdrawal, termination or consummation of or failure to initiate or consummate any matter referred to herein, (ii) any investigation made by or on behalf of any party hereto or any person controlling (within the meaning of Section 15 of the Act, or Section 20 of the Exchange Act) any party hereto, (iii) any termination or the completion or expiration of this Agreement and (iv) whether or not Laidlaw shall, or shall not, be called upon to render any formal or informal advice in the course of the engagement.

SCHEDULE C

CORPORATE GOVERNANCE AND
OTHER QUALITATIVE REQUIREMENTS

The Company herein recognizes the fundamental significance of the requirements of this Schedule C to both Investors in the Offering and to Laidlaw, and therefore agrees that its failure to materially comply with said requirements may if deliberate or due to negligence represent justifiable claims of "bad faith", potential grounds for rescission and/or other legal remedies under the terms of the Offering, the covenants of the Securities and/or the Indemnification outlined in Schedule B attached hereto.

To the extent any such requirements are expressly counter to the provisions of any stock purchase agreement or similar agreement ("SPA") subsequently executed by Client and Investors, the provisions of the SPA shall control.

Financial Reporting

The Company shall make available to the Investors and Laidlaw, if permissible under law, unaudited quarterly financial statements and an annual report containing audited financial statements of the Company and its subsidiaries by electronic notification or mailing the report to both Investors and Laidlaw in hard copy.

Conference Calls

The Company agrees to hold dial-in conference calls or calls utilizing other suitable electronic conferencing capability on no less than a quarterly basis, with the ability to replay such calls for a reasonable period of time following each call. Both Laidlaw and stockholders will be provided access to such calls through electronic notification reasonably in advance of each call.

Independent Auditors

The Company agrees to use qualified independent auditors approved by the Board of Directors to issue annual financial reports to the Board of Directors and to stockholders in accordance with U.S. GAAP standards as if Company was public.

Independent Counsel

The Company agrees to use independent legal counsel(s) with the requisite experience and expertise to provide appropriate oversight, advice and opinions to the Company as needed to the Board of Directors and to management; to review and approve any shareholder communications or public filings if applicable; and to ensure Company compliance with any other requirements of this Agreement or stakeholder rights.

Voting Rights

The voting rights of existing shareholders cannot be disparately reduced or restricted through any corporate action or issuance without their prior written consent and/or as may be required by law, the Company's Certificate of Incorporation and/or By-laws (and/or any amendment thereto) or contractual agreements with shareholders.

Company Record

The Company agrees to file a notification in writing to all shareholders and to Laidlaw of: (i) any change in the company's name (ii)any change in the par value of the Company's securities (iii) any change in the Company's principle address (iv) a change in its place of organization (v) a stock split or reverse stock split (vi) a change in symbol if applicable (vii) any reclassification or exchange of Company shares for another security (viii) the listing on any market of a new class of Company securities (ix) any other material aspect of the Company's corporate structure, securities or ownership, to the extent required to be disclosed by U.S. federal securities laws, such notice to be given no later than 10 days after the change unless prior notice is required by applicable law or regulation.

Website Maintenance

For the sake of additional transparency, the Company agrees to establish by July 1, 2011, maintain and update no less than quarterly an official website with access available to shareholders, investors, Laidlaw and interested parties. The information available on such website should be designed to provide timely and informative disclosure of the Company' operations insofar as such disclosure is required and permissible within the law and federal, state and local regulatory guidelines, and does not, in the reasonable judgment of the Board of Directors, present a material risk to the Company's overall business or the proprietary nature of any of its activities.

Transfer Agent & Legal Opinions

Upon completion of a Pubco Transaction or other transaction in which the capital shares of the Company become publicly traded, the Company shall use a "DWAC fast-eligible" transfer agent at all times and to stay current in regard to any financial obligations that the Company may have to such transfer agent.

The Company agrees to promptly obtain, at its own expense, any legal opinions or supporting documentation reasonably required by the Transfer Agent or any other party relating to the exercise, conversion, sale or disposition of any securities, warrants or derivative instruments held by Laidlaw or any stockholders introduced to the Company by Laidlaw pursuant to this Agreement and to instruct Company counsel and pay such counsel and Company personnel to use their reasonable best efforts to perform all such functions relating to such stockholder action, regardless of how often, as expeditiously as reasonably possible but in no event more than three (3) days after the sale or reverse.

Exclusion

Notwithstanding any of the above, the Company shall comply with all of the requirements of the market or exchange on which it is listed or shall become listed in the future, and shall also comply with all of the above requirements insofar as such is permitted or is not otherwise precluded by the market-listing requirements.

SCHEDULE D

ACTINIUM PHARMACEUTICALS, INC.

UNIT OFFERING

COMPRISED OF

COMMON STOCK AND WARRANTS

SUMMARY OF TERMS

This Summary of Terms sets forth the principal terms for discussion with respect to a potential private placement of Preferred equity securities of Actinium Pharmaceuticals, Inc., a Delaware corporation ("API" or the "Company'). This Term Sheet is intended solely as a basis for further discussion and does not constitute a legally binding obligation on the part of Laidlaw & Company (UK) Ltd. or any Holders. No other legally binding obligation will be created, implied or inferred until all of the requisite documents in final form fully detailing the terms and conditions of an agreed upon Transaction are executed and delivered by all parties.

General Assumptions (subject to final adjustments):

- **Value of not less than $0.50 per share is assumed for the purposes of this term sheet.**
- **Share price is derived based on a $35 million pre-money valuation and assumed Fully Diluted Shares of 70,000,000 [both subject to adjustment].**
- **Value per share to be finalized and share counts and warrant coverage and pricing to be adjusted pro-rata pursuant to mutual agreement between Company and Laidlaw.**

Issuer:	Actinium Pharmaceuticals, Inc. ("**API**" or the "**Company**")
Form of the Offering:	Units (the "**Units**") each consisting of one share of Common Stock, based on an implied value $0.50 per share, and two Investor Warrants: an 'A' Warrant (the "**A Warrant**") and a "B Warrant (the "**B Warrant**") with the following general terms (collectively the "**Investor Warrants**") The Units will be offered and sold in a private placement transaction to institutions and "accredited investors" (as such term is defined in Rule 501 under the Securities Act) " (the "**Offerees**") pursuant to the terms and conditions more fully described in a Private Placement Memorandum ("**PPM**") with customary Subscription Documents (the "**Offering Materials**") prepared by the Company and its counsel (the "**Offering**").
A Warrant:	The A Warrant will be exercisable for a period of 120-days following the Termination of the Offering and allow the Holder to purchase one share of Common Stock at $0.50 per share.

B Warrant:	The B Warrant will be exercisable for a period of 5 years from the Termination of the Offering and allow the Holder to purchase one-half share of Common Stock at a price of $0.75 per share (exercisable in whole share increments) The Units will be broken into the component parts such that the Warrants shall separate from the Common Stock and trade separately upon the Companies' securities being publicly quoted.
Amount of the Offering:	300 Units or up to $15,000,000 million (the "**Maximum Offering Amount**"). The Company has granted the Placement Agent an option ("**Greenshoe Option**") to increase the Offering through the sale, in whole or in part, of an amount of Units equal to $5,000,000 or such lesser amount as is allowable by law to cover overallotments, if any. The Greenshoe Option shall be exercisable for a period of 30 days from the Final Closing of the Maximum Offering on the same terms and conditions as the Offering.
Minimum Offering Amount:	$5,000,000
Maximum Offering Amount:	$15,000,000
Maximum Offering Amount with the Greenshoe:	$20,000,000
Minimum Investor Purchase:	One Unit or $50,000.00, consisting of (i) 100,000 shares of Common Stock at $0.50 per share (the "Subscription Price"), (ii) one A Warrant and (iii) one B Warrant. API reserves the right in in its sole discretion to accept investor subscriptions below the Minimum Investor Purchase, subject to notice to the Placement Agent.
Description of the Units:	The Common Stock issued pursuant to the Offering and underlying the Investor Warrants issued in the Offering shall have all of the rights and privileges attendant to such stock under the Company's Certificate of Incorporation and By-laws, as amended. In addition, the Company herein agrees to the following conditions of the Offering:
Alternative Public Offering or APO Transaction:	Within 15 business days of the Closing of the Minimum Offering Amount or at a date mutually acceptable to the Company and the Placement Agent but no later than 30 business days after reaching the Minimum Offering Amount, the Company will utilize its reasonable commercial efforts to effect (i) a reverse merger or similar transaction between the Company and a corporation whose securities are publicly traded in the United States ("Pubco") which will result in the Company becoming an entity whose securities are traded on a public exchange in the U.S. (a **"Pubco Transaction").** The Pubco Transaction shall be on a U.S. stock exchange and no less than the OTCQB and shall be with an entity which must, among other criteria, be fully reporting, have no material liabilities or contingent liabilities, be Depository Trust Company (DTC) eligible, have no significant mature or unmatured rescission rights, has not been late in any SEC filing for the last one (1) year, and is in good standing it its place of incorporation and on such other terms and conditions (including normal and customary due diligence) reasonably satisfactory to Placement Agent and Company. The release of funds received from this Offering from the Escrow Account to the Company will occur simultaneously with the effectiveness of the Material Definitive Agreement for the Pubco Transaction with the Pubco which would include among other items the recapitalization of the Pubco reflecting the ownership of the shareholders of the Company and the investors in this Offering (an **"Alternative Public Offering"** or **"APO")**

Penalty for Failure of Company to Fulfill its APO Obligations:	In the event that the Company does not fulfill its obligations with respect to the APO Transaction or otherwise (itself or through a successor) become a publicly reporting or traded entity within 60 days of the Closing of the Minimum of the Offering, then upon written demand of the Placement Agent, the Company shall i) authorize return of the funds held in the Escrow Account to the investors and ii) issue to Placement Agent and the intended purchasers of Units on a pro rata basis, warrants to purchase a number of shares of Common Stock of Company equal to 5% of the common share equivalents of the Securities that would have been issued to those investors in the Offering on the same terms, including the exercise price, as the Warrants in the Offering. This warrant issuance by the Company shall be in full satisfaction of its obligations to Placement Agent and intended purchasers of Units with respect to such APO Transaction.
Anti-Dilution:	The securities underlying the Units will be subject to proportional adjustment for stock splits, stock dividends, capital reorganizations, reclassifications and similar transactions with respect to the Common Stock after the Offering. In addition, the exercise price of the Investor Warrants will be subject to adjustments on a broad-based weighted average basis (based on all outstanding shares of Preferred and Common Stock) for issuances of Common Stock (or Common Stock equivalents) at a purchase price less than the then-effective conversion price, subject to the following carve-outs (collectively, the **"Excluded Securities"):** (i) the issuance of shares of Common Stock (or options to purchase Common Stock) to employees, consultants, officers or directors of the Issuer pursuant to stock option plans or restricted stock plans, or arrangements, which issuance of shares of Common Stock (or options to purchase Common Stock) is unanimously approved by the independent (non-management) directors of the API Board of Directors after the Offering; (ii) the issuance of securities pursuant to stock splits, stock dividends, or similar transactions where all shareholders are treated equally; (iii) the issuance of Common Stock or warrants toward advisory fees for the APO Pubco Transaction approved by the API Board of Directors prior to the Offering; (iv) the issuance of Common Stock upon conversion of any series of Classes A through E Preferred Stock on the terms set forth therein; (v) the issuance of Common Stock related to a APO or Pubco Transaction; (vi) the issuance of securities to financial institutions or other lenders or lessors in connection with loans, commercial credit arrangements, equipment financings, commercial property leases or similar transactions that are for purposes other than raising equity capital and which terms are approved by the independent directors of the Board; (vii) the issuance of securities pursuant to capital reorganization, reclassification or similar transactions that are primarily for purposes other than raising equity capital unless such issuances are disproportionate; (viii) the issuance of securities to an entity as a component of any business relationship with such entity for the purpose of (A) joint venture, technology licensing, or development activities, (B) distribution, supply or manufacture of the Company's products or services, or (C) any other arrangement involving corporate partners that are primarily for purposes other than equity capital and which terms are approved by the independent directors of the API Board of Directors. At least a majority of the Company's entire Board of Directors and a majority of the Board's independent directors must approve any issuance of Excluded Securities issued pursuant to (v) through (viii) above prior to such issuance. For purposes of the anti-dilution provisions of the Common Stock , the Notes will be deemed to have been issued at $0.50 per share.

Registration Rights:	Company is required to file within 45 days of the date of the final Closing of the Offering (the "**Filing Deadline**"), a Registration Statement registering for resale all shares of Common Stock issued in the Offering, including Common Stock (i) included in the Units; and (ii) issuable upon exercise of the Investor Warrants (A-Warrants and B-Warrants); consistent with the terms and provisions of the Registration Rights Agreement. A form of the Registration Rights Agreement will be filed as an exhibit to an amendment of the Current Report following the final closing of the Offering. The holders of any registrable securities removed from the Registration Statement a result of a Rule 415 or other comment from the SEC shall have "piggyback" registration rights for the shares of Common Stock or Common Stock underlying such warrants with respect to any registration statement filed by us following the effectiveness of the Registration Statement which would permit the inclusion of these shares. Company have agreed to use its reasonable best efforts to have the registration statement declared effective within 150 days of filing the registration statement or within 180 days under a full SEC review (the "**Effectiveness Deadline**"). If the Registration Statement is not filed on or before the Filing Deadline or not declared effective on or before the Effectiveness Deadline, Company shall pay to each holder of registrable securities an amount in cash equal to one-percent (1.0%) of such holder's investment herein or in the Offering on every thirty (30) day anniversary of such Filing Deadline or Effectiveness Deadline failure until such failure is cured. The payment amount shall be prorated for partial thirty (30) day periods. The maximum aggregate amount of payments to be made by as the result of such failures, whether by reason of a Filing Deadline failure, Effectiveness Deadline failure or any combination thereof, shall be an amount equal to 6% of each holder's investment amount. Notwithstanding the foregoing, no payments shall be owed with respect to any period during which all of the holder's registrable securities may be sold by such holder under Rule 144 or pursuant to another exemption from registration. Moreover, no such payments shall be due and payable with respect to any registrable securities if Company is unable to register due to limits imposed by the SEC's interpretation of Rule 415 under the Securities Act.

	Company agrees to keep the Registration Statement "evergreen" for one (1) year from the date it is declared effective by the SEC or until Rule 144 of the Securities Act is available to Investors herein with respect to all of their shares, whichever is earlier.
Lock-Up Provision:	Officers, directors, Placement Agent, shareholders owning 5% or more of the Common Stock and any other controlling persons will agree to not sell or otherwise transfer any shares of Common Stock or other securities of the Company owned by them until the date that equal to the earlier of twelve (12) months from the Closing Date of the closing of a APO or a Pubco Transaction; or (ii) six (6) months following the effective date of the Registration Statement registering the shares of Common Stock included in the Units as well as the shares of Common Stock issuable upon exercise of the Investor Warrants
Employee Option Pool:	The Company shall adopt the 2012 Employee Stock Option Plan ("**2012 ESOP**") upon the final Closing of the Offering. At that time, the Company will have authorized to the 2012 ESOP an aggregate number of shares of Common Stock such that the total number of shares available to both the 2003 ESOP and the 2012 ESOP equal to fifteen percent (15%) of the total issued and outstanding shares (including those to be issued in the final Closing) reserved for issuance pursuant to the API stock option plan(s).
Board Representation:	The Company agrees that the Board of Directors (the " **Board**") will remain unchanged at five Members and that it will not modify or increase the size of its Board without the prior written consent of Laidlaw for a period of one year following the expiration of the lock-up. Upon the launch of the Offering, the Board will be composed of two Independent Directors, up to two Laidlaw nominated Members and the Chief Executive Officer.

Terms of the Warrants:

Coverage:	For each Unit of Common Stock purchased in the Offering, the purchaser will receive on the closing date an A-Warrant to purchase 100,000 shares of the Company's Common Stock and a B-Warrant to purchase 50,000 shares of the Company's Common Stock. Each Warrant shall have the terms set forth below.

Exercise Price:	Each A-Warrant entitles the holder to purchase one (1) share of the Company's Common Stock (each a **"A-Warrant Share"** and collectively the **"A-Warrant Shares")** at an exercise price of $0.50 per share (the **"A-Exercise Price").** Each B-Warrant entitle the holder to purchase one (1) share of the Company's Common Stock (each a "B-**Warrant Share"** and collectively the **"B-Warrant Shares")** at an exercise price of $0.75 per share (the **"B-Exercise Price").** Both the A-Exercise Price and B-Exercise Price (collectively the **"Exercise Price")** are subject to adjustment as provided for below.
Exercise Mechanics:	Payment of the applicable Exercise Price for the A-Warrants may be made in cash. The B-Warrants may be exercised on a cashless basis, except upon a Call by the Company.
Exercise Period:	The right to exercise the A-Warrants will expire on the 120 th day after the issue date of the Warrants. The right to exercise the B-Warrants will expire on the fifth (5th) anniversary of the issue date of the Warrants.
Price Adjustment:	The Warrants and the underlying Warrant Shares will have the same anti-dilution protection as the Common Stock.
Registration Rights:	The Warrants and the underlying Warrant Shares will have the same registration rights as the Common Stock.
Call Provision:	Company may call the B-Warrants at any time the Common Stock trades above $1.50 for twenty (20) consecutive days following the effectiveness of the Registration Statement covering the resale of the underlying B-Warrant shares. In the 60 business days following the redemption call, investors may choose to exercise the warrant or a portion of the warrant by paying $0.75 per share for every share exercised. Any shares not exercised at the close of the period will be redeemed by the Company at $0.001 per share. The B-Warrants can only be called if a Registration Statement registering the shares underlying the B-Warrants is in effect at the time of the call. The Placement Agent shall receive a warrant solicitation fee equal to 5% of the funds solicited by the Placement Agent upon exercise of the B-Warrants if the Company elects to call the B-Warrants.
Plan of Distribution:	The Offering of Units is being made by API through the Placement Agent, on a **"reasonable efforts"** basis for a minimum offering of $5,000,000 and a maximum of $15,000,000, solely to **"accredited investors"** as defined in Rule 501 of Regulation **D** promulgated under the Securities Act. The Company has granted to the Placement Agent an option **("Greenshoe Option"),** exercisable for a period of 30 days from the Closing of the Offering, to offer additional Units equal to up to US$ 5 million at the offering price, to cover over-allotments, if any. The Company has agreed to compensate the Placement Agent per the same terms in the **"Placement Agent"** for any additional capital raised under the Greenshoe Option.

Investor funds will be deposited in a non-interest-bearing escrow account (the **"Escrow Account")** at Signature Bank (the **"Escrow Agent")** pending acceptance of subscription documentation by the Company.

API or the Placement Agent may reject subscriptions in either of their sole discretion in whole or in part. If the Offering is over-subscribed, API or the Placement Agent may determine, in its sole discretion, to reject subscriptions in whole or in part or to allocate to any prospective investor less than the subscription amount to which the investor subscribed.

The Offering will continue through October 21^{5t}, 2012, commencing on the date of this Confidential Information Memorandum (the **"Initial Offering Period"),** which period may be extended without notice to or vote by prospective investors by API and the Placement Agent, in their mutual discretion, to a date not later than January 21s^{t}, 2013 (this additional period and the Initial Offering Period will be collectively referred to as the **"Offering Period").** One or more closings (each, a **"Closing")** may be held at any time at the discretion of the Company; provided, however, that a first Closing of the Offering may not occur unless all conditions of closing are met, including that subscription documentation and gross offering proceeds for the Minimum Offering Amount shall have been received and accepted by the Company.

In the event that subscriptions for the Offering are rejected or the Offering Period shall expire, any funds held in the Escrow Account will be promptly returned in full to subscribers without deduction therefrom or interest thereon.

The Company and/or the Placement Agent reserves the right to purchase and/or permit their respective employees, agents, officers, directors and affiliates to purchase Units, Notes and Warrants in the Offering, in accordance with federal and state securities laws, and all such purchases will be counted toward satisfaction of the requirement that the Minimum Offering Amount of $5,000,000 principal amount of Units be sold in the Offering.

SCHEDULE E

NONDISCLOSURE AGREEMENT

[Disclosure from _____]

THIS NONDISCLOSURE AGREEMENT, having an Effective Date as of _____, 2012, ("Agreement"), is entered into between _____, a _____ corporation having a place of business at _____ ("Recipient"), and a corporation having a place of business at _____, ("XXX").

IN CONSIDERATION of the mutual covenants set forth below, the parties hereby agree as follows:

1. XXX, in its sole discretion, shall disclose certain Confidential Information, as defined below, to Recipient on the terms and subject to the conditions of this Agreement, and during the term of this Agreement.

2. "Confidential Information" shall mean, collectively, all technical, financial, and business information of any kind whatsoever, and all tangible and intangible embodiments thereof of any kind whatsoever, disclosed by XXX and obtained by Recipient. All Confidential Information disclosed by XXX to Recipient shall be marked or otherwise identified as confidential when disclosed or, in the case of information given orally, shall be identified as confidential in summary form in a written document (which may includemeeting minutes) provided by XXX to Recipient within thirty (30) days after oral disclosure

3. XXX' s purpose in disclosing Confidential Information to Recipient is to engage in discussions with regard to a possible investment by Recipient in the equity securities of XXX. Such purpose shall hereinafter be referred to as the "Authorized Purpose."

4. Recipient shall not disclose or use any of the Confidential Information at any time or for any purpose other than the Authorized Purpose and Neither party shall disclose the existence of this Agreement or the "Authorized Purpose".

5. Recipient shall maintain in confidence the Confidential Information disclosed by the XXX and, in doing so, shall exercise the same degree of care as it uses for its own Confidential Information, but no less than reasonable care, to prevent the unauthorized disclosure of any of the Confidential Information. Recipient shall only disclose XXX's Confidential Information to those of its directors, officers, employees, or agents having a need to know, as reasonably necessary to facilitate the Authorized Purpose, provided that such persons are obligated in writing or otherwise bound by fiduciary obligations to maintain in confidence and not use XXX's Confidential Information except as permitted by this Agreement.

6. Recipient shall promptly notify XXX upon discovery of any unauthorized use or disclosure of XXX's Confidential Information.

7. Notwithstanding the foregoing, (i) Recipient shall have the right to disclose Confidential Information to the extent required by applicable law or regulation, provided that, Recipient shall give XXX prompt written notice and sufficient opportunity to object to such use or disclosure, or to request confidential treatment of the Confidential Information; and (ii) Recipient's_nonuse_and_nondisclosure_obligations above_shall_not apply to such Confidential Information as Recipient can establish by written documentation to have been:

   (a) public knowledge at the time of such disclosure by XXX, other than as a result of wrongful acts attributable to Recipient; or

   (b) rightfully known by Recipient (as shown by its written records) prior to the date of disclosure to it by XXX; or

   (c) disclosed to Recipient on an unrestricted basis from a third party not under a duty of confidentiality to XXX.

   Information shall not be deemed to be in the public domain merely because it may be derived from one or more items publicly known.

8. The term of this Agreement shall, unless earlier terminated by either party, be five years (5) from the Effective Date. Either party may terminate this Agreement at any time by giving ten (10) days written notice to the other. However, the limitations on use and disclosure of Confidential Information shall survive expiration of the term hereof and shall be binding upon Recipient for a period of five (5) years after termination of this Agreement.

9. At any time upon the request of XXX, Recipient shall return to XXX all tangible items relating to XXX's Confidential Information, including all written material, software documentation, code, photographs, compounds, compositions, and the like, made available or supplied by XXX to Recipient, and all copies thereof.

10. This Agreement shall not be construed to grant any rights in XXX's patent, copyrights, trademarks, trade secrets, or other intellectual property, except as expressly provided in this Agreement. Recipient represents that the purpose of receiving from XXX any patent applications is solely for the Authorized Purpose and further represents that such request for such applications is not to assess the patentability of any technology or patent applications owned by XXX, or to form the basis for filing patent applications or instituting any other proceeding in any patent office or court.

11. No prototypes, models, instruments or other materials will be provided by XXX to Recipient except pursuant to the terms of a written materials transfer agreement and no such materials shall be transferred until such agreement has been agreed to and executed by both parties.

12. Recipient may not assign this Agreement, whether by operation of law or otherwise, without the prior express written consent of XXX. Any purported assignment in violation of this section shall be null and void.

13. This Agreement shall not be construed to require either party to enter into further contractual or other relationships with the other.

14. This Agreement shall be governed by and construed in accordance with the laws of the State of New York, without regard to the conflicts of law principles thereof. Any litigation arising out of or relating to this Agreement, or brought to enforce its terms, shall be brought in the United States District Court for the Southern District of New York and the parties hereby waive any objections to personal jurisdiction and/or venue in such courts for the purpose of such action.

15. Each party hereby acknowledges that the rights and obligations of this Agreement are subject to the laws and regulations of the United States relating to the export of products and technical information. Without limitation, each party shall comply with all such laws and regulations.

16. This Agreement shall be binding upon and for the benefit of the undersigned parties, their successors and permitted assigns. Failure to enforce any provisions of this Agreement shall not constitute a waiver of any term hereof.

17. This Agreement embodies the entire understanding between the parties and supersedes any prior understandings and agreements between them respecting the subject matter hereof No change, modification, extension, termination, or waiver of this Agreement, or any of the provisions herein contained, shall be valid unless made in writing and signed by duly authorized representatives of the parties.

IN WITNESS WHEREOF, the parties, through their duly authorized representatives, have entered into this Agreement as of the date first written above.

RECIPIENT		**XXX**	
By:	_____	By:	_____
Name:	_____	Name:	_____
Title:	_____	Title:	_____
Date:	_____	Date:	_____

Exhibit 10.8

EXECUTION COPY

EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT dated as of January 2, 2006 by and between Actinium Pharmaceuticals Inc., a Delaware corporation (the "Company"), and Dragan Cicic, M.D. (the "Executive ").

WHEREAS, the Company desires to employ the Executive and to enter into an agreement embodying the terms of such employment;

WHEREAS, the Executive desires to accept such employment and enter into such an agreement;

WHEREAS, the Company considers it essential to its best interests and the best interests of its stockholders to foster the continued employment of the Executive by the Company during the term of this agreement;

WHEREAS, the Executive is willing to accept and continue his employment on the terms hereinafter set forth in this agreement (the "Agreement"); and

WHEREAS, the Executive acknowledges and agrees that this Agreement supersedes any and all prior agreements or understanding, whether written or oral, between the Executive and the Company and represents that there are no outstanding agreements other than this Agreement relating to the employment of Executive by the Company;

NOW, THEREFORE, in consideration of the premises and mutual covenants herein and for other good and valuable consideration, the parties agree as follows:

1. Term of Employment.

Subject to the provisions of Section 7 of this Agreement, the Executive shall be employed by the Company for a period commencing on January 2, 2006 ("Start Date") and ending on the _twelfth month anniversary of the Start Date (the "Employment Term"); provided, however, that the Employment Term shall be automatically extended for successive one-year periods thereafter, unless, no later than 60 days prior to the expiration of the initial Employment Term, or any successive one-year renewal term, either party hereto shall provide to the other party hereto written notice of its or his desire not to extend the Employment Term.

2 Position.

(a) The Executive shall serve as the Vice President and Medical Director of the Company. In such position, the Executive shall have such duties as are customarily associated with such position and agrees to perform such duties and functions as shall from time to time be assigned or delegated to him by the Chief Executive Officer of the Company ("CEO"). The Executive shall report directly to the CEO.

(b) During the Employment Term, the Executive will devote substantially all of his business time and best efforts to the performance of his duties hereunder and will not engage in any other business, profession or occupation for compensation or otherwise other than pursuant to this Agreement which would conflict with the rendition of such services, either directly or indirectly, without the prior written consent of the Board of Directors (the "Board"). Notwithstanding the foregoing, with the prior written consent of the Board (such consent not to be unreasonably withheld), the Executive shall be permitted to serve as a director, trustee or member of a committee of any organization involving no conflict of interest with the Company.

(c) The Executive shall be permitted to work at his home at the Executive's discretion, subject to the reasonable requirements of the Company.

3. Base Salary and Bonus.

During the Employment Term, the Company shall pay the Executive an annual base salary (the "Base Salary") at the annual rate of $ $144,758, payable semi-monthly. The Executive shall be entitled to an annual percentage increase on each anniversary of this Agreement during its term (but not decrease) in Base Salary of no less than an amount equal to the aggregate preceding 12 months annual percentage increase of the U.S. Department of Labor Consumer Price Index for All Urban Consumers (CPI-U) for the New York area. Executive shall also be entitled to participate in any incentive compensation or bonus program which is instituted or maintained for company executives generally during the term of this Agreement.

4. Vacation and Benefits.

The Executive shall be provided three weeks paid vacation per year taking into account the Executive's time commitment to the Company described in Section 2 (b) above. The Executive's right to carry over any unused vacation entitlement to a subsequent calendar year is subject to the Company's vacation policy at that time. Executive shall also be entitled to the fringe benefits described on Appendix "A" attached hereto and any other benefits that Company extends generally to its management employees at any time during the term of this Agreement. Executive shall also be entitled to participate in any stock option plan or program of Company existing during the term of this Agreement

5. Business Expenses and Perquisites.

(a) During the Employment Term, reasonable and necessary business expenses incurred by Executive in the performance of his duties hereunder shall be reimbursed by the Company in accordance with the Company's policies on expense reimbursement, in effect from time to time. In addition, the Company shall pay the Executive's membership and related fees for any professional organizations, in accordance with the Company's policy on such payments in effect from time to time.

7. Termination.

Notwithstanding any other provision of this Agreement:

(a) For Cause by the Company. The Employment Term and the Executive's employment hereunder may be terminated by the Company for "Cause." For purposes of this Agreement, "Cause" shall mean (i) the Executive's gross neglect of, or willful and continued failure to substantially perform, his duties hereunder (other than as a result of total or partial incapacity due to physical or mental illness); (ii) a willful act by the Executive against the interests of the Company or which causes or is intended to or is likely to cause harm to the Company or its stockholders; (iii) the Executive's conviction, or plea of no contest or guilty, to a felony under the laws of the United States or any state thereof or of a lesser offense involving dishonesty, the theft of Company property; or (iv) a material breach of the Agreement by the Executive which is not cured by the Executive within twenty (20) days following written notice to the Executive by the Company of the nature of the breach. A mistake of fact or judgment made by the Executive in good faith shall not constitute Cause. Upon termination of the Executive's employment for Cause pursuant to this Section 6(a), the Executive shall be paid any accrued and unpaid Base Salary and benefits through the date of termination and shall have no further rights to any compensation or any other benefits under the Agreement or otherwise.

(b) Death. The Employment Term and the Executive's employment hereunder shall terminate upon his death. Upon termination of the Executive's employment hereunder due to death, the Executive's estate shall be entitled to receive (i) any accrued and unpaid Base Salary and benefits, and (ii) a single lump sum payment equal to one-quarter of the Executive's Base Salary, payable within 30 days of the Executive's death. Upon termination of the Executive's employment due to death pursuant to this Section 6(b), the Executive shall have no further rights to any compensation or any other benefits under this Agreement. All other benefits, if any, due the Executive following his termination due to death shall be determined in accordance with the plans, policies and practices of the Company.

(c) Without Cause by the Company. The Employment Term and the Executive's employment hereunder may be terminated at any time and for any reason or for no reason by the Company without Cause. If the Executive's employment is terminated by the Company without Cause (other than by reason of disability or death), the Executive shall be entitled to receive (i) any accrued and unpaid Base Salary and benefits, and (ii) a single lump sum payment, payable on the date of termination of the Executive's employment, equal to the amount of ___ (6) months Base Salary which would have been paid to the Executive had he remained employed by the Company at the level of Base Salary in effect on the date of termination and Executive's benefits under this agreement shall continue for ___(6) months after the date of termination. Upon termination of Executive's employment by the Company without Cause pursuant to this Section 6(c), Executive shall have no further rights to any compensation or any other benefits under this Agreement. All other benefits, if any, due Executive following Executive's termination of employment by the Company without Cause shall be determined in accordance with the plans, policies and practices of the Company.

(d) Voluntary Termination by Executive. The Executive shall provide the Company ninety (90) days' advance written notice in the event the Executive terminates his employment; provided that the Board may, in its sole discretion, terminate the Executive's employment with the Company prior to the expiration of the 90-day notice period. In such event and upon the expiration of such 90-day period (or such shorter time as the Board in its sole discretion may determine), the Executive's employment under this Agreement shall immediately and automatically terminate, and the Company shall pay the Executive any Base Salary earned and unpaid as of the Executive's termination date.

(e) Benefits/Release. In addition to any amounts which may be payable following a termination of employment pursuant to one of the paragraphs of this Section 6, the Executive or his beneficiaries shall be entitled to receive any benefits that may be provided for under the terms of an employee benefit plan in which the Executive is participating at the time of termination. Notwithstanding any other provision of this Agreement to the contrary, the Executive acknowledges and agrees that any and all payments to which the Executive is entitled under this Section 6 are conditioned upon and subject to the Executive's execution of a general waiver and release, in such form as may be prepared by the Company's attorneys, of all claims and issues arising under the Employment Agreement, except for such matters covered by provisions of this Agreement which expressly survive the termination of this Agreement. Except as provided in this Section 6, the Company shall have no further obligation or liability under this Agreement following a termination of employment by the Executive.

(f) Notice of Termination. Any purported termination of employment by the Company or by the Executive shall be communicated by written Notice of Termination to the other party hereto in accordance with Section 13(h) hereof. For purposes of this Agreement, a "Notice of Termination" shall mean a notice which shall indicate the specific termination provision in this Agreement relied upon and shall set forth in reasonable detail the facts and circumstances claimed to provide a basis for termination of employment under the provision so indicated.

7. Non-Competition.

(a) The Executive acknowledges and recognizes the highly competitive nature of the businesses of the Company and its Affiliates and accordingly agrees as follows:

(i) During the Employment Term and, for a period ending on the expiration of three years following the termination of the Executive's employment (the "Restricted Period"), the Executive will not directly or indirectly, (i) engage in any business for the Executive's own account that competes with the business of the Company, (ii) enter the employ of, or render any services to, any person engaged in any business that competes with the business of the Company, (iii) acquire a financial interest in, or otherwise become actively involved with, any person engaged in any business that competes with the business of the Company, directly or indirectly, as an individual, partner, shareholder, officer, director, principal, agent, trustee or consultant, or (iv) interfere with business relationships (whether formed before or after the date of this Agreement) between the Company or any of its Affiliates that are engaged in a business similar to the business of the company and customers or suppliers of the Company or its Affiliates. For purposes of this Agreement, an "Affiliate" of the Company shall mean any entity controlling, controlled by, or under common control with, the Company.

(ii) Notwithstanding anything to the contrary in this Agreement, the Executive may directly or indirectly own, solely as an investment, securities of any person engaged in the business of the Company which are publicly traded on a national or regional stock exchange or on the over-the-counter market if the Executive (i) is not a controlling person of, or a member of a group which controls, such person and (ii) does not, directly or indirectly, own one percent (1%) or more of any class of securities of such person.

(iii) During the Restricted Period, the Executive will not, directly or indirectly, (i) solicit or encourage any employee of the Company or its Affiliates to leave the employment of the Company or its Affiliates, or (ii) hire any such employee who has left the employment of the Company or its Affiliates (other than as a result of the termination of such employment by the Company or its Affiliates) within one year after the termination of such employee's employment with the Company or its Affiliates.

(iv) During the Restricted Period, the Executive will not, directly or indirectly, solicit or encourage to cease to work with the Company or its Affiliates any consultant then under contract with the Company or its Affiliates.

(b) It is expressly understood and agreed that although the Executive and the Company consider the restrictions contained in this Section 7 to be reasonable, if a final judicial determination is made by a court of competent jurisdiction that the time or territory or any other restriction contained in this Agreement is an unenforceable restriction against the Executive, the provisions of this Agreement shall not be rendered void but shall be deemed amended to apply as to such maximum time and territory and to such maximum extent as such court may judicially determine or indicate to be enforceable. Alternatively, if any court of competent jurisdiction finds that any restriction contained in this Agreement is unenforceable, and such restriction cannot be amended so as to make it enforceable, such finding shall not affect the enforceability of any of the other restrictions contained herein.

8. Confidentiality.

The Executive will not at any time (whether during or after his employment with the Company) disclose (other than as required in the fulfillment of his duties as an officer of the Company, or otherwise required for the business or other objectives of the Company or its Affiliates) or use for his own benefit or purposes or the benefit or purposes of any other person, firm, partnership, joint venture, association, corporation or other business organization, entity or enterprise other than the Company and any of its Affiliates, any trade secrets, information, data, or other confidential information relating to research and development, medical processes, patent know-how, customers, development programs, costs, marketing, trading, investment, sales activities, promotion, credit and financial data, manufacturing processes, financing methods, plans, or the business and affairs of the Company generally, or of any Affiliate of the Company; provided that the foregoing shall not apply to (i) information which is not unique to the Company or which is generally known to the industry or the public other than as a result of the Executive's breach of this covenant, and (ii) disclosures which are required by law. The Executive agrees that upon termination of his employment with the Company for any reason, he will return to the Company immediately all memoranda, books, papers, plans, information, letters and other data, and all copies thereof or therefrom, in any way relating to the business of the Company and its Affiliates, except that he may retain personal notes, notebooks and diaries. The Executive further agrees that he will not retain or use for his account at any time any trade names, trademark or other proprietary business designation used or owned in connection with the business of the Company or its Affiliates.

9. Developments as Property of the Company.

All discoveries, inventions, ideas, technology, formulas, designs, software, programs, algorithms, products, systems, applications, processes, procedures, methods and improvements and enhancements conceived, developed or otherwise made or created or produced by the Executive at any time, alone or with others, and in any way relating to the present or proposed business, products or services of the Company or its Affiliates, whether or not subject to patent, copyright or other protection and whether or not reduced to tangible form, during the Employment Term ("Developments"), shall be the sole and exclusive property of the Company. The Executive agrees to, and hereby does, assign to the Company, without any further consideration, all of the Executive's right, title and interest throughout the world in and to all Developments. The Executive agrees that all such Developments that are copyrightable may constitute works made for hire under the copyright laws of the United States and, as such, acknowledges that the Company or one of its Affiliates, as the case may be, is the author of such Developments and owns all of the rights comprised in the copyright of such Developments and the Executive hereby assigns to the Company without any further consideration all of the rights comprised in the copyright and other proprietary rights the Executive may have in any such Development to the extent that it might not be considered a work made for hire. The Executive shall make and maintain adequate and current written records of all Developments and shall disclose all Developments promptly, fully and in writing to the Company promptly after development of the same, and at any time upon request.

10. Specific Performance.

The Executive acknowledges and agrees that the Company's remedies at law for a breach or threatened breach of any of the provisions of Sections 7, 8 and 9 would be inadequate and, in recognition of this fact, the Executive agrees that, in the event of such a breach or threatened breach, in addition to any remedies at law, the Company, without posting any bond, shall be entitled to obtain equitable relief in the form of specific performance, temporary restraining order, temporary or permanent injunction or any other equitable remedy which may then be available.

11. Indemnification.

To the maximum extent allowed by the law of the State of Delaware, the Company shall indemnify and hold the Executive harmless from and against all losses, claims, damages, liabilities, costs and expenses (including, without limitation, attorneys' fees) which may, at any time, be suffered by the Executive as a result of the fact that the Executive is or was an employee of the Company, or is or was serving at the request of the Company. The expenses incurred by the Executive in any proceeding shall be paid promptly by the Company in advance of the final disposition of any proceeding, at the written request of the Executive to the fullest extent permitted under Delaware law.

12. Arbitration.

Upon demand of either party to this Agreement, whether made before or after institution of any judicial proceeding, any dispute, claim or controversy arising out of, connected with or relating to this Agreement ("Disputes") between the parties hereto shall be resolved by binding arbitration as provided herein; provided that any dispute relating to Sections 7, 8, and 9 (including any claim for specific performance) may be brought by any party hereto in any court of competent jurisdiction. Subject to the foregoing proviso, institution of a judicial proceeding by a party does not waive the right of the other party to demand arbitration hereunder within thirty (30) days following the institution of such proceeding. Arbitration shall be conducted a single arbitrator agreed upon the Company and the Executive, and otherwise in accordance with the arbitration rules (the "Arbitration Rules") of the American Arbitration Association and Title 9 of the U.S. Code. All arbitration hearings shall be conducted in Washington, D.C. (or such other location mutually agreed upon by the Company and the Executive). The expedited procedures set forth in Rule 51, et seq. of the Arbitration Rules shall be applicable to claims of less than $1,000,000. All applicable statutes of limitation shall apply to any Dispute. A judgment upon an award may be entered in any court having jurisdiction. The parties hereto do not waive any applicable Federal or state substantive law except as provided herein. The Company shall pay all fees and expenses for the arbitration itself; provided that the cost of the arbitrator will be equally divided between the parties. The parties shall be responsible for their own legal fees; provided that, if the Executive substantially prevails, the Company will reimburse his reasonable legal fees.

13. Miscellaneous.

(a) Governing Law. Except as otherwise expressly provided herein, this Agreement shall be governed by and construed in accordance with the laws of the State of Delaware.

(b) Entire Agreement/Amendments. This Agreement contains the entire understanding of the parties with respect to the employment of Executive by the Company and supersedes all prior agreements, whether written or oral, with respect thereto. There are no restrictions, agreements, promises, warranties, covenants or undertakings between the parties with respect to the subject matter herein other than those expressly set forth herein. This Agreement may not be altered, modified, or amended except by written instrument signed by the parties hereto.

(c) No Waiver. The failure of a party to insist upon strict adherence to any term of this Agreement on any occasion shall not be considered a waiver of such party's rights or deprive such party of the right thereafter to insist upon strict adherence to that term or any other term of this Agreement.

(d) Severability. In the event that any one or more of the provisions of this Agreement shall be or become invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions of this Agreement shall not be affected thereby.

(e) Assignment. This Agreement shall not be assignable by the Executive. This Agreement may be assigned by the Company to a company which is a successor in interest to substantially all of the business operations of the Company. Such assignment shall become effective when the Company notifies the Executive of such assignment or at such later date as may be specified in such notice. Upon such assignment, the rights and obligations of the Company hereunder shall become the rights and obligations of such successor company; provided that any assignee expressly assumes the obligations, rights and privileges of this Agreement.

(f) No Mitigation. The Executive shall not be required to mitigate the amount of any payment provided for pursuant to this Agreement by seeking other employment and, to the extent that the Executive obtains or undertakes other employment, the payment will not be reduced by the earnings of the Executive from the other employment.

(g) Successors; Binding Agreement. This Agreement shall inure to the benefit of and be binding upon personal or legal representatives, executors, administrators, successors, heirs, distributes, devises and legatees.

(h) Notice. For the purpose of this Agreement, notices and all other communications provided for in the Agreement shall be in writing and shall be deemed to have been duly given when delivered or mailed by United States registered mail, return receipt requested, postage prepaid, addressed, in the case of the Executive, to the Executive's address on file with the Company; all notices to the Company shall be directed to the attention of the President or to such other address as either party may have furnished to the other in writing in accordance herewith, except that notice of change of address shall be effective only upon receipt.

(i) Withholding Taxes. The Company may withhold from any amounts payable under this Agreement such Federal, state and local taxes as may be required to be withheld pursuant to any applicable law or regulation.

(j) Counterparts. This Agreement may be signed in counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument.

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

/s/ Dragan Cicic

Dragan Cicic, M.D.
393 17th St. Apt. 1A
Brooklyn, NY 11215

ACTINIUM PHARMACEUTICALS) INC.

By: /s/ Howard S. Wachtler

Howard S. Wachtler
Title: President and CEO
25B Hanover Road
Florham Park, NJ 07932

License, Development and Commercialization Agreement

between

Sloan-Kettering Institute of Cancer Research,

Actinium Pharmaceuticals, Inc.,

and

Actinium Pharmaceuticals, Ltd

CONFIDENTIAL

TABLE OF CONTENTS

TABLE OF CONTENTS

(continued)

Page

TABLE OF CONTENTS

(continued)

Page

TABLE OF CONTENTS

(continued)

Page

LICENSE, DEVELOPMENT AND COMMERCIALIZATION AGREEMENT

This Agreement is made and entered into as of February 11, 2002 ("Execution Date") between Sloan-Kettering Institute of Cancer Research (hereinafter "SKI"), a membership corporation of the State of New York with principal offices at 1275 York Avenue, New York, NY 10021, on the one hand, and Actinium Pharmaceuticals, Inc., a Delaware corporation with principal offices at 106 South Columbus Street, Alexandria, VA 22314, and Actinium Pharmaceuticals, Ltd:, a Bermuda corporation with principal offices at 22 Church Street Phase II 3rd Floor, Washington Mall P.O. Box HM2265, Hamilton HMJX, Bermuda , and their wholly owned subsidiaries (collectively and hereinafter "API"), on the other hand.

INTRODUCTION

WHEREAS, Sloan-Kettering Institute of Cancer Research Controls (defined below) certain SKI Patents (defined below) and SKI Know-How (defined below) related to Licensed Products (defined below), and has the right to grant certain rights and licenses thereunder as set forth herein; and

WHEREAS, API has certain expertise in the developing and commercializing pharmaceutical products, and API wishes to obtain certain licenses to Licensed Products; and

WHEREAS, SKI wishes to convey such license to API; and

WHEREAS, API and SKI wish to cooperate in optimizing the development and commercialization of targeted Ac-225 and/or Bi-213 as therapeutics by API; and

WHEREAS, API may desire for corporate and tax reasons to hold licenses outside the U.S. in the name of Actinium Pharmaceuticals, Ltd. For purposes of this Agreement, both Actinium Pharmaceuticals, Inc. and Actinium Pharmaceuticals, Ltd. shall be incorporated and referenced herein as "API".

NOW, THEREFORE, in consideration of the mutual promises, covenants and agreements hereinafter set forth, the sufficiency of which is hereby acknowledged, the parties to this Agreement mutually agree as follows:

Article I

Definitions

For purposes of this Agreement, the following initially capitalized terms in this Agreement, whether used in the singular or plural, shall have the following meanings:

1.1 "Affiliate" shall mean any corporation, company, partnership, joint venture and/or firm which controls, is controlled by, or is under common control with a specified person or entity. For purposes of this Section 1.1, "control" shall mean (a) in the case of corporate entities, direct or indirect ownership of fifty percent (50%) of the stock or shares having the right to vote for the election of directors, and (b) in the case of non-corporate entities, direct or indirect ownership of fifty percent (50%) of the equity interest with the power to direct the management and policies of such non-corporate entities.

1.2 "Agreement" shall mean this Agreement together with all exhibits, schedules, and appendices attached to this Agreement, all as respectively amended, modified or supplemented by the parties in accordance with the terms of this Agreement.

1.3 "Anniversary Date" shall mean each twelve (12) month period following the Effective Date of this Agreement.

1.4 "Business Day" shall mean any day on which banking institutions in the United States are open for business.

1.5 "Clinical Trials" shall mean human clinical trials conducted for inclusion in that portion of the Regulatory Filing for Regulatory Approval in a country in the European Union, the United States or Japan, which provides for the continued trials of a Licensed Products on sufficient numbers of patients to generate safety and efficacy data to support Regulatory Approval in the proposed therapeutic indication, as more fully defined, in the United States in 21 C.F.R.§312.21(c), and its equivalents in the European Union and Japan.

1.6 "Controlled" or "Controls", when used in reference to intellectual property, shall mean the legal authority or right of a party hereto (or any of its Affiliates) to grant a license or sublicense of intellectual property rights to another party, or to otherwise disclose proprietary or trade secret information to such other party, without, to the best of the granting party's knowledge, breaching the terms of any agreement with a Third Party, infringing upon the intellectual property rights of a Third Party, or misappropriating the proprietary or trade secret information of a Third Party.

1.7 "Development Plan" shall mean the drug development plan attached hereto as Schedule 2 as it may be amended from time to time by mutual consent. It shall include, among other things, a timeline for clinical development of Licensed Products, estimated budgets for pre-clinical and clinical studies for the Licensed Products, including but not limited to toxicology, pharmacology and efficacy studies in animals and humans, planned to be conducted to achieve each material step towards preparation of a New Drug Application for FDA market approval for the use of Licensed Products in the Field.

1.8 "Dollars" shall mean the lawful currency of the United States of America.

1.9 "FDA" shall mean the U.S. Food and Drug Administration or its successor agency, or equivalent regulatory authorities in other jurisdictions.

1.10 "Field" shall mean all therapeutic use of Licensed Products in humans and animals.

1.11 "First Commercial Sale" shall mean the first shipment of a Licensed Products to a Third Party by API or an Affiliate or sublicensee of API in a country in the Territory.

1.12 "GMP" shall mean the current Good Manufacturing Practice regulations promulgated by the FDA, published at 21 C.F.R. Part 210 et seq., as such regulations may be amended, and such equivalent foreign regulations or standards as may be applicable with respect to Licensed Products manufactured or sold outside the United States.

1.13 "Inventions" shall mean any patentably distinct derivatives or enhancements, in the structure, composition, manufacture, formulation, preparation, presentation, means of delivery, dosage, packaging or use of the products, devices, compositions and methods claimed in the patents and patent applications listed in Schedule 1. "SKI's Inventions" shall refer to Inventions Controlled by SKI..

1.14 "Know-How" shall mean any technical information on the structure, composition, manufacture, formulation, preparation, presentation, means of delivery, dosage, packaging or use of the products, devices, compositions and methods claimed in SKI Patents and may include chemical, stability, pharmacological, toxicological, clinical and manufacturing data. "SKI's Know-How" shall refer to Know-How Controlled by SKI.

1.15 "Licensed Product" shall mean a product, that is covered by a Valid Claim of an SKI Patent or which incorporates and utilizes SKI Know-How, prepared for therapeutic use comprising: (i) the radionuclide Ac-225 or Bi-213, and (ii) one or more targeting, delivery, attachment or carrier moieties including but not limited to monoclonal or other antibodies, antibody fragments or antibody derivatives, receptor ligands, proteins, peptides, liposomes, small molecules, or chemical chelators. Licensed Products shall necessarily include one member of each of the above two groups under Section 1.15 (i) and 1.15 (ii) and shall specifically exclude any single individual component. Licensed Products shall also include generators for Ac-225 or Bi-213.

1.16 "Major Market Country" shall mean the United States, Canada, Japan or any of the countries of the European Union.

1.17 "SKI Patents" shall mean those Patents and patent applications listed on Schedule 1 controlled by SKI and their foreign counterparts, and any divisionals, continuations, continuations-in-part and reissues thereof, and U.S or foreign Patents or patent applications covering such SKI Inventions added thereto in accordance with Section 2.3 from time to time during the term of this Agreement and divisionals, continuations, continuations-in-part and reissues thereof.

1.18 "NDA" or "New Drug Application" shall mean a new drug application filed with the FDA pursuant to 21 C.F.R. § 314, seeking permission to market the applicable Licensed Products in interstate commerce in the United States.

1.19 "Net Sales" mean the gross amount billed or invoiced on sales by API, its affiliates or sublicensees on account of sales of Licensed Products to Third Parties in the Territory *less*, to the extent such amounts are included in the gross invoiced sales price, incurred or accrued: (a) freight and insurance costs incurred in transporting product to such customers; (b) quantity, cash and other trade discounts actually allowed and taken; (c) customs duties, surcharges and taxes and other governmental charges incurred in connection with the production, sale, transportation, delivery, exportation, importation or use of product in final form; (d) *bona fide* bad debt expense; (e) amounts repaid or credited by reason of rejections (due to spoilage, damage or expiration of useful life) or retroactive price reductions (each in amounts consistent with industry custom and API's practice for similar products); (f) amounts incurred resulting from governmental mandated rebate or discount programs; (g) third party rebates and charge backs actually allowed and taken, including without limitation hospital buying group charge backs, hospital buying group/group purchasing organization administration fees or managed care organization rebates (each in amounts consistent with industry custom and API's practice for similar products) and (h) commissions paid to unaffiliated brokers or agents. Net Sales shall not include (x) the sale or transfer of a product between API, its affiliates and sublicensees for later sale to an independent third party; *provided, however*, that Net Sales shall include the subsequent sale to an independent third party and (y) the transfer by API, its affiliates or sublicensees without charge of reasonable quantities of product as samples (for promotion or otherwise) or as donations (*e.g.*, to non-profit or government agencies or to academic institutions for a non-commercial purpose).

1.20 "Person" shall mean any individual, corporation, partnership, association, joint-stock company, trust, unincorporated organization or government or political subdivision thereof.

1.21 "Reasonable Commercial Efforts" shall mean necessary and prudent efforts applied in a prompt, commercially reasonable manner, to the extent feasible and consistent with the exercise of good business judgment for the attainment of the goals and purposes of this Agreement consistent with current industry standards and practice for companies of like size and not less than the efforts applied by a party to its other projects of similar commercial potential.

1.22 "Regulatory Approval" shall mean, with respect to a country in the Territory, receipt of all authorizations by the appropriate governmental entity or entities necessary for commercial sale of a Licensed Products in that country including, without limitation and where applicable, approval of labeling, price, reimbursement and manufacturing. "Regulatory Approval" in the United States shall mean final approval of the NDA for such Licensed Products pursuant to 21 C.F.R. § 314, permitting marketing of the applicable Licensed Products in interstate commerce in the United States.

1.23 "Regulatory Authority" shall mean the FDA or any equivalent or additional governmental or regulatory agencies in the Territory.

1.24 "Regulatory Filing" shall mean all activities relating to the filing for and procurement of Regulatory Approval, including but not limited to price reimbursement approval for the marketing and sale of Licensed Products from the relevant Regulatory Authorities.

1.25 "Territory" shall mean all the countries and territories of the world.

1.26 "Third Party" shall mean any unincorporated body, Person, corporation or other entity other than API, SKI or their respective Affiliates or sublicensees of rights conveyed under this Agreement.

1.27 "Valid Claim" shall mean a claim of an issued SKI Patent which claim has not been held invalid or unenforceable by final decision of a court or other governmental agency of competent jurisdiction, unappealable or unappealed within the time allowed for appeal, and which is not admitted to be invalid or unenforceable through reissue, disclaimer or otherwise, or a claim of an SKI Patent which is actively being prosecuted in good faith by SKI.

Article II

License

2.1 Grant to API. Subject to the terms and conditions of this Agreement, SKI hereby grants to API an exclusive license in the Field under SKI Patents and SKI Know-How to develop, use, make, have made, market, offer to sell, sell and import for sale Licensed Products in the Territory, with the right to sublicense only as set forth below. SKI further grants to API an exclusive license to all SKI Know-How, pre-clinical and Clinical Trial research data needed for the research, manufacturing, sale or regulatory approval of the Licensed Products. SKI retains all rights to SKI Patents and SKI Know-How except to the extent explicitly granted to API hereunder.

2.2 Sublicense. API shall have the right to grant sublicenses under the license set forth in Section 2.1, to employ Affiliates and Third Parties, including sub-licenses to Affiliates of API for any country in the Territory outside the U.S., and to enter into distribution agreements in connection with the performance of its rights and obligations under this Agreement, provided that (a) the execution of a sublicense or a subcontract shall not in any way diminish, reduce or eliminate any of API's obligations under this Agreement, and API shall remain primarily liable for such obligations; (b) API shall obtain SKI's approval of all sublicensees and sublicense agreements prior to entering into such a sublicense, which approval shall not unreasonably be withheld and shall be conclusively deemed given if SKI does not respond to API's notice per Section 14.10 within 30 days of receipt of such notice by SKI (c) API shall provide a copy of the sublicense agreement to SKI which shall contain certain provisions substantially similar to certain provisions of this Agreement, such provisions to be mutually agreed to by the parties hereto prior to the granting of any sublicense; and (d) API shall only grant a sublicense to any Affiliate or Third Party which undertakes to perform those obligations of this Agreement relevant to such sublicense in accordance with the terms of this Agreement

2.3 SKI Disclosure of Know-How and Inventions. On a Licensed Product by Licensed Products basis, SKI shall, at such times as mutually agreed by the parties, disclose to API all Know-How in its Control relating to Licensed Products. An Invention shall be disclosed to API promptly upon the making of such Invention, provided, however, that disclosure of Inventions may be reasonably delayed for up to ninety (90) days to allow SKI to file a patent application on such Invention. Upon the reasonable request of API, SKI shall also disclose more detailed data and information as may be relevant to the evaluation of such Know-How or Inventions in the Field. API shall have ninety (90) days from receipt of written notification, including a reasonably detailed summary report of relevant experimental or clinical data, to evaluate the technology and request its inclusion in the Agreement. Upon API's request, and to the extent not prohibited by rights or obligations owed by SKI to any Third Party, such Invention shall be added to Schedule 1 and then it shall be governed by the terms of this Agreement.

Article III

Development

3.1 Efforts in Development.

(a) API shall finalize and deliver to SKI within 90 days of the Effective Date of this Agreement the Development Plan relating to Licensed Products that is accepted by the Joint Research and Development Committee pursuant to Article 3.2. The Development Plan may be amended by the parties hereto from time to time by mutual consent, including the incorporation of amendments requested by any future partners employed to help develop or commercialize Licensed Products, and shall be a part of this Agreement.

(b) SKI shall have a right of first refusal with respect to (i) conducting Phase I and Phase II Clinical Trials of Licensed Products, and (ii) being the lead institution in multi-center trials of the Licensed Products conducted by API or its sub-contractors, provided that SKI can reasonably demonstrate to API that it has the capabilities to support such trials in accordance with customary standards of the industry. SKI shall not object to the use by API of other qualified institutions in research and development efforts subject to this Section 3.1(b). In the event that SKI shall not exercise its right of first refusal by written notice to API within thirty (30) days after receiving written request from API, then SKI's right of first refusal shall terminate.

(c) Subject to its diligence obligations set forth in Section 4.3 and notwithstanding anything else to the contrary herein, following the Effective Date of this Agreement, API shall be responsible, at its cost and expense, and in its sole commercially reasonable judgment, for all research and development activities which are necessary to obtain regulatory approvals for Licensed Products in the Field and any post-approval studies required as a condition of obtaining any Regulatory Approval for Licensed Products in the Field. In addition, API shall be responsible for any other studies (or portions of studies) necessary or desirable, in its sole commercially reasonable judgment, for maintaining any Regulatory Approval in any country, as well as any pre-marketing studies prior to Regulatory Approval and post-marketing studies conducted following a Regulatory Approval. Each Regulatory Filing and Regulatory Approval shall be placed in API's name or the name of an Affiliate of API. API will use Reasonable Commercial Efforts to develop and commercialize Licensed Products and obtain Regulatory Approvals therefore. This Section 3.1© shall not, however, be construed in any way to limit the academic freedom of SKI and its researchers who may or may not be involved in clinical studies of Licensed Products.

3.2 Joint Research and Development Committee. API and SKI shall form a Joint Research and Development Committee, which will include three representatives of each party. The Committee shall meet at least semi-annually to review and manage current research and development activities and any changes or revisions to the Development Plan. Minutes of Committee meetings will be prepared by API and circulated to all designated representatives of each party. Such minutes shall be treated as Confidential Information pursuant to this Agreement. All decisions of the Committee shall be by simple majority.

3.3 Regulatory Approvals. API shall be responsible for all Regulatory Filings for the Licensed Products in all countries in the Territory. API will assume sole financial responsibility for the preparation of regulatory documents or any supplemental studies necessary to achieve Regulatory Approvals in the Territory.

3.4 Technology Transfer. SKI shall transfer all materials, Know-How, Inventions, data, and information that it deems necessary for commercial development of Licensed Products, and shall consult, as it deems appropriate for FDA discussions and filings. All transfers by either party of the other's proprietary technology of confidential information shall be made only under the Confidentiality provisions of this Agreement.

3.5 Cooperation. SKI shall reasonably support API in obtaining Regulatory Approvals for Licensed Products, as the case may be, including providing necessary documents, or other materials required by law to obtain such Regulatory Approvals. In all cases the expense of such cooperation shall be covered by API. Specifically, among other things each party agrees to execute documents, and provide a letter of authorization or other documentation to the appropriate regulatory authorities or to any other governmental authority or agency, as necessary or advisable, to enable either party to file, refer to or incorporate by reference all technical information including data on file with any Regulatory Authority concerning Licensed Products that may be contained in a drug master file or otherwise. In the event that any such drug master file is supplemented or modified by API, API agrees to notify SKI promptly that supplements or modifications have been made. API may use such information for the sole purpose of fulfilling its rights and obligations under this Agreement.

3.6 Manufacture of Licensed Products. API shall be solely responsible for manufacturing or having manufactured Licensed Products for clinical and commercial applications. All material will be manufactured in compliance with GMP standards.

Article IV

Commercialization

4.1 Marketing and Promotion. API shall have the exclusive right to market and commercialize Licensed Products upon Regulatory Approval. API shall not promote or market Licensed Products for off label use or seek labeling that describes, names or lists any use outside of the Field, and shall use Reasonable Commercial Efforts to obtain this same provision (Section 4.1) from Third Party sublicensees of Licensed Products.

4.2 Product Markings. Each Licensed Product marketed and sold by API under this Agreement shall be marked, but only to the extent required by law: (a) with a notice that such Licensed Product is sold under a license from SKI and (b) with all patent and other intellectual property notices relating to the SKI.

4.3 Commercialization Efforts.

(a) Market Launch. API shall use Commercially Reasonable Efforts to effect the introduction of Licensed Products into the countries in the Territory as soon as reasonably practicable. The parties agree and acknowledge that this most likely will require that API actively seek to sublicense the Licensed Products in certain countries of the Territory or enter into distribution agreements. Such sub-licenses shall be subject to SKI's prior approval, such approval not to be unreasonably withheld.

(b) Availability to Public. Following the First Commercial Sale of Licensed Products in a country of the Territory and until the expiration or termination of this Agreement, API shall use Reasonable Commercial Efforts to market and sell Licensed Products in that country.

4.4 Supply of Drug. API or its sublicensee shall supply SKI with Licensed Products free of charge for its internal use in research and patient care, provided that the total retail value of any Licensed Product thus supplied does not exceed 50% of the royalties due to SKI on worldwide sales of such Licensed Product pursuant to Section 5.6.

Article V

Payments

5.1 Technology Access Fee. Within ten (10) Business Days after the Effective Date, API shall pay to SKI the sum of fifty thousand Dollars ($50,000).

5.2 Annual Maintenance Fee. Within ten (10) Business Days after each Anniversary Date of this Agreement, API shall pay to SKI the sum of fifty thousand Dollars ($50,000) as an annual maintenance fee. Each year's annual maintenance fee shall apply as a credit against that particular year's royalty payment, as applicable.

5.3 Annual Research Funding. API shall pay to SKI an annual research fee of at least fifty thousand Dollars ($50,000) paid in accordance with this sub-section 5.3 or on a project by project basis, as mutually agreed to by the parties. This research funding shall not be applied to any clinical trials sponsored by API.

5.4 Sublicense License Fees. If API enters into a sublicense with a Third Party or otherwise grants the rights to Licensed Products to a Third Party, then API shall pay SKI fifteen (15%) percent of all payments received from such Third Party other than payments for reimbursement of research and development expenses and sale of equity at fair market value received by API or its Affiliate under such sublicense. SKI shall be entitled to receive 15% of any premiums on equity sales, and any research and development payments that are not actually expended for the specific research and development purposes contemplated by the payments.

5.5 Milestone Payments by API.

(a) Milestone Payments. API will make the following payments to SKI at such time as any one or more of the following milestones is achieved with respect to each Licensed Product by API or its sublicensee.

Milestone	Dollars
The filing of NDA for Regulatory Approval for each Licensed Product	$750,000
The receipt of Regulatory Approval of NDA from FDA for each Licensed Product.	$1,750,000

(b) Timing. Payment shall be made on or before the forty-fifth (45th) Business Day following the occurrence of an event giving rise to a payment obligation hereunder. All payments shall be made by wire transfer in Dollars to the credit of such bank account as may be designated, from time to time, by SKI in writing to API.

(c) Single Payment Obligation. It is understood that each of the milestone payments above in subparagraph (a) will not be made more than once per Licensed Product.

(d) Credits. Milestone payments received by SKI pursuant to Section 5.4, above, which are associated with either the filing of an NDA or the receipt of Regulatory Approval shall be fully creditable on a dollar for dollar basis by API against the milestone payments which API would otherwise be required to make pursuant to this Section 5.5.

5.6 Royalties.

(a) Term. Running royalty payments shall be payable on each Licensed Product on a country by country basis from the Effective Date, until with respect to any such country and such Licensed Product, the later of (1) ten (10) years from the First Commercial Sale or (2) the last to expire SKI Patent (including extensions thereof) in any country with a Valid Claim covering the Licensed Products or a method of use thereof.

(b) From API. API will report all sales of Licensed Products to SKI as specified in this Article. API will pay royalties to SKI of two (2) percent on Net Sales of each Licensed Product in the Territory ("Annual Net Sales"), regardless of whether API or a sublicensee sells such Licensed Product.

(c) From API's Sublicensees. API will obtain the same records of sales of Licensed Products by its sublicensees from its sublicensees as are required for API to keep for its own sales under this Agreement and will report those sales to SKI in the same manner as specified in this Article for its own sales.

(d) Royalty Reductions.

(i) **Generic Competition.** If a Generic Version (as defined below) of a Licensed Product is sold by a Third Party in a country in the Territory after which sales of Licensed Products by API in any calendar year constitute fifty percent (50%) or less of the combined sales (in values) of Licensed Products and Generic Versions of Licensed Products in such calendar year according to IMS market share data in such country for such calendar year, then API shall not be required to pay royalties for that portion of the calendar year in such country. Notwithstanding the foregoing, if, at any time during the twenty-four (24) months after a termination of such royalties, there is no Generic Version of Licensed Products on the market in such country, then royalties shall resume with respect to Net Sales of such Licensed Products in such country. "Generic Version" of a Licensed Products shall mean any pharmaceutical product (other than a product which was initially sold as a Licensed Products hereunder) that includes the same active ingredient as that used in Licensed Products and is sold by a Third Party. In the event of the introduction of a Generic Version of a Licensed Products in any country in the Territory, the parties will cooperate to challenge such introduction in a legal and appropriate manner.

5.7 Sales Reports.

(a) Substance of Quarterly Reports. During the term of this Agreement and after the First Commercial Sale of the Licensed Products, API shall furnish or cause to be furnished to SKI on a quarterly basis, calendar basis, a written report or reports covering the calendar year (each such year being sometimes referred to herein as a "reporting period") showing:

(i) the gross sales of Licensed Products in each country in the Territory,

(ii) the Net Sales of Licensed Products in each country in the Territory,

(iii) the Royalties payable in United States Dollars ("Dollars") in respect of such sales and the basis of calculating those Royalties;

(iv) the exchange rates used in converting into Dollars, from the currencies in which sales were made, any payments due which are based on Net Sales; and,

(v) dispositions of Licensed Products other than pursuant to sale for cash.

(b) Timing. Final reports shall be due on the forty-fifth (45) day following the close of each reporting period for Major Market Countries and no later than ninety (90) days following the close of each reporting period for all other countries in the Territory.

(c) Records. API shall keep accurate records in sufficient detail to enable the amounts due hereunder to be determined and to be verified by an independent certified public accountant mutually agreed upon by the parties. API shall be responsible for all payments that are due to SKI but have not been Paid by API's sublicensees or marketing partners.

(d) Currency Exchange. With respect to sales of Licensed Products invoiced in Dollars, the Net Sales amounts and the amounts due to SKI hereunder shall be expressed in Dollars. With respect to sales of Licensed Products invoiced in a currency other than Dollars, the Net Sales and amounts due to SKI hereunder shall be expressed in the domestic currency of the party making the sale, together with the Dollar equivalent of the amount payable to SKI, calculated as the average of the exchange rates most recently quoted in the Wall Street Journal in New York on the fifteenth (15th) Business Day of each month in the last respective calendar quarter of the year.

(e) Royalty Payment Due Date; Accrual. Royalties which have accrued during any calendar year and are required to be shown on a sales report provided for under this Section 5.7 of this Agreement shall be due and payable on the date such sales report is due. Minimum royalties due pursuant to Section 5.6(c) shall be due and payable ninety (90) days after the close of the relevant calendar year.

(f) API, its Affiliates and sublicensees shall keep for three (3) years from the date of each payment of royalties complete and accurate records of sales by API and its Affiliates and sublicensees of Licensed Products in sufficient detail to allow the accruing royalties to be determined accurately. SKI shall have the right for a period of three (3) years after receiving any report or statement with respect to royalties due and

payable to appoint an independent certified public accountant reasonably acceptable to API to inspect the relevant records of API and its Affiliates and sublicensees to verify such report or statement. API and its Affiliates and sublicensees shall each make its records available for inspection by such independent certified public accountant during regular business hours at such place or places where such records are customarily kept, upon reasonable notice from SKI, solely to verify the accuracy of the reports and payments. Such inspection right shall not be exercised more than once in any calendar year. SKI agrees to hold in strict confidence all information concerning royalty payments and reports, and all information learned in the course of any audit or inspection (and not to make copies of such reports and information), except to the extent necessary for SKI to reveal such information in order to enforce its rights under this Agreement or if disclosure is required by law, regulation or judicial order. The results of each inspection, if any, shall be binding on both parties. SKI shall pay for such inspections, except that in the event there is any upward adjustment in aggregate royalties payable for any year shown by such inspection of more than ten percent (10%) of the amount Paid, API shall pay for such inspection. API shall include in each sublicense or marketing agreement entered into by it pursuant to this Agreement a provision requiring the sublicensee or marketing partner to keep and maintain adequate records of sales made pursuant to such sublicense or marketing agreement and to grant access to such records by the aforementioned independent public accountant for the reasons specified in this Section.

(ii) Any overpayments shall be fully creditable against amounts payable in subsequent payment periods.

(iii) SKI agrees that all information subject to review under this Section or under any sublicense or marketing agreement is confidential and that SKI shall retain and cause its representative to retain all such information in confidence.

(f) Tax Withholding. The withholding tax, duties, and other levies (if any) applied by a government of any country of the Territory on payments made by API to SKI hereunder shall be borne by SKI. API shall cooperate with SKI to enable SKI to claim exemption therefrom under any double taxation or similar agreement in force and shall provide to SKI proper evidence of payments of withholding tax and assist SKI by obtaining or providing in as far as possible the required documentation for the purpose of SKI's tax returns.

5.8 Interest Due. In case of any delay in payment by API to SKI not occasioned by Force Majeure, interest on the overdue payment shall accrue at an annual interest rate, compounded monthly, equal to the prime rate as reported in The Wall Street Journal, plus one and one half percentage points (1.5%), as determined for each month on the last business day of that month, assessed from the day payment was initially due. The foregoing interest shall be due from API without any special notice.

Article VI

Intellectual Property

6.1 Ownership; Inventions. Inventorship for Inventions and Know-How conceived or reduced to practice during the course of the performance of activities pursuant to this Agreement shall be determined in accordance with U.S. patent laws for determining inventorship. Ownership shall be determined based on inventorship. In the event of a dispute regarding inventorship, if the parties are unable to resolve such inventorship dispute, the Parties shall establish a procedure to resolve such dispute, which may include engaging a Third Party patent attorney jointly selected by the Parties to resolve such dispute.

6.2 SKI Patentable Inventions and Know-How.

(a) SKI Patent Prosecution.

(i) *Prosecution and Maintenance.* During the term of the Agreement, SKI shall, at API's expense, diligently and in the reasonable exercise of its commercial discretion, prepare, file, prosecute, maintain, renew and defend SKI Patents. Such patents will be prosecuted by outside patent counsel who will copy API on all material correspondence concerning such prosecution and will accommodate API's suggestions in this regard subject to SKI's approval.

(ii) *Discontinuance.* If SKI does not intend to file for patent protection or does not wish to continue preparation, prosecution, or maintenance of a SKI Patent, then it shall give at least thirty (30) days advance notice, and in no event less than a reasonable period of time for API to act in its stead.

(A) In such case, API may elect at its sole discretion to continue preparation, filing and prosecution or maintenance of the discontinued patent at its sole expense.

(B) SKI shall execute such documents and perform such acts as may be reasonably necessary for API to file or to continue prosecution or maintenance.

(b) Cooperation. SKI will consult API and will keep API continuously informed of all matters relating to the preparation, filing, prosecution and maintenance of SKI Patents covered by this Agreement including, but not limited to, disclosing to API the complete text of all such SKI Patents. In addition, SKI will provide API with copies of all material correspondence with the applicable patent office in such a manner to allow API a meaningful opportunity to comment.

6.3 Costs. API will be responsible for all future costs of patent preparation, prosecution and maintenance for its patents and SKI Patents worldwide. API shall also reimburse SKI for all previous costs incurred by SKI as of the date of this Agreement in the preparation, prosecution and maintenance of SKI Patents within thirty (30) days of receipt of an invoice from SKI detailing such costs, up to the aggregate amount of $100,000.

6.4 Infringement Claims by Third Parties.

(a) Notice. If the manufacture, use or sale of Licensed Products under the SKI Patents results in a claim or a threatened claim by a Third Party against a party hereto for patent infringement or for inducing or contributing to patent infringement ("Infringement Claim"), the party first having notice of an Infringement Claim shall promptly notify the other in writing. The notice shall set forth the facts of the Infringement Claim in reasonable detail.

(b) Third Party Licenses. In the event that practicing under the SKI Patents in connection with manufacture, use or sale of the Licensed Products in a country would infringe a Third Party patent and a license to such Third Party patent is available and API in its sole discretion seeks such a license, the parties agree:

(i) Subject to Section 5.6(c), API will be responsible for all costs associated with acquiring any Third Party license that is required for API to practice any of the SKI Patents; and

(ii) API will use reasonable efforts to obtain required licenses under the Third Party's patents, with a right to sublicense to SKI, under reasonable sublicense terms mutually acceptable to both parties.

(c) Defense. In the event of the institution of any suit by a Third Party against API, API shall have the right but not the obligation to defend such suit at its expense. SKI shall cooperate and assist API in any such litigation at API's expense.

6.5 Infringement Claims Against Third Parties

(a) Cooperation. SKI and API each agree to take reasonable actions to protect SKI Patents from infringement. If one party brings any such action or proceeding, the second party may be joined as a party plaintiff if necessary for the action or proceeding to proceed and, in case of joining, the second party agrees to give the first party reasonable assistance and authority to file and to prosecute such suit.

(b) Notice. If any SKI Patents are infringed by a Third Party, the party to this Agreement first having knowledge of such infringement, or knowledge of a reasonable probability of such infringement, shall promptly notify the other in writing. The notice shall set forth the facts of such infringement in reasonable detail.

(c) Institution of Proceedings. API, shall have the primary right, but not the obligation, to institute, prosecute, and control with its own counsel any action or proceeding with respect to infringement of such SKI Patent and the other party shall have the right, at its own expense, to be represented in such action by its own counsel.

(d) Failure to Institute Proceedings. If the party having the primary right or responsibility to institute, prosecute, and control such action or prosecution fails to do so within a period of one hundred twenty (120) days after receiving notice of the infringement, the other party shall have the right to bring and control any such action by counsel of its own choice, and the other party shall have the right, at its own expense, to be represented in any such action by counsel of its own choice.

(e) Costs and Expenses. The costs and expenses of all suits brought by a party under this Section shall be reimbursed to such party and then to the other party, if it participates in such suit, pro rata, out of any damages or other monetary awards recovered therein in favor of SKI or API.

(f) Division of Damages Award. The party instituting infringement proceedings under Section 6.5(d) shall recover actual out-of-pocket expenses associated with any litigation or settlement thereof from any recovery made by it, after which the other party shall be entitled to recover its expenses. Any excess amount shall be divided such that the party instituting infringement proceedings receives 90% of such excess and the other party receives 10%.

(g) Settlement. The parties shall keep each other informed of the status of and of their respective activities regarding any litigation or settlement thereof concerning Licensed Products in the Field, provided however, that no settlement or consent judgment or other voluntary final disposition of a suit under this Section may be undertaken without the consent of the other party if such settlement would require the other party to be subject to an injunction or to make a monetary payment or would otherwise adversely affect the other party's rights under this Agreement.

6.6 Notice of Certification. SKI and API each shall immediately give notice to the other of any certification filed under the "U.S. Drug Price Competition and Patent Term Restoration Act of 1984" (or its foreign equivalent) claiming that a SKI Patent is invalid or that infringement will not arise from the manufacture, use or sale of any Licensed Products by a Third Party.

(a) If API decides not to bring infringement proceedings against the entity making such a certification, API shall give notice to SKI of its decision not to bring suit within twenty-one (21) days after receipt of notice of such certification.

(b) SKI may then, but is not required to, bring suit against the party that filed the certification.

(c) Any suit by API or SKI shall either be in the name of API or in the name of SKI, or jointly in the name of API and SKI, as may be required by law.

(d) For this purpose, the party not bringing suit shall execute such legal papers necessary for the prosecution of such suit as may be reasonably requested by the party bringing suit.

6.7 Patent Term Extensions. The parties shall cooperate in good faith with each other in gaining patent term extension wherever applicable to SKI Patents covering Licensed Products.

(a) API and SKI shall jointly determine which of SKI Patents shall be extended.

(b) All filings for such extension shall be made by the party responsible for prosecution and maintenance of the SKI Patent.

6.8 Trademarks. During the Term of this Agreement, API will select, own, maintain and enforce all trademarks for Licensed Products throughout the Territory at its expense.

Article VII

Representations and Warranties of SKI

7.1 SKI represents and warrants that

(a) This Agreement has been duly executed and delivered by SKI and constitutes the valid and binding obligation of SKI, enforceable against SKI in accordance with its terms except as enforceability may be limited by bankruptcy, fraudulent conveyance, insolvency, reorganization, moratorium and other laws relating to or affecting creditors' rights generally and by general equitable principles. The execution, delivery and performance of this Agreement have been duly authorized by all necessary action on the part of SKI, its officers and directors.

(b) To the best of its knowledge, SKI owns or possesses adequate licenses or other rights to use all SKI Patents, and to grant the licenses herein; and (b) to the best of its knowledge, the granting of the licenses to API hereunder does not violate any right known to SKI of any Third Party.

(c) To the best of SKI's knowledge, the development, manufacture, use or sale of Licensed Products pursuant to this Agreement will not infringe or conflict with any Third Party right or patent, and SKI is not aware of any pending patent application that, if issued, would be infringed by the development, manufacture, use or sale of any the Licensed Products pursuant to this Agreement.

(d) To the best of SKI's knowledge, the execution, delivery and performance of this Agreement by SKI does not conflict with any agreement, instrument or understanding, oral or written, to which it is a party or by which it may be bound, and, to the best of its knowledge, does not violate any material law or regulation of any court, governmental body or administrative or other agency having authority over it;

(e) To the best of SKI's knowledge, SKI is not currently a party to, and during the term of this Agreement will not enter into, any agreements, oral or written, that are inconsistent with its obligations under this Agreement;

(f) SKI is duly organized and validly existing under the laws of the jurisdiction of its incorporation and has full legal power and authority to enter into this Agreement; and

(g) SKI is not subject to any order, decree or injunction by a court of competent jurisdiction, which prevents or materially delays the consummation of the transactions contemplated by this Agreement.

Article VIII

Representations and Warranties of API

8.1 API Represents and Warrants that

(a) The execution, delivery and performance of this Agreement by API does not conflict with any agreement, instrument or understanding, oral or written, to which it is a party or by which it may be bound, and, to the best of its knowledge, does not violate any material law or regulation of any court, governmental body or administrative or other agency having authority over it;

(b) API is not currently a party to, and during the term of this Agreement will not enter into, any agreements, oral or written, that are inconsistent with its obligations under this Agreement;

(c) API is duly organized and validly existing under the laws of the jurisdiction of its incorporation and has full legal power and authority to enter into this Agreement;

(d) API is not subject to any order, decree or injunction by a court of competent jurisdiction which prevents or materially delays the consummation of the transactions contemplated by this Agreement; and

(e) This Agreement has been duly executed and delivered by API and constitutes the valid and binding obligation of API, enforceable against API in accordance with its terms except as enforceability may be limited by bankruptcy, fraudulent conveyance, insolvency, reorganization, moratorium and other laws relating to or affecting creditors' rights generally and by general equitable principles. The execution, delivery and performance of this Agreement have been duly authorized by all necessary action on the part of API, its officers and directors.

Article IX

Warranties

9.1 **THE LIMITED WARRANTIES CONTAINED IN ARTICLE VIII and IX ARE THE SOLE WARRANTIES GIVEN BY THE PARTIES AND ARE MADE EXPRESSLY IN LIEU OF AND EXCLUDE ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, INFRINGEMENT OR OTHERWISE, AND ALL OTHER EXPRESS OR IMPLIED REPRESENTATIONS AND WARRANTIES PROVIDED BY COMMON LAW, STATUTE OR OTHERWISE ARE HEREBY DISCLAIMED BY BOTH PARTIES.**

Article X

Confidentiality

10.1 Confidentiality. During the term of this Agreement, and for a period of five (5) years thereafter, each party hereto will maintain in confidence all information disclosed by the other party hereto and provided in writing and marked Confidential ("Confidential Information"). Neither party shall use, disclose or grant use of such Confidential Information except as required under this Agreement. To the extent that disclosure is authorized by this Agreement, the disclosing party shall obtain prior agreement from its employees, agents, consultants, Affiliates, sublicensees or clinical investigators to whom disclosure is to be made to hold in confidence and not make use of such information for any purpose other than those permitted by this Agreement. Each party shall use at least the same standard of care as it uses to protect its own Confidential Information to ensure that such employees, agents, consultants, Affiliates, sublicensees and clinical investigators do not disclose or make any unauthorized use of such Confidential Information. Each party shall promptly notify the other upon discovery of any unauthorized use or disclosure of Confidential Information. Confidential Information shall not include any information which:

(a) was already known to the receiving party, other than under an obligation of confidentiality, at the time of disclosure by the other party;

(b) was generally available to the public or otherwise part of the public domain at the time of its disclosure to the other party;

(c) becomes generally available to the public or otherwise part of the public domain after its disclosure and other than through any act or omission of the receiving party in breach of this Agreement;

(d) was disclosed to the receiving party, other than under an obligation of confidentiality, by a Third Party who had no obligation to the other party not to disclose such information; or

(e) was independently developed by the receiving party without reference to the disclosure by the other party.

10.1.1 The parties agree that the material financial terms of the Agreement shall be considered the Confidential Information of both parties.

10.1.2 Each party may disclose the Confidential Information to the extent such disclosure is reasonably necessary in filing or prosecuting patent applications, prosecuting or defending litigation, or complying with any applicable statute or governmental regulation. In addition, either party may disclose Confidential Information to its Affiliates, and to its licensee; provided, however, in connection with any such disclosure the disclosing party shall secure confidential treatment of such Confidential Information.

10.1.3 The parties shall undertake to ensure that all their employees who have access to Confidential Information of the other party are under obligations of confidentiality fully consistent with those provided in this Article.

Article XI

Publication

11.1 Publication. Each of API and SKI reserves the right to publish or publicly present the results of their respective activities under the Development Plan (research, clinical, etc.) (the "Results") subject to the following terms and conditions:

(a) The party proposing to publish or publicly present the Results (the "publishing party") will submit a draft of any proposed manuscript or speech to the other party (the "non-publishing party") for comments prior to submission for publication or oral presentation.

(b) If the publishing party shall disagree with the non-publishing party's assessment of the impact of the publication, then the issue shall be referred to the Joint Research and Development Committee.

(c) The parties agree that authorship of any publication will be determined based on the customary standards then being applied in the relevant scientific journal.

(d) The parties will use their best efforts to gain the right to review proposed publications, including without limitation, public presentations, by sublicensees, consultants or contractors relating to the subject matter of the Development Plan.

(e) No party may publish confidential or proprietary information of the other party, the use of which is restricted under Article XII hereof, without the written consent of the other party.

(f) This Article shall be inapplicable to the publication of information presented in substantially the same form in which was previously published or disclosed to the public, and to any other disclosures which, on the advice of counsel, are required by law to be disclosed.

(g) Publicity. Neither party shall use the name of the other without the other party's consent in any publicity materials Both parties acknowledge that they are, or may be, subject to disclosure requirements. Therefore, both parties shall agree on a joint press release with regard to this Agreement substantially in the form of a press release to be mutually agreed to by the parties. Such press release is anticipated to be issued within fifteen (15) Business Days after the Effective Date or earlier as may be required by law.

Article XII

Term and Termination

12.1 Term.

(a) Term. Unless earlier terminated as provided herein, the term of this Agreement shall commence as of February 11, 2002 ("Effective Date") and shall remain in full force and effect until the later of: (1) ten (10) years from the First Commercial Sale of the last Licensed Product or (2) the termination of the last to expire SKI Patent covering Licensed Products under a Valid Claim.

(b) Accrued Obligations. Except where explicitly provided elsewhere herein, termination of this Agreement for any reason, or expiration of this Agreement, will not affect: (i) obligations, including the payment of any royalties or other sums which have accrued as of the date of termination or expiration, and (ii) rights and obligations which, from the context thereof, are intended to survive termination or expiration of this Agreement.

12.2 Termination and License Reversion for Lack of Due Diligence SKI shall have the right to terminate this Agreement and, if so terminated, the Licensed SKI Patents shall revert to SKI, and SKI shall be free to enter into a license arrangement with any Third Party if:

(i) API fails to secure access to a supply of Ac-225 necessary to perform this Agreement in accordance with the Development Plan within two (2) years of execution of this Agreement, or does not demonstrate to SKI's satisfaction that it has made best efforts to secure such access at the one-year anniversary of the date of execution of this Agreement.

(ii) API does not, within six (6) months of the completion of the first successful company-sponsored Phase II Clinical Trial of a Licensed Product, conclude either (1) a marketing agreement for at least one Licensed Product in the area of cancer therapy with any pharmaceutical company that can demonstrate, to the reasonable satisfaction of SKI, the ability to develop and commercialize Licensed Products in Major Market Countries whether directly, through affiliates or through established relationships with sublicensees, or 2) manufacturing and marketing agreements with multiple parties who, in the aggregate and together with API and in SKI's judgment, provide credible resources for worldwide manufacturing and marketing of Licensed Products;

(iii) API fails to diligently pursue the commercialization of Licensed Products per the Development Plan attached herewith as Schedule 2 and is a part of this Agreement, which will specify target dates for clinical development milestones including but not limited to the initiation of Phase I, II and III of Clinical Trials of the first Licensed Products, or

(iv) API fails to meet any of its payment obligations under this Agreement, ; provided, however, that such termination shall become effective only if API shall fail to remedy or cure the breach for payment obligation under this Agreement within thirty (30) days after notice from SKI.

12.3 Termination For Insolvency. Either party may terminate this Agreement immediately upon delivery of written notice to the other party (a) upon the institution by or against the other party of insolvency, receivership or bankruptcy proceedings or any other proceedings for the settlement of the other party's debts, provided, however with respect to involuntary proceedings, that such proceedings are not dismissed within one hundred and twenty (120) days; (b) upon the other party's making an assignment for the benefit of creditors; or (c) upon the other party's dissolution or ceasing to do business or sale of its assets or merger with another company, unless SKI approves of the sale or merger, which is not to be unreasonably withheld. Should SKI terminate the Agreement under this Article 12.3, all rights and licenses granted to API under this Agreement shall revert to SKI.

Subject to the terms of the U.S. Bankruptcy Code, notwithstanding the bankruptcy of SKI, or the impairment of performance by SKI of its obligations under this Agreement as a result of an insolvency event with respect to SKI, API shall be entitled to retain the licenses granted herein, subject to SKI's rights to terminate this Agreement for reasons other than bankruptcy or insolvency as expressly provided in this Agreement.

12.4 Material Breach. Either party may terminate this Agreement upon ninety (90) days prior written notice to the other party upon the material breach by the other party of any of its obligations under this Agreement (including API's entering into sublicense or marketing agreements without SKI's approval); provided, however, that such termination shall become effective only if the other party shall fail to remedy or cure the breach within such ninety (90) day period.

12.5 Termination by API. API may terminate this Agreement upon thirty (30) days advance written notice to SKI at any time for any reason beginning on the 20th Business Day after the Execution Date as set forth in the first paragraph of this Agreement. Termination under this Section 12.5 shall not relieve API of any of its obligations under this agreement accrued or due prior to termination.

12.6 Effect Of Termination.

(a) Effect On License. Upon the expiration or earlier termination of this Agreement pursuant to this Section 12, the rights licensed under this Agreement shall be treated as follows:

(i) Upon the expiration of the Term, API shall have a fully paid-up, perpetual, irrevocable, royalty-free, transferable, worldwide, non-exclusive right and license under the SKI Patents and SKI Know-How existing as of the date of such expiration to make, have made, use, offer to sell, and sell Licensed Products in the Territory.

(ii) Upon termination of this Agreement pursuant to Section 12.2, 12.3, 12.4 or 12.5 above:

(A) All rights to SKI Patents and technology, including any Know-How, shall revert to SKI.

(B) Copies of, and the right to utilize, all data and any Know-How, generated by API relevant to Licensed Products shall be provided to SKI.

(b) Ongoing Obligations. Upon expiration or termination of this Agreement for any reason, each party shall immediately return to the other party or destroy any Confidential Information disclosed by the other party.

12.7 Inventory. Notwithstanding the foregoing, upon early termination of this Agreement pursuant to Sections 12.2, 12.3, 12.4 and 12.5, API shall have the right to sell all remaining Licensed Products in its inventory within six (6) months after the date of termination, subject to the payment to SKI of the amounts specified in Section 5.6. Thereafter, API agrees to destroy any remaining supply of Licensed Product sat SKI's request and direction.

Article XIII

Indemnification

13.1 Indemnification by SKI. SKI will indemnify and hold API and its Affiliates, and their employees, officers and directors harmless against any loss, damages, action, suit, claim, demand, liability, expense, bodily injury, death or property damage (a "Loss"), that may be brought, instituted or arise against or be incurred by such persons to the extent such Loss is based on or arises out of the breach by SKI of any of its covenants, representations or warranties set forth in this Agreement; provided however, that the foregoing indemnification shall not apply to any Loss to the extent such Loss is caused by the negligent or willful misconduct of API or its Affiliates.

13.2 Indemnification by API. API will indemnify and hold SKI, and its Affiliates, and their employees, officers and directors harmless against any Loss that may be brought, instituted or arise against or be incurred by such persons to the extent such Loss is based on or arises out of:

(a) the development, manufacture, use, sale, storage or handling of Licensed Products by API, its Affiliates or sublicensees, or their representatives, agents or subcontractors under this Agreement, or any actual or alleged violation of law resulting therefrom; or

(b) the breach by API of any of its covenants, representations or warranties set forth in this Agreement;

(c) provided that the foregoing indemnification shall not apply to any Loss to the extent such Loss is caused by the negligent or willful misconduct of SKI or its Affiliates.

13.3 Claims Procedures. Each party entitled to be indemnified by the other party (an "Indemnified Party") pursuant to Section 13.1 or 13.2 shall give notice to the other party (an "Indemnifying Party") promptly after such Indemnified Party has actual knowledge of any threatened or asserted claim as to which indemnity may be sought, and shall permit the Indemnifying Party to assume the defense of any such claim or any litigation resulting therefrom; provided:

(a) That counsel for the Indemnifying Party, who shall conduct the defense of such claim or any litigation resulting therefrom, shall be approved by the Indemnified Party (whose approval shall not unreasonably be withheld) and the Indemnified Party may participate in such defense at such party's expense (unless (i) the employment of counsel by such Indemnified Party has been authorized by the Indemnifying Party; or (ii) the Indemnified Party shall have reasonably concluded that there may be a conflict of interest between the Indemnifying Party and the Indemnified Party in the defense of such action, in each of which cases the Indemnifying Party shall pay the reasonable fees and expenses of one law firm serving as counsel for the Indemnified Party, which law firm shall be subject to approval, not to be unreasonably withheld, by the Indemnifying Party); and

(b) The failure of any Indemnified Party to give notice as provided herein shall not relieve the Indemnifying Party of its obligations under this Agreement to the extent that the failure to give notice did not result in harm to the Indemnifying Party.

(c) No Indemnifying Party, in the defense of any such claim or litigation, shall, except with the approval of each Indemnified Party which approval shall not be unreasonably withheld, consent to entry of any judgment or enter into any settlement which (i) would result in injunctive or other relief being imposed against the Indemnified Party; or (ii) does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party of a release from all liability in respect to such claim or litigation.

(d) Each Indemnified Party shall furnish such information regarding itself or the claim in question as an Indemnifying Party may reasonably request in writing and shall be reasonably required in connection with the defense of such claim and litigation resulting therefrom.

13.4 Compliance. The parties shall comply fully with all applicable laws and regulations in connection with their respective activities under this Agreement.

13.5 Insurance. Beginning on the date of first commercial sale of the first Licensed Product, API shall maintain insurance, including product liability insurance, with respect to its respective activities hereunder.

(a) Such insurance shall be in such amounts and subject to such deductibles based upon standards prevailing in the industry at the time, but at no time shall the amount be less than US$3 million.

(b) API may satisfy its obligations under this Section through self-insurance to the same extent.

(c) API shall name SKI as an additional insured on any such policies and shall provide evidence to the other party of such naming.

Article XIV

Miscellaneous Provisions

14.1 Governing Law; Jurisdiction. This Agreement shall be governed and construed in accordance with the laws of the State of New York.

14.2 Waiver. The failure on the part of API or SKI to exercise or enforce any rights conferred upon it hereunder shall not be deemed to be a waiver of any such rights nor operate to bar the exercise or enforcement thereof at any time or times thereafter. The observance of any term of this Agreement may be waived (either generally or in a particular instance and either retroactively or prospectively) by the party entitled to enforce such term, but any such waiver shall be effective only if in writing signed by the party against whom such waiver is to be asserted.

14.3 Force Majeure. Neither party shall be held liable or responsible to the other party nor be deemed to have defaulted under or breached this Agreement for failure or delay in fulfilling or performing any term of this Agreement, other than an obligation to make a payment, when such failure or delay is caused by or results from fire, floods, embargoes, government regulations, prohibitions or interventions, war, acts of war (whether war be declared or not), insurrections, riots, civil commotions, strikes, lockouts, acts of God, or any other cause beyond the reasonable control of the affected party.

14.4 Severability. It is the intention of the parties to comply with all applicable laws domestic or foreign in connection with the performance of its obligations hereunder. In the event that any provision of this Agreement, or any part hereof, is found invalid or unenforceable, the remainder of this Agreement will be binding on the parties hereto, and will be construed as if the invalid or unenforceable provision or part thereof had been deleted, and the Agreement shall be deemed modified to the extent necessary to render the surviving provisions enforceable to the fullest extent permitted by law.

14.5 Government Acts. In the event that any act, regulation, directive, or law of a government, including its departments, agencies or courts, should make impossible or prohibit, restrain, modify or limit any material act or obligation of API or SKI under this Agreement, the party, if any, not so affected shall have the right, at its option, to suspend or terminate this Agreement as to such country, if good faith negotiations between the parties to make such modifications to this Agreement as may be necessary to fairly address the impact thereof, after a reasonable period of time are not successful in producing mutually acceptable modifications to this Agreement.

14.6 Government Approvals. API will use reasonable efforts to obtain any government approval required to enable this Agreement to become effective, or to enable any payment hereunder to be made, or any other obligation hereunder to be observed or performed. Each party will keep the other informed of progress in obtaining any such approvals.

14.7 Assignment. This Agreement may not be assigned or otherwise transferred by either party without the prior written consent of the other party; provided, however, that either party may assign this Agreement, without the consent of the other party, to any of its Affiliates, if the assigning party guarantees the full performance of its Affiliates' obligations hereunder. In all cases the assigning party shall provide the other party with prompt notice of any such assignment. Any purported assignment in contravention of this Section shall, at the option of the nonassigning party, be null and void and of no

effect. No assignment shall release either party from responsibility for the performance of any accrued obligation of such party hereunder.

14.8 Counterparts. This Agreement may be executed in duplicate, both of which shall be deemed to be originals, and both of which shall constitute one and the same Agreement.

14.9 No Agency. Nothing herein contained shall be deemed to create an agency, joint venture, amalgamation, partnership or similar relationship between SKI and API. Notwithstanding any of the provisions of this Agreement, neither party shall at any time enter into, incur, or hold itself out to third parties as having authority to enter into or incur, on behalf of the other party, any commitment, expense, or liability whatsoever, and all contracts, expenses and liabilities undertaken or incurred by one party in connection with or relating to the development, manufacture or sale of Licensed Products shall be undertaken, incurred or paid exclusively by that party, and not as an agent or representative of the other party.

14.10 Notice. All communications between the parties with respect to any of the provisions of this Agreement will be sent to the addresses set out below, or to other addresses as designated by one party to the other by notice pursuant hereto, by internationally recognized courier or by prepaid certified, air mail (which shall be deemed received by the other party on the seventh business day following deposit in the mails), or by facsimile transmission or other electronic means of communication (which shall be deemed received when transmitted), with confirmation by letter given by the close of business on or before the next following Business Day:

if to SKI, at:

Sloan-Kettering Institute of Cancer Research
1275 York Avenue
New York, New York 10021

ATTN: Director, Office of Industrial Affairs

With a copy to: Mr. James S. Quirk, Senior Vice President

If to API at:

Actinium Pharmaceuticals, Inc.
106 South Columbus St.
Alexandria, VA 22314

ATTN: Chief Executive Officer

With a copy to:

Actinium Pharmaceuticals, Ltd.
22 Church Street Phase II 3rd Floor
Washington Mall P.O. Box HM2265
Hamilton, HMJX
Bermuda

ATTN: Chief Executive Officer

14.11 Headings. The Section headings are for convenience only and will not be deemed to affect in any way the language of the provisions to which they refer.

14.12 Authority. The undersigned represent that they are authorized to sign this Agreement on behalf of the parties hereto. The parties each represent that no provision of this Agreement will violate any other agreement that such party may have with any other person or company. Each party has relied on that representation in entering into this Agreement.

14.13 Entire Agreement. This Agreement, including the Schedules appended hereto, contains the entire understanding of the parties relating to the matters referred to herein, and may only be amended by a written document, duly executed on behalf of the respective parties.

14.14 Dispute Resolution. Any dispute concerning or arising out of this Agreement or concerning the existence or validity hereof, shall be determined by the following procedure.

(a) Both parties understand and appreciate that their long term mutual interest will be best served by effecting a rapid and fair resolution of any claims or disputes which may arise out of activities performed under this contract or from any dispute concerning the terms of this Agreement. Therefore, both parties agree to use their good faith efforts to resolve all such disputes as rapidly as possible on a fair and equitable basis. Toward this end both parties agree to develop and follow a process for presenting, rapidly assessing, and settling claims on a fair and equitable basis which takes into account the precise subject and nature of the dispute.

(b) If the parties are unable to resolve any matter within thirty (30) days, the matter shall be referred to the chief executive officers to be resolved by negotiation in good faith as soon as is practicable but in no event later than thirty (30) days after referral. Such resolution, if any, of a referred issue by the chief executive officers shall be final and binding on the parties.

(c) If the matter has not been resolved by the chief executive officers within thirty (30) days of referral in accordance with this Section, or if the chief executive officers fail to meet within such thirty (30) days, either party may initiate a non-binding mediation procedure. The non-binding mediation shall be administered by the American Arbitration Association in accordance with its commercial mediation rules. Unless otherwise mutually agreed upon by the parties, the mediation proceedings shall be conducted in New York, New York. The parties agree that they shall share equally the cost of the mediation, including filing and hearing fees, and the cost of the mediator(s). Each party shall have the right, at its own expense, to be represented by counsel in such a proceeding. If any unresolved matter is not resolved following non-binding mediation pursuant to this Section, either party may seek any remedy, at law or in equity that may be available.

14.15 Disputes Regarding Patents, Development or Manufacturing. If the dispute pertains to patents, manufacture or development of Licensed Products, the dispute resolution proceeding shall be before an expert or expert panel in the pertinent field. Such expert may be mutually agreed by the parties, but if no such expert is agreed upon within ten

(10) days after the written notice from one party to the other, then each party shall promptly select one expert, and those two shall select a third expert, which shall comprise the panel. The panel shall meet with the parties within fifteen (15) days of selection to examine the issue and shall hear the views and proposals of each party. The parties shall share equally in the cost of the expert or expert panel, including any fees and expenses payable to the experts.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the day and year first above written.

SLOAN-KETTERING INSTITUTE OF CANCER RESEARCH

By: G Bernhardt

Name: Mr. James S. Quirk

Title: Senior Vice President

ACTINIUM PHARMACEUTICALS, INC.

By:

Name: Dr. Maurits W. Geerlings

Title: Chief Executive Officer

ACTINIUM PHARMACEUTICALS, LTD.

By:

Name: Dr. Maurits W. Geerlings

Title: Chief Executive Officer

Senior Vice President
Research Resources Management

February 12, 2002

TO WHOM IT MAY CONCERN:

In my absence, Mr. Gustave J. Bernhardt, Director, Research Resources Management, will sign as an institutional official for the Sloan-Kettering Institute for Cancer Research.

James S. Quirk
Senior Vice President

JSQ:meb

Memorial Sloan-Kettering Cancer Center
1275 York Avenue, New York, New York 10021
NCI-designated Comprehensive Cancer Center

Schedule 1

Patents

SK979 - Targeted alpha particle therapy with DOTA-based complexes of Ac-225 - US provisional application number 60/232,909 filed 9-15-00; US non-provisional application number 09/952,756 filed 9-14-01; PCT application filed 9-14-01; application number not yet known.

SK933 - Liposome encapsulation of Ac225 - US Provisional application number 60/212,186 filed 6-16-00 ; converted to PCT application designating the US application number PCT/US01/19133 filed 6-15-2001.

SK852 - Alpha Emitting Constructs and Uses Thereof - US Provisional application number 60/086,772 filed 5-26-1998; PCT application number PCT/US99/11673 filed 5-26-1999, US national phase application 09/721,864 filed 11-24-2000; Canadian application 2,333,125 filed 5-26-1999; Japanese application 2000-550554 filed 11-27-2000.

SK712 - Bi-213 Generator and Uses thereof - US Provisional application number 60/079,902 filed 3/30/1998; US application number 09/647,491 filed 3-30-1999; PCT application number PCT/US99/06955 filed 3-30-1999.

Schedule 2

Development Plan

AVERION

An Operating Division of Averion International Corp.

CONFIDENTIAL

A Phase I/II Study on the Safety and Efficacy of ^{225}Ac-HuM195 in Patients With Advanced Myeloid Malignancies

Project Task Specifications
and
Budget Cost Estimate

Prepared for:

Actinium Pharmaceuticals, Inc.
Knoll Corporate Center
Florham Park, NJ 07932

Averion Project Code: ACT-001
December 7, 2006

800 Westchester Avenue, Ste N341
Rye Brook, NY 10573
www. Millennix-Inc.com

Tel 914.733.3400
email: info@millennix-inc.com

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

Millennix Oncology is pleased to provide a proposal to Actinium Pharmaceuticals Inc. (Sponsor) in support of a Phase I/II clinical trial.

Millennix Oncology, an operating division of Averion International Corp, provides expertise and experience in support of oncology clinical trials. Together with Averion which celebrates its 23nd anniversary in 2006, our history is driven by our commitment to our clients to maintain high standards of communication, quality, and accountability. Averion will keep Actinium current with project progress toward milestones. Our group has existing personnel, facilities, and resources to support all aspects of the project. Averion uses state-of-the-art software and hardware to support all projects while performing all work under industry-accepted SOPs. To date, we have supported 42 FDA approvals including 8 approvals in oncology.

Our proposal defines project task specifications for the services listed below.

- Protocol Review
- IND review, transfer and update
- Case Report Form (CRF) Development
- Study Training
- Site Monitoring and Management
- Site QA Audits
- Project Management
- Medical Monitoring
- Database Development
- Data Management
- Investigator's Meeting
- Biostatistical Analysis
- Project Communications
- Pharmacoviligance Services
- Report Writing

Project Task Specifications

Indication:	Myeloid Malignancies
Number of Sites:	5
Number of Patients:	40
Number of CRF Pages/Patient:	7
Total Number of CRF Pages:	3000
Study Planning Duration:	7 Months
Study Enrollment Duration:	18 Months
Duration of Patient Follow-up:	6 Months
Study Close-out:	7 Months
Total Study Duration:	38 Months

Contract Executed, Work Begins: January 1, 2007

FPFV:	August 1, 2007
FPLV:	January 31, 2008
LPFV	Februaryl, 2009
LPLV:	August 1, 2009
Database Locked:	October 15, 2009
Final Analysis:	November 1, 2009
Final Report:	January 1, 2010

II. PROJECT UNDERSTANDING

Millennix Oncology will provide regulatory and clinical trial management services to Actinium Pharmaceuticals for the Phase I/II development of its study drug, ^{225}Ac-HuM195 in patients with myeloid malignancies.

The program is outlined as follows:

1. Millennix will provide regulatory affairs services and assist in the transfer of BBIND #----- from Memorial Sloan Kettering Cancer Center to Actinium Pharmaceuticals. Transfer will include expert review of the current IND and GAP analysis, IND update and revision and regulatory filing and FDA liaison.
2. Millennix Oncology will provide the following clinical program services:

    1. Protocol development
    2. Case Report Forms
    3. Investigator Study Notebook and Study Training
    4. Investigator's meeting organization
    5. Data Management
    6. Database development
    7. Biometrics
    8. Project Management
    9. Clinical Monitoring
    10. Medical Monitoring and Safety Reporting
    11. Medical Writing
    12. QA oversight
    13. Administrative

Millennix Oncology, a division of Averion International Corp., is a full-service CRO with 250 full-time employees including 35 data managers (including database developers, data managers, data entry specialists), 40 clinical affairs specialists (including Lead CRAs, regional CRAs, project managers, clinical assistants), 15 biostatisticians (including SAS programmers), 7 medical specialists (including physicians, nurses, safety specialists), IT support specialists, operations (supporting metrics, new technologies, resource management), and a quality assurance group (supporting quality systems, compliance, validation, audits). We have earned a reputation as a high quality CRO during our 22 year history.

Millennix Oncology offers many advantages to Actinium for supporting this pivotal study. We have extensive experiences with complex oncology indications, study populations and trial activity. Consequently we will be able to rapidly engage staff and quality systems to launch the study.

<u>Millennix Understanding of Critical Issues</u>

Ensure that Inclusion/Exclusion Criteria are Met
The inclusion/exclusion criteria are highly specific, and involve objective measures (e.g., leukemia classification, cell flow cytometry), medical history, and prior treatment. The sites will need to pay careful attention to these criteria, and monitors will go to the sites early on to assure proper implementation of the protocol.

Facilitate Investigator and Site Training on Protocol-Related Issues

Sites need to be adequately trained on the study procedures and methodology (e.g., marrow analysis). The bulk of this training will occur at the Investigator Meeting, though additional training will occur during the course of the study, particularly at site monitoring visits.

Document Adequate Patient Training
As several of the secondary endpoints may be patient-derived, the sites must adequately train patients to report symptoms and events.

Sites Distinguish Between Natural History and Adverse Events
Patient in this study will have a baseline of medical history and signs/symptoms. It will be important for sites to establish the patient's baseline (i.e., medical history), so that if the

frequency or severity of an event changes, the event can be proper characterized as an adverse event (AE). The definition of an AE will be clearly defined in the protocol so that an event that is part of the natural history is not being classified as an AE, especially not one associated with drug treatment.

Relevant Experience

Millennix was founded in 1997 and joined with Averion International in 2005. We have supported 45 FDA approvals to date. As illustration of our visibility, we helped gain five oncology approvals to date inclusive of drugs (Gleevec, Erbitux), biologics (Mylotarg, ONTAKT[4]) and devices (CA-125, PSA, Quadramet, and LUMA). We are well-known to the FDA review branches for oncology. We have extensive experience in all aspects of the desired services and are confident that we can meet high quality standards. Averion brings the following specific experiences in Prostate and other GU malignancy:

- Strategic Assessment for Radiopharmaceutical Development
    - IND preparation/filing\
- Implementation Phase I/IUIV Monoclonal Antibody (4 studies)
    - FDA-mandated Safety Registry
    - Post-transplant use
    - Side effect profile
    - US/EU Compassionate Access program
- Field monitoring - STI571 - Imatinib Mesylate - Signal Transduction (TK) Inhibitor
- Site recruitment & mgmnt - AML in elderly
- Mucositis protectant - Phase III - Autologous transplant
- Cytokine TP Prevention — MM, AML
- IV Supplement — Chemotherapy Anemia — MM
- Rescue Program — MM — Complex regimen

As a result of these collective collaborations, we have often represented Sponsor clients at the FDA.

Relevant Resources

Our group brings existing resources inclusive of people, processes, and technologies. Specifically:

- has existing staff (Project Manager, Lead CRA, regional CRAs, data managers, biostatisticians, programmers, safety specialists, and medical writers) ready for project deployment

- has comprehensive, FDA and Sponsor audited SOPs to govern all aspects of involved services
- prospectively documents employee training and SOP mastery
- has SAS based and Oracle-based 21 CFR Part 11 validated software for data management and file transfer
- has systems to track the location and acceptance of each CRF page
- has logic checks to identify inconsistencies or missing data including systems to track each reader review
- has a firewall for maintaining data backup security and daily backup protection (Iron Mountain)
- offers on-line data browsing capability to Actinium for checking data status at any time
- has metrics for tracking site, reader, CRA, and staff performance
- has a safety database and process for dealing with any issues (medical vs. device-related)
- uses SAS for generation and validation of all analyses
- pre-writes the integrated clinical and statistical report to speed ICSR completion
- maintains central files to collect all study documents
- conducts ongoing internal and external audits to ensure quality is achieved
- keep Actinium current through conference calls, e-mails, and team meetings as desired.

Our Approach

Our understanding of the study complexities and issues include the needs to:

- ensure that all sites continually meet the FDA GCP requirements
- devise a Monitoring Plan for Sponsor approval
- track the cumulative safety event incidence in the population
- check that enrollment is consistent and timely
- counsel sites on toxicity and SAE reporting, particularly the importance of distinguishing disease progression from adverse events
- assess the potential contribution of concomitant medication to adverse events (i.e., other therapies with known toxicity)
- reinforce the need for accurate measurement and verification of toxicities as measured by NCI-CTCAE v 3.0, and the necessity of these being carefully reviewed to be consistent with clinically significant laboratory reports as well as coded adverse events
- reinforce the need for timely and accurate tumor measurements

Our Processes:

Our processes are in place to speed the study along:

- assess investigator qualification process
- train all project staff on medical background, study objectives, and potential issues
- rapidly review and distribute monitor field reports and other study documents on the MIMs web portal
- implement project reporting tools to keep Sponsor current
- track each CRF page and data query to be able to pull remaining data so as to lock the database

- project data burden at each site to optimally schedule each CRA visit
- as needed for data management activity:
- perform logic checks in coordination with each proposed CRA site visit
- conduct rolling data management audits
- pre-program and test all tables, figures, and listings to speed generation after database lock
- provide top-line analyses within a week after final database lock
- pre-write sections of the final report.

This proposal and accompanying budget does not assume the use of electronic data capture (EDC) for this size study. We have worked with several EDC vendors, and have qualified preferred vendors for the appropriate situation.

KEY ONCOLOGY LEADERSHIP

- GeneResnick MD
  - Chief Medical Officer, Averion International Corp.
  - President, Millennix Oncology
  - Board certified in oncology, internal medicine
  - 30 years experience
    - Clinical practice Cornell-New York Hospital
    - Study co-chair, CALGB
    - VP Global Clinical Oncology, Schering-Plough
      - Initiated Gene Therapy trials in US
      - Portfolio of 11 agents in development
      - FDA approvals for small molecules, alpha-interferon
  - Founded Millennix 1997
  - Internationally recognized thought leader
  - Numerous presentations and discussions at FDA and EMEA

- Philip Lavin PhD
  - Well known biostatistician
  - 10 years leadership roles in oncology cooperative groups
  - Helped develop RECIST and biomarker use criteria
  - Supported FDA approvals for 6 oncology approvals
  - Co-authored over 60 oncology publications

- Multiple Senior Oncology Program / Project Managers (Years)
  - Barbetti (25), Rochon (16), Sobel (9), Boyer (9), Lyons (7)

Conclusion

Millennix Oncology has relevant clinical trials experience. Our leadership, line managers, and staff understand GCP and the requirements put forth in the RFP. Averion and its associates understand the Nocturia literature, can train sites and staff in a timely manner, will motivate the sites through frequent contact and site visits, will know the key monitoring issues, appreciate the study complexities, and will work collaboratively with the Sponsor and sites to complete the study in a timely manner. We look forward to the opportunity to work with Actinium Pharmaceuticals on this study.

III. PROJECT TASK SPECIFICATIONS

A. Protocol Development

Millennix Oncology will prepare the protocol. Millennix Oncology will review the protocol for study design, procedures, and endpoints. Millennix Oncology will review any comments with the Sponsor.

B. Case Report Form Development

1. Design

Millennix Oncology will design CRF pages based on the final protocol and in accordance with FDA guidelines. Millennix Oncology will design the CRFs to ensure consistency with the protocol and ease of data collection, monitoring, data management, and database development.

2. Printing and Shipment

Millennix Oncology will arrange for CRF printing and will arrange for shipment of the CRFs to the study sites. This service can be performed by Millennix Oncology in conjunction with a third party vendor and will be billed as a direct pass through expense.

C. Study Training

1. Project Kick-off meeting

A kick-off meeting will be used to train sites and team members prior to study launch. Millennix Oncology will prepare materials and conduct presentations as requested by Actinium. The presentations may include the following: protocol review, case report form and use of completion guidelines, study management, site monitoring, investigator responsibilities, adverse event reporting, and regulatory audit procedures. All presentations will be approved by Actinium prior to the meeting.

2. Investigator Meeting Attendance

Pertinent Millennix Oncology personnel such as the Clinical Project Manager, Clinical Project Associate, Lead CRA, CRAs, Lead Data Manager, Medical Monitor and Pharmacovigilance Specialist will attend the investigator meeting.

3. Study Training

Millennix Oncology team members not attending the investigator meeting will review the protocol, CRFs, completion guidelines, study logistics, and vendor-specific procedures. These members may include the Database Programmer, the SAS Programmer, the Biostatistician, Biostatistical Analyst, Project Coordinator andthe Medical Writer.

4. Clinical Training

Millennix Oncology's Medical Monitor will prepare and present a training session on the indication for relevant team members. Attendees will include the Clinical Project Manager, Clinical Project Coordinator, Lead CRA, Lead Data Manager, CRAs, Database Programmer, the SAS Programmer, the Biostatistician, and the Medical Writer.

D. Clinical Monitoring

1. Investigator Identification and Recruitment

Actinium will identify and interview potential investigators. Millennix Oncology will check that investigators are not on the FDA restricted list.

2. Regulatory Document Collection

Prior to study initiation, Millennix Oncology will compile and send a regulatory document package to each study site outlining what documents are required. Millennix Oncology will prepare instructions for submitting the documents to Millennix Oncology. Millennix Oncology will collect the investigator CVs, Investigator's Agreement, Financial Disclosure Form, Delegation of Authority Form Institutional Review Board approvals, approved informed consent form, and will check document compliance with pertinent federal regulations. Institutional Review Board (IRB) membership rosters or assurance numbers will also be collected. Original documents will be maintained in Millennix Oncology's Trial Master File and copies will be placed in a binder for each site. Copies of the documents will be sent to the Sponsor. Millennix Oncology will ship a completed regulatory binder to each study site.

During the course of the study, Millennix Oncology will track all regulatory documents in the Clinical Trial Management System. To ensure continued adherence to regulatory requirements, Millennix Oncology will collect applicable regulatory documents throughout the life of the study. Additionally, Millennix Oncology will notify sites of expiring documents and collect updated documents.

3. Monitoring Plan

Millennix Oncology will develop a written monitoring plan. This plan will specify the monitoring frequency and objectives of each visit, as well as provide templates for study required documentation, including monitoring visit reports. Prior to conducting initiation visits, the plan will be reviewed and approved by Sponsor.

4. Site Qualification

If directed by the Sponsor, Millennix Oncology will conduct the site qualification visits to determine if: (1) the principal investigator and study personnel have adequate time and experience to conduct the study according to the protocol; and (2) the facility is acceptable, with secure areas for storage of the investigational product. Prior clinical trials experience of study investigators and support personnel will be assessed. Millennix Oncology will look for evidence of sufficient numbers of patients to meet accrual objectives and the duration of contact with these patients. GCP understanding will also be assessed.

5. Study Initiation Visits

The initiation visit will be conducted once all pre-study documents have been collected. Millennix Oncology and Sponsor estimate that site initiation visits will require one day of on-site time. The investigators and study personnel will be trained on all aspects of study procedures relating to patient screening, scheduling, evaluation, follow up, CRF completion, and device use and accountability. The study regulatory binder will be reviewed with the investigator. GCP requirements, including investigator responsibilities, will be reviewed.

6. Interim Monitoring Visits

Millennix Oncology will initially conduct site visits approximately two weeks after the first patient is enrolled at each site; subsequent monitoring visits will be scheduled depending on enrollment rate and data quality. It is estimated that one-day and two-day visits will be required. The frequency and length of visits will be adjusted as agreed upon by Sponsor and Millennix Oncology, based on patient enrollment and site quality.

During site visits, Millennix Oncology will check investigator adherence to FDA Good Clinical Practices, verify informed consent and HIPAA authorization, review all source documentation in comparison to the CRFs, check for missing or incomplete data and inconsistencies, obtain resolution of Data Clarification Forms, obtain documentation updates, and verify that the protocol is being followed with respect to eligibility, study-mandated procedures, and timetable. Millennix Oncology will inventory investigational materials and review accountability records. Problems with accrual, protocol compliance, any adverse event reporting and follow up, as well as CRF accuracy, completeness, and timeliness will be documented and discussed. Should any problems require it, Millennix Oncology, Sponsor, and the site will jointly develop an action plan. Completed CRF pages will be retrieved and forwarded to Millennix Oncology.

7. Site Closeout Visits

Millennix Oncology will perform the Site Closeout Visit once all Data Clarification Forms have been resolved. Millennix Oncology will review all patient files for completeness, review the study binder to assure all documentation is in place for an FDA audit, perform final device accountability, and authorize return or disposal of all unused study supplies.

8. Monitoring Coordination

The Millennix Oncology Lead CRA will be responsible for addressing site-emergent questions and problems. The Lead CRA will consult with the project team, management of Clinical Affairs, clinical study vendors, and Sponsor as needed. Millennix Oncology will inform Sponsor immediately of any issues requiring the sponsor's immediate attention (for example, serious adverse events).

The Lead CRA will work with Clinical Affairs Management to ensure all sites have an assigned CRA and that all CRAs assigned to the study have the appropriate training and will conduct ongoing study training as necessary. The Lead CRA will be responsible for managing the monitoring visit schedule and ensuring that all sites are being visited at the appropriate intervals.

The Lead CRA will review all monitoring visit reports and regulatory documents to ensure accuracy and completeness, and to ensure that the study is being conducted in accordance with GCP, the protocol, and the monitoring plan. The Lead CRA will also be responsible for providing study updates to the Project Manager and Actinium as needed (i.e., for monthly status reports or on an ad hoc basis).

The Clinical Project Coordinator will track monitoring visit reports and other visit related documents (e.g. confirmation, follow-up letters, and expense reports) under the direction of the Lead CRA to ensure all documents are completed and reviewed in a timely manner in accordance with the monitoring plan. The CPC will maintain the CTMS database, including entry and updating the system with site contact information and regulatory document information.

9. Site Communication

The Millennix Oncology Lead CRA will be the primary contact for the study sites and the CRAs. The Lead CRA will consult with the Project Manager, Millennix Oncology Management and the Sponsor as needed. Millennix Oncology will document pertinent telephone contacts with the sites and will file documentation as appropriate in the Trial Master File.

Interim site communication will consist of routine contact and follow-up with the study sites by the Lead CRA and/or the assigned CRA to address any questions or issues raised at or between monitoring visits.

The Clinical Project Associate may also contact the sites for missing Enrollment Logs and outstanding or deficient Regulatory Documents.

10. Contract/Budget Negotiation (Optional)

If directed by the Sponsor, Millennix Oncology will negotiate Investigator budgets based on agreeable rates determined jointly by Sponsor and Millennix Oncology. Millennix Oncology will obtain signed contracts/budgets from the clinical sites. All legal negotiations will be referred to the Sponsor.

E. Medical Monitoring

A Millennix Oncology MD will discuss patient eligibility, discuss protocol deviations, interact with the project team, review documents (protocol, CRF, adverse events, clinical study report), and interact with the project team at Actinium. The Millennix Oncology Medical Director will be available during usual business hours. Additional back-up coverage can be arranged if requested by Actinium.

F. Safety Review and Serious Adverse Event Reporting

1. Safety Review

The Medical Monitor together with The Project Manager will conduct regular, ongoing review of adverse events and AE trends during the project lifetime. The results of this review will be forwarded in a quarterly report to Actinium with comment, notation or opinion as warranted.

2. Serious Adverse Event Reporting

The Millennix Oncology Medical Monitor will be responsible for all SAE reporting to the sponsor and will prepare safety letters for IND filing as necessary in collaboration with Millennix Oncology Regulatory Affairs.

G. Clinical Site Audits for Good Clinical Practice/Quality Assurance

1. Audit Plan

Millennix Oncology can develop an initial site audit plan including site selection criteria, audit parameters and specifications, follow up, timelines, report format, etc. The plan can be provided to Actinium for review and approval.

2. Good Clinical Practice/Quality Assurance Audits (GCP/QA)

Millennix Oncology can perform GCP/QA audits of clinical sites, including review of regulatory documents, study files, and data, as specified in the approved audit plan. Additional audits (routine, for-cause) or co-audits will be conducted as mutually agreed upon. Site audit tracking reports can be provided to Actinium in mutually agreed upon format and frequency.

3. Good Laboratory Practice/Quality Assurance Audits (GLP/QA)

Millennix Oncology can perform a GLP/QA audit including review of standard operating procedures, documentation, study files, and data, as specified in the approved audit plan.

4. Final Audit Report

A final audit report summarizing the site audits performed, including audit results and follow-up, can be prepared once all audits are completed. The final report will be submitted to Actinium for review and approval.

H. Database Development

1. Database Design

Millennix Oncology will develop a customized SAS-based/Oracle database including an automated audit trail, auto-encoding using industry standard electronic dictionaries and Case Report Form (CRF) and Data Clarification Form (DCF) tracking tables. A main menu will control the flow of data entry. The data entry screens will be "painted" in the image of the CRF. Valid ranges and field types (number, character, etc.) will restrict entry. The database will provide a "pop-up" window during second entry to display discrepancies for resolution.

a. Audit Trail

A comprehensive automated audit trail will capture field level activity including initial entry, second entry, data clarification change, and logic check change. Current and previous data point values will be captured in the audit trail for all changes.

b. CRF Tracking Table

Oracle tables will be developed to track the flow of CRFs within Millennix Oncology. CRF identification data and date will be captured for CRF receipt, first entry, second entry, data clarification forms sent out, data clarification forms received, and database edited/closed.

2. Programming

A Database Programmer and an independent database reviewer will develop and test the database. Highlights of the software development lifecycle process include database development according to a validation protocol that documents the design requirements and specifications, database testing by programmers and end users using test CRF cases, and documented review and acceptance by end users. The database is considered validated when the expected results are the same as the actual results, and the end users verify that the database performs according to the requirements. The design procedures, testing results, and test CRF cases are filed in the Central Files.

3. Maintenance

Database maintenance, including back-ups and off-site storage, will be provided throughout the study. All database modifications will be fully tested and documented in the same manner as above. Millennix Oncology will run daily backups.

4. Imports of Electronic Data

Millennix Oncology will work out transfers of electronic data imports with the data import source. The medium, software, and schedule of merges will be mutually agreeable to Millennix Oncology and Sponsor.

Upon receipt at Millennix Oncology, the media will be logged and checked for viruses. The electronic data that is to be merged (in Oracle or SAS) with CRF data will be checked for integrity, and mismatched pairs will be identified for clarification. Millennix Oncology will resolve the mismatched pairs with the data import source. The data import source will be responsible for correcting and retransmitting the data.

I. Data Entry/Tracking

1. CRF/DCF Tracking

CRF and DCF tracking tables in Oracle will be maintained to track the dates of CRF received, CRF first entered, CRF second entered, data clarification form sent, data clarifications resolved, and CRF closed. This data will be used by Millennix Oncology to generate monthly CRF/DCF status reports.

2. Data Receipt Review

Prior to entry, Millennix Oncology will review the CRF for missing pages and any obvious data problems. These problems will be noted for review during generation of DCFs.

3. Double Data Entry

Millennix Oncology will double enter the data; separate individuals perform each entry. Discrepancies between first and second entry will appear in a "pop-up" window to prompt the data entry specialist to either choose a correct value or enter a correct value. Any additional problems identified during entry will be flagged for review during DCF generation.

J. Data Management

1. Data Management Oversight

The Lead Data Manager provides project oversight to ensure staffing consistency and ongoing quality control. The Lead Data Manager will provide training to the Data Management staff assigned to the project, and will conduct frequent Data Management team meetings to ensure that pertinent project and subject-specific issues are identified and resolved in a timely fashion.

2. CRF Completion Guidelines

Millennix Oncology will prepare the written guidelines instructing the sites regarding completion of the CRF pages.

3. Data Logic Check Definition

Logic checks will be defined by Millennix Oncology to identify missing key variables and discrepant data. These data checks will be based on the protocol and will include within field and between field checks. To ensure that appropriate checks are performed, the logic checks will be reviewed and approved by Sponsor prior to the commencement of programming.

4. Logic Check Programming, Testing, and Execution

The data logic checks will be programmed using SAS version 8.02 or higher for UNIX. Millennix Oncology will test logic check programming. Millennix Oncology will create and enter test CRFs containing erroneous data, to confirm that the programming for each check is identifying errors correctly. Any problems with the logic checks will be reported to the SAS Programmers for correction. Testing will be considered complete when the logic checks correctly identify all erroneous CRF data. This process will be documented, signed, and filed in the Central File.

Logic checks will be run on all data received from the site. Each section of the case report form will be run through the SAS logic checks at least once. Updated records will be re-run through the logic checks to confirm that (1) the changes made corrected the original problem and (2) the changes made did not cause additional data discrepancies.

5. Data Clarification Form Generation

Millennix Oncology will generate data clarification forms (DCFs) for each record that resulted in one or more data problems identified during manual review, entry, or logic check generation. DCFs will be sent to the monitors for resolution at site. These DCFs will outline (1) the patient record identification information (e.g. site, patient number/initials, and visit date), (2) the problem identified, and (3) the resolution. The resolution response will be left blank for the site to answer.

6. Database Updates

Upon receipt of the completed DCFs, Millennix Oncology will make corrections to the database followed by manual verification of the corrections. Logic checks are then run again to verify that the database change corrected the original problem and did not cause any additional problems.

7. Coding

Adverse events will be coded using MedDRA, and WHO-Drug will be used for coding concomitant medications. Following the auto-encoding execution, the Lead Data Manager will verify all assigned codes. Entries that are not an exact match will be manually coded by an experienced Data Manager and included in the thesaurus. Coded terms will be provided to Sponsor for review and approval.

8. Data Entry Quality Control

A Quality Control (QC) audit of data entry will be conducted after the CRFs have been completely processed and closed by Data Management. 10% (Ten) of all patients will be randomly selected for audit. Millennix Oncology will perform the QC audit by comparing the paper CRF and data clarification form resolutions to SAS output and noting any discrepancies. Millennix Oncology will review the discrepancies noted and either correct the database or document the reason for the discrepancy. Verification that all corrections were made will be part of the Audit Report. Millennix Oncology will provide an Audit Report to the Sponsor for review and approval. The Audit Report will be filed in the Central File.

K. Remote Data Browsing (Optional)

Direct, real time, data browsing capabilities using the web browsing and report access system is available to Actinium. Millennix Oncology will provide a secured dial up remote link directly to the Oracle database. A four-hour training session will be provided to Actinium to review the programmed reports for the protocol. Millennix Oncology will pre-program data queries and reports which can be executed at will during business hours to allow down time for database back-ups and maintenance). Additionally, Millennix Oncology will provide ongoing data management technical support to assist Actinium with customized ad-hoc data queries or reports. This service is not in the budget.

L. Biometrics

1. Analysis Plan

A detailed analysis plan will be drafted by Millennix Oncology for approval by Sponsor prior to the commencement of programming. The plan will consist of patient evaluation rules, endpoint definitions, missing data rules, and prototype data displays.

2. Programming/Analysis

Once the analysis plans are finalized, the statistical team will develop a comprehensive set of statistical programming specifications for analysis datasets and for each data display. The Statistical Programmers follow these specifications primarily using SAS and StatXact to generate analysis datasets, analyses, and data displays. These programs are written so that the generation of all displays is fully automated to facilitate consistency and quality control. The validation will be performed by a Biostatistician or Biostatistical Analyst in accordance with Millennix Oncology's SOPs.. Prior to analysis, a listing of patients who are invalid for the analyses will be provided to Sponsor for approval.

3. Statistical Evaluation

In order to promote uniformity, Millennix Oncology will perform an evaluation of all cases at the end of the study.

4. Ad Hoc Analyses

Ad hoc analyses can be performed with reasonable advance notice.

M. Medical Writing

The report will be written following ICH guidelines. Millennix Oncology will prepare a a Clinical Study Report and a Statistical Report that consist of a summary of the clinical trial and statistical interpretations of the study respectively. This report will describe the rationale of the study, the study plan and design and the statistical methodology. The report will be structured according to document specifications and the word processing format requested by Sponsor. A QC review will be performed to check the accuracy of the number transfer from the analysis tables and figures to the report.

The report review process will be conducted such that proposed changes are identified by the Sponsor in the first report draft. The second draft of the report will be evaluated for cosmetic changes. The third version will be the final report delivered to Sponsor.

N. Project Management

1. Communication

The Project Manager at Millennix Oncology will be the main contact for the Sponsor. The Sponsor may contact the Project Manager at any time to discuss and communicate Sponsor-driven changes to the project. Millennix Oncology will document pertinent communications with the Sponsor. It will be the Project Manager's responsibility to keep the Sponsor informed of the project status and any budgetary concerns or deviations from timeline.

2. Project Team

Millennix Oncology will assign a team to each project when it is awarded. The team members, whenever possible, will remain on the study throughout the project's duration. If there is a change in project staff, the Project Manager will notify the Sponsor as soon as possible. The Project Manager will ensure that another person is assigned to the project, orientated and apprised of the project's status immediately.

3. Project Status

The Project Manager will consistently monitor the progress of the project to provide oversight for the team and anticipate potential issues. The Sponsor will be apprised of any issues that may affect the project. The Project Manager will propose appropriate solutions to the Sponsor as needed. The Project Manager will oversee internal work flow and resource allocation. Timelines will be reviewed and negotiated with the Sponsor on an ongoing basis.

Enrollment reports will be provided to the Sponsor on a regular basis during the enrollment period of the study. Prior to production of the first report, the Sponsor will approve the content and timing.

Millennix Oncology will provide the Sponsor with detailed monthly reports, including data management and query status, monitoring visit information, and subject enrollment status. Prior to production of the first report, the Sponsor will approve the content and timing.

4. Task Specifications and Changes

The Project Manager will respond to and advise on any changes in task specifications. Both the Sponsor and Millennix Oncology will agree upon each specification change. In the case that an agreed-upon specification change will affect the budget, the Project Manager will utilize a Change Order, to be agreed upon by both parties, for any necessary budget adjustments.

5. Trial Master File

A Trial Master File will be established for the study. All project documents and materials, excluding budgetary information, will be stored in the file. The active file will be stored in locking file cabinets on Millennix Oncology premises and the cabinets will be locked during non-business hours.

The Clinical Project Associate is responsible for maintaining the file. Electronic correspondence (e-mail) will be stored in an electronic repository during the life of the study. At the end of the study, electronic correspondence with the sponsor and study sites will be saved to disc, archived with the file, and returned to the Sponsor.

6. Investigator Payment Processing

Millennix Oncology will open a separate checking account with Sponsor monies for the purpose of payments to Investigators or other expenses as indicated by the Sponsor. No other monies will be placed in this account. The Sponsor will provide a general payment scheme for Millennix Oncology to follow for administering all payments to Investigators. Millennix Oncology will order checks, set up the accounting software, and input Investigator names into the accounting program for ease of payments and tracking purposes.

The Clinical Project Associate will track status and initiate payments to be issued to sites according to the predetermined schedule.

O. Project Communications

1. Teleconferences

Teleconferences will be held with the Sponsor and the project team on a regular basis to discuss the status of the project. The Clinical Project Associate will take meeting minutes that will be sent to the Sponsor for review and feedback. The minutes will document any decisions made during the teleconference.

2. Internal Team Meetings

Internal project team meetings will be held at the discretion of the Project Manager but on a regular basis to coordinate tasks to be performed and to consider process efficiencies that translate into time and/or cost savings for the Sponsor.

3. Client Meetings

Face to face client meetings will be held as appropriate. The Clinical Project Associate will take meeting minutes to document any decisions made in the meeting.

P. Project Financial Management

Upon study award, Millennix Oncology will assign a Project Business Analyst to the study to work collaboratively with the Clinical Project Manager to review the financial status of the project and to assist with providing insights on project expenditures as appropriate.

Tasks will include the assessment of study metrics, budget assumptions, out of scope activities, budget versus actual analysis, and invoice preparation on an ongoing basis. The Sponsor will be notified of any deviation from the study budget and both Sponsor and Millennix Oncology will mutually agree on a resolution.

In addition, at the sponsor's request, Millennix Oncology will hold financial review meetings as part of the financial management of the study. The frequency of these meeting will be agreed upon by both Sponsor and Millennix Oncology. The financial review meetings can include budget analysis, invoices vs. payments, pass through expense review, potential change orders, and revenue projections.

Q. Project Close-out and Archiving

Upon completion of the project, the Trial Master File will be audited by Compliance and Validation. Once the file is reconciled it will be returned to the Sponsor or archived to an off-site storage facility at an additional cost. SAS files will be sent with full documentation at the completion of the project. Documentation will include the annotated CRF with variable and data set names, a PROC CONTENTS for each dataset with labels and field types described, and a sample data listing for 5 patients. All CRFs will be returned to the sponsor in patient order with an enclosed inventory list.

IV. BUDGET ASSUMPTIONS

A. General

1. . This proposal is based on the assumptions provided ay Actinium

2. This proposal is subject to receipt of the final/approved protocol and case report forms, and the geographic locations of the participating clinical sites.

3. This proposal is valid for 60 days from the cover date. If no decisions on the awarding of this project are made within this time frame, the proposal will need to be amended.

4. Millennix Oncology will begin work on this project upon contract execution.

5. All work will be performed on a Fee for Service basis.

6. Cost estimates are based on rates for Year 2006. An annual rate increase will be applied each January, to coincide with Millennix Oncology's fiscal year. Notification of the anticipated rate increase will be sent in December. The average annual increase based on the last three (3) years has been 5 percent.

7. Actual costs will be billed monthly at the annual rate that corresponds with the year in which the work is performed.

8. This proposal is governed by an executed Master Services Agreement.

9. This proposal is based on the following parameters per study: 40 enrolled patients, 5 US clinical sites, 18 month enrollment period, 6 month follow-up period, 7 months planning, and 7 months close out. Millennix Oncology estimates a total project duration of 38 months.

10. Millennix Oncology involvement with this project is expected to begin in January 2007 and is expected to end in March 2010.

11. Travel expenses for project-related activities, including site visits, are not included in this budget and will be billed to Sponsor as direct pass-through costs.

12. Efforts relating to publication or presentation of results are not included in this budget.

13. All deliverables that require Sponsor sign-off will require no more than two rounds of review/revisions and each round of review will require no more than 5 business days. Extension of Sponsor review time resulting in unreasonable delays may result in budget modifications.

14. The budget covers only the services specified in this proposal. This proposal will be re-negotiated if Millennix Oncology is not awarded all activities covered in this proposal or if the initial set of activities is reduced.

15. Once a contract is executed between Millennix Oncology and Sponsor, any changes that impact the project time frame or costs (out-of-scope-activities) will be addressed by means of a written Change Order, which must be signed by both parties.

16. Costs to accommodate the Health Insurance Portability and Accountability Act of 1996 (HIPAA) will be billed additionally as required to meet applicable regulations.

17. Costs associated with Sponsor requests for Millennix Oncology's attendance at scientific meetings, conferences and/or special presentations, or FDA meetings are not included in this budget; these efforts would be billed additionally.

18. Costs for services outsourced by Millennix Oncology to other vendors are not included in this budget and will be billed to Sponsor additionally as direct pass-through costs.

19. This proposal is confidential and shall not be discussed with any third party, excepting those as permitted by the Master Services Agreement.

B. IND Review and Transfer (Planning phase)

The Sponsor intends to transfer IND #-- from Memorial Sloan Kettering Cancer Centerto Actinium Pharmaceuticals. In addition, the Sponsor will update the contents of the IND to reflect subsequent pre-clinical and clinical data and information a regarding the development of the study drug for the aforementioned indication. The following activities will be performed:

1. Acquisition, electronic formatting and general review of the current IND content.

2. Expert review of the components of the IND: CMC, pharmacology, toxicology, pre-clinical and clinical data and summaries, administrative compliance.

3. GAP analysis of the IND

4. Expert review, writing and /or revision of the aforementioned components and clinical protocol (study now ongoing).

5. FDA liaison

6. FDA meeting (if required)

7. Regulatory activity including submissions as required, FDA filings and interaction

8. IND transfer at the conclusion of pre-filing activity

C. Protocol Review

1. The final protocol will be developed by Millennix Oncology . Millennix Oncology will review the protocol and provide comments and/or suggestions to the Sponsor.

2. This effort will require efforts of the Clinical Project Manager, Lead CRA, Manager of Data Management, Lead Data Manager, Biostatistician, Medical Monitor, and Medical Writer.

D. Case Report Form Development or Review

1. Millennix Oncology will create the Case Report Forms. Millennix assumes the CRFs will consist of 70 CRF pages per patient, including 15 unique CRF pages.

2. This effort will require services of the Project Manager, Lead CRA, Manager of Data Management, Lead Data Manager, Biostatistician, Database Programmer, Medical Monitor, and Pharmacoviligance Specialist.

3. Millennix Oncology will be responsible for printing and shipping the CRFs.

E. Study Training

1. The Investigator Meeting will require preparation, attendance, and travel time for each Millennix Oncology participant that is presenting. The meeting will require attendance travel time for all other Millennix Oncology attendees. Additionally, the Clinical Project Associate will make binders for the meeting including copies of all presentations and other pertinent documents. It is anticipated that the CPA will spend an additional effort on this preparation.

2. A separate internal training session at Millennix Oncology will present study specific materials to the team members (listed in section IIID); each attendee will participate in protocol and CRF review.

3. In the event that Sponsor schedules additional Training Meetings, Millennix Oncology participation will be billed on a fee-for-service basis.

F. Monitoring Activities

General

1. This budget assumes that one Lead CRA will manage the 5 clinical sites during the study.

2. This proposal is based on the initiation, monitoring, management, and closeout of all clinical sites.

3. Monitoring, monitoring management, and administrative support estimates are based on a maximum number of 5 initiation visits, 30 1-day and 20 2-day interim monitoring visits, and 5 closeout visits.

4. Any additional site visits beyond the budget total will be billed additionally at the 1-day ($1,408) or 2-day ($2,560) as required; travel will be billed on an hourly basis at the prevailing rate ($128/hr in 2006).

5. The clinical monitoring for this study will be conducted in accordance with Millennix Oncology's Standard Operating Procedures (SOPs).

6. Millennix Oncology's electronic monitoring reports will be used for all study visits including Initiation, Monitoring, and Study Closeout visits.

7. All site-monitoring visits will be billed on a unit cost basis for visits completed.

8. Actinium will negotiate budgets for all study sites and oversee the execution of all study-related contracts.

9. Sponsor will supply investigational product to the sites.

10. All costs associated with the use of commercial IRBs will be passed directly on to Sponsor.

Study Site Selection/Qualification and Contract/Budget Negotiation

1. Actinium will be responsible for selecting the study sites to participate in the study.

2. Actinium will negotiate budgets for all study sites.

3. Actinium will conduct the site qualification visits.

4. Millennia Oncology will check Investigators against FDA violation lists.

Study Initiation Visits

1. The initiation visit to each site will take place shortly after all approved regulatory documents are received at Millennix Oncology or by Sponsor.,

2. It is estimated that there will be 5 one-day initiation visits.

3. Each one-day initiation visit will require a total off! hours, consisting of 7 hours on site and 4 hours for visit preparation and report writing. Travel time will be billed on a fee for service basis.

Site Monitoring Visits

1. The estimate of site monitoring requirements is subject to Millennix Oncology's review of the final protocol and CRFs.

2. Millennix Oncology will conduct 48 1-day and 21 2-day monitoring visits.

3. Millennix Oncology will retrieve completed CRF pages at each monitoring visit.

4. One-day monitoring visits require a total of 11 hours, consisting of up to 7 hours on site and 4 hours for preparation and report writing. Travel time will be billed on a fee for service basis.

5. Two-day monitoring visits require a total of 20 hours, consisting of up to 14 hours on site and 6 hours for preparation and report writing. Travel time will be billed on a fee for service basis.

6. If needed, three-day visits require a total of 29 hours, consisting of up to 21 hours on site and 8 hours for preparation and report writing. Travel time will be billed on a fee for service basis

7. The initial interim monitoring visit will take place approximately 2 weeks after the first patient is enrolled at each site; subsequent monitoring visits will be scheduled depending on enrollment rate and data quality. The frequency of visits per site can be adjusted as mutually agreed upon by Sponsor and Millennix Oncology.

8. Millennix Oncology requires 2 days advance notice if Sponsor will be conducting co-monitoring visits with Millennix Oncology personnel.

Site Communication

1. The Lead CRAs monitoring communication activities include contact with the Sponsor and with the sites regarding recruitment, enrollment, GCP, protocol compliance, and data quality. Monitoring communication activities may involve the resolution of patient eligibility issues with the Lead Data Manager and Clinical Affairs Management, Medical Monitor, clinical study vendors, and Sponsor.

2. The Clinical Project Associate will create and maintain patient tracking databases, check for regulatory documents compliance, provide support to the Project Manager and Lead CRA, and provide copies of regulatory documents to Sponsor; Administrative support of monitoring also includes preparing regulatory file checklists and processing visit and expense reports.

Site Closeout Visits

1. Millennix Oncology will conduct 5 one-day termination visits.

2. Each one-day close out visit will require a total of 11 hours, consisting of 7 hours on site and 4 hours for visit preparation and report writing. Travel time will be billed on a fee for service basis.

3. If needed, each two-day closeout visit will require a total of 20 hours, consisting of 14 hours on site and 6 hours for visit preparation and report writing. Travel time will be billed on a fee for service basis.

4. Administrative support for site closeout activities will require 6 hours per site per study, including preparation of the study closeout package and providing support to the Lead CRA and assigned CRAs.

G. Medical Monitoring and Serious Adverse Event Reporting

1. Medical Monitoring: patient eligibility, patient management, adverse event reviews/narratives, CRA queries, Data Manager queries, data reviews, and protocol deviations. Any efforts for Medical Monitoring with the sites will be billed on a fee for service basis.

2. Serious adverse events (SAEs) will be reported directly to Millennix Oncology and the Medical Monitor by the clinical trial sites. SAEs will be reviewed, missing information will be acquired and the event will be reported to the sponsor according to Millennix Oncology SOPs. Millennix Oncology will provide guidance to the sites in completing SAE reports.

3. Millennix Oncology will manage the SAE reporting.

4. Millennix Oncology will provide written instructions to the clinical trial sites regarding SAE reporting procedures.

5. The Medical Monitor will assess each serious adverse event report for regulatory reporting requirements and for assuring that all SAEs are reported to the appropriate regulatory authorities.

6. An SAE database will be created.

7. Serious adverse event reporting estimates are based on 40 SAEs during the study.

8. The Medical Monitor will write narratives for all patients experiencing an SAE (including deaths) or all early withdrawals (or all patients withdrawals due to an adverse event)TBD ; the patient narratives will be structured using Millennix Oncology word processing and patient narrative format specifications unless otherwise specified by the Sponsor. .

9. The Medical Monitor will review and Millennix Oncology Regulatory Affairs will process each SAE IND report or premature study withdrawals including writing patient narratives for the ICSR.

10. Millennix Oncology personnel will be available during business hours (Eastern Time) to receive and process SAE reports.

11. Millennix Oncology assumes that, for each SAE, there will be an initial SAE report and one follow-up report.

12. This budget does include reconciliation of any separate Sponsor SAE and clinical databases. The Sponsor will provide paper copies of the data capture forms for all patients requiring a narrative if Millennix Oncology is not doing the data management. All such data transfers and reconciliation will be billed on a feefor-services basis.

H. GCP/QA Site Audits (if required/requested, billed appropriately)

1 Millennix Oncology can conduct GCP/QA audits on a fee-for-service basis.

2 Each one-day auditing visit will consist of 13 hours, including 2 hours for visit preparation, 7 hours on site and 4 hours report time. Travel time will be billed fee for service.

I. Database

1. Database estimates assume 15 unique CRF pages in the database.

2. Database estimates include set-up of standard data management support, tracking and report tools.

3. Database estimates include database design that supports tracking data by individual CRF page and unique page numbers are printed on each CRF page.

4. Database estimates assume Millennix Oncology standards for database design and structures.

5. Database estimates assume that collection of any unscheduled data has been designed into the CRF's.

6. Database estimates assume that once the database is designed, the CRF will remain the same for the duration of the study. Additions or significant changes to the CRF will require a change order to be agreed upon by both parties.

7. Database estimates assume a 30 page test case for database testing.

8. Database estimates assume one database lock. The Sponsor will authorize additional database locks, unlocks, or relocks.

9. Database estimates assume no database changes will be required during database maintenance of the study. Additional database maintenance will be billed on a fee for service basis.

Electronic Data Imports (if required/requested, billed appropriately)

1. Millennix Oncology assumes data transfers will be received from a single data import source for each type of external data

2. Millennix Oncology will track, scan for viruses, and incorporate each data transfer into the overall clinical database.

3. Data transfers will be provided to Millennix Oncology **in the form** of SAS transport files, ASCII, MS Excel, MS Access, or a format mutually agreeable to both parties. **The data** transfers will include associated variable formats. Once the setup and test transfer is completed, any work related to unexpected changes in software versions or formats during the study will be billed fee for service.

4. Comprehensive documentation of the content, data conventions, data formats, **and** amount of data will accompany each data transfer.

5. Data from the data import sources will be transferred to Millennix Oncology for all available subjects and visits at each transfer as opposed to incremental or partial transfers.

6. Millennix Oncology assumes that the data import sources will be responsible for compliance with the defined specifications.

J. Data Management

1. Data Management assumes a total of 15 unique CRF pages per patient for this protocol.

2. Data Management estimates are based on an average of 70 CRF pages per patient, 40 enrolled patients, and approximately 3000 total CRF pages.

3. Data Management and data entry estimates are based on 40 serious adverse events. Data Management SAE reconciliation will be billed on a fee for service basis.

4. Millennix Oncology assumes a total of 120 logic checks to be defined and programmed for this study. Millennix Oncology will not receive any additional pages per patient, other than listed CRF pages, for tracking or entry.

5. Data Management estimates are based on 15 coded items per patient and 10/20 queries per patient; any additional coding or queries will be billed on a fee-forservice basis.

6. Millennix Oncology will process completed CRF pages.

7. Adverse events will be initially auto-encoded based on MedDRA. Concomitant medications will be initially auto-encoded based on WHO-Drug.

8. Data Management will bill additionally for CRF medical review to identify SAEs.

9. Costs associated with reconciliation or review of SAE data versus a separate Sponsor database will be billed on a fee-for-service basis.

K. Biometrics

1. Millennix Oncology will prepare a statistical analysis plan for the study.

2. The analysis plan will present statistical methods, population definitions, endpoint criteria, missing data conventions, prototypes for tables, figures and listings, and analysis software used. Current costs for the analysis plan are based on one round of review by Sponsor

3. Amendments to the signed analysis plans will be identified in a change order to be agreed upon by both parties, and will be billed additionally.

4. All effectiveness analyses will be performed on an intent-to-treat population and a per-protocol population, and all safety analyses will be performed on a safety population (i.e. patients who received study drug).

5. Safety analyses will evaluate adverse events and physical examination changes.

6. All patients will undergo evaluation determinations at the end of the study; any additional evaluation rounds will be billed additionally.

7. Results will be displayed in 15 total tables, 15 figures, and 2 listings.

8. No interim analysis is planned but can be performed on a fee-for-service basis. Costs associated with post hoc analysis programming will be budgeted separately.

9. Additional data displays will require a change order to be agreed upon by both parties, and will be billed additionally.

10. Millennix Oncology will provide Sponsor with evaluability data displays prior to database lock. Sponsor will have 10 business days to review the data displays and return comments to Millennix Oncology. Final comments must be received by Millennix Oncology at least one calendar month prior to the anticipated database lock date in order to expedite end-of-study timelines for statistical analysis. Changes to the database can be made at a later date if they are required due to discovery of errors after the one-month review period.

11. Preparation of the database and data displays for an electronic regulatory submission is not covered under the current scope of work.

12. Costs are based on one round of review of tables, figures, and listings by Sponsor.

Analysis Data/Programming Exports

1. End of study electronic documentation will consist of SAS database in SAS transport files, analysis data displays in mutually agreed format.

2. The database will be provided in Millennix Oncology defined database structure. No conversion to Sponsor specifications will be necessary.

3. The above items will be transferred three times during the course of the study; one test, one interim, and one final transfer during the course of the study.

4. Comprehensive documentation of the content, format, and amount of data will accompany all exported data.

L. Medical Writing

1. The clinical trial reports will be written according to ICH guidelines.

2. The clinical trial reports will be structured using Millennix Oncology's word processing and report format specifications.

3. Millennix Oncology will prepare two drafts and one final version of the clinical trial report. The budget and the draft timelines assume that Actinium reviewers will provide Millennix Oncology with one set of collated comments on the initial two drafts within five business days of receipt of each draft. A comprehensive review is expected with the first draft; comments to the second draft are anticipated to be minor.

4. Medical Writing report hours are based on up to 32 total tables, listings, and figures. Greater than 32 tables, listings, and figures will require additional medical writing hours.

5. In the final deliverable, Millennix Oncology will supply an electronic copy of the report text in Microsoft Word format that will include internal hyperlinking to in-text tables. In addition, Millennix Oncology will supply a complete paper supply copy of the report text, appendices, tables, listings, and figures.

M. Project Management

1. The Project Manager is required to manage the conduct of the study, plan meetings, review meeting minutes, communicate with Sponsor, vendors, and the project team.

2. Clinical Project Associate activities include maintenance of central files, meeting planning, mailings, meeting minutes, documentation, report compilation, as well as project team support.

3. A total of 38 conference calls are included in this budget. Additional conference calls will be billed additionally on a fee-for-service basis.

4. Millennix Oncology attendees during conference calls will include the Project Manager, Lead CRA, Clinical Project Associate, and Lead Data Manager. Additional Millennix Oncology personnel, such as the Medical Writer, Database Programmer, Statistical Programmer, Biostatistician, and PVG Specialist will attend conference calls as needed.

5. Millennix Oncology assumes one client meeting will be conducted. Additional client meetings will be billed on a fee-for-service basis.

6. Millennix Oncology attendees during client meetings will include the Project Manager, Lead CRA, Clinical Project Associate, and Lead Data Manager. Additional Millennix Oncology personnel, such as the Medical Writer, Database Programmer, Statistical Programmer, Biostatistician, and PVG Specialist will attend client meetings as needed.

7. A total of 38 internal team meetings are included in the budget. Additional team meetings will be billed on a fee-for-service basis.

8. Millennix Oncology attendees during internal team meetings will include the Project Manager, Lead CRA, Clinical Project Associate, and Lead Data Manager. Additional Millennix Oncology personnel, such as the Medical Writer, Database Programmer, Statistical Programmer, Biostatistician, and PVG Specialist will attend internal team meetings as needed.

N. Project Close-out and Archiving

1. End of study electronic documentation will consist of SAS database in SAS transport files, analysis data displays in ASCII format.

2. The database will be provided in Millennix Oncology defined database structure. No conversion to Sponsor specifications will be necessary.

3. Comprehensive documentation of the content, format, and amount of data will accompany all exported data.

4. All working copy and original copy CRFs and DCFs will be inventoried ordered by page, patient and site, boxed and shipped to the Sponsor. Additional requests to further reconcile the CRF and DCFs can be done for an additional cost.

5. If no provision is made by the Sponsor at study termination, Millennix Oncology will reconcile and return the Trial Master File to the Sponsor and will bill on a fee for service basis, including courier expenses.

V. BUDGET COST ESTIMATE

Protocol Review	**$**	**8207**
CRF Review	**$**	**7264**
Study Training	**$**	**8094**
Investigator's Meeting	**$**	**10305**
Randomization	**$**	**0**
Monitoring Pre-Study Activities	**$**	**54052**
Regulatory Document Preparation/Collection		
Site Selection		
Monitoring Plan		
Clinical Monitoring Site Visits	**$**	**129545**
Study Qualification Visits		
Study Initiation Visits		
Site Monitoring Visits		
Site Termination Visits		
Study Coordination	**$**	**118986**
Site Communication	**$**	**62347**
Database Design/Maintenance	**$**	**52318**
Data Tracking, Entry and Administration	**$**	**19597**
Data Management	**$**	**106043**
CRF Completion Guidelines		
Data Management Plan (DMP)		
Data Review and Cleaning		
Data Transfers		
Logic Check Definition and Programming		
Quality Control Audit		
Administration		
SAE Reconciliation		
Medical Monitoring	**$**	**90720**
Safety Review and Reporting	**$**	**67162**
Biometrics	**$**	**40437**
Medical Writing	**$**	**26349**
Project Management	**$**	**273737**
Project Communications	**$**	**105006**
Millennix Oncology Internal Team Meetings		
Conference Calls		
Client Meetings		
Project Closeout and Archiving	**$**	**8551**
TOTAL LABOR COST	**$**	**1,188,720**
Estimated Pass Through Expenses:	**$**	**142380**
TOTAL COST ESTIMATE	**$**	**1,331,100**

VI. PAYMENT SCHEDULE AND SIGNATURES

Invoices will be sent monthly for all work performed for the previous month on a Fee for Service basis in accordance with the annual rate that corresponds with the year in which the work is performed. An initial payment of $150,000 is due upon contract execution and will be credited against the last invoice. If Sponsor terminates this project, Sponsor will reimburse Millennix Oncology for all reasonable costs to complete work in progress.

This proposal dated November 21, 2006 is agreed by and between:

AVERION INTERNATIONAL CORP.

Philip T. Lavin, Ph.D.
President/CEO

February 2, 2007
Date

ACTINIUM PHARMACEUTICALS, INC.

Authorized Signature

President & CEO
Title

1/26/07
Date

AVERION

MASTER SERVICES AGREEMENT

This Master Services Agreement ("MSA") is made by and between Averion International Corp. ("Averion"), with an address at 225 Turnpike Road, Southborough, MA 01772 and Actinium Pharmaceuticals, Inc. ("Client"), with an address at 25B Hanover Road, Florham Park, NJ 07932. The parties agree that this MSA shall govern any and all work to be completed by Averion for the Client.

Governance
As a "master" form of contract, this MSA allows Averion to work on one or more projects without having to re-negotiate the basic terms and conditions contained herein. This MSA will cover work assignments as well as consulting activities without formal work assignments.

Client shall engage Averion to provide and Averion shall provide consulting services as directed by the Client in writing or as specified in mutually agreed upon written Work Assignments as well as any mutually agreed upon written modifications (Amendment) to a Work Assignment. Each such Work Assignment and Amendment are governed by the terms and conditions of this MSA; provided, however, that in the event of a conflict between this MSA and a specific Work Assignment/amendment, the Work Assignment/Amendment shall control.

If Client wants to change a specific Work Assignment/amendment or to obtain additional services not identified in a Work Assignment, the Client must advise Averion and submit written specifications to Averion. Averion will then supply the Client with a written Change Order for the additional services. Upon written acceptance of the Change Order by the Client, these services will be performed subject to the terms of this MSA.

In the event the Food, Drug and Cosmetic Act, or any rule or regulation governing any Work Assignment, including without limitation any Good Clinical Practice regulation, is amended, revised or revoked during the term of any Work Assignment, the parties shall discuss the effect of such change on the Work Assignment. Any changes that Client determines to implement shall be handled as a Change Order, as above.

Client remains the sponsor of all studies and has not transferred any obligations to Averion pursuant to 21 CFR 312.52 unless specified in the Work Assignment. In any such instances, the obligations of Averion will be mutually agreed upon by Client and Averion in writing. Client will retain control of the relationship with the FDA unless specified in the Work Assignment.

Understanding
Both parties agree that this MSA supersedes all prior proposals, letters, discussions, negotiations, and agreements of any nature, excluding any prior Confidentiality Agreement between the parties, which shall be replaced by this MSA on the effective date of this MSA. This MSA may be amended only in a writing signed by both the Client and Averion.

Notice and Opportunity to Cure
If one party believes the other has materially failed to perform as provided in this MSA or under any Work Assignment, it shall so notify the other in writing, stating in reasonable detail the nature of the deficiency. Within fifteen (15) business days, the breaching party shall respond in writing with a plan to cure which will specify the agreed upon time to effect a cure, which shall be approved by the non-breaching party, approval shall not be unreasonably withheld. No action arising hereunder may be instituted after one year from when the non-breaching party learns of, or should reasonably be expected to have learned of, the full facts upon which action would be based.

Proposal
(a) Averion may submit to Client a written Work Assignment/Change Order proposal specifying objectives, tasks, assumptions, delivery, and estimated costs, as a proposed Work Assignment/Change Order. All work done by Averion and proposed to Client will be calculated on a fee for service basis with the base rates and estimated completion times specified in each Work Assignment/Change Order. **I f** Client is not satisfied with the written Work Assignment/Change Order proposal, the parties shall use best efforts to resolve any such issues within sixty (60) days of receipt thereof. In any event, Client shall accept any proposed Work Assignment/Change Order by written notice to Averion within sixty (60) days of receipt of Averion's written proposal; otherwise the proposed Work Assignment/Change Order shall be deemed void. All labor rates and other direct costs to be used in Work Assignments and Change Orders are subject to change every January not to exceed 5% per year., The total cost of the project shall not exceed budgeted estimates described in Work Assignments and Change Orders unless scope of work changes or assumptions do not hold (e.g. study enrollment is extended, new sites are activated, additional analyses are required). In the event, Averion is authorized in writing by the Client to begin working on any Work Assignment/Change Order, while the Work Assignment/Change Order is under Client review, Averion will invoice Client on a Fee-for-service basis.

(b) Client and Averion will each designate one or more individuals to represent it with authority to make decisions with respect to this MSA and each Work Assignment proposal or Change Order. Each Work Assignment and Change Order must be signed by Client's authorized individual and Averion's authorized individual prior to going into effect.

Invoices
(a) Averion will invoice Client monthly for services provided during the preceding monthly period.
Services performed under a Work Assignment/Change Order will be billed according to the terms of the Work Assignment/Change Order, while consulting without a signed work assignment will be invoiced on a fee for service basis according to the attached rate schedule (Appendix A). Any additional consulting outside a signed work assignment must be agreed to in advance in writing by the Client. Client agrees to pay Averion all charges related to services described in the invoices within 30 days of receipt of invoice. Thereafter, interest shall accrue and be payable at the rate of 12% per annum, calculated at the rate ,of 1% per month. In the event that Client disputes any portion of the invoice, Client shall notify Averion of such dispute within ten (10) business days of receipt and Client and Averion shall mutually agree upon a resolution of such dispute within ten (10) business days of receipt of the notice of dispute. Client will be responsible for payment for any amounts not in dispute, as stated herein. Client shall make all payments to Averion in United States Dollars ("US Currency"). Averion may suspend work on any assignment with thirty days advance notice if payment is in arrears and undisputed. All pass through costs invoiced to Client will be at actual cost with no mark-up for administration or overhead. In the event Averion incurs a pass through cost in a currency other than U.S. Dollars, the parties shall determine the amount payable based on the relevant conversion rate as reported in *The Wall Street Journal* on the invoice date.

(b) A normal business day is an eight-hour day. Partial days or additional hours worked during a 24-hour period will be billed by Averion as actual hours worked. Upon written approval in advance by Client, Client will reimburse Averion for travel and other direct costs incurred by Averion personnel, contractors, or consultants. Averion personnel, contractors or consultants required to travel out of state will bill Client for an 8-hour day for any partial days worked.

Labor
Averion personnel, contractors, and consultants are independent contractors and shall not be considered to be Client employees during the term of this MSA. Averion has the right to designate who will work on this project, provided that no contractors or consultants (collectively, "Third Party Contractors") will be designated without the prior written approval of the Client, which shall not be unreasonably withheld. Client can request reassignment of Averion staff or Third Party Contractors for any unsatisfactory performance that is unresolved to Client's satisfaction after written notice to Averion and after Averion has a reasonable opportunity to cure. In the event either party directly or indirectly solicits staff or contractors from each other, the soliciting party agrees to give immediate notice to the non-soliciting party. If either party hires staff or consultants, then the soliciting party agrees to pay 40% of the annual salary of that staff or contractors within three (3) months of the date of the hire to the other.

Representatives, employees, or agents of Averion will not be treated as an employee of Client for any purposes, including, but not limited to, those of FICA, Social Security, federal or state unemployment taxes, income tax withholding, or any other employment law or regulation. As the employer, Averion will: (i) supply only individuals legally authorized to work in the United States; (ii) complete and maintain 1-9 forms in compliance with the Immigration Reform and Control Act of 1986; (iii) conduct background checks to ensure its professionals have no felony convictions during the seven years prior to employment by Averion, nationally and by county of residence; (iv) maintain all necessary personnel and payroll records for its professionals; (v) calculate its employees wages and withhold applicable taxes, Social Security and other government-mandated charges; and (vi) remit such employment-related taxes and charges to the appropriate governmental entity.

Averion Warranty

(a) Averion warrants that its services shall be performed in a timely manner and be of professional quality in accordance with accepted industry standards. Any services provided by Averion which the Client claims are less than professional quality or do not substantially meet the stated performance standards, shall be promptly corrected by Averion without charge to Client provided that the Client provides Averion with a written notice of alleged poor quality at the earliest known opportunity; but in no event later than ninety (90) days after receipt of the final deliverable. Absent such notice, all services and deliverables are deemed accepted and conforming within one hundred eighty (180) days of such delivery. As Client's exclusive remedy and Averion's sole liability for any such defects, Averion shall timely cure such defects, at Averion's expense, such that performance and deliverables conform to the applicable specifications in effect at the time performance was due and without modification of said specifications.

(b) During the term of any Work Assignment/Change Order governed by this MSA, Averion, at its sole cost and expense, shall carry and maintain insurance in the amount of Three Million ($3,000,000) Dollars. Upon written request of Client, Averion shall provide Client with a Certificate of Insurance stating that such insurance policy is in full force and effect. In the event of any breach or default of the MSA or any applicable Work Assignment/Change Order that is not cured in accordance with the preceding paragraph, Client's monetary remedy shall be limited to the lesser of three (3) times the total fees associated with any Work Assignment/Change Order or $3,000,000 across all Work Assignments/Change Orders and Client agrees that this monetary remedy shall represent the total liability of Averion for all Work Assignments/Change Orders with Client that are governed by this MSA.

(c) EXCEPT AS EXPRESSLY STATED IN THIS SERVICESWARRANTY, AVERION MAKES NO OTHER WARRANTIES WITH RESPECT TO ITS PERFORMANCE HEREUNDER, INCLUDING WITHOUT LIMITATION, ANY WARRANTIES WITH RESPECT TO THE OUTCOME OF ITS PERFORMANCE OR ANY ANALYSIS, THE VIABILITY OF PRODUCTS WHICH ARE THE SUBJECT OF ANY STUDY, WHETHER OR NOT THE PRODUCTS SHALL BE CLEARED BY THE FDA OR ANY OTHER REGULATORY AGENCY FOR THE STATED INDICATIONS OR IN ANY PARTICULAR TIME, WHETHER OR NOT ANY APPLICATION SHALL BE FILED, THAT THE PRODUCTS SHALL BE A COMMERCIAL SUCCESS, OR THAT THE CLIENT WILL OBTAIN ANY REVENUES OF ANY SIZE FROM ANY PRODUCT IN ANY STUDY.

(d) The Client acknowledges that the services to be provided by Averion are based on information supplied by the Client and other information in the public domain. Averion does not guarantee or warrant such services to any specifications, functions or other standards other than those supplied by Client. The sole remedy of the Client for any breach or default by Averion is the remedy specified herein or termination of this MSA as herein provided and in no event shall Averion be liable for damages to Client in excess of the amounts set forth in (b), above.

Client Warranties

Client warrants that it has obtained all necessary governmental and regulatory approvals to conduct any study or clinical trial described any Work Assignment, including without limitation, all applicable FDA and IRB approvals; and that all approvals shall be in full force and effect during the relevant term of any Work Assignment. Unless expressly agreed in a Work Assignment, Client is solely responsible for interaction with regulatory agencies, including without limitation, the FDA. Client further warrants that the conduct of any studies or clinical trials under this MSA will not infringe any patents, trademarks or copyrights held by third parties.

Indemnification
(a) Client agrees to indemnify, defend and hold harmless Averion and its directors, officers, agents, employees and permitted subcontractors (collectively "Averion Indemnitees") from and against any and all costs (including reasonable attorneys' fees and expenses of litigation), expenses, damages, loss and liabilities incurred or imposed as a result of any third party claim, suit, action, demand or judgment ("Losses") arising from or attributable to the negligence, gross negligence, intentional misconduct or inaction of Client in the performance of any of its obligations under this MSA, including without limitation:

(1) personal injury and property damage suffered by a participant due to any drug, device, biologic, consent, procedure, or protocol arising out of or in connection with, any Work Assignment/Change Order under this MSA, including without limitation, injury and damage received as result of receiving medical care or as a result of medical malpractice;

(2) any harmful or otherwise unsafe effect, including without limitation, a claim based upon a person's use, consumption, sale, distribution, or marketing of any drug, device, biologic or procedure used in or resulting from any Work Assignment/Change Order under this MSA;

(3) Client's performance of or involvement with any drug, device, biologic or procedure used in or resulting from any Work Assignment/Change Order under this MSA or Client's negligent use of any data or information provided by Averion pursuant to this MSA;

(4) any violation of applicable law, rule or regulation for which Client bears responsibility for compliance; or

(5) otherwise resulting from Averion's proper performance of the services under this MSA and any Work Assignment/Change Order hereunder;

provided, however, that if any such Loss arises in whole or in part from the negligence, or intentional misconduct of any Averion Indemnitee(s), then the amount of such Loss for which Client shall indemnify the Averion Indemnitee(s) pursuant to this provision shall be reduced by an amount proportionate to the percentage of the responsibility of the Averion Indemnitees for such Loss.

(b) Averion agrees to indemnify, defend and hold Client and its directors, officers, agents, employees and subcontractors (collectively "Client Indemnitees") harmless from and against any and all Losses to the extent such Losses arise from or are attributable to, the negligence, gross negligence, or intentional misconduct of Averion or its directors, officers, agents or employees, permitted contractors, or consultants *provided however,* that if any such Loss arises in whole or in part from the negligence, gross negligence, or intentional misconduct of any Client Indemnitee(s), then the amount of such Loss for which Averion shall indemnify the Client Indemnitee(s) pursuant to this provision shall be reduced by an amount proportionate to the percentage of the responsibility of the Client Indemnitees for such Loss.

(c) As a condition of the indemnification provided herein, the indemnified parties shall promptly notify the indemnifying party in writing of any claim, action or proceeding potentially giving rise to indemnification hereunder. The indemnifying party shall have sole and absolute control of, and discretion in, the handling of any such claim, action or proceeding, including the selection of legal counsel. The indemnified parties shall fully cooperate with the indemnifying party in the defense and settlement of all such claims, actions and proceedings. The indemnifying party shall keep the indemnified entity reasonably informed concerning all said claims, actions or proceedings and shall not admit liability without the prior written consent of the indemnified entity.

This provision on indemnity shall survive termination or expiration of this MSA.

Limitation of Liability
(a) Notwithstanding anything to the contrary in this MSA or in any Work Assignment, the parties agree Averion shall not be liable for: (1) the lack of efficacy or complications associated with any product under study outside of Averion control, or (2) the act of any principal investigator, sub-investigator, clinical research associate, nurse, nurse-practitioner, pharmacist, or any other employee or consultant licensed to practice medicine or employed by or under agreement with any hospital, clinic, nursing service, site management organization, or other entity which is contracted to **be a** site for any study conducted pursuant to this MSA, even if Averion shall pay, compensate, select, train, contract with or otherwise interact with any of the foregoing.

(b) NEITHER PARTY SHALL BE LIABLE TO THE OTHER **PARTY OR ANY THIRD PARTY FOR** ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY KIND (INCLUDING BUT NOT LIMITED TO LOST PROFITS) IN CONNECTION WITH THIS AGREEMENT, EVEN IF THE PARTY HAS BEEN ADVISED OF SUCH DAMAGES.

This limitation of liability shall survive termination or expiration of this MSA.

Confidentiality
In order for Averion to provide services to the Client, confidential and proprietary information may be disclosed to Averion relating to Client's past, present, and future activities (collectively, "Confidential Information"). Averion and its personnel will preserve the confidential nature of information received from Client in accordance with Averion's established policies and practices, copies of which will be provided to Client. Confidential Information does not include 1) information in the public domain; 2) information previously known by Averion employees or consultants prior to the commencement of this MSA or any Work Assignment; 3) information given to Averion by a third party, not known to be violating Client confidentiality; or 4) information independently developed by Averion outside the scope of the project or this MSA, or without use of Client Confidential Information. Averion agrees to keep all Client Confidential Information confidential during the term of this MSA and for a period of five (5) years from the date of termination or expiration of this MSA. Nothing in this section will prohibit Averion from disclosing Confidential Information pursuant to regulation or court order, provided Averion gives the Client as much advance notice as practical prior to disclosure and Averion protects the Client Confidential Information to the same degree as Averion protects its own Confidential Information. The Client shall bear all costs if Client wishes to dispute the disclosure of its Confidential Information pursuant to regulation or court order.

Work Product
(a) All tangible reports, tables, data analyses, figures, listings, and correspondence created by Averion pursuant to this MSA specifically for the Client (collectively "Work Product") other than the Averion Intellectual Property (defined below) belong to the Client and will not be disclosed by Averion to any third party except as required by any applicable federal or state law or regulation (and provided, in such event, that Averion shall notify the Client as soon as possible of such required disclosure). Averion hereby assigns, sells and transfers to client all of Averion's right, title and interest in and to all such Work Product and all intellectual property rights therein and Client shall provide Averion with a royalty-free nonexclusive license to use the Work Product worldwide throughout the term of this MSA for the purpose of performing its duties and obligations to Client under the MSA and Work Assignments or Change Orders.

(b) Averion owns all rights in and to its general use intellectual property related to its business, including without limitation, all software, algorithms, processes, systems, know-how, and all data collection, report generation, metrics, data checking, data quality checking, data analysis, data displaying and modeling based procedures that it uses in its general business (collectively, "Averion IP").

(c) Averion agrees not to disclose that the Client has specifically retained Averion for professional services unless the Client has specifically authorized in writing that such disclosure can be made.

Property
All data and materials furnished by Client to Averion for use by Averion in connection with the services performed under this MSA or any Work Assignment or Change Order shall remain the sole property of the Client. Client may request the return of all data and confidential materials given to Averion and Averion will promptly ship all materials back to Client upon satisfactory negotiation of all invoices.

Averion Audits
Client shall be entitled to one audit at no charge to Client per Work Assignment and subsequent Change Orders at the Client's discretion and upon reasonable advance notice to Averion. Audits are intended to monitor the operations of Averion hereunder, to examine standard operating procedures, facilities, books, records, papers, files and documentation, including computer files, data bases and records, at Averion's facilities, and, generally, to understand the manner in which tasks are being performed hereunder, determine the adequacy of records, ensure the tasks are being performed in accordance with this Agreement and applicable regulations. This audit shall be conducted during normal business hours and will be at no expense to the Client. Any additional audits conducted at the written request of client will be billed on a fee for service basis.

Exemption
Client acknowledges that Averion will require from Client information, materials, and data in order to perform services properly. Averion is not responsible for errors, delays, or other consequences arising from the failure of Client to provide such data, records, or necessary background to permit Averion to perform services. Neither party will be liable for any delay or failure to perform as required under this MSA to the extent that such delay or failure to perform is caused by circumstances reasonably beyond either party's control, including, without limitation, labor disputes, accidents, any law, order or requirement of any governmental agency or authority, civil disorders or commotions, acts of aggression or terror, fire or other casualty, strikes, acts of God, explosions, material shortages, act required to comply with any laws of the United States or Massachusetts. Performance time will be considered extended for a period of time equivalent to the time lost because of any such delay or failure to perform, provided, however, that if any such delay extends for a period in excess of ninety days, then either party may terminate the applicable Work Assignment upon prior written notice to the other party.

Generic Drug Enforcement Act of 1992
Averion represents that it and its employees, affiliates and agents have never been (i) debarred or (ii) convicted of a crime for which a person can be debarred under Section 306(a) or 306(b) of the Generic Drug Enforcement Action of 1992. Averion represents that it has never been and, to the best of its knowledge after due inquiry, none of its employees, affiliates, or agents has ever been (1) threatened to be debarred or (2) indicted for a crime or otherwise engaged in conduct for which a person can be debarred, under Section 306(a) or (b). Averion agrees that it will promptly notify Client in the event of any such debarment, conviction, threat or indictment.

Assignment
Neither party shall assign this MSA or any Work Assignment/Change Order without the prior written consent of the other party; provided, however a party may assign this MSA or any Work Assignment/Change Order without prior consent in the event of the sale of its business.

Non-Waiver
The waiver, forbearance or failure by either party to claim a breach of any provision of this MSA or any Work Assignment or Change Order pursuant hereto, or to exercise any right or remedy provided by this MSA, shall not be deemed to constitute a modification of any provision of this MSA, or a waiver or estoppel with respect to any subsequent breach or with respect to any provision thereof.

Changes and Modifications
No changes or modifications of this MSA or any Work Assignment or Change Order shall be deemed effective unless in writing and executed by the parties hereto.

Severability
If any provision of this MSA or any Work Assignment/Change Order pursuant hereto shall be determined to be invalid or unenforceable, the validity and effect of the remaining provisions of this MSA or such Work Assignment/Change Order shall not be affected thereby.

Term, Termination and Effects of Termination
(a) This MSA will be effective from the date of signature of the latter party to sign and will remain in
effect for a period of five years or until the last Work Assignment/Change Order is completed, whichever is longer. Notwithstanding the foregoing, either party may terminate this MSA and all open Work Assignments/Change Orders upon written notice in the event that the other party files for bankruptcy protection or seeks any similar relief from creditors, and Averion may terminate this MSA and all open work Assignments/Change Orders if Client fails to pay for work done as required. Upon termination of this MSA and payment in full for all work done through termination of any Work Assignment/Change Order, in addition to payments specified by any early termination clauses in a Work Assignment/Change Order. If so requested by the other party, each party will promptly return to the other all documents or data which are specified to contain Confidential Information, provided, however, that each party may retain one copy of such Confidential Information for documentation.

(b) If a study is stopped or put on hold for efficacy, safety, or site compliance in accordance with the applicable protocol, providing that such hold continues for longer than 6 consecutive months and the parties did not agree in writing to continue for a longer period based on analysis of the reasons for sioppage the Work Assignment/Change Order may be immediately terminated by either party and Averion will have thirty (30) days to wind-down the Work Assignment/Change Order. Alternatively, Client may terminate a Work Assignment/Change Order for any reason with ninety (90) days written notice. Upon such early termination of any Work Assignment/Change Order, Averion shall use commercially reasonable efforts to avoid incurring any additional costs and to fully cooperate in disengaging from any Work Assignment/Change Order and eliminating or minimizing all externally cancelable costs, damages, penalties and expenses connected with the termination of the Work Assignment/Change Order or this MSA. Averion shall comply with all applicable warranties during the wind-down period; provided however, that if the Client does not allow Averion to perform the applicable compliance-related activities (e.g., GCP, SOP or other applicable standard) during that period, then Averion shall promptly notify Client of Averion's inability to perform such compliance-related activities, provided Client with a budget estimate for any such compliance and within fifteen (15) days after any such notification, Client will agree to (i) accept the materials without a warranty for such compliance-related activities; or (ii) require such compliance in accordance with the budget estimate provided by Averion. However, nothing in the foregoing is intended to compromise patient safety in the event a study is suspended or terminated. Further, the parties shall cooperate with each other during such trial or project termination to safeguard patient safety and otherwise to comply with applicable laws and regulations.

Headings
Any heading used in this MSA or any Work Assignment/Change Order is inserted for convenience of reference only and shall not be construed to affect the construction or interpretation of any provision hereof.

Governing Law
This MSA and the rights and obligations of the parties hereunder shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, without regard to its conflicts of law rules.The parties hereby agree to submit any dispute arising hereunder to binding arbitration pursuant to the Commercial Arbitration Rules of the American Arbitration Association. The arbitration shall be conducted in New York, New York. The decision of the arbitrator or arbitration panel shall be final and binding upon the parties hereto and shall be enforceable by any court of competent jurisdiction.

Notice
Any notice to be given hereunder or under any Work Assignment/Change Order, unless otherwise specified in the relevant Work Assignment/Change Order, shall be in writing and shall be deemed given 3 days after being deposited in the United States certified mail (postage prepaid, return receipt requested), 1 day after being deposited with a nationally recognized overnight courier (shipping prepaid), or immediately upon acknowledged hand delivery or electronic confirmation of being sent by facsimile as follows (or to such other addressee as a party specifies from time to time via written notice as below):

If to Client:
Actinium Pharmaceuticals, Inc.
25B Hanover Road
Florham Park, NJ 07932
Attention: Howard Wachtler and Dragan Cicic
Fax: 973-377-0610

If to Averion:
Averion International Corp.
225 Turnpike Road
Southborough, MA 01772
Attention: Dr. Philip Lavin
Fax: 508-416-2789
Copy: Dr. Gene Resnick
800 Westchester Avenue, #N341
Rye Brook, NY 10573
Fax: 914-694-3293

In witness whereof, the parties intending to be legally bound, do hereby execute this MSA by their duly authorized representatives:

AVERION INTERNATIONAL CORP.
Accepted by:

Philip T. Lavin, Ph.D.
President and CEO

February 2, 2007
Date

ACTINIUM PHARMACEUTICALS, INC.
Accepted by:

Authorized Signature

President & CEO
Title

1/26/07
Date

Appendix A

Position Level	2007	2008	2009	2010
President/CEO	578	607	637	669
Senior Executive/CMO	516	542	569	597
Senior Biostatistician	438	460	483	507
Biostatistician	344	361	379	398
Department Director	293	308	323	339
Senior Systems Specialist	293	308	323	339
Averion Attorney	293	308	323	339
Department Manager	256	269	282	296
Senior Biostatistical Analyst	256	269	282	296
Senior Project Manager	256	269	282	296
Senior Quality Assurance	256	269	282	296
Senior Statistical Programmer	256	269	282	296
Biostatistical Analyst	213	224	235	247
DMC Coordinator	213	224	235	247
Medical Research Associate	213	224	235	247
Project Manager	213	224	235	247
Senior Medical Writer	213	224	235	247
Statistical Programmer	213	224	235	247
Compliance and Validation Specialist	194	204	214	225
Computer Validation Specialist	194	204	214	225
Lead CRA	194	204	214	225
Database Programmer	172	181	190	200
Endpoint Assistant	172	181	190	200
Medical Writer	172	181	190	200
Project Associate	172	181	190	200
Clinical Data Manager II, III	172	181	190	200
Systems Specialist	172	181	190	200
Clinical Data Associate	122	128	134	141
Clinical Data Manager I	148	155	163	171
Medical Writer I	148	155	163	171
QC Auditor	148	155	163	171
Senior Project Assistant	148	155	163	171
Clinical Research Associate/Monitor	134	141	148	155
Clinical Assistant	122	128	134	141
Clinical Data Assistant	122	128	134	141
Medical Affairs Assistant	122	128	134	141
Operations Assistant	122	128	134	141
Project Assistant	122	128	134	141
Statistical Assistant	122	128	134	141
Administrative Assistant	91	96	101	106
Data Entry Specialist	91	96	101	106

CONFIDENTIAL
EXECUTION COPY

PRODUCT DEVELOPMENT AND PATENT LICENSE AGREEMENT

This PRODUCT DEVELOPMENT AND PATENT LICENSE AGREEMENT (the "Agreement") is entered into as of February 27, 2003 (the "Effective Date") by and between **PROTEIN DESIGN LABS, INC.**, a corporation organized and existing under the laws of the State of Delaware and having its principal office at 34801 Campus Drive, Fremont, California 94555 U.S.A (hereinafter referred to as "PDL"), and **ACTINIUM PHARMACEUTICALS, INC.**, a corporation organized and existing under the laws of Delaware and having its principal office at 106 South Columbus Street, Alexandria, Virginia 22314 U.S.A. (hereinafter referred to as "ACTINIUM").

RECITALS

WHEREAS, PDL owns certain patents and related patent applications related to humanized antibodies and antibody humanization technology;

WHEREAS, PDL has certain rights to a humanized antibody directed against the CD33 antigen and designated by PDL as "HuM195";

WHEREAS, ACTINIUM has an active research and development program relating to human pharmaceutical products and desires to develop and market HuM195 pursuant to certain restrictions enumerated herein;

WHEREAS, ACTINIUM desires to obtain certain worldwide rights with respect to the clinical development and marketing of HuM195 under the terms and conditions of this Agreement.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants herein contained and intending to be legally bound, the parties agree as follows:

1. DEFINITIONS

All references to particular Exhibits, Articles and Sections shall mean the Exhibits to, and Articles and Sections of, this Agreement, unless otherwise specified. References to this "Agreement" include the Exhibits. For the purposes of this Agreement, the following words and phrases shall have the following meanings:

"ACTINIUM Inventions" means any inventions, whether patented or not, that are invented under standards of applicable patent law solely by employees of ACTINIUM or its Affiliates or other persons required to assign or license patent rights covering such inventions to ACTINIUM or its Affiliates.

"ACTINIUM Field Inventions" means ACTINIUM Inventions within the Field.

"ACTINIUM Joint Inventions" means Joint Inventions owned by ACTINIUM as described in Sections 9.3(a) and 9.3(b) hereof.

"ACTINIUM Non-Field Inventions" means ACTINIUM Inventions outside the Field to the extent that that they relate to the use, manufacture or composition of the HuM195 Antibody or that are improvements

or variations on the methods and applications and formulations disclosed in the PDL Patent Rights or the PDL Technical Information.

"**ACTINIUM Patent Rights**" means all patents and patent applications owned or controlled by ACTINIUM and that are related to ACTINIUM Field Inventions or ACTINIUM Non-Field Inventions, including any addition, continuation, continuation-in-part or division thereof or any substitute application therefor; any patent issued with respect to any such patent application, any reissue, extension or patent term extension of any such patent; and any confirmation patent or registration patent or patent of addition based on any such patent, including any supplementary protection certificates.

"**ACTINIUM Technical Information**" means all inventions, discoveries, know-how, trade secrets, information, experience, technical data, formulas, procedures or results relating to the Licensed Products in the Field (including, without limitation, physical, chemical, biological, toxicological, pharmacological and clinical information and data, product forms and formulations, and know-how relating to methods, processes or techniques for the manufacture or use of Licensed Products in the Field including, without limitation, preparation, recovery, packaging, and sterilization processes and techniques, dosage regimens, control assays and specifications) that are developed or acquired by ACTINIUM or its Affiliates or sublicensees, with right to license or sublicense, during the term of this Agreement, and which are useful or necessary for the registration, manufacture, use, importation or sale of Licensed Products in the Field.

"**Affiliate**" means, with respect to any person or entity, any corporation or other business entity that, directly or indirectly, controls, is controlled by, or is under common control with such person or entity, where "control" means (a) in the case of corporate entities, direct or indirect ownership of at least fifty percent (50%) of the stock or shares having a right to vote for the election of directors, and (b) in the case of non-corporate entities, direct or indirect ownership of at least fifty percent (50%) of the equity interest with the power to direct the management and policies of such non-corporate entities, *provided, however,* that such entity shall be an Affiliate only so long as such control exists.

"**BLA**" means a Biologics License Application, as defined under the U.S. Code of Federal Regulations, or foreign counterparts thereto, as the case may be.

"**Bulk Product**" means Licensed Product supplied in a form other than Finished Product that can be converted into Finished Product.

"**Combination Product**" means any product containing both a pharmaceutically active agent or ingredient that constitutes a Licensed Product and one or more other pharmaceutically active agents or ingredients that do not constitute Licensed Products.

"**Commercially Reasonable Efforts**" means mean continuous and diligent efforts of a degree and kind, including the level of attention and care and providing of funding and manpower, as are consistent with industry custom and practice and with the then current stage of product life cycle, and such efforts will in no event be less than the efforts that a party applies with respect to its other products of similar commercial potential to the maximum extent feasible, consistent with the exercise of good business judgment.

"**FDA**" means the U.S. Food and Drug Administration.

"**Field**" means any form or derivative of the HuM195 Antibody conjugated with ACTINIUM-225 or other alpha emitting radioisotopes (the "**HuM195 Antibody Conjugate**"), including without limitation conjugates with bispecific, less than full-length antibody forms such as Fv, Fab, and F(ab'), single-chain

antibodies and hybrid antibodies, provided however, that the "Field" shall not include the unconjugated HuM195 Antibody (except as delivered as part of a mixture with the HuM195 Antibody Conjugate and delivered as a single therapy), the HuM195 Antibody conjugated with any radionuclide other than Actinium-225 or other alpha emitters, or the HuM195 Antibody conjugated with a peptide or small molecule toxin.

"**Finished Product(s)** " means any and all Licensed Products in a form for use by an end user and not intended for further chemical or genetic manipulation or transformation.

"**First Commercial Sale**" means the first sale, by ACTINIUM, its Affiliates or Sublicensees of a Licensed Product to an independent Third Party, who is not a Sublicensee or an Affiliate of a Sublicensee, following regulatory approval of such Licensed Product by the FDA or equivalent governmental approval in countries in the Territory.

"**HuM195 Antibody**" means the humanized version of the m195 antibody directed against the CD33 antigen.

"**Initiate**" means, with respect to a Clinical Trial, the enrollment of the first patient in a specified clinical trial.

"**Joint Inventions**" means any inventions, whether patented or not, that are jointly invented under standards of applicable patent law by at least one employee of PDL or its Affiliates or person contractually required to assign or license patent rights covering such inventions to PDL or its Affiliates and at least one employee of ACTINIUM or its Affiliates or person contractually required to assign or license patent rights covering such inventions to ACTINIUM or its Affiliates.

"**Licensed Products**" means any product in the Field, including any Combination Product, the making, use or sale of which utilizes PDL Technical Information or PDL Patent Rights or would, in the absence of this Agreement, infringe a Valid Claim.

"**Net Sales**" means the aggregate gross revenues accrued or received by Actinium, its Sublicensees or Affiliates, whether in cash or in kind, derived by or payable from or on account of the sale of Licensed Products, less sales or excise taxes separately stated on any invoice for such Licensed Products and less actual amounts expended or deducted for the following items: (a) rebates, refunds, credits or allowances, if any, actually granted on account of price adjustments (including customary trade, quantity and cash discounts, administrative fees in lieu of rebates, chargebacks and retroactive adjustments), recalls, rejection or return of items previously sold, (b) duties or other taxes imposed on and paid with respect to such sales (excluding income or franchise taxes of any kind), and (c) outer packing, freight and freight insurance costs.

If ACTINIUM or any of its Affiliates or Sublicensees receive non-cash consideration for any Licensed Product sold or otherwise transferred to an independent third party not an Affiliate of the seller or transferor, the fair market value of such non-cash consideration on the date of such transfer as known to ACTINIUM, or as reasonably estimated by ACTINIUM if unknown, shall be used to calculate Net Sales.

In the case of a Combination Product for which the agent or ingredient constituting a Licensed Product and each of the other active agents or ingredients not constituting Licensed Products have established market prices when sold separately, Net Sales shall be determined by multiplying the Net Sales for each such Combination Product by a fraction, the numerator of which shall be the established market price for the Licensed Product(s) contained in the Combination Product and the denominator of which shall be the

sum of the established market prices for the Licensed Product(s) plus the other active agents or ingredients contained in the Combination Product. When such separate market prices are **not** established, then the parties shall negotiate in good faith to determine a fair and equitable method of calculating Net Sales for the Combination Product in question.

In the case of Net Sales for Bulk Products, Net Sales shall be calculated by multiplying the units of Finished Product to which such Bulk Product is reasonably anticipated to be converted by the established market price of the Finished Product on the date of sale of the Bulk Product. By way of example and without limitation, units of Finished Product may be measured in grams or doses, as appropriate.

"PDL Joint Inventions" means Joint Inventions owned by PDL as described in Sections 9.3(a) and 9.3(b) hereof.

"PDL Technical Information" means those inventions, discoveries, know-how, trade secrets, information, experience, technical data, formulas, procedures or results, as of the date of this Agreement, relating to Licensed Products listed on Exhibit B hereto.

"PDL Patent Rights" means all patents or patent applications owned or controlled by or licensed to PDL to the extent directly related to the humanization of antibodies or the HuM195 Antibody and identified on **Exhibit A**, which are filed prior to or during the date of this Agreement, including any rights of PDL to the ACTINIUM Non-Field Inventions and the PDL Joint Inventions, and any addition, continuation, continuation-in-part or division thereof or any substitute application therefor, any patent issued with respect to such patent application, any reissue, extension or patent term extension of any such patent, and any confirmation patent or registration patent or patent of addition based on any such patent, including any supplementary protection certificates.

"Phase I Clinical Trial" means a trial that provides for the first introduction into humans of a pharmaceutical product with the purpose of determining human toxicity, metabolism, absorption, elimination and other pharmacological action and to support Regulatory Approval of such pharmaceutical product or label expansion of such pharmaceutical product.

"Phase II Clinical Trial" means a trial on sufficient numbers of patients that is designed to determine the effectiveness of a pharmaceutical product by examining several factors, including dose-response, type of patient and frequency of dosing and to support Regulatory Approval of such pharmaceutical product or label expansion of such pharmaceutical product.

"Phase III Clinical Trial" means a trial on sufficient numbers of patients that is designed to establish that a pharmaceutical product is safe and efficacious for its intended use, and to define warnings, precautions and adverse reactions that are associated with the pharmaceutical product in the dosage range to be prescribed, and to support Regulatory Approval of such pharmaceutical product or label expansion of such pharmaceutical product.

"Regulatory Approval" means all approvals (including supplements, amendments, pre- or post-approvals including but not limited to, recommendations or opinions of committees, such as the Committee for Medicinal Products and the Committee for Orphan Medicinal Products, pricing or reimbursement approvals), licenses, registrations or authorizations of any national, supra-national (e.g., the European Commission, the Council of the European Union or The European Agency for the Evaluation of Medicinal Products), regional, state or local regulatory agency, department, bureau, commission, council or other governmental entity, that are necessary for the manufacture, distribution, use and sale of a Licensed

Product in a regulatory jurisdiction, including, approval of labeling, price, reimbursement and manufacturing.

"**SKI**" means Sloan-Kettering Institute for Cancer Research.

"**Sublicensee**" means any person or entity who receives a sublicense from ACTINIUM pursuant to Section 2.2.

"**Territory**" means worldwide.

"**Valid Claim**" means (a) any claim in any issued, unexpired patent or any claim or product definition or equivalents thereof in any patent term extension, including supplementary protection certificates, included in the PDL Patent Rights, which claim or product definition or equivalents thereof has not been disclaimed or held unenforceable or invalid by a governmental agency or court of competent jurisdiction by a decision beyond right of review, and (b) any pending claims in any patent application being diligently and continuously prosecuted in good faith or any claim or product definition or equivalents thereof in any patent term extension, including supplementary protection certificates, included in PDL Patent Rights, which claim has not been disclaimed or held unenforceable or invalid by a governmental agency or court of competent jurisdiction by a decision beyond right of review.

2. HUM195 LICENSE

2.1 License Grants.

(a) **License Grant to ACTINIUM.** Subject to the terms and conditions of this Agreement, including the limitations on sublicensing described in Section 2.2 below, PDL hereby grants, and ACTINIUM hereby accepts, an exclusive, worldwide license, including the right to grant sublicenses in accordance with Section 2.2, under the PDL Patent Rights and PDL Technical Information, to research, develop, make, have made, import, market, promote, use, sell, offer to sell and have sold Licensed Product(s) in the Field.

(b) **License Grant to PDL.** Subject to the exclusive rights of ACTINIUM pursuant to this Agreement, ACTINIUM hereby grants, and PDL hereby accepts, a nonexclusive, worldwide, royalty-free, irrevocable license, with the right to grant sublicenses, to research, develop, make, have made, import, market, promote, use sell, offer to sell and have sold any product outside of the Field incorporating any ACTINIUM Joint Invention or any ACTINIUM Non-Field Invention.

2.2 Sublicenses. Subject to the terms and conditions of third-party licenses as provided in Section 2.3, ACTINIUM shall have the right to grant sublicenses of its rights under Section 2.1(a) with respect to Licensed Products, subject to PDL's consent, which shall not be unreasonably withheld. ACTINIUM shall be prohibited from disclosing any PDL Technical Information, prior to obtaining PDL's consent except as set forth in Article 8, below. Notwithstanding the grant of a sublicense by ACTINIUM hereunder, ACTINIUM shall remain obligated to pay all royalties due to PDL with respect to the sale of Licensed Products by its Sublicensee. In addition, the grant of any sublicenses under this Section 2.2 shall be on terms and conditions that are subject to and subordinate to the terms of this Agreement and ACTINIUM shall remain fully responsible to PDL for the performance of any and all such terms by its Sublicensees. Promptly following execution of any sublicense hereunder, ACTINIUM shall deliver to PDL a copy of the sublicense agreement.

2.3 Sublicenses of Third-Party Rights to ACTINIUM. ACTINIUM understands and agrees that the license granted to it under this Agreement includes certain rights sublicensed to ACTINIUM under agreements between PDL and certain third parties. Exhibit C lists all agreements pursuant to which third-party rights are sublicensed by PDL to ACTINIUM as of the Effective Date. ACTINIUM acknowledges that it has received copies of such agreements, including the License Agreement between SKI and PDL, dated April 1, 1993, and understands and agrees that it will have no more rights under such sublicenses than are permitted in each case by the applicable third-party agreement. ACTINIUM shall abide by all applicable terms and conditions of such third-party agreements. ACTINIUM understands that it may have to obtain licenses under third party rights at its own risk in order to carry out the activities contemplated by this Agreement.

2.4 Continuing Rights of Sublicensees. Upon the termination of this Agreement, each Sublicensee of ACTINIUM or its Affiliates shall have the option to convert its sublicense from ACTINIUM or its Affiliates to a direct license with PDL on substantially the same terms as in the sublicense agreement with the ACTINIUM (or its Affiliates), but in no event on terms more favorable to a Sublicensee than those of this Agreement.

2.5 Technical Information. Within thirty (30) days after execution of this Agreement, PDL will designate two (2) individuals to coordinate the transfer to ACTINIUM of the PDL Technical Information (the "Coordinators"). The Coordinators will be the only PDL representatives with authority to transfer any PDL Technical Information. Within thirty (30) days after execution of this Agreement, PDL will provide to ACTINIUM the PDL Technical Information. In addition, PDL will cooperate and in good faith provide, to the extent permitted by law and other third party contractual obligations, access to any additional PDL technical information that the parties agree may be required by ACTINIUM for patent prosecution and maintenance or regulatory submissions with respect to Licensed Products. If PDL, in its sole discretion, determines that the provision of such information imposes an unreasonable burden on PDL, PDL may require ACTINIUM to reimburse PDL for its reasonable costs actually incurred to gather and provide such additional information. In no event shall there be any obligation on the part of PDL to generate any new data or information related to Licensed Products.

2.6 No Other Rights. ACTINIUM acknowledges and agrees that, except for the rights expressly granted under Section 2.1(a), no rights to any other PDL patents or patent applications, or to any know-how, trade secrets, licenses, or PDL Technical Information are included in this Agreement or granted by implication, estoppel or otherwise.

2.7 Covenant by ACTINIUM. ACTINIUM hereby covenants and agrees that it will not research, develop, make, have made, use, offer to sell, sell, or import Licensed Products, or otherwise practice the subject matter claimed under the PDL Patent Rights, or contained in PDL Technical Information, outside the Field, or otherwise outside the scope of the licenses granted herein.

3. COMMERCIAL DILIGENCE

3.1 Diligence Requirements. At all times during the term of this Agreement, ACTINIUM, its Affiliates and Sublicensees shall use Commercially Reasonable Efforts to (a) initiate and complete the clinical development of the HuM195 Antibody Conjugate, (b) obtain regulatory approvals for the Licensed Product in major markets, and (c) obtain subsequent worldwide marketing, distribution and sale of the Licensed Product.

4. NON-ROYALTY PAYMENTS

4.1 License Fee. In consideration for the rights and licenses granted by PDL under this Agreement, ACTINIUM shall pay to PDL, no later than 30 days after the effective date of this Agreement, a non-refundable, non-creditable fee in the sum of Three Million United States Dollars (US $3,000,000) by wire transfer to PDL's bank account specified in Section 6.2 or to such other account as may be specified by PDL to ACTINIUM in writing.

4.2 Milestone Payments. Within thirty (30) days following the achievement of each of the following milestones, ACTINIUM shall pay to PDL the corresponding milestone payment, as set forth below. All milestone payments shall be payable only once, which shall be the first time a milestone is achieved for any indication. If a milestone for a Licensed Product is skipped or avoided by advancing to what would normally be expected to be a later development or regulatory step, then the milestone(s) that was expected to occur earlier shall be deemed to have been achieved at the same time as such later milestone is achieved, and the corresponding payment for both milestones shall be due. Milestones paid by ACTINIUM before the launch of a Licensed Product are not creditable against royalties payable to PDL. Payment shall be made by wire transfer to such account as may be specified by PDL to ACTINIUM in writing:

Milestone	Milestone Payment Amount
1. ACTINIUM initiates a Phase I Clinical Trial of a Licensed Product.	US$750,000
2. ACTINIUM initiates a Phase II Clinical Trial of a Licensed Product.	US$750,000
5. ACTINIUM initiates a Phase III Clinical Trial of a Licensed Product.	US$1,500,000
6. BLA Filing.	US$1,750,000
7. First Commercial Sale.	US$1,500,000
8. After first US$10,000,000 in Net Sales.	US$1,500,000

5. ROYALTIES

5.1 Royalty to PDL. In further consideration of the rights and licenses granted under Article 2, ACTINIUM shall pay to PDL on a country-by-country basis a royalty of Twelve Percent (12%) of Net Sales of all Licensed Products sold by ACTINIUM, its Affiliates and Sublicensees until the later of (i) twelve and one-half (12 1/2) years from the date of First Commercial Sale of any Licensed Product in that country, or (ii) the last date there is a Valid Claim that, but for the licenses granted to ACTINIUM under this Agreement, would be infringed by the making, using, importing, having made or sale of that Licensed Product in such country in the Territory or by the manufacture of Licensed Product in the country of manufacture. The royalty shall be reduced to reflect any reduction or cessation of PDL royalty obligations to SKI with respect to the use, manufacture or sale of the Licensed Products. In the event that the total royalties payable by ACTINIUM, its Affiliates and sublicensees to third parties (including the royalties payable to PDL under this Agreement), are in excess of fifteen percent (15%) of Net Sales of a Licensed

Product in a country of the Territory, then with respect to that Licensed Product in that country, for each percentage point by which such total royalties exceed fifteen percent (15%) of Net Sales, the rate for royalties payable to PDL pursuant to this Agreement shall be reduced by one-half (1/2) of a percentage point, provided, however, that the rate for royalties payable to PDL shall in no case be less than ten percent (10%) of Net Sales (inclusive of royalties payable to SKI pursuant to Section 5.2 below).

5.2 Royalties to Third Parties. Royalties payable under Section 5.1shall be exclusive of third-party royalties, with the exception of royalties payable by PDL to SKI, which shall be included within the royalty owed to PDL under Section 5.1. . ACTINIUM shall be solely responsible for the payment of any royalties payable to third parties arising out of the manufacture, use, import or sale of Licensed Products by ACTINIUM, its Affiliates or Sublicensees, which shall be in addition to the royalty specified in 5.1, except as noted herein. This shall include all royalties payable to third parties pursuant to sublicenses granted by PDL to ACTINIUM under Article 2, which ACTINIUM shall pay directly to PDL and PDL shall pay the third-party royalties when due under the terms of PDL's agreement with such third-party licensors.

5.3 Sales Among Affiliates. Sales or other transfers of Licensed Products between and among ACTINIUM and any of its Affiliates or Sublicensees which are subsequently resold or to be resold by such Affiliates or Sublicensees shall not be subject to royalty, but in such cases royalty shall accrue and be calculated on any subsequent sale or other transfer of such Licensed Products to an independent third party.

6. REPORTS, PAYMENTS AND ACCOUNTING

6.1 Reports.

(a) Royalty Payment Reports. ACTINIUM agrees to make written reports and royalty payments to PDL within forty five (45) days after the close of each calendar quarter during the term of this Agreement, beginning with the calendar quarter in which the first sale to an independent third party occurs. These reports shall show for the calendar quarter in question Net Sales by ACTINIUM, its Affiliates and Sublicensees of the Licensed Products on a country-by-country basis, details of the quantities of Licensed Products sold in each country and the country of manufacture if different, and the royalty due to PDL thereon pursuant to Section 5.1. Concurrently with the making of each such report, ACTINIUM shall make any payment due to PDL of royalties for the period covered by such report.

(b) Clinical Development Progress Reports. ACTINIUM agrees to make written reports to PDL within forty five (45) days after the close of each calendar year during the term of this Agreement, beginning with the calendar year in which the Effective Date falls, which reports shall set forth the progress made by ACTINIUM in pre-clinical and/or clinical development of the HuM195 Antibody Conjugate and any Licensed Products during the preceding year and the pre-clinical and/or clinical efforts or events anticipated during the next year.

(c) Termination Report. ACTINIUM also agrees to make a written report to PDL within ninety (90) days after the date on which ACTINIUM, its Affiliates or Sublicensees last sell the Licensed Product in each country stating in such report the same information required by quarterly royalty reports for all such Licensed Products made, sold or otherwise disposed of which were not previously reported to PDL.

(d) Notification of Regulatory Approval. ACTINIUM agrees to notify PDL in writing within thirty (30) days after each date on which ACTINIUM, its Affiliates or Sublicensees obtain Regulatory Approval of a Licensed Product in any country. Each such notice shall specify the country in which Regulatory Approval was obtained and the date of such approval. Additionally, ACTINIUM shall deliver

to PDL within one (1) month of receipt by ACTINIUM, Actinium's Affiliates or ACTINIUM's Sublicensees, or within one (1) month of the availability of the document: (a) a copy of every Regulatory Approval for a Licensed Product, (b) a copy of the official journal page from each country granting the Regulatory Approval, including the approval number and date of authorization for each approved Licensed Product, and (c) to the extent applicable, a copy of the EMEA Commission Decision.

(e) **Patent Term Extensions.** The parties agree to cooperate fully and expeditiously with each other in obtaining any patent term extension, including supplementary protection certificates, wherever applicable to PDL Patent Rights and patents covering ACTINIUM Joint Inventions.

6.2 Payments.

(a) **When and Where Due.** All amounts payable to PDL under this Agreement shall be due and payable when specified herein and shall be payable in U.S. Dollars by wire transfer to the following account or to such other account(s) as PDL may specify in writing.

State Street Bank and Trust Co.
Boston, MA.
ABA # 0110 0002 8
Acct# 99037582
ATTN: Merrill Group
Credit MLIF # 3214958
N/O Protein Design Labs, Inc.

(b) **Currency Conversion.** In the case of royalties on Net Sales, all amounts payable shall first be calculated in the currency of sale and then converted into U.S. Dollars using the average of the daily exchange rates for such currency quoted by Citibank, N.A. for each of the last five (5) banking days of each calendar quarter.

(c) **Late Payments.** Any overdue payments under this Agreement shall bear interest at the rate of twelve percent (12%) per annum, or the highest rate allowed by law, whichever is less, commencing on the date such payment is due until paid.

(d) **Withholding.** The amounts payable by ACTINIUM to PDL hereunder shall represent the actual proceeds to be received by PDL, net of any withholding or other taxes or levies that may be applicable to such payments. PDL agrees to reasonably cooperate with ACTINIUM in obtaining a refund of any withholding taxes or levies paid by ACTINIUM, if any, with respect to any payments to PDL hereunder. In the event that PDL is successful in obtaining any refund of tax withholding amounts paid by ACTINIUM under this Agreement, PDL agrees to promptly remit such refund amount to ACTINIUM.

6.3 Inspection. ACTINIUM agrees to keep and to require its Affiliates and Sublicensees to keep, clear, accurate and complete records for a period of at least three (3) years (or such longer period as may correspond to ACTINIUM's internal record retention policy) after each reporting period in which Net Sales occur showing the manufacturing, sales, use and other disposition of Licensed Products in each country in sufficient detail to enable the royalties payable hereunder to be determined, and further agrees to permit its books and records to be examined by an independent accounting firm selected by PDL and reasonably satisfactory to ACTINIUM, from time-to-time to the extent necessary, but not more than once a year. Such examination is to be made during regular business hours upon reasonable prior written notice and at the expense of PDL, except in the event that the results of the audit reveal that ACTINIUM underpaid PDL

by five percent (5%) or more in any quarter for which records are being examined, then the audit fees shall be paid by ACTINIUM. Any such discrepancies will be promptly corrected by a payment or refund, as appropriate. PDL agrees that all information subject to review under this Section is confidential and that PDL shall retain and cause its representative to retain all such information in confidence.

7. REPRESENTATIONS, DISCLAIMERS, INDEMNIFICATION

7.1 Valid Agreement. Each party represents and warrants to the other that it knows of no legal reason to prevent it from entering into this Agreement, that the signatory hereto is duly authorized to execute and deliver this Agreement, and that this Agreement constitutes the valid and binding obligation of that party, enforceable against it in accordance with its terms except as enforceability may be limited by bankruptcy, fraudulent conveyance, insolvency, reorganization, moratorium and other laws relating to or affecting creditors' rights generally and by general equitable principles.

7.2 No Warranty of Validity, Non-Infringement. Except as specifically set forth below in this Section 7.2, nothing in this Agreement shall be construed as (a) a warranty or representation by PDL as to the validity or scope of any PDL Patent Rights; or (b) a warranty or representation that any Licensed Product made, used, imported, sold or otherwise disposed of under the license granted in this Agreement is or will be free from infringement of patents, copyrights, trademarks, trade secrets or other rights of third parties. To PDL's knowledge as of the Effective Date, (i) PDL owns or possesses adequate licenses or other rights to use all PDL Patent Rights, and to grant the licenses herein; (ii) the granting of the licenses to Actinium hereunder does not violate any right known to PDL of any third party, and (iii) PDL is not in breach of any of its obligations under any of the third party agreements listed in Exhibit C and no claims for breach or termination of such agreements have been received by PDL.

7.3 No Other Warranties. EXCEPT AS SPECIFICALLY SET FORTH IN THIS ARTICLE 8, PDL MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO ANY CELL LINES OR ANTIBODIES DEVELOPED BY PDL, OR LICENSED PRODUCTS DEVELOPED BY ACTINIUM UNDER THE LICENSE SET FORTH IN THIS AGREEMENT AND PDL FURTHER MAKES NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR THAT THE USE OF ANY CELL LINES, ANTIBODIES, LICENSED PRODUCTS OR OTHER MATERIALS DEVELOPED BY ACTINIUM UNDER THE LICENSE SET FORTH IN THIS AGREEMENT WILL NOT INFRINGE ANY THIRD-PARTY RIGHTS.

7.4 ACTINIUM Diligence. ACTINIUM acknowledges the provisions of this Section 7 and agrees that it is responsible for and has conducted its own investigation and analysis of the patent or other proprietary rights of third parties and the possibilities of infringements thereof, that it understands the complexity and uncertainties associated with possible claims of infringement of patent or other proprietary rights of third parties, particularly those relating to pharmaceutical products, and that it agrees to be responsible for the risks of such claims. To PDL's actual knowledge, it has in all material respects provided to ACTINIUM all documents and information in its possession reasonably necessary for ACTINIUM to carry out the activities contemplated under this Agreement, with the exception of any information relating to analysis of the patent or other proprietary rights of third parties ("Third Party Rights"), including, but not limited to, information concerning the validity, scope or potential infringement of Third Party Rights. PDL makes no representation or warranty of any kind, either express or implied, with respect to the accuracy or completeness of any information disclosed to ACTINIUM, orally or in

writing, with respect to Third Party Rights and ACTINIUM acknowledges that it may not rely in any way on any such information.

7.5 Indemnification by ACTINIUM. ACTINIUM shall at all times, during the term of this Agreement and thereafter, defend, indemnify and hold harmless PDL and its Affiliates, sublicensees, directors, officers, agents and employees from any claim, proceeding, loss, expense, and liability of any kind whatsoever (including but not limited to those resulting from death, personal injury, illness or property damage and including legal expenses and reasonable attorneys' fees) to the extent arising out of or resulting from the development, manufacture, holding, use, testing, advertisement, sale or other disposition by ACTINIUM, its Affiliates or Sublicensees, or any distributor, customer or representative of ACTINIUM, of any Licensed Product, the HuM195 Antibody Conjugate, or of their progeny or derivatives, or of any radioisotope, or any other biological material, method, device, process, or apparatus, provided however, that the foregoing indemnification shall not apply to any claim, proceeding, loss, expense or liability to the extent caused by the gross negligence or willful misconduct of PDL or its Affiliates or sublicensees.

7.6 Claims Procedures. PDL shall give notice to ACTINIUM after PDL has actual knowledge of any threatened or asserted claim as to which indemnity may be sought pursuant to Section 7.5, and shall permit ACTINIUM to assume the defense of any such claim or any litigation resulting therefrom, provided that, counsel for ACTINIUM, who shall conduct the defense of such claim or any litigation resulting therefrom, shall be approved by PDL (whose approval shall not unreasonably be withheld) and PDL may participate in such defense at PDL's expense. The foregoing notwithstanding, ACTINIUM shall pay the reasonable fees and expenses of one law firm serving as counsel for PDL, which law firm shall be subject to approval, not to be unreasonably withheld, by ACTINIUM, if (i) the employment of counsel by PDL has been authorized by ACTINIUM, or (ii) PDL has reasonably concluded that there may be a conflict of interest between ACTINIUM and PDL in the defense of such action. The failure of PDL to give notice as provided herein shall not relieve ACTINIUM of its obligations under this Agreement to the extent that the failure to give notice did not result in harm to ACTINIUM. ACTINIUM shall not, in the defense of any such claim or litigation, except with the approval of PDL which approval shall not be unreasonably withheld, consent to entry of any judgment or enter into any settlement which (i) would result in injunctive or other relief being imposed against PDL, or (ii) does not include as an unconditional term thereof the giving by the claimant or plaintiff to PDL of a release from all liability in respect to such claim or litigation. PDL shall furnish such information regarding itself or the claim in question as ACTINIUM may reasonably request in writing and shall be reasonably required in connection with the defense of such claim and litigation resulting therefrom.

7.7 Compliance with Laws. In connection with the activities contemplated under this Agreement, ACTINIUM shall, and shall cause its Affiliates and Sublicensees to, comply with all material applicable laws and regulations concerning the development, manufacture, holding, use, testing, advertisement, sale or other disposition of pharmaceuticals or radioactive or hazardous materials. Any material departure from this undertaking may, at PDL's option, be treated by PDL as a breach of this Agreement by ACTINIUM.

7.8 Product Liability Insurance. ACTINIUM shall maintain product liability insurance in amounts as appropriate for the clinical development and sale of Licensed Products in the individual countries.

8. CONFIDENTIALITY AND DISCLOSURE

8.1 Prior Agreement. This Agreement supersedes any and all previous agreements and understandings, whether oral or written, between the parties regarding the treatment of confidential information.

8.2 Confidentiality. PDL and ACTINIUM each acknowledge that, in the course of negotiations and furtherance of the interests of the parties hereunder, it ("Recipient") may receive confidential information of the other party ("Provider"). "Confidential Information" means any and all data and information that (a) has been reduced to tangible form and marked clearly and conspicuously with a legend identifying its confidential or proprietary nature; or (b) with respect to any oral presentation or communication, is designated as confidential immediately before, during, or within a reasonable time after the oral presentation or communication and such designation is subsequently confirmed in writing; or (c) is otherwise characterized by Provider as confidential information. Confidential Information may include, but is not limited to, any portion of any scientific or technical information, design, process, procedure, formula, data, or improvement, biological material, software programs and source documents, and information relating to Provider's financial affairs, products, processes, services, customers, customer lists, business plans, employees, employee compensation, research, development, inventions, works of authorship, manufacturing, engineering, purchasing, accounting, distribution, and marketing, or information which any third party has disclosed to Provider in confidence. In any event, PDL shall have the right to disclose publicly the amount of payments received from ACTINIUM from time to time during the term of this Agreement.

8.3 Recipient Obligations. During the term of this Agreement and for five (5) years after termination hereof, Recipient agrees not to disclose the Confidential Information to any third party, other than those of its Affiliates, sublicensees, employees, agents or subcontractors who are bound by non-use and non-disclosure agreements and are required to have the information in connection with such party's activities as contemplated under this Agreement. Recipient further agrees not to use the Confidential Information of the other party, during the term of this Agreement and for five (5) years after termination hereof, for any purpose other than the development and commercial exploitation of Licensed Products in the Field. The foregoing obligations of confidentiality shall not apply to the extent that any Confidential Information (a) is rightfully in the possession or control of the Recipient at the time of disclosure or is developed by Recipient thereafter in the course of work entirely independent of any disclosure by the other party; (b) is publicly known prior to or becomes publicly known after disclosure through no fault or omission of the Recipient; (c) is lawfully obtained by Recipient from a third party under no obligation of confidentiality to Provider; (d) is disclosed pursuant to a requirement of a government agency or of law without similar restrictions or other protection against public disclosure, or as to which disclosure is required by operation of law; provided that the disclosing party shall first give written notice of such required disclosure to Provider, make a reasonable effort to obtain a protective order requiring that the Confidential Information so disclosed be used only for the purposes for which disclosure is required, and take reasonable steps to allow Provider to seek to protect the confidentiality of the information required to be disclosed; (e) if Recipient is a publicly traded company, is disclosed to meet the requirements of any law or regulation, or the requirements of any securities exchange to which Recipient may be subject, including any related rules and regulations, but only to the extent such disclosure is reasonably required and subject to obligations of confidentiality wherever possible; or (f) is disclosed to a government agency or regulatory authority in connection with drug development, approval or registration.

9. PROSECUTION, MAINTENANCE AND ENFORCEMENT OF PATENTS

9.1 PDL Patent Rights.

(a) **Prosecution.** PDL agrees to prosecute and reasonably maintain all of the patents and applications included within the PDL Patent Rights in countries determined by PDL. Upon the written request of ACTINIUM (which request shall not be made more than once per calendar year), PDL agrees to provide a written update of the information relating to the PDL Patent Rights. If PDL decides not to continue the prosecution or maintenance of a PDL Patent Right directly relating to a Licensed Product in

any country, PDL shall promptly advise ACTINIUM thereof. At the request of ACTINIUM, PDL and ACTINIUM shall negotiate in good faith to determine an appropriate course of action in the interests of both parties. If the parties determine that it would be feasible for ACTINIUM to assume responsibility for such prosecution or maintenance, then ACTINIUM shall have the right but not the obligation to assume such prosecution or maintenance. If the parties determine that it would not be feasible for ACTINIUM to assume responsibility for such prosecution or maintenance, then, at ACTINIUM's request, PDL shall continue such prosecution or maintenance, provided that all costs and expenses for such prosecution shall be borne by ACTINIUM. Effective as of the date royalties become payable to PDL for Net Sales on Licensed Products pursuant to Section 5.1, patent prosecution and maintenance fees incurred by ACTINIUM subsequent to that date pursuant to this Section 9.1(a) shall be creditable against royalties payable to PDL, provided that, such credit shall not exceed fifty thousand dollars ($50,000) per year.

(b) **Enforcement.** With respect to the PDL Patent Rights licensed under this Agreement, PDL, at its sole cost and expense, agrees to take all steps and proceedings and to undertake such other acts as PDL may, in its sole discretion, deem necessary or advisable to restrain any infringement or improper or unlawful use of the PDL Patent Rights. PDL shall have the sole right to take such steps, conduct any such proceedings or undertake any such actions to restrain any infringement or improper or unlawful use of the PDL Patent Rights, whether or not ACTINIUM is a party to such steps, proceedings or actions. Any moneys recovered from alleged infringers shall be retained by PDL. If, in ACTINIUM's reasonable opinion, PDL has not undertaken action reasonably designed to restrain any infringement or improper or unlawful use of the PDL Patent Rights with respect to a Licensed Product by a third party and ACTINIUM's market share of the indications for which Licensed Products are sold in that country is reduced by twenty percent (20%) or more as a result of the infringing or unlawful use of PDL Patent Rights then ACTINIUM shall be entitled to suspend royalties payable on Net Sales of Licensed Products in such country; provided that, the royalty rate on Net Sales of Licensed Products in that country shall revert to the applicable royalty rate under Section 5.1 at such time as ACTINIUM regains the market share it lost as a result of such infringement, or improper or unlawful use.

(c) **Notification.** Each party shall promptly notify the other in writing of any actual or suspected infringement of any PDL Patent Rights or ACTINIUM Patent Rights in the Field which notification shall specify in reasonable detail the nature of such actual or suspected infringement.

9.2 ACTINIUM Rights.

(a) **ACTINIUM Patent Rights.** ACTINIUM agrees to prosecute and reasonably maintain all of the patents and applications included within the ACTINIUM Patent Rights in countries determined by ACTINIUM. If ACTINIUM decides not to continue the prosecution or maintenance of an ACTINIUM Patent Right in any country, ACTINIUM shall promptly advise PDL thereof and, at the request of PDL, ACTINIUM and PDL shall negotiate in good faith to determine an appropriate course of action in the interests of both parties. If the parties determine that it would be feasible for PDL to assume responsibility for such prosecution or maintenance, then PDL shall have the right but not the obligation to assume such prosecution or maintenance. If the parties determine that it would not be feasible for PDL to assume responsibility for such prosecution or maintenance, then, at PDL's request, ACTINIUM shall continue such prosecution or maintenance, provided that all costs and expenses for such prosecution shall be borne by PDL and such patent or patent application shall be considered a PDL Patent Right.

(b) **ACTINIUM Inventions.** Subject to the license grant in Section 2.1(b), ACTINIUM Field Inventions and ACTINIUM Non-Field Inventions shall be vested solely in ACTINIUM and ACTINIUM shall have the exclusive right to file, in its own name, patent applications relating to the ACTINIUM Field Inventions and ACTINIUM Non-Field Inventions.

9.3 Joint Inventions.

(a) **Ownership.** Each party shall advise the other party of a Joint Invention promptly upon becoming aware of any such Joint Invention. Ownership of Joint Inventions that relate to the use, manufacture or composition of the HuM195 Antibody or that might be deemed an improvement or variation on the methods and applications and formulations disclosed in the PDL Patent Rights or PDL Technical Information shall be vested in PDL. Ownership of all other Joint Inventions shall be vested in ACTINIUM.

(b) **Assignment.** The parties shall assign any interest in such Joint Invention in accordance with Section 9.3(a) above. The parties agree to take such other actions and execute assignments and other documents as may be useful or necessary to evidence, perfect, obtain, maintain, enforce or defend the rights set forth in this Section 9.3(b). The party to whom the interest in the Joint Invention was assigned shall have the exclusive right to file, in its own name, patent applications relating to such Joint Invention.

9.4 General Provisions Relating to Prosecution, Maintenance and Enforcement.

(a) **Cooperation.** At the request of a party performing the prosecution or maintenance of any patent rights pursuant to this Article 10, the other party will cooperate, in all reasonable ways, in connection with the prosecution and maintenance of all such patent applications or patents. Each party shall make available to the other party or its respective authorized attorneys, agents or representatives such of its employees as the other party in its reasonable judgment deems necessary in order to assist such other party with the prosecution and maintenance of such patents at the expense of the owner of such patents or patent applications. Each party shall sign or use commercially reasonable efforts to have signed at no charge to the other party all legal documents reasonably deemed necessary in connection with such prosecution and maintenance.

(b) **Expenses.** Each party prosecuting or maintaining a patent or patent application pursuant to the terms of this Agreement shall bear the costs and expenses for the filing, prosecution and maintenance of that patent or patent application, except as described in Section 9.1(a) and Section 9.2(a), above.

(c) **Confidential Information.** In the event the party to whom any Invention was assigned hereunder (the "Assignee") determines not to file for a patent(s), and, in any event, until such patents are filed for and published, then the subject matter of such assigned Invention shall be deemed part of the Assignee's "Confidential Information" and shall not be used or disclosed to any third party by the party who assigned such Invention pursuant to the provisions of Article 9 hereof.

10. MANUFACTURING AND CO-PROMOTION

10.1 Manufacturing.

(a) **Clinical Supply.** The parties will negotiate in good faith to enter into a separate agreement providing for PDL's manufacture clinical supplies of HuM195 Antibody in purified bulk form compliant with current Good Manufacturing Practices. PDL will charge ACTINIUM its fully-burdened cost of goods sold plus twenty percent (20%) for such manufacturing. For purposes of this section, "fully-burdened" shall mean direct and allocated costs as determined by PDL's then-current accounting procedures and systems used in the ordinary course of its business.

(b) **Commercial Supply.** Subject to PDL's ability and capacity to manufacture bulk drug product for commercial sale, the parties agree to negotiate in good faith, pursuant to a request from ACTINIUM, to enter into an agreement under which PDL would manufacture purified bulk supplies of HuM195 Antibody for commercial sale of Licensed Products by ACTINIUM.

10.2 Co-Promotion. The parties agree in good faith to negotiate a co-promotion rights agreement, upon ACTINIUM's decision to proceed to a BLA filing for a Licensed Product, pursuant to which PDL would be granted rights to co-promote Licensed Products, at least in the United States upon terms and conditions to be negotiated in good faith.

11. TERM, TERMINATION AND DISPUTE RESOLUTION

11.1 Term. Unless earlier terminated as provided in this Article 12, this Agreement shall come into force on the date first set forth above and shall continue until the expiration of the obligation to pay royalties to PDL in accordance with Article 5 above. Thereafter, this Agreement shall expire and all licenses and sublicenses granted hereunder shall become fully paid-up, irrevocable nonexclusive licenses.

11.2 Termination.

(a) This Agreement may be terminated on sixty (60) days prior written notice by ACTINIUM.

(b) If either party shall at any time default in the payment of any royalty or other sums due hereunder, and shall fail to have cured such default within thirty (30) days after receipt of written notice thereof by the other party, then the party with a right to such payment may, at its option cancel this Agreement and revoke any rights and licenses herein granted and directly affected by such default by notice in writing to such effect, but such act shall not prejudice the right of the party giving notice to recover any royalty or other sums due at the time of such cancellation. If either party shall at any time default in the making of any report hereunder, or shall commit any material breach of any covenant or agreement herein contained or shall make any false report, and shall fail to have initiated and actively pursued remedy of any such default or breach within forty five (45) days after receipt of written notice thereof by the other party, that other party may, at its option, cancel this Agreement and revoke any rights and licenses herein granted and directly affected by the default or breach by notice in writing to such effect, but such act shall not prejudice the right of the party giving notice to recover any royalty or other sums due at the time of such cancellation, it being understood, however, that if within thirty (30) days after receipt of any such notice the receiving party shall have initiated and actively pursued remedy of its default, then the rights and licenses herein granted shall remain in force as if no breach or default had occurred on the part of the receiving party, unless such breach or default is not in fact remedied within a reasonable period of time.

(c) This Agreement may be terminated by either party upon the occurrence of any of the following which is not stayed or vacated within ninety (90) days of such occurrence: (i) petition in bankruptcy filed by or against the other party; (ii) adjudication of the other party as bankrupt or insolvent; (iii) appointment of a liquidator, receiver or trustee for all or a substantial part of the other party's property; or (iv) an assignment for the benefit of creditors of the other party.

(d) **Effect of Bankruptcy**. In the event either party terminates this Agreement under Section 11.2(c) or this Agreement is otherwise terminated under Section 11.2(c), the parties agree that, as licensees of rights to intellectual property under this Agreement, the parties shall retain and may fully exercise all of their rights and elections under Title 11 of the US Code, including as set forth in Section 13.5.

11.3 No Waiver. The right of either party to any remedy available with respect to this Agreement as provided herein shall not be affected in any way by its waiver of, or failure to take action with respect to, any previous failure to perform hereunder.

11.4 Dispute Resolution. In the event of any controversy or claim arising out of, relating to or in connection with any provision of this Agreement, the Parties shall try to settle their differences amicably between themselves first, by referring the disputed matter to an appropriate Vice President (or higher level officer) of each Party and, if not resolved by such officers, by referring the disputed matter to the respective Chief Executive Officers of each Party. Either Party may initiate such informal dispute resolution by sending written notice of the dispute to the other Party, and, within twenty (20) days after such notice, such representatives of the Parties shall meet for attempted resolution by good faith negotiations. Except with respect to matters relating to patents, including but not limited to the validity of PDL Patent Rights, if such personnel are unable to resolve such dispute within thirty (30) days of their first meeting of such negotiations, either Party may seek to have such dispute resolved by binding arbitration pursuant to the Commercial Arbitration Rules of the American Arbitration Association (the "Rules") before a panel of three (3) arbitrators appointed in accordance with such Rules. The arbitration decision shall be final and binding. The prevailing party may enforce such decision against the other party in any court having jurisdiction. The arbitration shall take place in San Francisco, California and shall be conducted in the English language. Attorney's fees may be awarded to the prevailing party by the panel of arbitrators.

12. RIGHTS AND DUTIES UPON TERMINATION

12.1 Survival. Termination for any reason hereunder shall not affect any accrued rights or obligations of the parties arising in any manner under this Agreement as of the date of termination. In any event, Sections 2.1(b), 6.1, 6.2, 6.3, Article 7, 8.2, 8.3, 12.2, 12.3 and 13.5, and any accrued payment obligations under Sections 4.1, 4.2, 5.1 and 5.2 shall survive any termination of this Agreement.

12.2 Effect of Termination. Upon termination of this Agreement by PDL pursuant to Section 11.2 or by ACTINIUM for any reason other than default by PDL under Section 11.2(b), ACTINIUM shall promptly return to PDL, subject to Section 12.3, all quantities of the HuM195 Antibody and PDL Technical Information and PDL Confidential Information. Further, upon termination by PDL pursuant to Section 11.2(b), ACTINIUM shall promptly transfer to PDL all ACTINIUM Technical Information and ACTINIUM Confidential Information related to any Licensed Product at no cost to PDL and, effective as of the date of termination, ACTINIUM hereby grants and PDL accepts an exclusive worldwide license, on reasonable commercial terms to be negotiated in good faith by the parties, to make, have made, use, import and sell Licensed Products under the ACTINIUM Patent Rights and any ACTINIUM Joint Invention, and, on PDL's request, any regulatory filings or approvals related to Licensed Products, as needed to continue with the development of the Licensed Products. Upon termination of this Agreement for any reason prior to expiration, each Sublicensee of ACTINIUM or its Affiliates shall have the option to convert its sublicense from ACTINIUM or its Affiliates into a direct license with PDL pursuant to the terms of Section 2.4 hereof.

12.3 Inventory. Upon termination of this Agreement after regulatory approval of the Licensed Products in any country, PDL hereby grants ACTINIUM a license to sell within six (6) months of such termination any such Licensed Products (for which regulatory approval has been obtained) in ACTINIUM's or its Affiliates or Sublicensee's inventory on the date of such termination, which have not previously been sold ("Inventory"); provided, however that ACTINIUM shall pay the royalties due on such Inventory, provide related reports and allow a final audit in the amounts and manner provided for in Article 9.

13. MISCELLANEOUS

13.1 Assignment. This Agreement may not be assigned by either party without the prior written consent of the other (which consent shall not be unreasonably withheld or delayed), except that either party shall have the right to assign this Agreement in connection with a consolidation or merger of that party with or into any other corporation or other entity or person, or any corporate reorganization, in which the shareholders of such party immediately prior to such consolidation, merger or reorganization, own less than fifty percent (50%) of the voting power immediately after such consolidation, merger or reorganization, or any transaction, or series of related transactions to which either party is a party in which in excess of fifty percent (50%) of such party's voting power is transferred, or in connection with the sale of its business to which this Agreement is related.

13.2 Entire Agreement; Amendment. This Agreement constitutes the entire Agreement between the parties hereto with respect to the within subject matter and supersedes all previous Agreements, whether written or oral. This Agreement shall not be changed or modified orally, but only by an instrument in writing signed by both parties.

13.3 Severability. If any provision of this Agreement is declared invalid by a court of last resort or by any court from the decision of which an appeal is not taken within the time provided by law, then and in such event, this Agreement will be deemed to have been terminated only as to the portion thereof which relates to the provision invalidated by that decision and only in the relevant jurisdiction, but this Agreement, in all other respects and all other jurisdictions, will remain in force; provided, however, that if the provision so invalidated is essential to this Agreement as a whole, then the parties shall negotiate in good faith to amend the terms hereof as nearly as practical to carry out the original interest of the parties.

13.4 Notices. Any notice or report required or permitted to be given under this Agreement shall be in writing and shall be sent by express courier or facsimile and confirmed by mailing, as follows and shall be effective three (3) days business after such mailing:

If to PDL:	Protein Design Labs, Inc. 34801 Campus Drive Fremont, CA 94555 U.S.A Attention: Chief Executive Officer Fax No.: (510) 574-1500
Copy to:	Protein Design Labs, Inc. 34801 Campus Drive Fremont, CA 94555 U.S.A Attention: General Counsel Fax No.: (510) 574-1473
If to ACTINIUM:	Dr. Maurits W. Geerlings 106 South Columbus Street Alexandria, VA 22314
w/ copy to:	Actinium Pharmaceuticals, Ltd. 22 Church Street phase II 3rd Floor Washington Mall P.O. Box HM2265

Hamilton, HMJX Bermuda
Attention: Chief Executive Officer

or at such other address as PDL or ACTINIUM shall have furnished to the other in writing.

13.5 Provisions for Insolvency. Rights and licenses granted under or pursuant to this Agreement are, for all purposes of Section 365(n) of Title 11 of the United States Code ("Title 11"), licenses of rights to "intellectual property" as defined in Title 11 and each party agrees that as licensees of such rights under this Agreement each party shall retain and may fully exercise all of its rights and elections under Title 11. If a case is commenced by or against either party under Title 11 (the "Bankrupt Party"), such party (in any capacity, including debtor-in-possession) and its successors and assigns (including, without limitation, a Title 11 Trustee) shall, perform all of the obligations provided in this Agreement to be performed by such Bankrupt Party including, where applicable and without limitation, providing to the non-Bankrupt Party portions of such intellectual property (including embodiments thereof held by and such successors and assigns or otherwise available to them).

13.6 Choice of Law. The validity, performance, construction, and effect of this Agreement shall be considered and construed in English and shall be governed by the laws of the State of California and the United States, except for provisions related to the conflict of laws.

13.7 Waiver. The failure of either party to assert a right hereunder or to insist upon compliance with any term or condition of this Agreement shall not constitute a waiver of that right or excuse a similar subsequent failure to perform any such term or condition by the other party. None of the terms, covenants and conditions of this Agreement can be waived except by the written consent of the party waiving compliance.

13.8 Force Majeure. If either party shall be delayed, interrupted in or prevented from the performance of any obligation hereunder by reason of force Majeure, including an act of God, fire, flood, earthquake, war (declared or undeclared), public disaster, strike or labor differences, governmental enactment, rule or regulation, or any other cause beyond such party's control, such party shall not be liable to the other therefor; and the time for performance of such obligation shall be extended for a period equal to the duration of the contingency which occasioned the delay, interruption or prevention. The party invoking such force majeure rights of this subparagraph must notify the other party within a period of fifteen (15) days from the first and last day of the force majeure unless the force majeure renders such notification impossible, in which case notification will be made as soon as possible. If the delay resulting from the force majeure exceeds six (6) months, both parties shall consult together to find an appropriate solution.

13.9 Publicity. The parties shall issue a joint press release regarding entry into this Agreement. The date of such issuance as well as its content shall be subject to prior written approval by each party, which shall not be unreasonably withheld, provided that, the financial terms of this Agreement shall not be disclosed in such press release. Other than the foregoing and except as required by law or regulation, neither party shall publicly disclose the terms and conditions of this Agreement unless expressly authorized to do so by the other party, which authorization shall not be unreasonably withheld. In the event that disclosure shall be agreed upon then the parties will work together to develop a mutually acceptable disclosure.

13.10 Headings. The captions used herein are inserted for convenience of reference only and shall not be construed to create obligations, benefits, or limitations.

13.11 Export. Each party acknowledges that the laws and regulations of the United States restrict the export and re-export of commodities and technical data of United States origin. Each party agrees that it will not export or re-export the technical data of the other party in any form without the appropriate United States and foreign government licenses.

13.12 Counterparts. This Agreement may be executed in counterparts, all of which taken together shall be regarded as one and the same instrument. Execution and delivery of this Agreement by exchange of facsimile copies bearing the facsimile signature of a party hereto shall constitute a valid and binding execution and delivery of this Agreement by such party. Such facsimile copies shall constitute enforceable original documents.

13.13 Attorneys' Fees. If any action or proceeding shall be commenced to enforce this Agreement or any right arising in connection with this Agreement, the prevailing party in such action or proceeding shall be entitled to recover from the other party, the reasonable attorneys' fees, costs and expenses incurred by such prevailing party in connection with such action or proceeding.

IN WITNESS WHEREOF, the parties have executed this Agreement by their duly authorized representatives as of the date first written above.

PDL:

Protein Design Labs, Inc.

By _____

Title S.V.P. Legal & Corp. Dev.

ACTINIUM:

By _____

Title President & CEO

Exhibits

Exhibit A - PDL Patent Rights

Exhibit B – PDL Technical Information

Exhibit C - List of Agreements pursuant to which Third-Party Rights are Sublicensed by PDL to ACTINIUM

Exhibit A

PDL Patent Rights

The following are patents and patent applications (also known as the "Queen et al. patents") issued and filed in certain countries in the world and licensed as part of the PDL Patent Rights under the Agreement.

1. The following issued U.S. patents and pending U.S. patent applications:

Patent No. 5,585,089, "Humanized Immunoglobulins," issued December 17, 1996.

Patent No. 5,693,761, "Polynucleotides Encoding Improved Humanized Immunoglobulins," issued December 2, 1997.

Patent No. 5,693,762, "Humanized Immunoglobulins," issued December 2, 1997.

Patent No. 6,180,370 "Humanized Immunoglobulins and Method of Making the Same", issued January 30, 2001.

Pending application "Improved Humanized Immunoglobulins," filed June 1, 1999.

Pending application "Improved Humanized Immunoglobulins," filed November 22, 2000.

Pending application "Improved Humanized Immunoglobulins," filed November 22, 2000.

2. The following patents and patent applications outside the U.S.:

Issue Date		Patent No.	Country	Title*
Issued	9/29/00	AR 254487 V1	Argentina	"Novel Immunoglobulins, Their Production and Use"
Issued	7/12/94	647383	Australia	"
Issued	1/7/97	671949	Australia	"
Issued	1/24/96	AT 0451216	Austria	"
Issued	8/25/99	AT 0682040	Austria	"
Issued	1/24/96	0451216	Belgium	"
Issued	8/25/99	0682040	Belgium	"
Issued	10/27/97	61095	Bulgaria	"
Issued	4/11/00	40279	Chile	"
Issued	7/21/00	58770	China	"
Issued	11/4/99	P920500A	Croatia	"
Issued	1/24/96	0451216B1	Europe[1]	"
Issued	8/25/99	0682040 B1	Europe[1]	"
Issued	3/28/02	108797	Finland	"
Issued	1/24/96	FR0451216	France	"
Issued	8/25/99	FR0682040	France	"
Issued	1/24/96	DE 68925536.5	Germany	"
Issued	8/25/99	DE 68929061.6	Germany	"
Issued	1/24/96	DD 296 964	East Germany	"

Issued	1/24/96	GB 0451216	Great Britain	"
Issued	8/25/99	GB 0682040	Great Britain	"
Issued	1/5/93	1001050	Greece	
Regist.	7/14/00	0682040	Hong Kong	
Issued	3/22/96	211174	Hungary	"
Issued	1/24/96	IT 0451216	Italy	"
Issued	8/25/99	IT 0682040	Italy	
Issued	9/18/98	2828340	Japan[2]	"
Issued	1/24/96	LU 0451216	Luxembourg	"
Issued	8/25/99	LU 0682040	Luxembourg	
Issued	2/18/92	92.2146	Monaco	"
Issued	1/24/96	NL 0451216	Netherlands	"
Issued	8/25/99	NL 0682040	Netherlands	
Issued	10/20/97	231984	New Zealand	"
Issued	6/8/00	314793	New Zealand	"
Issued		19912385	Norway[3]	"
Issued	12/26/91	132068	Pakistan	"
Issued	5/17/96	29729	Philippines	"
Issued	10/20/95	92758	Portugal	"
Issued	2/10/99	2126046	Russia	"
Issued	1/24/96	SG 0451216	Singapore	"
Issued	5/22/01	78258	Singapore	"
Issued	2/28/99	8912489	Slovenia	"
Issued	10/31/90	89/9956	South Africa	"
Issued	11/23/98	178385	South Korea	"
Issued	1/24/96	2081974 T3	Spain	"
Issued	8/25/99	0682040	Spain	"
Issued	1/24/96	SE 0451216	Sweden	"
Issued	8/25/99	SE 0682040	Sweden	"
Issued	1/24/96	CH 0451216	Switzerland	"
Issued	8/25/99	CH 0682040	Switzerland	"
Issued	12/2/91	50034	Taiwan	"
Issued	5/19/93	13349	Uruguay	"
Issued	2/9/96	56455	Venezuela	"
Issued	1/5/99	48700	Yugoslavia	"

	Country	Application No.	Title*
			"Novel Immunoglobulins, Their Production and Use"
Pending	Argentina	P980106362	"
Pending	Brazil	PI1101125-4	"
Pending	Canada	2006865	"
Pending	Canada	2328851	"
Pending	Czech Republic	PV 1991-4186	"
Pending	Europe	98 204240.0	"
Pending	Ireland	420689	"

Pending	Ireland	2000/0331	"
Pending	Israel	92904	"
Pending	Japan	10-4334	"
Pending	Romania	PL4105	"
Pending	Denmark	PA199800941	"
Pending	Denmark	1191/91	"
Pending	Slovak Republic	PV 418691	

*Exact titles may differ in different countries.
[1]and corresponding European national patents issued therefrom.
[2]registration date
[3]this is the application number; have not received patent yet.

The following are patents and patent applications relating to HuM195 and licensed as part of the PDL Patent Rights under the Agreement.

A. Certain patents and patent applications in the name of PDL as follows:

Patents

Issue Date	Patent No.	Country	Title
Issued 01/07/97	671949	Australia	Humanized Immunoglobulins
Issued 08/26/99	0231090	Republic of Korea	"
Issued 02/08/02	3276369	Japan	"
Issued 02/22/02	2,098,404	Canada	"
Issued 12/02/97	5,693,761	United States	Polynucleotides Encoding Improved Humanized Immunoglobulins (Claims 24 and 25)

Patent Applications

	Country	Application No.	Title
Pending	European Patent Convention	92903551.7	Humanized Immunoglobulins
Pending	Romania	98-20287	"
Pending	Singapore	9607331-7	"

B. Certain patents and patent applications in the name of SKI which PDL has a right to sublicense in accordance with Section 2.1 of that certain Amended and Restated Agreement dated as of April 1, 1993 between SKI and PDL (the "SKI Agreement").

Patents

Issue Date	Patent No.	Country	Title
Issued 09/20/00	0504327	Spain	Therapeutic Use of Hypervariable Region of Monoclonal Antibody M195 and Constructs Thereof
Issued 08/29/95	659,083	Australia	"
Issued 03/24/98	5,730,982	United States	"
Issued 12/28/99	6,007,814	United States	"
Issued 09/20/00	E0 196.477	Austria	"
Issued 09/20/00	0504327	Belgium	"
Issued 09/20/00	0504377	EPO	"
Issued 09/20/00	0504327	France	"
Issued 09/20/00	69033631-4	Germany	"
Issued 09/20/00	0504327	Italy	"
Issued 09/20/00	0504327	Switzerland	"
Issued 09/20/00	0504327	United Kingdom	"

Patent Applications

	Country	Application No.	Title
Pending	Canada	2,072,017	Therapeutic Use of Hypervariable Region of Monoclonal Antibody M195 and Constructs Thereof
Entered region phase	PCT	PCT/US90/07436	"

C. Certain patents and patent applications in the name of SKI and PDL, which PDL has a right to sublicense in accordance with Section 2.1 of the SKI Agreement.

Patents

Issue Date	Patent No.	Country	Title
Issued 02/03/98	5714350	United States	Increasing Antibody Affinity by Altering Glycosylation in the Immunoglobulin Variable Region
Issued 02/26/02	6,350,861	United States	

Patent Applications

	Country	Application No.	Title
Pending	United States	10084825	Increasing Antibody Affinity by Altering Glycosylation in the Immunoglobulin Variable Region

Exhibit B

PDL Technical Information

1. US IND #5540 from 1994 to present in 20 volumes, inclusive of all (1) collected clinical data on all patients treated, and (2) all relevant correspondence with the FDA, in PDL's possession as of the Effective Date.
2. Samples of Cell Bank (upon request)
    - 6 vials of MCB
    - 12 vials of WCB
3. Reference Standards
4. Sample Product
    - 500 vials of formulated drug
    - 2 grams of bulk GLP product

Exhibit C

Third-Party Rights Sublicensed to ACTINIUM

Subject to Articles 5 and 6 and only to the extent necessary for ACTINIUM to exercise its rights under the license granted to ACTINIUM under Section 2.1 of this Agreement, PDL's rights under the following Agreement is sublicensed to ACTINIUM under the license set forth in Section 2.1:

1. PDL's rights under that certain Amended and Restated Agreement dated as of April 1, 1993 between SKI and PDL, relating to HuM195.

CLINICAL TRIAL AGREEMENT

THIS CLINICAL TRIAL AGREEMENT ("Agreement") is made by and between Fred Hutchinson Cancer Research Center, a nonprofit corporation having a principal place of business at 1100 Fairview Avenue N., J5-110, Seattle, Washington 98109 ("Site") and Actinium Pharmaceuticals, Inc. with an address of 25B Hanover Road, Florham Park, New Jersey 07932 ("Actinium"). This Agreement is entered into this July 19, 2012.

This Agreement provides for the conduct of a clinical investigation using a proprietary drug which is not, at this time, cleared for human use by the Food and Drug Administration. Any use of this drug must be pursuant to an Investigational New Drug Exemption issued to Actinium by the FDA. Aptiv Solutions, Inc., a Delaware corporation having a principal place of business at 1925 Isaac Newton Square, Suite 100, Reston, VA 20190 ("Aptly") has been engaged by Actinium to oversee and manage the Study.

In consideration of the mutual covenants and conditions set forth in this Agreement and for good and valuable consideration, the sufficiency of which is hereby acknowledged, the parties hereby agree as follows:

1. Definitions. When used in this Agreement, the listed terms shall have the following meanings:

   a. "Study" means the conduct of human research using the Study Drug manufactured by Actinium on Qualified Subjects at the Site pursuant to the protocol which has been reviewed and approved by the IRE and the FDA prior to the commencement of the Study.
   b. "Protocol" means the details of that certain clinical Study to be performed pursuant to this Agreement entitled A Phase I/II Study of Low Dose Cytarabine and Actinium-255 Hum195 in Older Patients with Untreated Acute Myeloid Leukemia. The Protocol, including any amendments is hereby incorporated by reference. and made part of this Agreement.
   c. "IRB" means the institutional review board of Site.
   d. "Study Drug" means the compound known as Actinium-255 Hum 195.
   e. "Study Data" means all of the data collected and records compiled during the Study relating to the conduct of the Study and/or the Study Drug. Study Data includes without limitation, all records prepared by the Investigator and all clinical research assistants, all Case Report Forms, all Screening records, all records on Qualified Subjects, Completed Subjects, Withdrawn Subjects, Uncompleted Subjects and Non-Qualified Subjects, all Informed Consent forms, all adverse/unexpected/serious or other reportable events, and all modifications, adjustments, suggestions for improvement of the Study Drug.
   f. "Potential Subject" is a patient or individual who could possibly participate in the Study.
   g. "Screening" is the process of identifying Potential Subjects and of conducting the examinations and tests necessary to select Qualified Subjects for the Study.
   h. "Qualified Subject" is a subject who, on inclusion in the treatment phase of the Study, has met all of the inclusion criteria and none of the exclusion criteria in the Protocol and has given his/her written Informed Consent to participate in the Study.
   i. "Completed Subject" is a Qualified Subject who has completed the Study and met the minimum attendance and compliance standards in the Protocol for evaluation of the safety and effectiveness of the Study Drug,
   j. "Withdrawn Subject" is a Qualified Subject who has been withdrawn from the Study because of treatment failure or adverse event, but who otherwise met the Protocol entry requirements.

k. "Uncompleted Subject" is a Qualified Subject who was initially included in the Study but who failed to complete the Study satisfactorily because of insufficient clinic attendance, poor compliance, voluntary withdrawal, and loss to follow-up or other Protocol violations.
l. "Non-Qualified Subject" is a subject who has not met the inclusion criteria as defined in the Protocol.
m. "Informed Consent Form" means the written form agreed upon by Actiniumand the Site in conformance with all applicable FDA regulations and guidances, and approved by the IRB for use in this Study.
n. "Case Report Form (CRF)" means the report in the Actinuim format which is completed by the Investigator or his/her authorized designee documenting the use of the Study Drug in subjects.
o. "FDA" means the Food and Drug Administration of the United States Department of Health and Human Services, and any successor government agency.
P. "Investigator's Brochure" is a document describing the Study Drug, which is provided to the Investigator prior to the start of the Study.
q. "Investigator" means John Pagel, M.D., Ph.D.

2. Compliance with laws and procedures.

a. All parties shall conduct the Study in accordance with all applicable laws, regulations and guidances, as each of the foregoing may be amended from time to time. Without limiting the foregoing, the parties expressly agree to comply with 21 CFR 312 - Investigational New Drug Application, 21 CFR 50 Protection of Human Subjects, and 21 CFR 56 — Institutional Review Boards.
b. The Site agrees to comply with the terms of this Agreement and all IRB and FDA procedures and applicable decisions for the Study.

3. Scope of Study

a. This Study is governed by this Agreement. All parties agree that no Study Drug shall be used on a subject until the 1RB and the FDA have both approved the Study. After the FDA and IRB approval, the Protocol may only be amended when: 1) there is written agreement between the Site, Actinium, and the Investigator to amend the Protocol, and 2) any and all such amendments have been reviewed and approved by the IRB and FDA. No Protocol amendments shall be implemented until receipt of the IRB and FDA written approval. Nothing in this paragraph shall limit the Investigator's ability to act under 21 CFR 312.50, 312.60, 312.62, 312.64 (Subpart D).
b. The Site agrees to strictly comply with all IRB procedures and policies which govern the review, approval and conduct of this Study.
c. The parties agree that Screening for Qualified Subjects shall begin within thirty (30) days of receipt of the following: 1) written approval of the Study and the Informed Consent by the IRB, 2) notification by Aptly or Actinium that the FDA has granted the Investigational New Drug Application for the Study Drug, and 3) completion of Initiation Visit of the Site by Aptiv and Actinium for Study participation. The goal of the Study is to enroll up to ten (10) Qualified Subjects per year. The Site agrees to use its best efforts to complete subject enrollment as soon as practical, after commencement of Screening at each dose group.

4. Responsibilities of Actinium

a. Actinium represents and warrants that it has the authority to enter into this Agreement on its own behalf.
b. Actinium agrees to provide to the Site and the Investigator the information necessary to properly conduct the Study, including without limitation, the Protocol, the Investigator's Brochure and data of any prior investigations of the Study Drug. Actinium agrees to provide any new information related to the safety and efficacy of the Study Drug as such information becomes available during the course of the Study. Actinium advises the Site and the Investigator that the effectiveness and safety in humans of the Study Drug have not been fully investigated.
c. Actinium shall provide, free of charge, the necessary quantity of the Study Drug. Actinium or Aptiv shall ship the Study Drug only to the Site.
d. Aptly shall monitor the Study and shall require evidence that IRB review and approval are obtained.
e. Actinium agrees that Institution, its affiliates and all Study team members shall have the sole authority over the clinical care of the Study subjects and nothing in this Agreement shall prevent Institution or Investigator from taking any action which is, in the reasonable medical judgment of the Study team members, in the Study subject's best interest. Any time Actinium or Aptiv becomes aware of a significant Study subject safety issue it will communicate such information to Institution. Actinium further agrees to promptly report to Institution the results of any monitoring reports that could affect the safety of Study participants, influence the conduct of the Study, alter the Institutional Review Board ("IRB") approval to continue the Study, and/or affect the willingness of Study Subjects to continue in the Study. During the Study and after its completion, Actinium shall promptly report to Institution and the Investigator any Study results that could directly affect the safety or medical care of Study Subjects.

5. Responsibilities of Site

a. The Site warrants and represents that Investigator is an employee of the Site, and is sufficiently qualified by training and experience to conduct the Study using the Study Drug. A true and complete copy of the Investigator's current curriculum vitae is attached as Exhibit B and made part of this Agreement.
b. The Site warrants that the Investigator has never been involved in any investigation or research at the Site which was terminated by the FDA, National Institutes of Health (1'.411-1) or any sponsor for non-compliance.
c. The Site warrants and represents that Investigator has not been disbarred under Section 306 of the Federal Food, Drug and Cosmetic Act, or any other section of said act or its successor, and further, that the Investigator will not use in any capacity, the services of any individual or entity which has been so disbarred, in any aspect of this Study. The Site agrees to notify Actinium immediately if the Investigator or any individual or entity involved in this Study is the subject of a disbarment proceeding or becomes disbarred.
d. In addition to and without limiting the obligations of Section 2a above, the Site agrees to conduct the Study in strict accordance with this Agreement, the Protocol, all associated documentation provided by Aptiv (e.g. CRF, CRF Completion guidelines, User Manuals, and Regulatory Binder documentation), applicable regulations, and all conditions of approval imposed by the reviewing IRB or FDA. The Site shall permit the use of the Study Drug only on Qualified Subjects under Investigator's personal supervision only for the purpose of the Study. The Site shall not supply the Study Drug to any other person or entity not authorized under FDA'regulation to receive it, nor to any person for any purpose other than the Study. The Site shall not modify or alter the Study Drug. The Site shall maintain proper control of all Study Drug inventory and return of unused quantities of Study Drug as required by regulation and directed by Actinium. The Site agrees that the Investigator will personally supervise or perform all testing of the Study Drug involving human subjects.

e. The Site agrees to maintain all records and make all reports as required by regulation, the Study, the IRB and this Agreement.

f. The Site agrees to use best efforts, on a diligent and continuous basis, to recruit Qualified Subjects, to prepare true and accurate Case Report Forms, to make all required reports, to complete the Study within the time limits set forth in this Agreement, and to perform all long-term follow-up examinations, visits and data collection as required by the Study and/or regulation from time to time. In addition, all CRF and Study Data shall be submitted to Aptiv within ten (10) days of written request. This provision shall survive termination or expiration of this Agreement.

g. The Site shall exclusively use the Informed Consent. The Site agrees that the IRB approved consent form must be provided to and acknowledged by Actinium prior to use. The Site agrees that the Investigator shall not conduct any screening procedures, enroll any Potential Subject nor use the Study Drug on any Potential Subject who has not given written consent by signing and dating the specified Informed Consent form. The Site agrees that investigator shall personally ensure that all the requirements for obtaining informed consent are met.

h. The Site agrees that Investigator will follow good medical practice and exercise the customary standard of care practiced in his professional specialty.

i. The Site ensures that Investigator will provide sufficient accurate financial disclosure information to allow Actinium or Aptly to submit a complete and accurate certification or disclosure statement as required under 21 CFR part 54, as it may be amended from time to time. Further, the Site agrees that the Investigator shall promptly update this financial disclosure information if any relevant changes occur during the course of the Study and for one (1) year following completion of the study. The Site also agrees that Investigator will update this financial disclosure information within ten (10) days of request by Actinium or Aptiv. The Site understands that this information shall be submitted in any marketing application involving the Study Drug. This provision shall survive termination or expiration of this Agreement.

j. The Site agrees to provide sufficient resources to the IRB to enable the IRB to operate as required by law, regulation and its own procedures.

k. During the Study, and subject to the terms of this Agreement, Site agrees to use reasonable efforts to cause the Investigator to conduct the Study pursuant to the Protocol and to provide to Investigator reasonable access to all Site facilities, staff and resources which the Investigator determines necessary or desirable to the conduct of the Study. Without limiting the foregoing, the Site agrees to make available a Study coordinator, qualified by training and experience and reasonably acceptable to Actinium and Aptiv, to manage all administrative functions of the Study, including but not limited to, meeting with Actinium and Aptly. All such Site facilities, staff and resources used in the Study are subject to the supervision of the Investigator.

1. The Site agrees to provide the facilities necessary to the conduct of the Study, and to notify Actinium and Aptiv promptly, but no later than 1 business day after the discovery, of any failure of the Investigator, the Site or the IRB itself, to follow any of the established protocols for the Study.

m. The Site agrees to allow Aptiv and Actinium reasonable access to the study site and to facilities and staff as reasonably.needed to conduct long-term follow-up of Study subjects, at Aptiv's expense. The Site will ensure that the Investigator will be available, during regular business hours, to meet with a study monitor to review the status of the Study and discuss any pending issues. Aptiv will provide no less than five (5) days advance notice of monitoring visits and will use all reasonable efforts to coordinate the scheduling of the visits with the Investigator and Study Coordinator.

n. The Site agrees to allow Actinium and Aptiv reasonable access to Study Data, including without limitation, patient records (subject to patient consent), and Case Report Forms, as necessary for completion of the Study, long-term follow-up, and compliance efforts, at Actinium's expense.

o. The Site warrants and represents that it will not use in the Study, in any capacity whatsoever, whether as employee, consultant, contractor or agent, the services of any individual or entity who has been disbarred under Section 306 of the Federal Food, Drug and Cosmetic Act, or any other section of said act or its successor. The Site agrees to notify Aptiv and Actinium immediately if any individual or entity involved in this Study is the subject of a disbarment proceeding or becomes disbarred.

p. In the event the Investigator becomes unable to complete the Protocol for any reason, Site will, to the extent possible, propose a substitute Investigator with qualifications and experience at least equal to or greater than those of the Investigator for Actinium's approval, which approval shall not be unreasonably withheld. In the event Actinium and Site agree upon a substitute Investigator, this Agreement shall continue in full force and effect. If Actinium and Site are unable to agree on a substitute Investigator, this Agreement may be terminated in accordance with the provisions of this Agreement.

q. Subparagraphs 5J-5P shall survive termination or expiration of this Agreement

r. The Site and Investigator agree to notify Aptiv and Actinium as soon as possible, but in no event later than twenty-four (24) hours after each occurrence of an adverse, serious or unexpected event, or any deviation in the Protocol permitted by 21 CFR 312.60(aX2). The Investigator shall complete all reports when and in the manner required by 21 CFR 312.62 and 312.64. The Investigator shall make all other reports as required by 21 CFR 312.62 and 312.64.

s. The Site agrees to cooperate with any study monitor designated by Aptiv to monitor this Study. The Site agrees to cooperate with authorized FDA employees conducting an audit or inspection, in the manner required by 21 CFR 312.68. The Investigator shall notify Actinium within 24 hours of any request for an audit of the Study by the Site, the FDA or any other governmental agency. If any inspection occurs, the Site will provide Actinium and Aptiv with copies of all auditor (including FDA and IRB) materials, correspondence, statements, forms and records that are received by the Investigator or the Site. Actinium and Aptiv will shall assist the Investigator in responding to any FDA or IRB correspondence and promptly implementing any necessary corrective action. This provision shall survive termination or expiration of this Agreement.

t. The Site warrants that its Investigator has made all disclosures required regarding conflict of interest in connection with this Study.

u. The Site hereby assures Actinium that the Study will be reviewed and approved by its IRB before any Study Drug is tested on a human subject, and further, that said IRB is functioning in compliance with the applicable regulations and all times. The Site shall provide, upon request, evidence of IRB approvals related to this Study in a timely manner, but in no event less than ten (10) business days after receipt, filing or request from Actinium or Aptiv, whichever is the case. This provision shall survive termination or expiration of this Agreement. The Site warrants that the Site has not, except as has been previously disclosed to Actinium and Aptiv in writing, in the last five (5) years been involved in any study which was terminated by any IRB, the FDA, National Institutes of Health (N111) or any sponsor for non-compliance.

6. Payment

a. Actinium acknowledge that it is Site's policy that the results of the Study must be publishable and the each Completed Subject of the Study, as set forth in the Site Budget and Payment schedule, attached to and made part of this Agreement as Exhibit C. All payments are gross in US Dollars; all approved invoices are net thirty (30) days.

Payment of all sums due hereunder shall be made by check payable as follows:

Fred Hutchinson Cancer Research Center
Accounts Receivable J6-330
1100 Fairview Avenue N.
Seattle, WA. 98109

b. Any additional payments must be approved in advance by Actinium in writing.

c. The Site agrees to be responsible for invoicing Actinium in accordance with the Budget and Payment Schedule (Exhibit C).

d. Any equipment (except for the Study Drug) purchased by the Site as part of the Protocol shall be owned by the Site, shall be physically located at Site, and shall remain the property of Site following completion of the Study.

e. In no event is Actinium required to make any payment for any costs incurred with respect to Non-Qualified Subjects entered into the treatment phase of the Study or for any Subject who has not given written Informed Consent to participate in the Study.

f. Nothing contained herein shall be construed as requiring Site, the Investigator or any Site research staff to work on any project or process which is prohibited by law or by any international treaty to which the United States of America is a party, or which may be harmful or detrimental to public health, patient safety or good clinical care or which may be considered to be immoral. No payment is subject to submission of favorable clinical results or evaluations.

g. Notwithstanding the foregoing, in no event shall any payment be made under this Agreement which is contrary to 42 USC 1320a-7b, as it or any successor law may be in effect from time to time. In accordance with the statute, in no event shall the Investigator or any member of his immediate family, receive any payment, royalty, form of compensation, or emuneration of any nature, sort or description, for any use of all or any portion of the Study Drug by any hospital, clinic or other Site where he works. In no event shall any request for reimbursement or payment under any private or public health insurance carrier be made which is contrary to law.

7. Publications

Actinium acknowledge that it is Site's policy that the results of the Study must be publishable and the Investigator and others employed by Site or who are engaged in the Study be permitted to present at symposia, national or regional professional meetings and to publish in journals, theses or dissertations or otherwise in their sole discretion, the methods and results of the Study.

The parties recognize that because this is a multi-center Study, there is a need for a coordinated approach to any publication or public disclosure of the data or results of this Study. To that end, there will be no publication or public disclosure of such data or results by the Site or Investigator until a multi-center publication is submitted for publication or presentation by Actinium, or its designee. However, if no multi-site publication is submitted by Actinium or its designee within twelve (12) months of the completion of the Study from all sites, the Site and the Investigator shall be free to publish for non-commercial purposes the Study results from there Site as follows. If the Site or the Investigator wishes to publish or publicly disclose Study and data or results the Site will submit any proposed manuscript or publication to Actinium for comment at least thirty (30) days prior to its submission for publication or other disclosure. The Site will review and consider in good faith comments received from Actinium during such thirty (30) day period. If requested to do so by Actinium, Site agrees to remove confidential information provided by Actinium prior to submitting the manuscript or publication, excluding Study data or results. Actinium will make every reasonable attempt to notify the Site within said thirty (30) days of receipt of the proposed publication whether it is desirable to file a patent application on any inventions contained in the proposed publication. In the event Actinium decides to pursue patent protection, Actinium shall have the right to defer publication for an additional sixty (60) days to permit the filing of any desired patent application.

8. Confidential Information

a. The parties acknowledge that as part of the scientific collaboration between Actinium, Aptiv and the Site in connection with the Study, Aptiv or Actinium may find it necessary to disclose certain confidential and proprietary information and trade secrets of Actinium and/or Aptiv. Such confidential and proprietary information includes, without limitation, the Protocol, all intellectual property contained in the Study Drug, the design and manufacturing processes utilized to produce and test the Study Drug, the identity of Actinium's suppliers, data concerning scientific discoveries made by Actinium and/or Aptiv; Actinium's manufacturing strategies and processes; Actinium's marketing plans; data from Actinium's evaluations in animals and humans; Actinium's strategy for or status of regulatory approval; or Actinium's forecasts of sales and sales data, and any other information which by its nature would be considered confidential (hereafter referred to collectively as "Actinium Confidential Information"). Such Actinium Confidential Information shall remain the confidential and proprietary property of Actinium and shall be disclosed to Site's employees, affiliates or agents on a "need to know" basis, and who are bound by similar obligations to protect the Actinium Confidential Information from unauthorized disclosure.

b. The Site may find it necessary to disclose certain confidential and proprietary information and trade secrets of Site to Aptly Such confidential and proprietary information includes, any data, records or other information disclosed to Aptiv, or its designee, (hereinafter collectively, "Site Confidential Information"). Such Site Confidential Information shall remain the confidential and proprietary property of Site and shall be disclosed to Aptiv's or its designees, employees, affiliates or agents on a "need to know" basis.

c. Subject to the terms and conditions of the Agreement, each party hereby agrees that during the term of the Study Agreement and for a period of five (5) years thereafter, neither party shall (i) publicly divulge, disseminate, publish or otherwise disclose any of the other party's confidential information without prior written consent; (ii) limit access to each party's confidential information to those of the other party's, co-workers and staff who are involved in the Study and have a need for such confidential information in connection with the conduct of the Study, and (iii) cause the return to the other party, as the case may be, any and all documents, drawings, sketches, designs, products or samples containing confidential information, together with any copies thereof, promptly upon termination of this Agreement or upon the other party's request therefore, provided that such obligations undertaken by the said party shall remain in force for seven (7) years after completion of the Study with respect to the Chemical Manufacturing and Control Section, Toxicity Studies or Performance Studies.

d. Notwithstanding the foregoing, the obligations of confidentiality and nondisclosure shall not apply to the following information:

(1) Information that was in the public domain prior to the date of disclosure to the receiving party coming into possession thereof, or becomes part of the public domain by publication or otherwise through no fault or unauthorized act or omission on the part of the receiving party;
(2) Information that is disclosed to the receiving party by a third party legally entitled to disclose such information, as demonstrated by competent evidence;
(2) Information that is disclosed to the receiving party by a third party legally entitled to disclose such information, as demonstrated by competent evidence;
(3) Information that was rightfully in the possession of or already known to the receiving party as demonstrated by prior written records;
(4) Information that is independently developed by the receiving party without reference to any confidential information, as demonstrated by competent evidence; or
(5) Information that is required to be disclosed to a government authority or by order of a court of competent jurisdiction, provided that (a) such disclosure is subject to all applicable governmental or judicial protection available for like material; (b) reasonable advance notice is given to the disclosing party and disclosing party is provided with an opportunity to comment on such proposed disclosure; and (c) the receiving party take all reasonable steps to limit the scope of such disclosure.

e. Site, in accordance with its policies and procedures, may post the Protocol on its internal database (referred to as "FYI") and share the Protocol, or portions thereof, as necessary i) to comply with applicable laws and regulations; ii) for internal patient care billing audits with Site's affiliates, and iii) to provide information to third party payors as necessary, in connection with the processing or payment of a claim submitted in relation to a Study subject. Site shall also be allowed to post a synopsis of the Protocol on its recruitment website.

In addition, the parties agree that the Investigator may disclose the title of the Study on his curriculum vitae and grant application(s).

9 Intellectual Property

The parties acknowledge that it is unlikely that an invention will result during the performance of the Study. Site, on behalf of itself and its employees, consultants and agents, hereby exclusively, perpetually and irrevocably, conveys to Actinium a fully-paid and royalty-free, all rights, title to and interest in, including without limitation, all patent rights, copyrights, know-how, and other intellectual property of any nature, sort or description, which is created, learned, reduced to practice, discovered, or made in the performance of this Agreement or is related to or useful in connection with, the Study Drug or the Study Protocol ("Intellectual Property"). The Site and the Investigator shall promptly disclose all said Intellectual Property to Aptiv. The Site also represents that it has obtained sufficient authority to make this grant from all individuals that Site makes available to perform this Agreement and to provide good and clear title to Actinium. Additionally, Site, on behalf of itself and all of its employees, contractors and agents, hereby grants Actinium the right to file, prosecute and defend *any* such patent applications, at Actinium's .'.own cost and expense. Site agrees to render all reasonable assistance to Actinium in the filing, prosecution and defense of any such patent application at Actinium's own cost and expense.

The parties further acknowledge and agree that Actinium is the owner or authorized licensee of the Study Drug. Neither Site nor Investigator shall obtain any license to make, have made, sell, distribute, rent, lease, or otherwise transfer or use the Study Drug or Actinium Confidential Information, or their derivatives. Actinium Confidential Information is licensed for use only on and in combination with the Study Drug, and may not be used on or with third party products without Aptiv's prior express written permission. This Agreement grants no implied rights.

Aptiv on behalf of Actinium, hereby grants to Site a non-exclusive royalty free license to the Intellectual Property for Site's own internal nonprofit research and education related purposes.

10. Indemnification

a. The Site shall, to the extent authorized by applicable law, indemnify, defend and hold harmless Actinium and Aptly, their agents and employees (collectively the "Indemnitees") from any and all liabilities, claims, actions, or suits (collectively "Claims") resulting from the negligence or wrongful acts or omissions of the Institution, the Investigator, their agents or employees pertaining to the activities of this Study and/or this Agreement, provided, however, that:

(i) the Institution shall not indemnify, defend and hold harmless the Indemnitees from Claims arising out of the negligence or wrongful acts or omissions of the Indemnitees;
(ii) the Institution is promptly, and in any event within thirty (30) days after an Indemnitee's receipt of notice of any complaint, claim or injury relating to any loss subject to this indemnification, notified in writing of any such complaint, claim or injury;
(iii) the Institution has sole control over the defense and settlement of any such claim or suit, including the right to select defense counsel and to direct the defense or settlement of any such claim or suit, provided that Institution shall not admit fault or liability on behalf of any Indemnitee in the defense and settlement of such claim or suit; and
(iv) the Indemnitees reasonably cooperate with the Institution and its legal representatives in the investigation and defense of any claims or suits covered under this Section 12(b). In the event that a conflict arises in the context of such an investigation or defense, the Indemnitees shall have the right at their own expense to select and obtain representation by separate legal counsel.

b. Actinium Indemnification.

Actinium shall indemnify, defend and hold harmless the Site, its trustees, officers, medical and professional staff, affiliates, employees, and agents and their respective successors, heirs and assigns (collectively the "Site Indemnitees"), against any liability, damage, loss or expense (including reasonable attorneys' fees and expenses of litigation) incurred by or imposed upon the Site Indemnitees or any one of them in connection with any third party claims, suits, actions, demands or judgments due to any side effect, adverse reaction, illness or injury occurring to any Qualified Subject as a result of the Study Drug, performance of a Study test or procedure, use of any equipment or supplies supplied by Actinium, or complying with the Protocol or any instructions provided by Actinium or approved by Actinium.

Actinium's indemnification shall not apply to any liability, damage, loss or expense attributable to (i) the negligent activities, reckless misconduct or intentional misconduct of the Site Indemnitees; (ii) failure of the Site Indemnitees to provide the current standard of care for subjects, excepting use of the Study Drug; (iii) failure of the Site Indemnitees to adhere to the terms of the Protocol for the Study or follow all prior written instructions provided by Actinium or Aptly, (iv) actions of the Site Indemnitees in violation of applicable laws or regulations , or (v) material breach of this Agreement by the Site Indemnitees. In no event shall Actinium have any liability of any nature, sort or description attributable to the exclusions of this sub-paragraph,.

This obligation to indemnify is subject to the Site Indemnitees giving Actinium written notice within two (2) business days of any claim, suit or demand and full control of any defense and settlements of such claim, suit or demand. The Site Indemnitees will also notify Actinium promptly in the event any one of them becomes aware of any potential claim, or likelihood of any potential claim of indemnification rights under this Section. Site Indemnitees will cooperate fully, at Actinium's expense, in the defense or settlement of any claim or action.

This Paragraph shall survive expiration or termination of this Agreement.

c. Study-Related Injury.
Subject to Section 10(b), above, Actinium agrees to pay for all reasonable costs incurred for the care and treatment of any illness or injury to a Subject resulting from his or her participation in the Study.

I I. Insurance

The Site and Actinium shall, at its sole cost and expense, procure and maintain commercial general liability insurance or equivalent self insurance in amounts not less than $2 million per incident and $5 million annual aggregate with respect to the Study.

12. Term and Termination

Unless earlier terminated in accordance with its terms, this Agreement shall commence on the date when it is signed by all parties, (the "Effective Date", and shall continue in full force and effect until two (2) years after the Study has been completed.

a. This Agreement shall be terminated immediately in the event that: 1) the authorization and IND issued by the FDA is withdrawn, 2) the approval of the IRB is withdrawn; or 3) the Investigator has not included any Qualified Subjects in the Study in accordance with Paragraph 3.c. and after the Study has been open to enrollment for twenty-four (24) months.

b. Except as otherwise provided in this section, any party may terminate this Agreement upon sixty (60) days prior written notice in the event of any material breach by another party of any material term or condition hereof; provided such breach is not cured within said sixty (60) day notice period.

c. Any party may terminate or suspend this Study immediately for the safety of Subjects, pursuant to applicable regulations. In such case, the party terminating or suspending the study will provide prompt written notice to the other party.

d. Any party may terminate this Agreement upon written notice immediately in the event a party engages in criminal, unprofessional or fraudulent conduct.

e. Aptiv may terminate this Agreement upon sixty (60) days prior written notice in the event that: I) the Protocol is suspended by the2) the Principal Investigator is unable to complete the Study and a substitute Principal Investigator cannot be agreed upon, or 3) if circumstances reasonably beyond Site's control preclude the Site from continuing the Study, and such suspension of the Study exceeds sixty (60) consecutive days or ninety (90) days in the aggregate in any year during the term (or renewal) of this Agreement.

f. Aptiv may terminate this Agreement at any time upon one (1) month prior written notice to the Site. In such case, Aptly will provide finding of expenses actually incurred under the Study prior to the date of said notice or prior to a patient's completion of the Study if said completion is in the best interest of the patient as reasonably determined by the Investigator. Site may terminate this Agreement at any time upon ninety (90) days prior written notice to Aptiv.

g. Any provision of this Agreement, which provides continuous enforcement or operation thereof after the termination hereof, shall survive the termination of this agreement.

13. Effect of Termination

Except as otherwise provided herein, termination of this Agreement shall not be construed to release either party from any obligation hereunder which has matured prior to the date of said termination. Upon termination of this Agreement, Site shall promptly return to Aptly the Study Drug, Study Data, including without limitation, all CRP and Actinium Confidential Information at Aptiv's expense.

14. Diversity in Study Population - Translation Services

The Site endorses the National Institute of Health's policy concerning the inclusion of minorities in study populations. The Investigator is encouraged to recruit patients into the Study without regard to ethnic background. The Site shall provide the consent form applicable to the Study in written form translated to the appropriate language to any non-English speaking minorities included in the Study. Any cost incurred by the Site for the development of a translated informed consent from will be agreed upon in advance and reimbursed by Aptly. The Site shall present Aptly with an invoice for translation services which Aptiv shall reimburse to the Site within thirty (30) days of receipt. The parties acknowledge that said translation costs are not included in the Study budget set out in Appendix B and are not included in the Total Cost of the Study.

15. Communications

All medical/scientific and other communications, reports and notices shall be delivered by hand, by facsimile, by secure electronic means or sent by first class mail postage prepaid and addressed as follows:

If to Aptly: Anthony Apicella, Project Manager\
Aptiv Solutions 225 Turnpike Rd. Southborough, MA. 01772

If to Actinium: Dragan Cicic, CEO
Actinium Pharmaceuticals, Inc.
391 Lafayette Street
Newark, NJ 07105

If to Site : Fred Hutchinson Cancer Research Center
Attn: Industry Relations and Clinical Research Support Office
1100 Fairview Avenue N., J5-110
Seattle, WA 98109

If to Accounts Receivable: Fred Hutchinson Cancer Research Center
Attn: Accounts Receivable
1100 Fairview Avenue N., .J6-330
Seattle, WA 98109

If to Investigator: Fred Hutchinson Cancer Research Center
Attn: John Pagel, M.D., Ph.D.
1100 Fairview Avenue N., D5-380
Seattle, WA. 98109

In no event shall Site or the Investigator file any communication they are legally required to file with the FDA or any other regulatory agency, without first notifying Aptiv, unless otherwise requested by the FDA or other regulatory agency.

16. Use of Names

Except as otherwise required by law, each party agrees not to use or cite in any manner the name of the other party or its employees in any commercial or non-commercial advertising, article, press release or in any other forms of writing or publication medium without the prior written permission of the party or individual whose name or employee's name is to be used.

17. General Provisions

a. All rights and remedies hereunder are exclusive and not cumulative.

b. This Agreement may be amended only by written agreement signed by all parties.

c. It is expressly agreed by the parties hereto that the Site, the Investigator and Aptly are independent contractors and nothing in this Agreement is intended to create an employer relationship, joint venture, or partnerships between the parties. No party has the authority to bind any other.

d. This Agreement, including all exhibits, constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all proposal, negotiations and other communications between the parties, whether written or oral, with respect to the subject matter hereof.

e. If any provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions of this Agreement shall not be impaired thereby, and the party against whom the holding is made, shall be entitled to substitute a similar provision that preserves the benefit of the bargain.

f. The failure of any party to insist on strict performance of any provision of this Agreement or exercise any right hereunder will not constitute a waiver of that provision or right.

g. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original as against the party whose signature appears thereon, but all of which taken together shall constitute but one and the same instrument.

h. Each party hereto agrees to execute, acknowledge and deliver such further instruments and do all such further acts as may be necessary or appropriate in order to carry out the purposes and intent of this Agreement.

i. The paragraph headings contained in this Agreement are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement.

IN WITNESS WHEREOF, the parties intending to be legally bound have caused this Agreement to be executed by their duly authorized representatives or, in the case of the Investigator, have duly executed this Agreement, on the dates stated beneath their names:

SITE
Accepted by:

/s/ Ulrich Mueller

Name: Ulrich Mueller
Title: Vice President, Industry Relations and Research Support
Dated: 7/24/12

ACTINIUM PHARMACEUTICALS, INC.
Accepted by:

/s/ Dragan Cicic

Name: DRAGAN CICIC, M.D.
Title: CEO
Dated: 7/26/12

Read and Acknowledged by:
INVESTIGATOR:

/s/ John M. pagel

Name: John M. pagel, M.D., Ph.D.
Dated: 7/20/12

EXHIBIT A
PROTOCOL

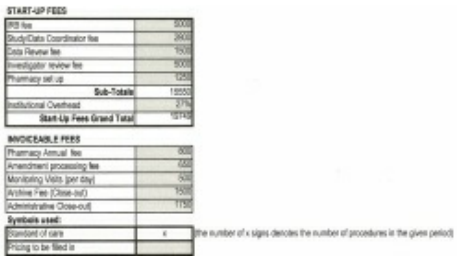
Incorporated by reference

EXHIBIT B
Investigator's current curriculum vitae is attached (incorporated by reference)

EXHIBIT C
BUDGET

Schedule of Events/Assessments **A Phase I/II Study of Low Dose Cytarabine and Lintuzumab-Ac225 in Older Patients with Untreated Acute Myeloid Leukemia**

	Baseline	LDAC Cycle 1 (days 1-28)					LDAC Cycle 2-12 (months 2-12)										
Assessment	(within 14 days prior to treatm.)	1-10	14-17	17-21	22-28		2	3	4	5 through 12							
Baseline Assessments																	
ICF(1)	200																
Demographics	x																
Hematology (2)	x	xx	xx	xx	xx		xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Serum Chemistry (3)	x		x		x		xx	x	x	x	x	x	x	x	x	x	x
Bone Marrow Examination (4)	x				x		x		x								
PT, PTT, Fibrinogen	x																
Thyroxane, TSH	x							95			95			95			95
Medical history	x																
PE	x																
Urinalysis (5)	x		40		40		40	40	40	40	40	40	40	40	40	40	40
Chest X-ray (6)	x																
ECG (6)	x																
Vital signs (7)	x		incl. infusion	incl. infusion													
HAHA (8)	150							150	150			150					
Premedications (9)		x	x	x	x												
Study Drug																	
LDAC (10)		x					x	x	x	x	x	x	x	x	x	x	x
Lintuzumab-Ac225 (11)			API supply	API supply													
Radiation Nephropathy Prophylaxis																	
Furosemide (12)		30	30	30	30												
Spironolactone (13)							50	50	50	50	50	50	50	50	50	50	50
Concomitant Medications (14)	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x
Adverse Event Assessment (15)		x	x	x	x		x										
Survival		x	x	x	x		x	x	x	x	x	x	x	x	x	x	x
Patient Work Total	350	30	70	30	70		90	335	240	90	185	240	90	185	90	90	185
TX room																	
Study Drug Administration Fee			1100	1100													
Hydration infusion			589	589													
Hotel Accommodation			200	200													
In-patient hospital fee	n/a																
Investigator Fee	600	400	400	400	400		200	200	200	200	200	200	200	200	200	200	200
Nuclear Medicine Fee	0	0	500	500	0		0	0	0	0	0	0	0	0	0	0	0
Nursing Fee	500	400	400	400	400		250	250	250	250	250	250	250	250	250	250	250
Data manager	400	300	300	300	300		300	300	300	300	300	300	300	300	300	300	300
Study Coordinator	400	200	200	200	200		200	200	200	200	200	200	200	200	200	200	200
Parking																	
Per patient fees sum	2250	1330	3759	3719	1370		1040	1285	1190	1040	1135	1190	1040	1135	1040	1040	1135
OH	607.5	359.1	1014.93	1004.13	369.9	0	280.8	346.95	321.3	280.8	306.45	321.3	280.8	306.45	280.8	280.8	306.45
Per Patient fees with OH	2857.5	1689.1	4773.93	4723.13	1739.9	0	1320.8	1631.95	1511.3	1320.8	1441.45	1511.3	1320.8	1441.45	1320.8	1320.8	1441.45
Total per patient fee	24,658.00																
Applicable Overhead, if any	27%																
Total per patient fee w/ OH	31,309.66																



START-UP FEES

IRB fee	500
Study/Data Coordinator fee	2800
Data Review fee	1500
Investigator review fee	500
Pharmacy set up	1250
Sub-Totals	18550
Institutional Overhead	275
Start-Up Fees Grand Total	19145

INVOICEABLE FEES

Pharmacy Annual fee	800
Amendment processing fee	600
Monitoring Visits (per day)	500
Archive Fee (Close-out)	1500
Administrative Close-out	1750
Symbols used:	
Standard of care	x
Pricing to be filled in	

(the number of x signs denotes the number of procedures in the given period)

1 Informed consent form (ICF) obtained prior to any study-related procedures
2 Hematology assessments: complete blood count (CBC), Red Blood Cell count (RBC) with WBC differential and platelet count, hemoglobin, hematocrit. Timetable: Baseline, twice per week for the 1st 2 months, then CBC once every week.
3 Serum chemistry: Comprehensive biochemistry profile (including serum electrolytes, BUN, creatinine, glucose, calcium, phosphate, total protein, albumin, alkaline phosphatase, AST, total bilirubin), PO4, LDH, and uric acid. Assessments timetable: Baseline, every other week for the 1st 2 months, then every month.
4 Bone marrow aspiration or biopsy: morphology, cytogenetics (if not previously done), immunophenotyping, PCR analysis if applicable. Assessment timetable: Baseline, just before cycle 2 LDAC, after the end of cycle 4 LDAC, upon disease progression or before the 2nd cycle LDAC if the peripheral blood count shows ANC > 1000 and the platelet count is > 100,000 after 225Actinium-HuM195 treatmer
5 Urinalysis to include: pH, protein, ketones, Hb or blood, specific gravity and if abnormal, microscopic a examination of the sediment. Timetable: every other week for the 1st month, then monthly.
6 ECG and Echocardiogram: within 30 days of study entry
7 Vital signs to include temperature, pulse rate, respiration rate, blood pressure. Timetable: 15 minutes prior to each study drug infusion, every 15 minutes during the infusion, then 30, 60, 90 and 120 minutes after the infusions are completed.
8 Human anti-human antibody response: Baseline, then 2, 3 and 6 months after the last dose of study drug. Please include only payments for collecting and shipping from your site, as the tests will be done centrally.
9 Allopurinol, 300-600 mg po/day one day before administration of Lintuzumab-Ac225 and continued for 7 days after the 2nd (last) dose of study drug. For subjects with ANC500/pL at study start, prophylactic antibiotic and antifungal therapy should be used.
10 First cycle of LDAC, 20 mg subQ every 12hrs X 10 D, given prior to the administration of study drug, then cycle 2 given 3 to 4 weeks after the 2nd dose of study drug for up to 12 cycles total.
11 1st divided dose given 4-7 days after completion of LDAC cycle 1. 2nd divided dose given 4-7 days after dose #1
12 40 mg po/day starting 1 day before LDAC administration and continuing until the end of cycle 1 (day 28)
13 25 mg po/day starting 1 day after the last dose of furosemide at the end of cycle 1.
14 Concomitant medications: all medications taken for 28 days prior to the 1st dose of study drug and then all medications while on study
15 Adverse event assessments begin at the time of LDAC administration and continue until 30 days after the last dose of the study drug.

Exhibit 10.13

Actinium Pharmaceuticals, Inc.

July 23, 2012

Jack V. Talley, Jr.
24 Kent Lane
Trumbull, CT 06611

Dear Jack:

On behalf of Actinium Pharmaceuticals, Inc. {the "Company"), I am pleased to offer you the position of President and Chief Executive Officer. 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 Chief Executive Officer of the Company and shall (i) be responsible for the management of the overall direction of the Company, including, without limitation, strategy, planning, corporate policies, research and development, staffing, finance and operations, (ii) perform such other duties and shall have authority consistent with your position as may be from time to time specified by the Board of Directors of the Company ("Board"). You shall report directly to the Board 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. The offices will initially be located in New York City but will eventually be located in Stamford, CT by early 2013.

(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 continue to hold no more than two board seats on for-profit and not-for-profit boards that do not represent a conflict with the Company and subject to Board review of the time commitment involved. Specific Board approval will be required for any additional board commitments.

2. Start Date. Subject to fulfillment of any conditions imposed by this letter agreement, you will commence this new position with the Company on August 15, 2012 ("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 two hundred fiftythousand dollars ($250,000), which will be paid in accordance with the Company's regular payroll practices. In January 2013 the Board will review your base salary with the help of an independent compensation consultant to adjust your base salary is to be competitively aligned to a range between the 25th (twenty-fifth) and 75th (seventy-fifth) percentile of the relevant market data of CEO positions of similarly situated publicly traded Biotech companies. The Board shall review the amount of your base salary and performance bonus, and shall determine the appropriate adjustments to each component of your compensation at the start of each calendar year.

(b) Performance Cash Bonus. You shall be entitled to participate in an executive bonus program, which shall be established by the Board pursuant to which the Board shall award bonuses to you, 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 your base salary, you shall be entitled to a cash bonus in an amount to be determined by the Board up to fifty percent (50%) of your base salary. Within thirty (30) days after the Start Date, the Board shall establish written individual and corporate performance objectives for the balance of 2012 and the amount of the performance bonus payable upon the attainment of each objective. At least thirty (30) days before each subsequent calendar year, the Board shall establish written individual and corporate performance objectives for such calendar year and the amount of the performance bonus payable upon the attainment of such objectives. Within thirty (30) days after the end of each calendar year, the Board shall determine the amount of any performance bonus payable hereunder. Any such performance bonus shall be due and payable within sixty (60) days after the end of the calendar year to which it relates.

(c) Stock Option Grant. Subject to the approval of the Board which Company shall obtain on or before the Start Date, Company agrees to grant to you an option grant to purchase common shares of the Company equal to three percent (3.0%) of the Company's issued and outstanding equity (common and preferred shares) on a fully diluted basis. Such options will have an exercise price of $0.261 cents per share which is equal to fair market value as determined by the Board on the date of the grant. Twenty-eight percent (28%) of the initial options granted shall vest twelve months after the date of grant and two percent (2%) of the remainder shall vest each month thereafter until fully vested. Additional options will be granted upon the final closing of the Company's next financing so that total options granted will equal three percent (3%) of fully diluted shares on that date. Such additional options 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 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 will be incentive stock options to the maximum extent allowed by the tax code and will be subject to the terms of the Company's 2003 Stock Plan and the Stock Option Agreement between you and the Company.

5. Benefits.

a. Insurance Benefits. 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 20 days paid vacation per year, pro-rated for the remainder of this calendar year and pro-rated by the number of hours worked. Vacation may not be taken before it is accrued. You will be entitled to 10 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 Comnanv 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. The initial term of your employment shall be a period of three (3) years the Start Date provided that 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, except that upon termination of your employment by the Company during the initial term other than for cause you will be entitled to severance equal to 12 months base salary.

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 Am-pen-lent exiclenr,Psa transartinn invnlvina intPrstate,rnmmPrPp 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 (0 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: 391 Lafayette Street
Newark, NJ 07105

If to you: 24 Kent Lane
Trumbull, CT 06611

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.

Very truly yours,

ACTINIUM PHARMACEUTICALS, INC.

By: _____

Title: Director, API

ACCEPTED AND AGREED:

JACK V. TALLEY, JR.

_____
Signature

7/24/12
Date

Exhibit 10.14

Actinium Pharmaceuticals, Inc.

July 21, 2012

Ms. Enza Guagenti
391 Lafayette Street
Newark, NJ 07105

Dear Enza:

On behalf of Actinium Pharmaceuticals, Inc. (the "Company"), I am pleased to offer you the position of Interim Chief Financial Officer of the Company. Speaking for myself, as well as the other members of the Company's Board of Directors (the "Board"), we are very appreciative of your past contributions to the Company look forward to your future participation in this position.

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

below:

(a) You shall serve as Interim Chief Financial Officer of the Company and shall (i) be responsible for the overall direction and execution of financial planning and control activities of the Company, including, without limitation, the responsibilities set forth in Attachment A attached to this letter, and (ii) perform such other duties and shall have authority consistent with your position as may be from time to time specified by the Chief Executive Officer and the Board. You shall report directly to the Chief Executive Officer 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 three days of your business time a week to advance the interests of the Company and to discharge adequately your duties hereunder. You may continue to hold board seats on for-profit and not-for-profit board seats that do not represent a conflict with the Company only upon specific Board approval.

(c) It is understood and agreed that during the first six months after your Start Date you will be utilizing consultants for certain supplemental work, as approved by the Company's Chief Executive Officer on a case-by-case basis.

2. Start Date. Subject to fulfillment of any conditions imposed by this letter agreement, you will commence this new position with the Company on August 15, 2012 ("Start Date").

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 initial annual base salary of ninety thousand dollars ($90,000), which will be paid in accordance with the Company's regular payroll practices. Your annual base salary will be increased to one hundred fifteen thousand dollars ($115,000) on the six month anniversary of your Start Date. Thereafter, before the beginning of each calendar year during the term of your employment, beginning in January 2014, the Board shall review the amount of your base salary and performance bonus, and shall determine the appropriate adjustments to each component of your compensation for the following calendar year.

(b) Stock Option Grant. Subject to the approval of the Board which Company shall obtain on or before the Start Date, Company agrees to grant to you an option grant to purchase 75,000 common shares of the Company. Such options will have an exercise price of $0.261 cents per share which is equal to fair market value as determined by the Board on the date of the grant. Two percent (2%) of the options granted shall vest each month after the date of grant until fully vested. The term of all options granted under this Agreement will be for 10 years from the date of initial grant, subject to your continuing service with the Company. The options will be incentive stock options to the maximum extent allowed by the tax code and will be subject to the terms of the Company's 2003 Stock Plan and the Stock Option Agreement between you and the Company.

5. Benefits.

a. Insurance Benefits. The Company will provide you with the opportunity to participate in the standard benefits plans currently available to senior executive employees of the Company. 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 10 days paid vacation per year, pro-rated for the remainder of this calendar year and pro-rated by the number of hours worked. 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 including home office 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, entertainment, CPEs, professional memberships 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, except that upon termination of your employment by the Company other than for cause you will be entitled to severance equal to 3 months base salary. In the event that a) the Company hires a CFO other than yourself, and 2) within two years thereafter your base salary is reduced below $115,000 per year, you may then within thirty days after the base salary reduction resign your position with the Company and collect your severance.

8. Non-Solicitation. You agree that during the term of your employment with the Company, and for a period of 12 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 12 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. The parties further agree that, to the fullest extent permitted by law, the provisions of Section 658A of the Hawaii Revised Statutes, as amended, will not apply to this provision, nor to any arbitration conducted pursuant thereto. 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: 391 Lafayette Street
Newark, NJ 07105

If to you: 391 Lafayette Street
Newark, NJ 07105

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.

Very truly yours,

ACTINIUM PHARMACEUTICALS, INC.

By: _____
DRAGAN CICIC

Title: CEO

ACCEPTED AND AGREED:

ENZA GUAGENTI

_____
Signature

7/27/12
Date

Attachment A: Job Responsibilities

1. Perform or review the complex accounting/valuations/derivative analysis;
2. Review the financial statements and footnote disclosures;
3. Review and consent on significant accounting policies;
4. Consult on complex accounting transactions;
5. Review and approve all Form 8-K, 10-K, 10-Q and any other related filings
6. Respond to SEC comment letters (once the Company's registration statement
7. becomes effective);
8. Prepare internal management reporting packages;
9. Monitor financial control systems;
10. Be a key financial executive for management; play a key financial role in merger and
11. acquisitions (M&A) activities (if any)
12. Develop strategic financial and tax plans for the Company;
13. Strengthen relationships with financial institutions; and
14. Work with external auditors and attorneys.

CLINICAL TRIAL AGREEMENT
(SK#5165)

THIS AGREEMENT is made and entered into as of the 18th day of January, 2001 (hereinafter "Effective Date") by and between

SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH and its affiliate **MEMORIAL HOSPITAL FOR CANCER AND ALLIED DISEASES** both having a principal place of business at 1275 York Avenue, New York, New York 10021, membership corporations of the State of New York (hereinafter "SKI/MEMORIAL") and

PHARMACTINIUM, INC., a corporation having its principal place of business at 106 South Columbus Street, Alexandria, Virginia 22314 (hereinafter "COMPANY").

WITNESSETH

WHEREAS, SKI/MEMORIAL has established and maintains a Leukemia Service, a Division of Hematologic Oncology, in the Department of Medicine and has acquired expertise in conducting research investigations, clinical trials and laboratory test evaluations; and

WHEREAS, SKI/MEMORIAL will conduct a clinical trial entitled "Phase I/II trial of 213Bi-M195 and cytarabine for Acute Myeloid Leukemia (hereinafter "Study").

WHEREAS, COMPANY conducts business in the development, manufacture and sale of therapeutic products, and is interested in partial sponsorship of the Study in exchange for access to the data resulting from the Study.

WHEREAS, COMPANY understands that SKI/MEMORIAL will use HuM195 ("M195") provided by Protein Design Labs, Inc. (hereinafter "PDL") in the Study and may provide any data of the Study to PDL. COMPANY also understands that SKI/MEMORIAL has granted to PDL certain SKI/MEMORIAL rights relating to M195 under a license agreement between SKI/MEMORIAL and PDL.

NOW, THEREFORE intending to be legally bound and upon the terms, conditions and covenants hereinafter set forth, SKI/MEMORIAL and COMPANY agree as follows:

ARTICLE I – THE STUDY

1.1 The Study under this Agreement will be conducted under the protocol approved by SKI/MEMORIAL'S Human Subject Institutional Review Board (hereinafter "IRB"), based on the draft protocol annexed hereto as Exhibit A (hereinafter "Protocol"). SKI/MEMORIAL shall submit the Protocol for approval to the IRB and the United States Food and Drug Administration (hereinafter the "FDA"). When not available to SKI/MEMORIAL from other sources, COMPANY shall supply Bismuth-213 after COMPANY has:

a. received a mutually executed copy of this Agreement;

b. received documentation from the Office of Industrial Affairs that SKI/MEMORIAL'S IRB has approved the Protocol.

Promptly after SKI/MEMORIAL'S IRB has approved the final Protocol, the Principal Investigator shall forward a copy to the Office of Industrial Affairs, and the Office of Industrial Affairs shall forward a copy to COMPANY. The Principal Investigator shall also forward to the Office of Industrial Affairs any subsequent change to the Protocol, and the Office of Industrial Affairs shall forward the change to COMPANY.

1.2 As part of this Agreement, SKI/MEMORIAL shall appoint Dr. David A. Scheinberg or Dr. Joseph Jurcic and/or such other physicians as it may deem appropriate as investigators (hereinafter "Investigators") to oversee the Study. If Dr. David A. Scheinberg or Dr. Joseph Jurcic should become unable to complete the Study, SKI/MEMORIAL shall consult with COMPANY regarding the appointment of a new principal investigator.

1.3 The Investigators on behalf of SKI/MEMORIAL shall prepare and maintain records and case histories with all pertinent data documented as required by the Protocol on case report forms supplied by COMPANY. The parties shall hold all patient data confidential, and information provided to COMPANY shall not disclose patient names, except to the extent that the patient consent form permits. COMPANY may disclose reports and other information to an independent data management company, provided the management company is bound to hold such information in confidence.

1.4 The Investigators shall also immediately notify COMPANY and the IRB of any adverse reaction in the course of the Study of which they become aware.

1.5 All applicable government laws, rules, regulations and guidelines, including those of the FDA, shall be adhered to by SKI/MEMORIAL and COMPANY, including but not limited to those requirements found in 21 C.F.R. Parts 50, 56, and 312 covering among other requirements the performance, documentation, and reporting requirements associated with the Study.

1.6 COMPANY shall provide SKI/MEMORIAL with any investigational protocols, pre-clinical or background information which are germane to the Study.

1.7 Upon SKI/MEMORIAL's request, COMPANY shall provide, without cost to SKI/MEMORIAL, sufficient amounts of Bismuth-213 to conduct the Study.

1.8 SKI/MEMORIAL shall permit COMPANY to monitor the progress of the Study through site visits and review of Study reports and related documentation. The parties agree that COMPANY may engage a third party of COMPANY's choosing to conduct the Study monitoring.

ARTICLE II – SKI/MEMORIAL STAFF AND FACILITIES

2.1 The Study shall be carried out at SKI/MEMORIAL under the supervision of SKI/MEMORIAL'S IRB and the Investigators indicated above.

2.2 SKI/MEMORIAL shall provide the physician, laboratory, statistical, and clinical support staff levels of effort required to complete the Study.

ARTICLE III – REPORTS

3.1 SKI/MEMORIAL shall keep COMPANY advised of the status of the Study via periodic reports. The frequency of reports shall be mutually agreed to by both parties. There shall also be a final report of the Study presented to COMPANY within sixty (60) days of the Study completion.

3.2 All reports submitted to COMPANY shall become the property of COMPANY and may be used by COMPANY for its internal uses. If COMPANY desires to release the reports or any contents in the reports to the public domain by any means or methods such as press releases, publications, meeting presentations, COMPANY must first obtain written consent from SKI/MEMORIAL.

ARTICLE IV – PUBLICATION

4.1 Notwithstanding anything contained herein to the contrary including without limitation Article V, SKI/MEMORIAL may freely publish the results of its investigative findings hereunder. The authorship and contents (including scientific conclusions and professional judgments) of any paper submitted shall be determined by SKI/MEMORIAL. SKI/MEMORIAL shall provide COMPANY with a copy of the papers prepared for publication prior to their submission to a scientific journal or presentation at scientific meetings. COMPANY shall have thirty (30) days to review the papers. COMPANY shall not make any editorial changes in the papers, but may delete any of its Confidential Information (as defined in Article V) contained therein. COMPANY personnel shall be acknowledged with customary scientific practice.

ARTICLE V – CONFIDENTIAL INFORMATION

5.1 In order to effectively complete the Study, it may be necessary or desirable for the parties to disclose proprietary, trade secret and/or other confidential information (hereinafter "Confidential Information") to one another. Each party agrees that, provided that the disclosing party specifies in writing the nature and identity of the Confidential Information and the manner and time of disclosure, any Confidential Information of the other party disclosed to it or to its employees or an independent data management company shall, for three (3) years after disclosure; be used only in connection with the legitimate purposes of this Agreement; shall be disclosed only to those who have a need to know it; and shall be safeguarded with the same care normally afforded confidential

information in the possession, custody or control of the party receiving the Confidential Information. Furthermore, all medical records not transcribed into the case report forms are Confidential Information of SKI/MEMORIAL.

The foregoing shall not apply when, after and to the extent the Confidential Information disclosed; i) becomes generally available to the public through no fault of the receiving party; ii) was already known to the receiving party at the time of disclosure as evidenced by written records in the possession of the receiving party prior to such time; iii) is subsequently received by the receiving party in good faith from a third party without breaching any confidential obligation between the third party and the disclosing party or; iv) is required to be disclosed for compliance with court orders, statutes or regulations.

In the event that the receiving party is required by law to disclose any Confidential Information, the receiving party will, as soon as possible (and in any event prior to such disclosure), notify the disclosing party of such requirement so that disclosing party may seek a protective order or other appropriate remedy, or in its sole discretion, waive compliance with this Section 5.1. In the event that no such protective order or other remedy is obtained, or in the event that disclosing party waives compliance with this Section 5.1, receiving party will furnish only that portion of the Confidential Information which it is advised by counsel it is legally required to furnish and will exercise all reasonable efforts to obtain reasonable assurance that confidential treatment will be accorded the Confidential Information so furnished.

ARTICLE VI – COMPENSATION

6.1 Definitions

For purposes of this Agreement, the following definitions apply:

i. Screening is the process of identifying potential subjects according to the entrance criteria outlined in the Protocol and of conducting the examinations and test specified in the Protocol necessary to select qualified subjects for the Study. For any given subject, the screen phase ends and the treatment phase begins when the subject has been enrolled into a treatment group under the Protocol and has been dispensed any Study Drug or placebo by SKI/MEMORIAL according to the study design and regimen described in the Protocol.

ii. A qualified subject is one who, upon entrance into the treatment phase of the Study, met all of the entrance criteria and none of the exclusion criteria in the Protocol and for whom knowing, written informed consent to participate was obtained in accordance with sub-Article 6.1.ii herein.

iii. A completed subject is a qualified subject who completed the full term of the Study and met the minimum attendance and compliance standards in the Protocol so that the Study Drug can be evaluated for safety or effectiveness.

iv. A completed case report form is a set of case report forms submitted to the COMPANY for a completed subject which meets the requirements set forth in the Protocol.

v. An incomplete subject is a qualified subject who started the Study but failed to complete the Protocol satisfactorily because of insufficient clinic attendance, poor compliance, voluntary withdrawal, or other violations of the Protocol.

6.2 Amounts of Payment

The compensation to SKI/MEMORIAL for the Study shall be calculated as follows:

i. For each completed case report form on a completed subject, COMPANY will pay ten thousand U.S. Dollars ($10,000).

ii. For each case report on an incomplete subject, the COMPANY will pay two thousand and five hundred U.S. Dollars ($2,500).

iii SKI/MEMORIAL will receive no compensation for the examinations and tests conducted in non-qualified subjects under the screening or treatment phases of the Protocol.

iv. Under this Agreement the maximum compensation for which COMPANY is responsible is five hundred and fifty thousand U.S. Dollars ($550,000), which is based on SKI/MEMORIAL enrolling a maximum of 40 qualified subjects, a maximum of 20 incomplete subjects and a maximum of 20 preparation fees in the amount of $3,500 per preparation.

6.3 Other Conditions of Payment

i. SKI/MEMORIAL agrees to use reasonable efforts to follow the Protocol, recruit, screen and enroll qualified subjects, prepare case report forms and any reports required in the Protocol.

ii. The parties agree that the screening phase will begin as soon as practicable after the signing of this Agreement. Each subject will be considered to be a completed, or incomplete patient, as appropriate, only after SKI/MEMORIAL has produced all completed case report forms and COMPANY has accepted the completed case report forms.

iii. In the event the Study is terminated prior to the anticipated Study completion date as described in Article VIII herein, COMPANY will pay actual expenses incurred by SKI/MEMORIAL for all completed, and incomplete patients accrued to the date of termination, as detailed above. If the Study is terminated by COMPANY prior to the planned completion date for its convenience and without cause, COMPANY agrees to pay for those subjects active in the treatment phase at the termination date as if they had completed the Study.

iv. The dates and financial arrangements in this Agreement can be changed only by written amendment to this Agreement, signed and executed by both parties.

6.4 Schedule of Payment

In consideration for SKI/MEMORIAL'S participation and to cover a portion of the costs associated with the Study, COMPANY shall pay SKI/MEMORIAL a total of five hundred and fifty thousand U.S. Dollars ($550,000) up to $ 800,000 payable as follows:

a. $ 50,000 of the ($550,000) within thirty (30) days after the execution of this Agreement; and

b. the remainder, as outlined in Sections 6.2 and 6.3, upon COMPANY'S receipt of final case reports on each group of 3 of the patients enrolled into the Study in accordance with the Protocol, provided however that, as many patients as possible will be treated per isotope generator of 40 mCi of Ac-225.

The above payments shall constitute full and final compensation to SKI/MEMORIAL under this Agreement.

6.5 SKI/MEMORIAL shall discuss, if COMPANY so requests, budgetary matters with COMPANY, but reserves the right to be the final control on budgetary categories and expenditures.

6.6 The checks shall be made payable to Sloan-Kettering Institute for Cancer Research (Sloan-Kettering Institute Tax I.D. No. 13-1624182) and shall be forwarded to:

Memorial Sloan-Kettering Cancer Center
Office of Industrial Affairs
1275 York Avenue
New York, New York 10021

COMPANY should note on its check stub or in its transmittal letter that the payment relates to a Clinical Trial Agreement, SK#5165, under the direction of Dr. David A. Scheinberg.

ARTICLE VII – INDEPENDENT CONTRACTOR

7.1 Both parties shall, at all times during the performance of this Agreement, remain as independent contractors and the Agreement shall not make the parties partners, joint venturers, or agents of one another. No party to this Agreement shall have the power to bind or obligate the other party.

ARTICLE VIII – TERM AND TERMINATION

8.1 This Agreement shall commence on the Effective Date of this Agreement and shall continue until SKI/MEMORIAL completes a final study report.

8.2 This Agreement can be terminated by either SKI/MEMORIAL or COMPANY with or without cause upon thirty (30) days prior written notice without penalty to either party.

8.3 In the event that this Agreement is terminated prior to completion of the Study, the amount due to SKI/MEMORIAL from COMPANY shall be that specified in Sections 6.2 and 6.3 for each patient who was enrolled in the Study any time between the Effective Date and the date of termination of this Agreement.

For purposes of this Agreement enrollment shall mean a patient that has signed the Patient Consent Form and has been treated.

8.4 Sections 1.3, 1.5, 3.2, 4.1, 5.1, 8.3, 8.4, 10.1, 10.5, 11.1-11.3, 12.1-12.3, and 12.5 shall all survive the termination of this Agreement.

ARTICLE IX – REPRESENTATIONS AND WARRANTIES

9.1 SKI/MEMORIAL represents and warrants to COMPANY that:

(a) to the best of its knowledge, it is authorized to enter into this Agreement, and that unless otherwise provided by SKI/MEMORIAL's agreement with PDL its execution, delivery and performance of this Agreement will not conflict with or constitute a default under any other agreement to which it is a party or by which its assets are bound;

(b) all aspects of SKI/MEMORIAL's facilities which may be used in the performance of the Study have been fully validated and are in compliance with applicable federal, state and local governmental requirements;

(c) it will obtain IRB review and approval of informed consent documentation, Study Protocol, and other relevant documentation prior to initiation of the Study;

(d) it will adhere to all aspects of the Protocol, including but not limited to patient enrollment criteria;

(e) it will manufacture, hold, and store the Bismuth-213 and Study Drug in accordance with all applicable federal, state, and local governmental regulations;

(f) it will maintain proper control and inventory over the Bismuth-213 and Study Drug.

9.2 COMPANY represents and warrants to SKI/MEMORIAL that it is authorized to enter into this Agreement, and that its execution, delivery and performance of this Agreement will not conflict with or constitute a default under any other agreement to which it is a party or by which its assets are bound.

ARTICLE X – OWNERSHIP RIGHTS

10.1 Preservation of Data. Notwithstanding anything else in this Agreement to the contrary, unless specifically instructed otherwise in writing by COMPANY, SKI/MEMORIAL shall retain and preserve one (1) copy only of all records relating to the Study for two (2) years after the last marketing authorization for the Study Drug has been approved or COMPANY has discontinued its research with

respect to the Study Drug and the FDA has been notified, or such longer period as shall be required by law (such period being referred to herein as the "Retention Period"). At the end of such period, SKI/MEMORIAL may destroy all such material upon giving COMPANY written notice of its intent to do so at least sixty (60) days prior to destruction.

10.2 Inventions. "Inventions" shall mean any invention, that is conceived, developed or reduced to practice during or as a result of the performance of the Study. Inventions conceived or reduced to practice solely by SKI/MEMORIAL or its faculty, staff, employees, or students shall be the sole property of SKI/MEMORIAL. Inventions conceived or reduced to practice solely by COMPANY or its employees or subcontractors or agents shall be the sole property of COMPANY. Inventions conceived or reduced to practice jointly by SKI/MEMORIAL or its faculty, staff, employees, or students, together with one or more employees, subcontractors or agents of COMPANY, shall be owned jointly by SKI/MEMORIAL and COMPANY.

10.3 To the extent SKI may legally do so, SKI/MEMORIAL grants to COMPANY a right of first refusal to obtain an exclusive license to SKI's interest in any jointly owned Inventions, through good faith negotiations and on commercially reasonable terms. The option shall extend for a period of six (6) months following disclosure of the Invention to the COMPANY. In the event the parties, acting in good faith, fail to reach a mutually acceptable agreement within three (3) months after commencing negotiations, SKI/MEMORIAL shall be entitled to negotiate a license with a third party for such patent applications.

10.4 Retention of Non-Exclusive License by SKI/MEMORIAL. SKI/MEMORIAL shall retain an irrevocable, non-assignable, royalty free license to use solely for its own internal, non-commercial research purposes any Inventions licensed to COMPANY pursuant to Section 10.3.

10.5 U.S. Government's Rights. It is understood that the U.S. government partially sponsors this Study and, therefore, has certain rights to Inventions made under the Study.

ARTICLE XI – INDEMNIFICATION

11.1 COMPANY shall indemnify, defend and hold SKI/MEMORIAL, and their affiliate corporation Memorial Sloan-Kettering Cancer Center harmless from and against all claims, causes of action, suits, damages and costs arising out of, resulting from, or otherwise in respect of, the manufacture and/or use of Bismuth-213 or 213Bi-M195 and cytarabine by Company's staff or agents, except where such claims, causes of action, suits, damages and costs are the result of noncompliance with the Study Protocol or are the result of negligence or willful misconduct by SKI/MEMORIAL, its investigators, staff, or agents. COMPANY shall have no obligation to indemnify, defend or hold SKI/MEMORIAL and their affiliate corporation, Memorial Sloan-Kettering Cancer

Center, harmless from and against all claims, causes of action, suits, damages and costs arising directly from a failure by SKI/MEMORIAL, its staff or agents to; (i) properly manufacture or administer 213Bi-M195 and cytarabine; (ii) comply with any applicable FDA or other governmental requirement; (iii) adhere to the terms of the Protocol; or (iv) adhere to its obligations under this Agreement. Furthermore, COMPANY shall indemnify, defend and hold SKI/MEMORIAL, and their affiliate corporation Memorial Sloan-Kettering Cancer Center harmless from and against all claims, causes of action, suits, damages and costs arising out of COMPANY's use of the report or data of the Study.

11.2 SKI/MEMORIAL shall indemnify, defend or hold COMPANY harmless from and against all claims, causes of action, suits, damages and costs arising directly from a failure by SKI/MEMORIAL, its staff or agents to (i) properly manufacture or administer 213Bi-M195 and cytarabine; (ii) comply with any applicable FDA or other governmental requirement; (iii) adhere to the terms of the Protocol; or (iv) adhere to its obligations under this Agreement.

11.3 As a condition to a party's right to indemnification hereunder, the claiming party must inform the other party of a claim as soon as is practical after it receives notice of the claim, permit the indemnifying party to control the defense of such claim, to select and engage counsel of its own choice to defend against such claims and to settle any claims or suits at its discretion, and otherwise cooperate fully with the indemnifying party in the defense of such claim. In no event shall the indemnifying party have any obligation hereunder with respect to claims or suits settled or compromised without its prior written consent.

ARTICLE XII – GENERAL

12.1 No right or license is granted under this Agreement by either party to the other either expressly or by implication, except those specifically set forth herein.

12.2 Unless otherwise specified in this Agreement, nothing contained within this Agreement shall impose an obligation of exclusivity on one party by the other. Both parties reserve the right to enter into and participate in other activities (either alone or with a third party) including, but not limited to, clinical trials and sponsored research projects.

12.3 All matters affecting the interpretation, validity and performance of this Agreement shall be governed by the laws of the State of New York applicable to agreements made and to be performed wholly within the State of New York. This Agreement, including the Protocol, sets forth the entire understanding between the parties herein, and cannot be changed or amended except by written agreement executed by the parties. In the event of any inconsistency in this Agreement, the inconsistency shall be resolved by giving precedence first, to the Articles of this Agreement, and then, to the Protocol. This Agreement may not be assigned by either party without the prior written consent of the other party.

12.4 All notices to be given by either party to the other shall be made in writing, delivered by any means providing proof of delivery, at the following addresses respectively:

Sloan-Kettering Institute for Cancer Research
1275 York Avenue
New York, New York 10021

(Attention: Director, Office of Industrial Affairs
(Copy: Mr. James S. Quirk, Senior Vice President)

PharmActinium, Inc.
106 South Columbus Street
Alexandria, Virginia 22314
Attention: Maurits W. Geerlings Jr., M.D.

Any notice shall be effective as of its date of receipt.

12.5 Except as set forth in Articles 4.1 and 5.1, as required by law and/or as may be required in order to maintain a party's status as an exempt organization under Section 501(c)(3) of the Internal Revenue Code and regulations thereunder, neither SKI/MEMORIAL nor COMPANY shall release any information, publicity, news releases or other public announcement, written or oral, with regard to the Agreement or any amendment thereto or to performance hereunder, to newspapers or any other mass communication media without the prior written approval of the other party. COMPANY shall not use the name of SKI/MEMORIAL and their affiliate corporation Memorial Sloan-Kettering Cancer Center, or a variant of any of the foregoing in any advertising, packaging or other promotional material in connection with except as may be required by law.

12.6 If any one or more of the provisions of this Agreement is held to be invalid or unenforceable from which no appeal can be or is taken, the provision shall be considered severed from this Agreement, and shall not serve to invalidate the remaining provisions hereof, so long as the essential benefits of this Agreement will still be realized. The parties shall make a good faith effort to replace the invalid or unenforceable provision with a valid one that, in its economic effect, is most consistent with the invalid or unenforceable provision.

IN WITNESS THEREOF, SKI/MEMORIAL and COMPANY have caused this Agreement to be executed in duplicate by their respective duly authorized officers.

PHARMACTINIUM, INC.

By: _____
Maurits W. Geerlings Jr., M.D.

Date: 01/31, 2001

SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH, AND MEMORIAL HOSPITAL FOR CANCER ALLIED DISEASES

By: _____
James S. Quirk
Senior Vice President
Research Resources Management

Date: 1/26, 2001

By: _____
George J. Bosl, Chairman
Department of Medicine

Date: 1/26/01, 2001

By: _____
Stephen Nimer, Head
Division of Hemology Oncology

Date: Jan 24, 2001

By: _____
Dr. Joseph Jurcic, Principle Investigator

Date: Jan. 19, 2001

CLINICAL TRIAL AGREEMENT

THIS CLINICAL TRIAL AGREEMENT ("Agreement") is made by and between The Trustees of the University of Pennsylvania, a nonprofit corporation having a business address at 3451 Walnut Street, Rm. P-221 Franklin Building, Philadelphia, Pa 19104 ("Site") and Actinium Pharmaceuticals, Inc. with an address of 391 Lafayette Street, Newark, New Jersey 07105 ("Actinium"). This Agreement is entered into on the date of last signature.

This Agreement provides for the conduct of a clinical investigation using a proprietary drug which is not, at this time, cleared for human use by the Food and Drug Administration. Any use of this drug must be pursuant to an Investigational New Drug Exemption (IND 10807) held by Actinium. Aptiv Solutions, Inc., a Delaware corporation having a principal place of business at 1925 Isaac Newton Square, Suite 100, Reston, VA 20190 ("Aptiv") has been engaged by Actinium to oversee and manage the Study.

The research contemplated by this Agreement is of mutual interest and benefit to the Site and to Actinium and will further the Site's instructional and research objectives in a manner consistent with its status as a non-profit, tax-exempt, educational institution.

In consideration of the mutual covenants and conditions set forth in this Agreement and for good and valuable consideration, the sufficiency of which is hereby acknowledged, the parties hereby agree as follows:

1. Defmitions. When used in this Agreement, the listed terms shall have the following meanings:

   a. "Study" means the conduct of human research using the Study Drug manufactured by Actinium on Qualified Subjects at the Site pursuant to the protocol which has been reviewed and approved by the IRB and the FDA prior to the commencement of the Study.
   b. "Protocol" means the details of that certain clinical Study to be performed pursuant to this Agreement entitled A Phase I/11 Study of Low Dose Cytarabine and Actinium-255 Hum195 in Older Patients with Untreated Acute Myeloid Leukemia. The Protocol, including any amendments is hereby incorporated by reference. and made part of this Agreement.
   c. "IRB" means the institutional review board of Site.
   d. "Study Drug" means the compound known as Actinium-255 Hum 195.
   e. "Study Data" means all of the data collected and records compiled during the Study relating to the conduct of the Study and/or the Study Drug. Study Data includes without limitation, all records prepared by the Investigator and all clinical research assistants (with the exclusion of patient medical charts), all Case Report Forms, all Screening records, all records on Qualified Subjects, Completed Subjects, Withdrawn Subjects, Uncompleted Subjects and Non-Qualified Subjects, all Informed Consent forms and all adverse/unexpected/serious or other reportable events.
   f. "Potential Subject" is a patient or individual who could possibly participate in the Study.
   g. "Screening" is the process of identifying Potential Subjects and of conducting the examinations and tests necessary to select Qualified Subjects for the Study.
   h. "Qualified Subject" is a subject who, on inclusion in the treatment phase of the Study, has met all of the inclusion criteria and none of the exclusion criteria in the Protocol and has given his/her written Informed Consent to participate in the Study.
   i. "Completed Subject" is a Qualified Subject who has completed the Study and met the minimum attendance and compliance standards in the Protocol for evaluation of the safety and effectiveness of the Study Drug.
   j. "Withdrawn Subject" is a Qualified Subject who has been withdrawn from the Study because of treatment failure or adverse event, but who otherwise met the Protocol entry requirements.
   k. "Uncompleted Subject" is a Qualified Subject who was initially included in the Study but who failed to complete the Study satisfactorily because of insufficient clinic attendance, poor compliance, voluntary withdrawal, and loss to follow-up or other Protocol violations.

1. "Non-Qualified Subject" is a subject who has not met the inclusion criteria as defined in the Protocol.

m. "Informed Consent Foil'!" means the written form agreed upon by Actinium and the Site in conformance with all applicable FDA regulations and guidances, and approved by the IRB for use in this Study.

n. "Case Report Foam (CRF)" means the report in the Actinuim format which is completed by the Investigator or his/her authorized designee documenting the use of the Study Drug in subjects.

o. "FDA" means the Food and Drug Administration of the United States Department of Health and Human Services, and any successor government agency.

p. "Investigator's Brochure" is a document describing the Study Drug, which is provided to the Investigator prior to the start of the Study.

q. "Investigator" means Alexander Perl, M.D.

2. Compliance with laws and procedures.

a. All parties shall conduct the Study in accordance with all applicable laws, regulations and guidances, as each of the foregoing may be amended from time to time. Without limiting the foregoing, the parties expressly agree to comply with 21 CFR 312 - Investigational New Drug Application, 21 CFR 50 - Protection of Human Subjects, and 21 CFR 56 — Institutional Review Boards.

b. The Site agrees to comply with the terms of this Agreement and all IRB and FDA procedures and applicable decisions for the Study.

3. Scope of Study

a. This Study is governed by this Agreement. All parties agree that no Study Drug shall be used on a subject until the IRB and the FDA have both approved the Study and this Agreement is fully executed. After the FDA and IRB approval, the Protocol may only be amended when: 1) there is written agreement between the Site, Actinium, and the Investigator to amend the Protocol, and 2) any and all such amendments have been reviewed and approved by the IRB and FDA. No Protocol amendments shall be implemented until receipt of the IRB and FDA written approval. Nothing in this paragraph shall limit the Investigator's ability to act under 21 CFR 312.50, 312.60, 312.62, 312.64 (Subpart D).

b. The Site agrees to strictly comply with all IRB procedures and policies which govern the review, approval and conduct of this Study.

c. The parties agree that Screening for Qualified Subjects shall begin within thirty (30) days of receipt of the following: 1) written approval of the Study and the Informed Consent by the IRB, 2) notification by Aptiv or Actinium that the FDA has granted the Investigational New Drug Application for the Study Drug, and 3) completion of Initiation Visit of the Site by Aptiv and Actinium for Study participation. The goal of the Study is to enroll up to ten (10) Qualified Subjects per year. The Site agrees to use its best efforts to complete subject enrollment as soon as practical, after commencement of Screening at each dose group.

4. Responsibilities of Actinium

a. Actinium represents and warrants that it has the authority to enter into this Agreement on its own behalf.

b. Actinium agrees to provide to the Site and the Investigator the information necessary to properly conduct the Study, including without limitation, the Protocol, the Investigator's Brochure and data of any prior investigations of the Study Drug. Actinium agrees to provide any new information related to the safety and efficacy of the Study Drug as such information becomes available during the course of the Study. Actinium advises the Site and the Investigator that the effectiveness and safety in humans of the Study Drug have not been fully investigated.

c. Actinium shall provide, free of charge, the necessary quantity of the Study Drug. Actinium or Aptiv shall ship the Study Drug only to the Site.

d. Aptiv shall monitor the Study and shall require evidence that IRB review and approval are obtained.

e. Actinium agrees that Site, its affiliates and all Study team members shall have the sole authority over the clinical care of the Study subjects and nothing in this Agreement shall prevent Site or Investigator from taking any action which is, in the reasonable medical judgment of the Study team members, in the Study subject's best interest. Any time Actinium or Aptiv becomes aware of a significant Study subject safety issue it will communicate such information to Site. Actinium further agrees to promptly report to Site the results of any monitoring reports that could affect the safety of Study participants, influence the conduct of the Study, alter the Institutional Review Board ("IRB") approval to continue the Study, and/or affect the willingness of Study Subjects to continue in the Study. During the Study and after its completion, Actinium shall promptly report to Site and the Investigator any Study results that could directly affect the safety or medical care of Study Subjects. Actinium acknowledges and agrees that Site may communicate any of the aforementioned findings to both current and former Study subjects, as well as any participants in studies at Site using the same Study Drug or treatment regimen.

5. Responsibilities of Site

a. The Site represents and certifies that Investigator is an employee of the Site, and is sufficiently qualified by training and experience to conduct the Study using the Study Drug. A true and complete copy of the Investigator's current curriculum vitae has or will be forwarded to Actinium prior to the start of the Study.

b. The Site will not use in any capacity, in connection with the Study, the services of any individual, corporation, partnership or association which:

(i) is debarred under 21 U.S.C. 335a; or

(ii) is disqualified as a clinical investigator under the provision of 21 C.F.R. 312.70. In the event that Site becomes aware of the debarment or disqualification of any such individual, corporation, partnership or association providing services under this Agreement, Site shall notify Actinium.

c. In addition to and without limiting the obligations of Section 2a above, the Site agrees to conduct the Study in strict accordance with this Agreement, the Protocol, all associated documentation provided by Aptiv (e.g. CRF, CRF Completion guidelines, User Manuals, and Regulatory Binder documentation), applicable regulations, and all conditions of approval imposed by the reviewing IRB or FDA. The Site shall permit the use of the Study Drug only on Qualified Subjects under Investigator's supervision only for the purpose of the Study. The Site shall not supply the Study Drug to any other person or entity not authorized under FDA regulation to receive it, nor to any person for any purpose other than the Study. The Site shall not modify or alter the Study Drug. The Site shall maintain proper control of all Study Drug inventory and return of unused quantities of Study Drug as required by regulation and directed by Actinium at Actinium's expense. The Site agrees that the Investigator will supervise or perform all testing of the Study Drug involving human subjects.

d. Site shall maintain all source documents/records and Study data for a period of two (2) years following the date a marketing application is approved, or until two (2) years after the withdrawal of the application in accordance with 21 CFR 312.62 (c) or for such longer period as the parties mutually agree but in no instance longer than five (5) years. Neither Site nor Investigator shall destroy or permit the destruction of any Study data without prior written notification to the Actinium.

e. The Site agrees to use best efforts, on a diligent and continuous basis, to recruit Qualified Subjects, to prepare true and accurate Case Report Forms, to make all required reports, to complete the Study within the time limits set forth in this Agreement, and to perform all long-term follow-up examinations, visits and data collection as required by the Study and/or regulation from time to time. In addition, all CRF and Study Data shall be submitted to Aptiv promptly. Actinium may utilize all data and results for any reasonable purpose, including regulatory submissions, subject to the provisions of this Agreement. Site may use the research results and associated data generated for any reasonable purpose, including, without limitation, non-commercial research, educational purposes, health care operations and patient care purposes. Site will be free to publish, present and disclose the research results and associated data generated in the Study in accordance with the Publication provision of this Agreement. This provision shall survive termination or expiration of this Agreement.

f. The Site shall exclusively use the Informed Consent Form. The Site agrees that such Informed Consent Form must be provided to and acknowledged by Actinium prior to use. The Site agrees that the Investigator shall not conduct Screenings, enroll any Potential Subject nor use the Study Drug on any Potential Subject who has not given written consent by signing and dating the specified Informed Consent form. The Site agrees that Investigator shall ensure that all the requirements for obtaining informed consent are met.

g. The Site agrees that Investigator will follow good medical practice and exercise the customary standard of care practiced in his professional specialty.

h. The Site ensures that Investigator will provide sufficient accurate fmancial disclosure information to allow Actinium or Aptiv to submit a complete and accurate certification or disclosure statement as required under 21 CFR part 54, as it may be amended from time to time. Further, the Site agrees that the Investigator shall promptly update this financial disclosure information if any relevant changes occur during the course of the Study and for one (1) year following completion of the study. The Site also agrees that Investigator will update this financial disclosure information promptly upon request by Aptiv. The Site understands that this information shall be submitted to the FDA in any marketing application involving the Study Drug. This provision shall survive termination or expiration of this Agreement.

i. The Site agrees to provide sufficient resources to the IRB to enable the IRB to operate as required by law, regulation and its own procedures.

j. During the Study, and subject to the terms of this Agreement, Site agrees to use reasonable efforts to cause the Investigator to conduct the Study pursuant to the Protocol and to provide to Investigator reasonable access to all Site facilities, staff and resources which the Investigator determines necessary or desirable to the conduct of the Study. Without limiting the foregoing, the Site agrees to make available a Study coordinator, qualified by training and experience and reasonably acceptable to Actinium and Aptiv, to manage all administrative functions of the Study, including but not limited to, meeting with Actinium and Aptiv. All such Site facilities, staff and resources used in the Study are subject to the supervision of the Investigator.

k. The Site agrees to provide the facilities necessary to the conduct of the Study, and to notify Actinium and Aptiv promptly, of any failure of the Investigator, the Site or the IRB itself, to follow the Protocol for the Study.

l. The Site agrees to allow Aptiv and Actinium reasonable access upon advance notice during Site's regular business hours to the study site and to facilities and staff as reasonably needed to conduct long-term follow-up of Study subjects, at Aptiv's expense. The Site will ensure that the Investigator will be available, during regular business hours, to meet with a study monitor to review the status of the Study and discuss any pending issues. Aptiv will provide no less than five (5) days advance notice of monitoring visits and will use all reasonable efforts to coordinate the scheduling of the visits with the Investigator and Study Coordinator.
m.The Site agrees to allow Actinium and Aptiv reasonable access upon advance notice during Site's regular business hours, to Study Data, including without limitation, patient records (subject to patient consent), and Case Report Forms, as necessary for completion of the Study, long-term follow-up, and compliance efforts, at Actinium's expense.

m. The Site agrees to allow Actinium and Aptiv reasonablee access upon advance notice during Site's regular business hours, to Study including without limitation, patient records (subject to patient consent), and Case Report Forms, as necessary for completion of the Study, long-term follow-up and compliance efforts, at Actinium's expense.

n. The Site represents and certifies that it will not use in the Study, in any capacity whatsoever, whether as employee, consultant, contractor or agent, the services of any individual or entity who has been disbarred under Section 306 of the Federal Food, Drug and Cosmetic Act, or any other section of said act or its successor. Unless prohibited by law, the Site agrees to notify Aptiv immediately if any individual or entity involved in this Study is the subject of a disbarment proceeding or becomes disbarred.

o. In the event the Investigator becomes unable to complete the Protocol for any reason, Site will, to the extent possible, propose a substitute Investigator with qualifications and experience at least equal to or greater than those of the Investigator for Actinium's approval, which approval shall not be unreasonably withheld. In the event Actinium and Site agree upon a substitute Investigator, this Agreement shall continue in full force and effect. If Actinium and Site are unable to agree on a substitute Investigator, this Agreement may be terminated in accordance with the provisions of this Agreement.

p. Subparagraphs 5H-5P shall survive termination or expiration of this Agreement.

q. The Site and Investigator agree to notify Aptiv and Actinium as soon as possible, but in no event later than twenty-four (24) hours after each occurrence of an adverse, serious or unexpected event, or any deviation in the Protocol permitted by 21 CFR 312.60(a)(2). The Investigator shall complete all reports when and in the manner required by 21 CFR 312.62 and 312.64. The Investigator shall make all other reports as required by 21 CFR 312.62 and 312.64.

r. The Site agrees to cooperate with any study monitor designated by Aptiv to monitor this Study. The Site agrees to cooperate with authorized FDA employees conducting an audit or inspection, in the manner required by 21 CFR 312.68. The Site shall notify Aptiv and Actinium promptly of any request for an audit of the Study by the FDA or any other governmental agency. If any inspection occurs and unless prohibited by law, the Site will provide Actinium and Aptiv with copies of all auditor (including FDA and IRB) materials, correspondence, statements, forms and records that are received by the Investigator or the Site. Actinium and Aptiv will shall assist the Investigator in responding to any FDA or IRB correspondence and promptly implementing any necessary corrective action. This provision shall survive termination or expiration of this Agreement.

s. The Site represents and certifies that its Investigator has made all disclosures required regarding conflict of interest in connection with this Study.

t. The Site hereby assures Actinium that the Study will be reviewed and approved by its IRB before any Study Drug is tested on a human subject, and further, that said IRB is functioning in compliance with the applicable regulations and all times. The Site shall provide, upon request, evidence of IRB approvals related to this Study in a timely manner. This provision shall survive termination or expiration of this Agreement.

6. Payment

a. Actinium will pay to Site, subject to the terms and conditions of this Agreement the sum of US$ 32,103.68 for each Completed Subject of the Study, as set forth in the Site Budget and Payment Schedule, attached to and made part of this Agreement as Exhibit B. In no event shall payments to the Site for each Completed Subject, up to a maximum of sixty (60) Completed Subjects, exceed the amount set forth in the attached Site Budget and Payment Schedule. All payments are gross in US Dollars; all approved invoices are net thirty (30) days. All costs outlined on the budget shall remain firm for the duration of the Study, except that Actinium will reimburse Site for cost increases due to Protocol amendments and Actinium written instructions. Actinium will provide for payment for such increased costs in an amendment to this Agreement. If not budgeted, a one-time clinical trial IRB review fee, and, if applicable, fees for continuing IRB reviews will be invoiced per the appended mutually agreed to budget.

Payment of all sums due hereunder shall be made by check payable to the "Trustees of the University of Pennsylvania" and sent to the following address:

Office of Research Services
University of Pennsylvania
P-221 Franklin Building
3451 Walnut Street
Philadelphia, PA 19104-6205
ATTENTION: Executive Director (Per1/#10036086)

Site Tax Identification Number: 23-1352685

b. Any additional payments must be approved in advance by Actinium in writing.

c. The Site agrees to be responsible for invoicing Actinium in accordance with the Budget and Payment Schedule (Exhibit B).

d. Intentionally omitted.

e. In no event is Actinium required to make any payment for any costs incurred with respect to Non-Qualified Subjects entered into the treatment phase of the Study or for any Subject who has not given written Informed Consent to participate in the Study.

f. Nothing contained herein shall be construed as requiring Site, the Investigator or any Site research staff to work on any project or process which is prohibited by law or by any international treaty to which the United States of America is a party, or which may be harmful or detrimental to public health, patient safety or good clinical care or which may be considered to be immoral. No payment is subject to submission of favorable clinical results or evaluations.

g. Notwithstanding the foregoing, in no event shall any payment be made under this Agreement which is contrary to 42 USC 1320a-7b, as it or any successor law may be in effect from time to time. In accordance with the statute, in no event shall the Investigator or any member of his immediate family, receive any payment, royalty, form of compensation, or remuneration of any nature, sort or description, for any use of all or any portion of the Study Drug by any hospital, clinic or other Site where he works. In no event shall any request for reimbursement or payment under any private or public health insurance carrier be made which is contrary to law.

7. Publications

Actinium acknowledges that it is Site's policy that the results of the Study must be publishable and the Investigator and others employed by Site or who are engaged in the Study be permitted to present at symposia, national or regional professional meetings and to publish in journals, theses or dissertations or otherwise in their sole discretion, the methods and results of the Study.

The parties recognize that because this is a multi-center Study, there is a need for a coordinated approach to any publication or public disclosure of the data or results of this Study. To that end, there will be no publication or public disclosure of such data or results by the Site or Investigator until a multi-center publication is submitted for publication or presentation by Actinium, or its designee. However, if no multi-site publication is submitted by Actinium or its designee within twelve (12) months of the completion, abandonment or termination of the Study from all sites or after Actinium confirms there will be no multi-center Study publication, whichever occurs first, the Site and the Investigator shall be free to publish for non-commercial purposes the Study results from their Site as follows. If the Site or the Investigator wishes to publish or publicly disclose Study data and results the Site will submit any proposed manuscript or publication to Actinium for review and comment at least thirty (30) days prior to its submission for publication or other disclosure. The Site will review and consider in good faith comments received from Actinium during such thirty (30) day period. If requested to do so by Actinium, Site agrees to remove Confidential Information provided by Actinium prior to submitting the manuscript or publication, excluding Study data and results. Actinium will make every reasonable attempt to notify the Site within said thirty (30) days of receipt of the proposed publication whether it is desirable to file a patent application on any inventions contained in the proposed publication. In the event Actinium decides to pursue patent protection, Actinium shall request that the Site defer publication for an additional sixty (60) days to permit the filing of any desired patent application and Site shall honor such request.

As part of the Site's compliance with guidelines to facilitate publication of reports resulting from the Study (for example, the International Committee of Medical Journal Editors or World Health Organization guidelines), Site shall have the right to register the Study, if Actinium does not so register, and make publicly available the information registered about the Study, and such information shall not be deemed Confidential Information.

8. Confidential Information

a. Actinium and/or Aptiv shall not disclose confidential information to the Site unless it is necessary to the Study. Any confidential information will be in writing and clearly marked by Actinium and/or Aptiv as "Confidential" or if disclosed orally, written notice will be provided within thirty (30) days of disclosure ("Confidential Information"). Site shall protect the Confidential Information with the same degree of care as Site's own confidential information (hereafter referred to collectively as "Confidential Information"). Such Confidential Information shall remain the confidential and proprietary property of Actinium and shall be disclosed to Site's employees, affiliates or agents on a "need to know" basis, and who are bound by similar obligations to protect the Confidential Information from unauthorized disclosure.

b. Subject to the terms and conditions of this Agreement, each party hereby agrees that during the term of this Agreement and for a period of five (5) years thereafter, Site shall (i) not publicly divulge, disseminate, publish or otherwise disclose any of the Confidential Information without prior written consent; (ii) limit access to the Confidential Information to those of the Site's employees, students and agents who are involved in the Study and have a need for such confidential information in connection with the conduct of the Study, and (iii) cause the return to Actinium and/or Aptiv any Confidential Information, promptly upon termination of this Agreement or upon Actinium's and/or Aptiv's request, except those copies that shall remain with Site as required by law, the IRB or institutional policy, for compliance purposes and/or the administration of sponsored projects at the Site. Site shall maintain the confidentiality of all Confidential Information retained in accordance with this Agreement.

c. Notwithstanding the foregoing, the obligations of confidentiality and nondisclosure shall not apply to the following Confidential Information:

(1) that was in the public domain prior to the date of disclosure to the Site and/or Investigator, or becomes part of the public domain by publication or otherwise through no fault or unauthorized act or omission on the part of the Site and/or Investigator;

(2) that is disclosed to the Site and/or Investigator by a third party apparently legally entitled to disclose such information;
(3) that was rightfully in the possession of or already known to the Site and/or Investigator as demonstrated by prior written records;
(4) that is independently developed by the Site and/or Investigator without reference to any Confidential Information, as demonstrated by competent evidence; or
(5) that is required to be disclosed to a government authority or by order of a court of competent jurisdiction, provided that reasonable advance notice is given to Actinium and/or Aptiv whenever practicable, so that Actinium may take all reasonable steps to limit the scope of such disclosure.

d. Research results and associated data generated by this Study conducted under this Agreement will be considered confidential until the earlier of: (i) the first publication or presentation thereof of data according to the terms of this Agreement; or (ii) one (1) year after conclusion, abandonment or termination of the Study at all sites. To the extent that research results and associated data are included in an electronic medical record of Site's, such records are held in confidence as a matter of Site policy and are disclosable only pursuant to HIPAA.

e. In the event Actinium and/or Aptiv comes into contact or otherwise has access to Study subject's medical records, Actinium and/or Aptiv shall hold in confidence the identity of the subject and shall comply with all applicable law(s) regarding the confidentiality of such records. Actinium and/or Aptiv will review and approve of the informed consent document and any HIPAA authorization document. Actinium and/or Aptiv agree that, should either gain access to any Protected Health Information (as such term is defined in HIPAA) of Study subjects, Actinium and/or Aptiv will treat such Protected Health Information in accordance with the informed consent document, any HIPAA authorization document, and all applicable laws and regulations. If Actinium and/or Aptiv gains access to any Protected Health Information that is not covered by an informed consent or HIPAA authorization, Actinium and/or Aptiv shall hold such information in the strictest confidence, shall not remove records containing such information from the Site and, if inadvertently removed, shall immediately return any records containing such information to the Site.

9. Intellectual Property

The parties acknowledge that it is unlikely that an invention will result during the performance of the Study. It is recognized and understood that the existing inventions and technologies of Actinium and Site are their separate property, respectively, and are not affected by this Agreement and neither party shall have any claims to or rights in such existing inventions and technologies of the other party.

Title to any inventions or discoveries arising from this Study and conceived and reduced to practice solely by Actinium employees shall be owned by Actinium. Title to any inventions or discoveries arising from this Study and conceived and reduced to practice solely by Site employees shall be owned by Site. Title to any inventions or discoveries arising from this Study and conceived and reduced to practice jointly by Site employees and Actinium employees shall be jointly owned. Site will offer Actinium the first opportunity to enter into a royalty-bearing or royalty-free license, as appropriate, for Site's rights in any invention or discovery covered by this Section 9. If a license has not been executed within ninety (90) days of Site's disclosure of the invention or discovery to Actinium, Site shall be free to seek another potential licensee. Any license or other rights granted to Actinium pursuant to this Agreement shall be subject, if applicable, to the rights of the United States government reserved under Public Laws 96-517, 97-256 and 98-620, codified at 35 U.S.C. 200-212 and to Site's rights to use inventions for internal, noncommercial research.

The parties further acknowledge and agree that Actinium is the owner or authorized licensee of the Study Drug. Neither Site nor Investigator shall obtain any license to make, have made, sell, distribute, rent, lease, or otherwise transfer or use the Study Drug or its derivatives. The Confidential Information is provided to Site and Investigator for use only on and in combination with the Study Drug solely for the performance of the Study and may not be used on or with third party products without Actinium's prior express written permission. This Agreement grants no implied rights.

10. Indemnification

a. Actinium shall indemnify, defend and hold harmless the Site, its trustees, officers, medical and professional staff, affiliates, employees, and agents and their respective successors, heirs and assigns (collectively the "Site Indemnitees"), against any liability, damage, loss or expense (including reasonable attorneys' fees and expenses of litigation) incurred by or imposed upon the Site Indemnitees or any one of them in connection with any third party claims, suits, actions, demands or judgments due to (i) any side effect, adverse reaction, illness or injury (including death) occurring to any Qualified Subject as a result of the Study Drug, performance of a Study test or procedure, use of any equipment or supplies required by the Protocol, or complying with the Protocol or any instructions provided by Actinium or approved by Actinium and (ii) Actinium's use of the Study results.

Actinium's indemnification shall not apply to any liability, damage, loss or expense to the extent attributable to (i) the negligent activities or intentional misconduct of the Site Indemnitees (ii) failure of the Site Indemnitees to adhere to the terms of the Protocol for the Study or follow all written instructions provided by Actinium or Aptiv or (iii) actions of the Site Indemnitees in violation of applicable laws or regulations. As between the parties, in no event shall Actinium have any liability of any nature, sort or description attributable to the exclusions of this sub-paragraph and Site will accept full responsibility and liability for its own negligence, willful misconduct or other wrongful acts or omissions.

This obligation to indemnify is subject to the Site Indemnitees giving Actinium prompt written notice of any claim, suit or demand and full control of any defense and settlements of such claim, suit or demand. The Site Indemnitees will also notify Actinium promptly in the event any one of them becomes aware of any potential claim, or likelihood of any potential claim of indemnification rights under this Section. Site Indemnitees will cooperate fully, at Actinium's expense, in the defense or settlement of any claim or action. Actinium shall not dispose or settle any claim admitting liability on the part of, or impose any obligation on the Site or any other Site Indernnitee without Site's prior written consent.

This Paragraph shall survive expiration or termination of this Agreement.

b. Study-Related Injury.
Actinium agrees to pay for all reasonable costs incurred for the care and treatment of any illness or injury to a Subject resulting from his or her participation in the Study unless Site's negligence or willful misconduct caused the injury.

11. Insurance

Actinium shall, at its sole cost and expense, procure and maintain commercial general liability insurance or equivalent self insurance in amounts not less than $2 million per incident and $5 million annual aggregate with respect to the Study.

Site represents and certifies that it possesses and shall carry at its own expense commercial general liability insurance with limits of not less than $1,000,000 per occurrence and $2,000,000 in the aggregate, and professional malpractice insurance with limits of liability as required by law.

12. Term and Termination.

Unless earlier terminated in accordance with its terms, this Agreement shall commence on the date when it is signed by all parties, (the "Effective Date", and shall continue in full force and effect until the Study has been completed.

a. This Agreement shall be terminated immediately in the event that: 1) the authorization and IND issued by the FDA is withdrawn, 2) the approval of the IRB is withdrawn; or 3) the Investigator has not included any Qualified Subjects in the Study in accordance with Paragraph 3.c. and after the Study has been open to enrollment for twenty-four (24) months.

b. Any party may terminate this Agreement upon sixty (60) days prior written notice in the event of any material breach by another party of any material term or condition hereof; provided such breach is not cured within said sixty (60) day notice period.

c. Any party may terminate or suspend this Study immediately for the safety of Subjects, pursuant to applicable regulations. In such case, the party terminating or suspending the study will provide prompt written notice to the other party.

d. d. Upon the effective date of expiration or termination, there shall be an accounting conducted by the Site. Within thirty (30) days after receipt of the fmal accounting for a Study, Actinium will make payment to the Site for:
(i) All services rendered and monies expended by the Site until the date of termination not yet paid for; and
(ii) Any non-cancelable obligations, including any costs associated with termination, incurred for the Study by the Site prior to the effective date of termination

e. Termination of this Agreement by either party shall not affect the rights and obligations of the parties accrued prior to the effective date of the termination. All obligations which are by their nature continuing shall survive the expiration or termination of this Agreement.

13. Effect of Termination

Except as otherwise provided herein, termination of this Agreement shall not be construed to release either party from any obligation hereunder which has matured prior to the date of said termination. Upon termination of this Agreement, Site shall promptly return to Aptiv any unused Study Drug at Aptiv's expense and shall provide any remaining Study Data, including without limitation, all completed CRFs.

14. Diversity in Study Population - Translation Services

Intentionally omitted.

15. Communications

All medical/scientific and other communications, reports and notices shall be delivered by hand, by facsimile, by secure electronic means or sent by first class mail postage prepaid and addressed as follows:

If to Aptiv: Anthony Apicella
Aptiv Solutions

225 Turnpike Rd.
Southborough, MA 01772

If to Actinium: Dragan Cicic, COO/CMO
501 Fifth Avenue, 3rd Floor
New York, NY 10017

If to Site: University of Pennsylvania
Office of Research Services
P-221 Franklin Building
3451 Walnut Street
Philadelphia, PA 19104-6205
Attention: Executive Director

If to Accounts Receivable: same address as above

If to Investigator: Alexander Perl, M.D.
Assistant Professor of Medicine
Division of Hematology/Oncology
University of Pennsylvania
713 BRB II/III
421 Curie Boulevard
Philadelphia, PA 19104

16. Use of Names

The Site and Actinium will obtain prior written permission from each other before using the name, symbols and/or marks of the other in any form of publicity in connection with the Study. This shall not include legally required disclosure by the Site or Actinium that identifies the existence of the Agreement. Further, Actinium's use of the name, symbols and/or marks of the Site, or names of the Site's employees, shall be limited to identification of the Site as the Study site and the Study staff as participants in the Study. Notwithstanding any provision in this Agreement to the contrary, Site reserves the right to include the Study on its own clinical trials registry in a manner consistent with the requirements of the International Committee of Medical Journal Editors. Actinium, Site and Investigator may also, without the prior consent of the other party, disclose their participation in the Study (including the name of the sponsor or site, name of the Study, Protocol number, and funding amount) as required by applicable law or regulation or court orders, or with respect to the Site and Investigator, for other academic purposes.

17. General Provisions

a. All rights and remedies hereunder are exclusive and not cumulative.

b. This Agreement may be amended only by written agreement signed by all parties.

c. It is expressly agreed by the parties hereto that the Site, the Investigator and Aptiv are independent contractors and nothing in this Agreement is intended to create an employer relationship, joint venture, or partnerships between the parties. No party has the authority to bind any other.

d. This Agreement, including all exhibits, constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all proposal, negotiations and other communications between the parties and the Investigator, whether written or oral, with respect to the subject matter hereof. In the event of any inconsistency between this Agreement and either an agreement between the Investigator and Actinium (or Aptiv) or the Protocol, the terms of this Agreement shall govern.

e. If any provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions of this Agreement shall not be impaired thereby, and the party against whom the holding is made, shall be entitled to substitute a similar provision that preserves the benefit of the bargain.

f. The failure of any party to insist on strict performance of any provision of this Agreement or exercise any right hereunder will not constitute a waiver of that provision or right.

g. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original as against the party whose signature appears thereon, but all of which taken together shall constitute but one and the same instrument

h. Each party hereto agrees to execute, acknowledge and deliver such further instruments and do all such further acts as may be necessary or appropriate in order to carry out the purposes and intent of this Agreement.

i. The paragraph headings contained in this Agreement are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement.

j. Neither this Agreement nor the rights or obligations hereunder shall be assignable or otherwise transferred or subcontracted without the other party's prior written consent.

k. Neither party shall be liable for any failure to perform as required by this Agreement to the extent such failure to perform is due to circumstances reasonably beyond such Party's control, including, without limitation, labor disturbances or labor disputes of any kind, accident, failure of any governmental approval required for full performance, civil disorders or commotion, acts of aggression, acts of God, energy or other conservation measures imposed by law or regulation, explosions, failure of utilities, mechanical breakdowns, material shortages, disease, or other such occurrence.

{Signatures on Next Page}

IN WITNESS WHEREOF, the parties intending to be legally bound have caused this Agreement to be executed by their duly authorized representatives or, in the case of the Investigator, have duly executed this Agreement, on the dates stated beneath their names:

SITE
Accepted by:

Name: Kerry E. Wilson, Esq.
Title: Associate Director, Corporate Contracts
Dated: 11/20/12

Read and Acknowledged by:
INVESTIGATOR:

Name:
Investigator: Alexander Perl, M.D.
Dated: 11/14/12

ACTINIUM PHARMACEUTICALS, INC.
Accepted by:

Name: DRAGAN CICIC
Title: COO/CMO
Dated: 11/26/12

Exhibit A

Protocol incorporated by reference.

EXHIBIT

Exhibit B

Budget and Payment Schedule

EXHIBIT

Schedule of Events/Assessments

A Phase I/II Study of Low Dose Cytarabine and Lintuzumab-Ac225 in Older Patients with Untreated Acute Myeloid Leukemia

	Baseline	LDAC Cycle 1 (days 1-28)					LDAC Cycle 2-12 (months 2-12)										
Assessment	(within 14 days prior to treatm.)	1-10	14-17	17-21	22-28		2	3	4	5 through 12							
Baseline Assessments																	
ICF(1)	130																
Inclusion/Exclusion Review	195																
Demographics, Medical History	150																
Hematology (2)	x	xx	xx	xx	xx		xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Serum Chemistry (3)	x		x		x		xx	x	x	x	x	x	x	x	x	x	x
Bone Marrow Examination (4)	850				x		x		x								
PT, PTT, Fibrinogen	x																
Thyroxane, TSH	80							80			80			80			80
PE	x																
Urinalysis (5)	28		x		x		x	x	x	x	x	x	x	x	x	x	x
Chest X-ray (6)	150																
ECG and Echcardiogram (6)	1350																
Vital signs (7)	X		100	100													
HAHA (8)	150							150	150			150					
Premedications (9)		x	x	x	x												
Study Drug																	
LDAC (10)		x					x	x	x	x	x	x	x	x	x	x	x
Lintuzumab-Ac225 (11)			API supply	API supply													
Radiation Nephropathy Prophylaxis																	
Furosemide (12)- price is for cost of all drugs during treatment		25															
Spironolactone (13)- price is for cost of all drugs during treatment							88										
Concomitant Medications (14)	65	65	65	65	65		65	65	65	65	65	65	65	65	65	65	65
Adverse Event Assessment (15)		65	65	65	65		65	65	65	65	65	65	65	65	65	65	65
Survival		x	x	x	x		x	x	x	x	x	x	x	x	x	x	x
Patient Work Total	3158	155	230	230	130		218	360	280	130	210	280	130	210	130	130	210
TX room/Chair Time- Clinical Translational Research Center (CTRC)			400	400													
CTRC Staff Fees			265	265													
Hotel Accommodation			INV	INV													
Investigator Fee	350	300	300	300	300		150	150	150	150	150	150	150	150	150	150	150
Nuclear Medicine Fee			700	700													
Nursing Fee	450	350	350	350	350		200	200	200	200	200	200	200	200	200	200	200
Data manager	400	300	300	300	300		300	300	300	300	300	300	300	300	300	300	300
Study Coordinator	350	200	200	200	200		200	200	200	200	200	200	200	200	200	200	200
Parking	25	25	25	25	25		25	25	25	25	25	25	25	25	25	25	25
Per patient fees sum	4733	1330	2770	2770	1305		1093	1235	1155	1005	1085	1155	1005	1085	1005	1005	1085
Total per patient fee	24,821.00																
Applicable Overhead (28%)																	
Total per patient fee w/ OH	31,770.88																

START-UP/ADMINISTRATIVE FEES	(inclusive of 28% overhead)
Administrative Start-up	13500
Pharmacy/Nuclear Medicine Start-up	2500
Start-Up Fees Grand Total	16000

INVOICEABLE FEES	Inclusive of 28% overhead
Annual Regulatory Maintenance Fee	5000/year
Annual Pharmacy Maintenance Fee	150/year
Pharmacy Close-out Fee	500
Study Close-out Fee	500
Document Storage Fee	500
Administrative Fees Grand Total	16950
Symbols used:	
Standard of care	x
Pricing to be filled in	

(the number of x signs denotes the number of procedures in the given period)

[1] Informed consent form (ICF) obtained prior to any study-related procedures

[2] Hematology assessments: complete blood count (CBC), Red Blood Cell count (RBC) with WBC differential and platelet count, hemoglobin, hematocrit. Timetable: Baseline, twice per week for the 1st 2 months, then CBC once every week.

[3] Serum chemistry: Comprehensive biochemistry profile (including serum electrolytes, BUN, creatinine, glucose, calcium, phosphate, total protein, albumin, alkaline phosphatase, AST, total bilirubin), PO4, LDH, and uric acid. Assessments timetable: Baseline, every other week for the 1st 2 months, then every month.

[4] Bone marrow aspiration or biopsy: morphology, cytogenetics (if not previously done), immunophenotyping, PCR analysis if applicable. Assessment timetable: Baseline, just before cycle 2 LDAC, after the end of cycle 4 LDAC, upon disease progression or before the 2nd cycle LDAC if the peripheral blood count shows ANC ≥ 1000 and the platelet count is ≥ 100,000 after 225Actinium-HuM195 treatment.

[5] Urinalysis to include: pH, protein, ketones, Hb or blood, specific gravity and if abnormal, microscopic a examination of the sediment. Timetable: every other week for the 1st month, then monthly.

[6] ECG and Echocardiogram: within 30 days of study entry

[7] Vital signs to include temperature, pulse rate, respiration rate, blood pressure. Timetable: 15 minutes prior to each study drug infusion, every 15 minutes during the infusion, then 30, 60, 90 and 120 minutes after the infusions are completed.

[8] Human anti-human antibody response: Baseline, then 2, 3 and 6 months after the last dose of study drug. Please include only payments for collecting and shipping from your site, as the tests will be done centrally.

[9] Allopurinol, 300-600 mg po/day one day before administration of Lintuzumab-Ac225 and continued for 7 days after the 2nd (last) dose of study drug. For subjects with ANC ≤500/µL at study start, prophylactic antibiotic and antifungal therapy should be used.

[10] First cycle of LDAC, 20 mg subQ every 12hrs X 10 D, given prior to the administration of study drug, then cycle 2 given 3 to 4 weeks after the 2nd dose of study drug for up to 12 cycles total.

[11] 1st divided dose given 4-7 days after completion of LDAC cycle 1. 2nd divided dose given 4-7 days after dose #1

[12] 40 mg po/day starting 1 day before LDAC administration and continuing until the end of cycle 1 (day 28)

[13] 25 mg po/day starting 1 day after the last dose of furosemide at the end of cycle 1.

[14] Concomitant medications: all medications taken for 28 days prior to the 1st dose of study drug and then all medications while on study

[15] Adverse event assessments begin at the time of LDAC administration and continue until 30 days after the last dose of the study drug.

Exhibit 10.17

CLINICAL TRIAL AGREEMENT

THIS AGREEMENT is made and entered into by and between SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH and its affiliate MEMORIAL HOSPITAL FOR CANCER AND ALLIED DISEASES both having a principal place of business at 1275 York Avenue, New York, New York 10065, membership corporations of the State of New York (hereinafter " SKI/MEMORIAL"), and ACTINIUM PHARMACEUTICAL INC., a corporation having its principal place of business at 391 Lafayette Street, Newark, NJ 07105 (hereinafter "COMPANY"). This Agreement is effective as of the date of the last party to subscribe below (hereinafter "Effective Date").

WITNESSETH

WHEREAS, SKI/MEMORIAL will conduct a clinical trial entitled "A Phase I/II Study of Low Dose Cytarabine and Lintuzumab-Ac225 in Older Patients with Untreated Acute Myeloid Leukemia " (IND # 10807), hereinafter "Study"), which is a clinical investigation using a proprietary drug which is not, at this time, cleared for human use by the U.S. Food and Drug Administration ("FDA"). Any use of this drug must be pursuant to an Investigational New Drug Exemption issued to Company by the FDA, and

WHEREAS, Aptiv Solutions, Inc., a Delaware corporation having a principal place of business at 1925 Isaac Newton Square, Suite 100, Reston, VA 20190 ("Aptiv") has been engaged by Company to oversee and manage the Study and

WHEREAS, COMPANY conducts business in the development, manufacture and sale of therapeutic products, and is interested in sponsoring the Study in exchange for access to the data resulting from the Study.

NOW, THEREFORE intending to be legally bound and upon the terms, conditions and covenants hereinafter set forth, SKI/MEMORIAL and COMPANY agree as follows:

ARTICLE 1-THE STUDY

1.1 SKI/MEMORIAL has established and maintains a Leukemia Service, a Division of Hematologic Oncology, in the Department of Medicine and has acquired expertise in conducting research investigations, clinical trials and laboratory test evaluations.

1.2 The Study under this Agreement will be conducted under a protocol approved by SKI/MEMORIAL'S Human Subject Institutional Review Board (hereinafter "IRB"), based on the draft protocol annexed hereto as Exhibit A (hereinafter "Protocol"). SKI/MEMORIAL shall submit the Protocol for approval to the IRB and Company shall submit Protocol to the FDA. COMPANY shall supply Lintuzumab-Actinium-225 after COMPANY has:

a. received a mutually executed copy of this Agreement;

b. received documentation from SKI/MEMORIAL that SKI/MEMORIAL'S IRB has approved the Protocol.

Promptly after SKI/MEMORIAL'S IRB has approved the Protocol, SKI/MEMORIAL shall forward a copy as approved to COMPANY. SKI/MEMORIAL shall also forward any subsequent change to the Protocol to COMPANY. Except for Protocol changes required by the FDA, all Protocol changes must be approved by COMPANY.

1.3 As part of this Agreement, SKI/MEMORIAL shall appoint Joseph G. Jurcic, M.D. and/or such other physicians as it may deem appropriate as investigators (hereinafter "Investigators") to oversee the Study. If Dr. Jurcic should become unable to complete the Study, SKI/MEMORIAL shall consult with COMPANY regarding the appointment of a new principal investigator.

1.4 The Investigators on behalf of SKI/MEMORIAL shall prepare and maintain records and case histories with all pertinent data documented as required by the Protocol on case report forms supplied by COMPANY. The parties shall hold all patient data confidential, and information provided to COMPANY shall not disclose patient health information, except to the extent that the patient consent form permits. COMPANY may disclose reports and other information to Aptiv and to an independent data management company, provided Aptly and the management company is bound to hold such information in confidence.

1.5 The Investigators shall also promptly notify COMPANY, Aptiv and the IRB of any adverse reaction in the course of the Study of which they become aware, but in no event shall such notice be later than twenty-four (24) hours after each occurrence of an adverse, serious or unexpected event, or any deviation in the Protocol permitted by 21 CFR 312.60(a)(2). The Investigator shall complete all reports when and in the manner required by 21 CFR 312.62 and 312.64. The Investigator shall make all other reports as required by 2.1 CFR 312.62 and 312.64

1.6 SKI/MEMORIAL and COMPANY agree that in the performance and documentation of the Study they shall adhere to this Agreement, the Protocol and all applicable government laws, rules, regulations and guidelines, including but without limitation the Health Insurance Portability and Accountability Act of 1996 ("HIPAA") and its regulations and official guidance promulgated thereunder, and those of the FDA, including among others the Generic Drug Enforcement Act of 1992 (21 USC §§ 305,306). Certifications and other documents required by these statutes and regulations, such as those relating to financial conflicts of interest and debarment from performing clinical trials, shall be provided as necessary.

1.7 COMPANY shall provide SKI/MEMORIAL with any investigational protocols, preclinical or background information which are germane to the Study.

1.8 Upon SKI/MEMORIAL'S request, COMPANY shall provide, without cost to SKI/MEMORIAL, sufficient amounts of Lintuzumab-Actinium-225 to conduct the Study.

1.9 SKI/MEMORIAL shall permit COMPANY and Aptiv to monitor the progress of the Study through site visits and review of Study reports and related documentation. The parties agree that COMPANY may engage other third parties of COMPANY'S choosing to conduct the Study monitoring.

1.10 SKI/MEMORIAL shall provide the physician, laboratory, statistical and clinical support staff levels of effort required to complete the Study

ARTICLE II — REPORTS

2.1 SKUMEMORIAL shall keep COMPANY and Aptiv advised of the status of the Study via periodic reports. The frequency of reports shall be mutually agreed to by both parties. At any time all case reopt forms and other Study data shall be submitted to Aptiv within ten (10) days of written request. There shall also be a final report of the Study presented to COMPANY and Aptiv within sixty (60) days of the Study completion.

2.2 All reports submitted to COMPANY or Aptiv shall become the property of COMPANY and may be used by COMPANY for its internal uses and for use in communications with the FDA and other regulatory authorities, filing of patent applications by the Company, and otherwise as required by law. If COMPANY desires to release the reports or any contents in the reports to the public domain by any means or methods such as press releases, publications, meeting presentations, COMPANY must first obtain written consent from SKI/MEMORIAL, which consent will not be unreasonably withheld or delayed. Notwithstanding the above, COMPANY shall not release any reports or any contents that could jeopardize publication under Article III.

ARTICLE III — PUBLICATION

Notwithstanding anything contained herein to the contrary including without limitation Article IV, but subject to the provisions of this Article III, SKI/MEMORIAL may freely publish the results of its investigative findings hereunder. The authorship and contents (including scientific conclusions and professional judgments) of any paper submitted shall be determined by SKI/MEMORIAL. SKI/MEMORIAL shall provide COMPANY with a copy of the papers prepared for publication prior to their submission to a scientific journal or presentation at scientific meetings. COMPANY shall have thirty (30) days to review the papers. COMPANY shall not make any editorial changes in the papers, but may delete any of its Confidential Information (as defined in Article V) contained therein. COMPANY personnel shall be acknowledged with customary scientific practice. The parties recognize that because this is a multicenter Study, there is a need for a coordinated approach to any publication or public disclosure of the data or results of this Study. To that end, there will be no publication or public disclosure of such data or results by SKI/MEMORIAL or Investigator until a multi-center publication is submitted for publication or presentation by Actinium, or its designee. However, if no multi-site publication is submitted by Actinium or its designee within twelve (12) months of the completion of the Study from all sites, SKI/MEMORIAL and the Investigator shall be free to publish for non-commercial purposes the Study results in accordance with this Article III.

ARTICLE IV - CONFIDENTIAL INFORMATION

4.1 In order to effectively complete the Study, it may be necessary or desirable for the parties to disclose proprietary, trade secret and/or information relating to patients (hereinafter "Confidential Information") to one another.

4.1.1 All medical records (or other patient infoiation) not transcribed into the case report forms are Confidential Information of SKI/MEMORIAL, and do not need to be marked "Confidential". There shall be no time limit on the parties' obligation to maintain the confidentiality of patient identifiable health information, including information whose identifiers may be ascertained by the exercise of reasonable effort through investigation. Patient identifiable health information shall be protected in compliance with all applicable regulations, rules and statutes. COMPANY agrees to refrain from publishing or disclosing any part of such confidential medical records or from using it except as necessary to discuss and analyze the results of the Study, to ensure research integrity, to communicate with the FDA and other regulatory authorities, and otherwise as required by law or specifically permitted by authorizations or consents signed by Study subjects, or waivers of authorization granted by an IRB overseeing the Study ("Permitted Activities"). COMPANY also agrees to restrict the use and disclosure of any individually identifiable health information gained through the Permitted Activities to its workforce, contractors, subcontractors, Study collaborators and agents who must have access to that information in order directly to support or facilitate the Permitted Activities, and to use the necessary means to bind those parties to these restrictions and requirements, as though these restrictions and requirements applied to these entities directly.

4.1.2 Any other Confidential Information shall be marked as "Confidential" or, if provided to the other party orally. shall be reduced to writing marked as "Confidential" and sent to the other party within ten (10) days of the oral disclosure, except that this requirement shall not apply to patient information, which is always Confidential Information. Each party agrees that such other Confidential Information of the other party disclosed to it or to its employees or an independent data management company shall for three (3) years after disclosure:

a) be used only in connection with the legitimate purposes of this Agreement;
b) be disclosed only to those who have a need to know it; and
c) be safeguarded with the same care normally afforded confidential information in the possession, custody or control of the party holding the Confidential Information.

The foregoing shall not apply when, after and to the extent the Confidential Infatuation Disclosed:

i. can be demonstrated to have been in the public domain prior to the date of the disclosure; or
ii. enters the public domain through no fault of the receiving party; or
iii. was already known to the receiving party at the time of disclosure as evidenced by written records in the possession of the receiving party prior to such time; or
iv. is subsequently received by the receiving party in good faith from a third party without breaching any confidential obligation between the third party and the disclosing party; or
v. was independently developed, as established by tangible evidence, by the receiving party without reference to information or material provided by the disclosing party; or
vi. is required to be disclosed for minimal compliance with court orders, statutes or regulations or SKI/MEMORIAL audits for compliance with such regulatory requirements, provided that prior to any such disclosure to the extent reasonably practicable, the party from whom disclosure is sought shall promptly notify the other party and shall afford such other party the opportunity to challenge or otherwise lawfully seek limits upon such disclosure of Confidential Information.

ARTICLE V — COMPENSATION

5.1 Definition:

For purposes of this Agreement, the following definitions apply:

i. Screening is the process of identifying potential subjects according to the entrance criteria outlined in the Protocol and of conducting the examinations and test specified in the Protocol necessary to select qualified subjects for the Study. For any given subject, the screen phase ends and the treatment phase begins when the subject has been enrolled into a treatment group under the Protocol and has been dispensed any Study Drug or placebo by SKI/MEMORIAL according to the study design and regimen described in the Protocol.
ii. A qualified subject is one who, upon entrance into the treatment phase of the Study, met all of the entrance criteria and none of the exclusion criteria in the Protocol and for whom knowing, written informed consent to participate was obtained in accordance with sub-Article 5.1.i herein.
iii. A completed subject is a qualified subject who completed the full term of the Study and met the minimum attendance and compliance standards in the Protocol so that the Study Drug can be evaluated for safety or effectiveness. A completed case report form is a set of Clinical Research Database (CRDB) generated reports submitted to the COMPANY for a completed subject which meets the requirements set forth in the Protocol.
iv. An incomplete subject is a qualified subject who started the Study but failed to complete the Protocol satisfactorily because of insufficient clinic attendance, poor compliance, voluntary withdrawal, or other violations of the Protocol.

5.2 Amounts of Payment

The compensation to SKI/MEMORIAL for the Study shall be calculated as follows:

i. For each completed case report form (set OI CRDB generated reports) on a completed subject, COMPANY will pay thirty one thousand one hundred eighty five U.S. Dollars ($31,185).
ii. For each case report (CRDB generated report) on an incomplete subject, the COMPANY will pay on a pro-rated basis taking into account that the initialization of the treatment maybe more expensive.
iii. SKI/MEMORIAL will receive no compensation for the examinations and tests conducted in non-qualified subjects under the screening or treatment phases of the Protocol.
iv. A start-up fee of seventy-nine thousand six hundred and twenty three dollars ($79,623) that includes $17,253 to cover costs required to initiate the study and the remainder to cover study costs through the submission of the first two case reports.

5.3 Other Conditions of Payment

i. SKI/MEMORIAL agrees to use reasonable efforts in accordance with industry custom and practice to follow the Protocol, recruit, screen and enroll qualified subjects, prepare case report forms and any reports required in the Protocol.
ii. The parties agree that the screening phase will begin as soon as practicable after the signing of this Agreement. Each subject will be considered to be a completed, or incomplete patient, as appropriate, only after SKI/MEMORIAL has produced all completed case report forms (set of CRDB generated reports) and COMPANY has accepted the completed case report forms (set of CRDB generated reports).

iii. In the event the Study is terminated prior to the anticipated Study completion date as described in Article VII herein, COMPANY will pay actual expenses incurred by SKI/MEMORIAL for all completed and incomplete patients accrued to the date of termination, as detailed above. If the Study is terminated by COMPANY prior to the planned completion date for its convenience and without cause, COMPANY agrees to pay for those subjects active in the treatment phase at the termination date as if they had completed the Study.
iv. The dates and financial arrangements in this Agreement can be modified only by written amendment to this Agreement signed and executed by both parties.

5.4 Schedule of Payment

In consideration for SKI/MEMORIAL'S participation and to cover a portion of the costs associated with the Study, COMPANY shall pay SKI/MEMORIAL as follows:

a. $79,623 within thirty (30) days after the execution of this Agreement; and

b. the remainder, as outlined in Sections 5.2 and 5.3, upon COMPANY'S receipt of final case reports (set of CRDB generated reports) on each group of 3 of the patients enrolled into the Study in accordance with the Protocol. SKI/MEMORIAL anticipates enrolling a total of 15 patients.

The above payments shall constitute full and final compensation to SKI/MEMORIAL under this Agreement unless agreed otherwise in writing by both parties.

5.5 SKI/MEMORIAL shall discuss if COMPANY so requests, budgetary matters with COMPANY, but reserves the right to be the final control on budgetary categories and expenditures.

The checks shall be made payable to Sloan-Kettering Institute for Cancer Research (Sloan Kettering Institute Tax I.D. No. 13-1624182) and shall be forwarded to:

Memorial Sloan-Kettering Cancer Center.
P. 0. Box 29049
New York, New York 10087-9035

COMPANY should note on its check stub or in its transmittal letter that the payment relates to a Clinical Trial Agreement, SK2011-1346, under the direction of Dr. Jurcic.

ARTICLE VI -INDEPENDENT CONTRACTOR

Both parties shall, at all times during the performance of this Agreement, remain as independent contractors and the Agreement shall not make the parties partners, joint venturers, or agents of one another. No party to this Agreement shall have the power to bind or obligate the other party

ARTICLE VII - TERM AND TERMINATION

7.1 This Agreement shall commence on the Effective Date of this Agreement and shall continue until completion as provided in the Protocol, which is estimated to occur twenty four (24) months from the Effective Date hereof.

7.2 This Agreement can be terminated by either SKI/MEMORIAL or COMPANY with or without cause upon thirty (30) days prior written notice without penalty to either party. Notwithstanding any notice period, SKI/MEMORIAL may immediately cease provision of services pursuant to the Protocol if either the Principal Investigator or the IRB determines that immediate cessation is appropriate for patient safety.

7.3 In the event that this Agreement is terminated by COMPANY or for safety reasons prior to completion of the Study, the amount due to SKI/MEMORIAL from COMPANY shall be $ 31,185.00 for each patient who was enrolled in the Study any time between the Effective Date and the date of termination of this Agreement. For purposes of this Agreement enrollment shall mean a patient that has signed the .IRBapproved patient Informed Consent Form for the Study and successfully passed any pretreatment screening that is required.

7.4 If COMPANY terminates the Agreement prior to completion of the Study, COMPANY shall, if permitted by law and requested by SKI/MEMORIAL, supply SKI/MEMORIAL, free of charge, with sufficient Study Material to allow SKI/MEMORIAL to complete the treatment of those patients participating in the Study on the date of SKI/MEMORIAL'S receipt of COMPANY'S telmination notice.

7.5 Sections 1.5, 7.4, 7.5, 11.1-11.5 and Articles IL III, IV, VII, IX, and X shall all survive the termination of this Agreement.

ARTICLE VIII - REPRESENTATIONS AND WARRANTIES

8.1 SKI/MEMORIAL represents and warrants to COMPANY that:

i. all aspects of SKI/MEMORIAL'S facilities which may be used in the performance of the Study have been fully validated and are in compliance with applicable federal, state and local governmental requirements; it will obtain IRB review and approval of informed consent documentation, Study Protocol, and other relevant documentation prior to initiation of the Study;
ii. it will adhere to all aspects of the Protocol, including but not limited to patient enrollment criteria:
iii. SKI/MEMORIAL will receive no compensation for the examinations and tests conducted in non-qualified subjects under the screening or treatment phases of the Protocol.
iv. it will maintain proper control and inventory over the Actinium-225 and Study Drug. 7

vi. Investigators are employees of SKI/MEMORIAL, and are sufficiently qualified by training and experience to conduct the Study and have never been involved in any investigation or research at SKIIMEMORIAL which was terminated by the FDA, National Institutes of Health (NIB) or any sponsor for non-compliance.

8.2 COMPANY represents and warrants to SKI/MEMORIAL that it is authorized to enter into this Agreement, to provide Lintuzumab — Actinium 225 under this Agreement and that its execution, delivery and performance of this Agreement will not conflict with or constitute a default under any other agreement to which it is a party or by which its assets are bound.

8.3 COMPANY represents and warrants that it will not obtain any portion of the Lintuzumab from Protein Design Labs, Inc. (hereinafter "PDL ") or its successors in interest.

8.4 COMPANY and SKI/MEMORIAL represent and warrant to each other that:

(i) Neither they nor their employees, agents and subcontractors who provide services in connection with this Agreement have been excluded from participation in, or otherwise sanctioned by Medicare, Medicaid or any other federal, state or local health care program, and will promptly notify the other party if it or any such entity becomes so excluded or sanctioned during the term of this Agreement.

(ii) They have not been found by the FDA or any other state or federal government agency or enforcement body to have violated any relevant federal, state or local laws, rules or regulations relating to clinical investigations. If it is so found during the term of this Agreement, whether in connection with the Study, or in connection with any other clinical investigations or studies, the party so informed will notify the other party immediately.

ARTICLE IX - OWNERSHIP RIGHTS

9.1 Preservation of Data. Notwithstanding anything else in this Agreement to the contrary, unless specifically instructed otherwise in writing by COMPANY, SKI/MEMORIAL shall retain and preserve one (1) copy of all records relating to the Study for two (2) years after the last marketing authorization for the Study Drug has been approved or COMPANY has discontinued its research with respect to the Study Drug and the FDA has been notified, or such longer period as shall be required by law (such period being referred to herein as the "Retention Period"). At the end of such period, SKI/MEMORIAL may destroy all such material upon giving COMPANY written notice of its intent to do so at least sixty (60) days prior to destruction.

9.2 Inventions. "Inventions" shall mean any invention that is conceived, developed and reduced to practice during or as a result of the performance of the Study. In the event that use of Actinium 225 and/or Lintuzurnab under this Agreement results in an Invention or discovery involving a new use, improvement, or enhancement of either or both of them, whether patentable or not, SKUMEMORIAL shall disclose the Invention to COMPANY. SKI/MEMORIAL shall grant COMPANY a royalty free license to its undivided interest in such Inventions for research, and development purposes only.. Any Inventions conceived or reduced to practice solely by SKI/MEMORIAL or its faculty, staff, employees, or students shall be the sole property of SKI/MEMORIAL. Inventions conceived and reduced to practice solely by COMPANY or its employees or subcontractors or agents shall be the sole property of COMPANY. Inventions conceived and reduced to practice jointly by SKI/MEMORIAL or its faculty, staff, employees, or students, together with one or more employees, subcontractors or agents of COMPANY, shall be owned jointly by SKI/MEMORIAL and COMPANY.

9.3 To the extent SKI may legally do so, SKI/MEMORIAL grants to COMPANY a right of first refusal to obtain an exclusive license to SKI's interest in any Inventions, through good faith negotiations and on commercially reasonable terms. The option shall extend for a period of six (6) months following disclosure of the Invention to the COMPANY. In the event the parties, acting in good faith, fail to reach a mutually acceptable agreement within six (6) months after commencing negotiations, SKI/MEMORIAL shall be entitled to negotiate a license with a third party for such patent applications.

9.4 Retention of Non-Exclusive License by SKUMEMORIAL. SKI/MEMORIAL shall retain an irrevocable, non-assignable, royalty free license to use for non-commercial research purposes any Inventions licensed to COMPANY pursuant to Section 9.3.

ARTICLE X - INDEMNIFICATION — INSURANCE

10.1 COMPANY shall indemnify, defend and hold SKI/MEMORIAL, and their affiliate corporation Memorial Sloan-Kettering Cancer Center harmless from and against all claims, causes of action, suits, damages and costs arising out of, resulting from, or otherwise in respect of, the manufacture and/or use of Actinium-225 or Lintuzumab — Actinium 225 by COMPANY'S staff or agents, except where such claims, causes of action, suits, damages and costs arc the result of COMPANY's use of the results of this study, noncompliance with the Protocol or are the result of gross negligence or willful misconduct by SKI/MEMORIAL, its investigators, staff, or agents_ COMPANY shall have no obligation to indemnify, defend or hold SKI/MEMORIAL and their affiliate corporation, Memorial Sloan Kettering Cancer Center, harmless from and against all claims, causes of action, suits, damages and costs arising directly from a failure by SKI/MEMORIAL, its staff or agents to: (i) comply with any applicable FDA or other governmental requirement; (ii) adhere to the terms of the Protocol. Furthermore, COMPANY shall indemnify, defend and hold SKI/MEMORIAL, and their affiliate corporation Memorial Sloan-Kettering Cancer Center harmless from and against all claims, causes of action, suits, damages and costs arising out of COMPANY'S use of the report or data of the Study.

10.2 SKI/MEMORIAL shall indemnify, defend or hold COMPANY harmless from and against all claims, causes of action, suits, damages and costs arising directly from a failure by SKI/MEMORIAL, its staff or agents to: (i) comply with any applicable FDA or other governmental requirement; (ii) adhere to the terms of the Protocol, or which are (iii) the result of gross negligence or willful misconduct by SKI/MEMORIAL, its investigators, staff, or agents, all except to the extent that such claims arise out of COMPANY'S gross negligence or willful misconduct.

10.3 As a condition to a party's right to indemnification hereunder, the claiming party must inform the other party of a claim as soon as is practical after it receives notice of the claim, permit the indemnifying party to control the defense of such claim, to select and engage counsel of its own choice to defend against such claims and to settle any claims or suits at its discretion, and otherwise cooperate fully with the indemnifying party in the defense of such claim. In no event shall the indemnifying party have any obligation hereunder with respect to claims or suits settled or compromised without its prior written consent.

ARTICLE XI — GENERAL

11.1 No right or license is granted under this Agreement by either party to the other either expressly or by implication, except those specifically set forth herein.

11.2 Unless otherwise specified in this Agreement, nothing contained in this Agreement shall impose an obligation of exclusivity on one party by the other. Both parties reserve the right to enter into and participate in other activities (either alone or with a third party) including, but not limited to, clinical trials and sponsored research projects.

11.3 All matters affecting the interpretation, validity and performance of this Agreement shall be governed by the laws of the State of New York applicable to agreements made and to be performed wholly within the State of New York. This Agreement, including the Protocol, sets forth the entire understanding between the parties herein, and cannot be changed or amended except by written agreement executed by the parties. In the event of any inconsistency in this Agreement, the inconsistency shall be resolved by giving precedence first, to the Articles of this Agreement, and then, to the Protocol. Notwithstanding the above, in the event of a conflict between the text of this Agreement and the text of the final, IRB-approved Protocol, the final Protocol shall control with respect to any matter for which the United States Food and Drug Administration (hereinafter "FDA") has promulgated regulations addressing the requirement set forth in the Protocol; this Agreement shall govern for all other matters. This Agreement may not be assigned by either party without the prior written consent of the other party.

11.4 All notices to be given by either party to the other shall be made in writing, delivered by any means providing proof of delivery, at the following addresses respectively:

SKI/MEMORIAL

Memorial Sloan-Kettering Cancer Center
1275 York Avenue
New York, New York 10065
(Attention: Director, Office of Technology Development

COMPANY

Actinium Pharmaceuticals
391 Lafayette Street
Newark, NJ 07105
(Attention: President and CEO)

Any notice shall be effective as of its date of receipt.

11.5 Except as set forth in Articles III and IV, as required by taw and/or as may be required in order to maintain a party's status as an exempt organization under Section 501 (c)(3) of the Internal Revenue Code and regulations thereunder, neither SKI/MEMORIAL nor COMPANY shall release any information, publicity, news releases or other public announcement, written or oral, with regard to the Agreement or any amendment thereto or to performance hereunder, to newspapers or any other mass communication media without the prior written approval of the other party, which approval will not be unreasonably withheld or delayed. COMPANY shall not use the name of SKUMEMORIAL and their affiliate corporation Memorial Sloan-Kettering Cancer Center, or a variant of any of the foregoing in any advertising, packaging or other promotional material in connection with the Study Drug except as may be required by law.

11.6 If any one or more of the provisions of this Agreement is held to be invalid or unenforceable from which no appeal can be or is taken, the provision shall be considered severed from this Agreement, and shall not serve to invalidate the remaining provisions hereof, so long as the essential benefits of this Agreement will still be realized. The parties shall make a good faith effort to replace the invalid or unenforceable provision with a valid one that, in its economic effect, is most consistent with the invalid or unenforceable provision.

IN WITNESS THEREOF, SKI/MEMORIAL and COMPANY have caused this Agreement to be executed in duplicate by their respective duly authorized officers.

Actinium Pharmaceuticals

By: /s/Dragan Cicic
Dragan Cicic
CEO

Date: March 15, 2012

SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH, AND

By: /s/ Eric Cottington
Eric Cottington
Vice P esident, Research and Technology Management
Date: March 27, 2012

By: /s/ George J. Bosl
George J. Bosl, M.D.
Chairman. Department of Medicine

By: /s/ Marcel R. M
Marcel R. M. van den brink, M.D., PhD
Head, Div. of hematology Oncology

By: /s/ Joseph Jurcic
Joseph Jurcic, .M.D.
Principal Investigator

Schedule of Events/Assessments — A Phase I/II Study of Low Dose Cytarabine and Lintuzumab-Ac225 in Older Patients with Untreated Acute Myeloid Leukemia

	Baseline	LDAC Cycle 1 (days 1-28)					LDAC Cycle 2-12 (months 2-12)										
Assessment	days prior to treatm.)	1-10	14-17	17-21	22-28		2	3	4	5 through 12							
Baseline Assessments																	
ICF(1)	200																
Demographics	x																
Hematology (2)	x	xx	xx	xx	xx		xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Serum Chemistry (3)	x		x		x		xx	x	x	x	x	x	x	x	x	x	x
Bone Marrow Examination (4)	x						x		x								
PT, PTT, Fibrinogen	x																
Thyroxane, TSH																	
Medical History	x																
PE	x																
Urinalysis (5)	x		x		x		x	x	x	x	x	x	x	x	x	x	x
Chest X-ray (6)	x																
ECG (6)	x																
Vital signs (7)	$100		$100	$100													
HAHA (8)	$150							$150	$150			$150					
Premedications (9)		x	x	x	x												
Study Drug																	
LDAC (10)		x					x	x	x	x	x	x	x	x	x	x	x
Lintuzumab-Ac225 (11)			API supply	API supply													
Radiation Nephropathy Prophylaxis																	
Furosemide (12)																	
Spironolactone (13)																	
Concomitant Medications (14)	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x
Adverse Event Assessment (15)		x	x	x	x		x										
Survival		x	x	x	x		x	x	x	x	x	x	x	x	x	x	x
Patient Work Total	$450	$0	$100	$100	$0		$0	$150	$150	$0	$0	$150	$0	$0	$0	$0	$0
TX room																	
Study Drug Administration Fee																	
Hotel Accommodation																	
In-patient hospital fee	n/a																
Investigator Fee	$600	$400	$400	$400	$400		$400	$400	$400	$400	$400	$200	$200	$200	$200	$200	$200
Nuclear Medicine Fee	$0	$200	$200	$200	$200		$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Nursing Fee	$500	$400	$400	$400	$400		$400	$400	$400	$400	$400	$200	$200	$200	$200	$200	$200
Data manager	$400	$300	$300	$300	$300		$300	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300
Study Coordinator	$400	$200	$200	$200	$200		$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Parking																	
Per patient fees sum	$2,350	$1,500	$1,600	$1,600	$1,500		$1,500	$1,650	$1,650	$1,500	$1,500	$1,250	$1,100	$1,100	$1,100	$1,100	$1,100

Total per patient fee	$23,100
Applicable Overhead, if any	35.00%
Total per patient fee w/ OH	$31,185

START-UP FEES	
IRB fee	$4,000
CTO fee	$2,500
Scientific Review fee	$1,500
Investigator review fee	$5,000
Pharmacy set up	$4,253

Sub-Totals	$17,253
Institutional Overhead	
Start-Up Fees Grand Total	$17,253

INVOICEABLE FEES	
Pharmacy Annual fee	$2,127
Amendment processing fee	$500
Annual Review Fee	$500
Symbols used:	
Standard of care	x
Pricing to be filled in	

(the number of x signs denotes the number of procedures in the given period)

[1] Informed consent form (ICF) obtained prior to any study-related procedures

[2] Hematology assessments: complete blood count (CBC), Red Blood Cell count (RBC) with WBC differential and platelet count, hemoglobin, hematocrit. Timetable: Baseline, twice per week for the 1st 2 months, then CBC once every week.

[3] Serum chemistry: Comprehensive biochemistry profile (including serum electrolytes, BUN, creatinine, glucose, calcium, phosphate, total protein, albumin, alkaline phosphatase, AST, total bilirubin), PO4, LDH, and uric acid. Assessments timetable: Baseline, every other week for the 1st 2 months, then every month.

[4] Bone marrow aspiration or biopsy: morphology, cytogenetics (if not previously done), immunophenotyping, PCR analysis if applicable. Assessment timetable: Baseline, just before cycle 2 LDAC, after the end of cycle 4 LDAC, upon disease progression or before the 2nd cycle LDAC if the peripheral blood count shows ANC ≥ 1000 and the platelet count is ≥ 100,000 after 225Actinium-HuM195 treatment.

[5] Urinalysis to include: pH, protein, ketones, Hb or blood, specific gravity and if abnormal, microscopic a examination of the sediment. Timetable: every other week for the 1st month, then monthly.

[6] ECG and Echocardiogram: within 30 days of study entry

[7] Vital signs to include temperature, pulse rate, respiration rate, blood pressure. Timetable: 15 minutes prior to each study drug infusion, every 15 minutes during the infusion, then 30, 60, 90 and 120 minutes after the infusions are completed.

[8] Human anti-human antibody response: Baseline, then 2, 3 and 6 months after the last dose of study drug. Please include only payments for collecting and shipping from your site, as the tests will be done centrally.

[9] Allopurinol, 300-600 mg po/day one day before administration of Lintuzumab-Ac225 and continued for 7 days after the 2nd (last) dose of study drug. For subjects with ANC ≤500/µL at study start, prophylactic antibiotic and antifungal therapy should be used.

[10] First cycle of LDAC, 20 mg subQ every 12hrs X 10 D, given prior to the administration of study drug, then cycle 2 given 3 to 4 weeks after the 2nd dose of study drug for up to 12 cycles total.

[11] 1st divided dose given 4-7 days after completion of LDAC cycle 1. 2nd divided dose given 4-7 days after dose #1

[12] 40 mg po/day starting 1 day before LDAC administration and continuing until the end of cycle 1 (day 28)

[13] 25 mg po/day starting 1 day after the last dose of furosemide at the end of cycle 1.

[14] Concomitant medications: all medications taken for 28 days prior to the 1st dose of study drug and then all medications while on study

[15] Adverse event assessments begin at the time of LDAC administration and continue until 30 days after the last dose of the study drug.

CLINICAL TRIAL AGREEMENT

THIS CLINICAL TRIAL AGREEIVIENT ("Agreement") is made by and between Johns Hopkins University, having a School of Medicine with an Office of Research Administration located at 733 North Broadway, Suite 117, Baltimore, Maryland 21205 ("Site") and Actinium Pharmaceuticals, Inc, with an address of 501 Fifth Avenue, r t Floor, New York, NY 10017 ("Actinium"). This Agreement is entered into as of the last signature (the "Effective Date").

This Agreement provides for the conduct of a clinical investigation using a proprietary drug which is not, at this time, cleared for human use by the Food and Drug Administration, Any use of this drug must be pursuant to an Investigational New Drug Exemption (IND 10807) held by Actinium. Aptiv Solutions, Inc., a Delaware corporation having a principal place of business at 1925 Isaac Newton Square, Suite 100, Reston, VA 20190 ("Ante) has been engaged by Actinium to oversee and manage the Study.

In consideration of the mutual covenants and conditions set forth in this Agreement and for good and valuable consideration, the sufficiency of which is hereby acknowledged, the parties hereby agree as follows:

1. Definitions. When used in this Agreement, the listed terms shall have the following meanings:

   a. "Study" means the conduct of human research using the Study Drug manufactured by Actinium on Qualified Subjects at the Site pursuant to the protocol which has been reviewed and approved by the IRH and the FDA prior to the commencement of the Study.
   b. "Protocol" means the details of that certain clinical Study to be performed pursuant to this Agreement entitled A Phase I/11 Study of Low Dose Cytarabine and Actinium-255 Hum 195 in Older Patients with Untreated Acute Myeloid Leukemia, The Protocol, including any amendments is hereby incorporated by reference. and made part of this AgreeMent.
   c. "MB" means the institutional review board of Site.
   d. "Study Drug" means the compound known as Actinium-255 Hum 195.
   e. "Study Data" means all of the data collected and records compiled during the Study relating to the conduct of the Study and/or the Study Drug. Study Data includes without limitation, all records prepared by the Investigator and all clinical research assistants, all Case Report Farms, all Screening records, all records on Qualified Subjects, Completed Subjects, Withdrawn Subjects, Uncompleted Subjects and Non-Qualified Subjects, all Informed Consent forms, all adverse/unexpected/serious or other reportable events, and all modifications, adjustments, suggestions for improvement of the Study Drug.
   f. "Potential Subject" is a patient or individual who could possibly participate in the Study.
   g. "Screening" is the process of identifying Potential Subjects and of conducting the examinations and tests necessary to select Qualified Subjects for the Study.
   h. "Qualified Subject" is a subject who, on inclusion in the treatment phase of the Study, has met all of the inclusion criteria and none of the exclusion criteria in the Protocol and has given his/her written Informed Consent to participate in the Study.
   i. "Completed Subject" is a Qualified Subject who has completed the Study and met the minimum attendance and compliance standards in the Protocol for evaluation of the safety and effectiveness of the Study Drug.
   j. "Withdrawn Subject" is a Qualified Subject who has been withdrawn from the Study because of treatment failure or adverse event, but who otherwise met the Protocol entry requirements. "Uncompleted Subject" is a Qualified Subject who was initially included in the Study but who failed to complete the Study satisfactorily because of insufficient clinic attendance, poor compliance, voluntary withdrawal, and loss to fol low-up or other Protocol violations.
   1. "Non-Qualified Subject" is a subject who has not met the inclusion criteria as defined in the Protocol.
   m. Informed Consent Form" means the written form agreed upon by Actinium and the Site in conformance with all applicable FDA regulations and guidances, and approved by the IRB for use in this Study.

n. "Case Report Form (CRF)" means the report in the Actinuim format which is completed by the Investigator or his/her authorized designee documenting the use of the Study Drug in subjects.
o. "FDA" means the Food and Drug Administration of the United States Department of Health and Human Services, and any successor government agency.
p. "Investigator's Brochure" is a document describing the Study Drug, which is provided to the Investigator prior to the start of the Study.
q. "investigator" means Richard i,. Wahl , M.D., employee of Site.

2. Compliance with laws and procedures.

a. All parties shall conduct the Study in accordance with all applicable laws, regulations and guidances, as each of the foregoing may be amended than time to time. Without limiting the foregoing, the parties expressly agree to comply with 21 CFR 312 - Investigational New Drug Application, 21 CFR 50 - Protection of Human Subjects, and 21 CFR 56 — Institutional Review Boards.
b. The Site agrees to comply with the terms of this Agreement and all IRB and FDA procedures and applicable decisions for the Study.
c. Actinium and Aptly shall comply with all applicable laws and regulations regarding subject data privacy. In addition, Actinium and Aptly will review and approve the Informed Consent and Authorization documents (collectively, the "Authorization Documents") relating to the use and disclosure of indivhtually identifiable health information of subjects enrolled in the Study ("Health Information"), including receipt and use of Health Information by Actinium and Aptiv. Actinium and Aptly agree, and Actinium and Aptiv wilt require that any party to whom Actinium and Aptly discloses Health Information ("Recipient") agrees, to use and disclose the Health Information only as permitted in the Authorization Documents and in accordance with all applicable laws and regulations. The Authorization Documents will not authorize Actinium and Aptov or any Recipient to use Health Information to recruit research subjects to additional studies, to advertise additional studies or products or to perform marketing or marketing research.

3. Scope of Study

a. This Study is governed by this Agreement. All parties agree that no Study Drug shall be used on a subject until the IRB and the FDA have both approved the Study. After the FDA and IRB approval, the Protocol may only be amended when I) there Is written agreement between the Site, Actinium, and the Investigator to amend the Protocol, and 2) any and all such amendments have been reviewed and apprOved by the IRB and if applicable the FDA. No Protocol amendments shall be implemented until receipt of the IRB and FDA written approval. Nothing in this paragraph shall limit the Investigator's ability to act under 21 CFR 312.50, 312.60, 312.62, 312.64 (Subpart D).
b. The Site agrees to strictly comply with all IRB procedures and policies which govern the review, approval and conduct of this Study.
c. The parties agree that Screening for Qualified Subjects shall begin within thirty (30) days of receipt of the following: I) written approval of the Study and the Informed Consent by the IRB, 2) notification by Aptiv or Actinium that the FDA has granted the Investigational New Drug Application for the Study Drug, and 3) completion of Initiation Visit of the Site by Aptiv and Actinium for Study participation. The goal of the Study is to enroll up to ten (10) Qualified Subjects per year. The Site agrees to use reasonable efforts to complete subject enrollment as soon as practical, after commencement of Screening at each dose group.

4. Responsibilities of Actinium

a. Actinium represents and warrants that it has the authority to enter into this Agreement on its own behalf.

b. Actinium agrees to provide to the Site and the Investigator the information necessary to properly eontluet the Study, including without limitation, the Protocol, the Investigator's Brochure and data of any prior investigations of the Study Drug. Actinium agrees to provide any new information related to the safety and efficacy of the Study Drug as such information becomes available during the course of the Study. Actinium advises the Site and the Investigator that the effectiveness and safety in humans of the Study Drug have not been fully investigated.

c. Actinium shall provide, free of charge, the necessary quantity of the Study Drug. Actinium or Aptiv shall ship the Study Drug only to the Site.

d. Aptly shall monitor the Study and shall require evidence that IRB review and approval are obtained.

e. Actinium agrees that Institution, its affiliates and all Study team members shall have the sole authority over the clinical care of the Study subjects and nothing in this Agreement shall prevent institution or Investigator from taking any action which is, in the reasonable medical judgment of the Study team members, In the Study subject's best interest. Any time Actinium or Aptly becomes aware of a significant Study subject safety issue it will communicate such information to Institution. Actinium further agrees to promptly report to Institution the results of any monitoring reports that could affect the safety of Study participants, influence the conduct of the Study, alter the instil Minitel Review Board ("MB") approval to continue the Study, and/or affect the willingness of Study Subjects to continue in the Study. During the Study and after its completion, Actinium shall promptly report to Institution and the Investigator any Study results that could directly affect the safety or medical care of Study Subjects.

5. Responsibilities of Site

a. The Site warrants and represents that Investigator is an employee of the Site, and is sufficiently qualified by training and experience to conduct the Study using the Study Drug. A true and complete copy of the Investigator's current curriculum vitae is attached as Exhibit B and made part of this Agreement.

b. The Site warrants that the investigator has never been involved in any investigation or research at the Site which was terminated by the FDA, National Institutes of Health (NIH) or any sponsor for non-compliance.

c. The Site warrants and represents that Investigator has not been disbarred under Section 306 of the Federal Food, Drug and Cosmetic Act, or any other section of said act or its successor, and further, that the Investigator will not use in any capacity, the services of any individual or entity which has been so disbarred, in any aspect of this Study. The Site agrees to promptly notify Actinium if the Investigator or any individual or entity involved in this Study is the subject of a disbarment proceeding or becomes disbarred.

d. In addition to and Without limiting the obligations of Section 2a above, the Site agrees to conduct the Study in strict accordance with this Agreement, the Protocol, all associated documentation provided by A ptiv (e.g. CRF, . CRP Completion guidelines, User Manuals, and Regulatory Binder documentation), applicable regulations, and all conditions of approval imposed by the reviewing IRB or FDA. The Site shall permit the use of the Study Drug only on Qualified Subjects under Investigator's personal supervision only for the purpose of the Study. The Site shall not supply the Study Drug to any other person or entity not authorized under FDA regulation to receive it, nor to any person for any purpose other than the Study. The Site shall not modify or alter the Study Drug. The Site shall maintain proper eontrol of all Study Drug inventory and return of unused quantities of Study Drug as required by regulation and directed by Actinium.
The Site agrees that the Investigator will supervise or perform all testing of the Study Drug involving human subjects.

e. The Site agrees to maintain all records and make all reports as required by regulation, the Study, the IRB and this Agreement.

f. The Site agrees to use reasonable efforts, on a diligent and continuous basis, to recruit Qualified Subjects, to prepare true and accurate Case Report Forms, to make all required reports, to complete the Study within the time limits set forth in this Agreement, and to perform all long-term follow-up examinations, visits and data collection as required by the Study and/or regulation from time to time. in addition, all CRF and Study Data shall he promptly submitted to Aptly upon written request. This provision shalt survive termination or expiration of this Agreement.

g. The Site shall exclusively use the Informed Consent. The Site agrees that the IRB approved consent form must be provided to and acknowledged by Actinium prior to use. The Site agrees that the Investigator shall not conduct any screening procedures, enroll any Potential Stibject nor use the Study Drug on any Potential Subject who has net given written consent by signing and dating the specified informed Consent form, The Site agrees that Investigator shall ensure that all the requirements for obtaining informed consent are met.

h. The Site agrees that Investigator will follow good medical practice and exercise the customary standard of care practiced in his professional specialty.

i. The Site ensures that Investigator will provide sufficient accurate financial disclosure information to allow Actinium or Aptly to submit a complete and accurate certification or disclosure statement as required under 21 CFR part 54, as it may be amended from time to time. Further, the Site agrees that the Investigator shall promptly update this financial disclosure information If any relevant changes occur during the course of the.Study and for one (1) year fallowing completion of the study. The Site also agrees that Investigator will promptly update this financial disclosure information upon request by Aptiv. The Site understands that thiS information shall be submitted in any marketing application involving the Study Drug, This provision shall survive termination, or expiration of this Agreement.

j. The Site agrees to provide sufficient resources to the IRB to enable the 1R13 to operate as required by law, regulation and its own procedures.

k. During the Study, and subject to the terms of this Agreement, Site agrees to use reasonable efforts to cause the Investigator to conduct the Study pursuant to the Protocol and to provide to Investigator reasonable access to all Site facilities, staff and resources which the Investigator determines necessary or desirable to the conduct of the Study. All such Site facilities, staff and resources used in the Study are subject to the supervision or the Investigator.

l. The Site agrees to provide the facilities necessary to the conduct of the Study, and to notify Actinium and Aptly promptly of any failure of the Investigator, the Site or the ERB itself, to follow any of the established protocols for the Study.

m. The Site agrees to allow Aptiv and Actinium reasonable supervised access to the study site and to Facilities and staff as reasonably needed to conduct long-term follow-tip ofStudy subjects, at Apt1V's expense. The Site wilt ensure that the Investigator will be available, during mutually agreed upon regular business hours, to meet with a study monitor to review the status of the Study and discuss any pending issues, Aptiv will provide no less than five (5) days advance notice of monitoring visits and will use all reasonable efforts to coordinate the scheduling of the visits with the Investigator and Study Coordinator.

n. The Site agrees to allow Actinium and Aptly reasonable supervised access to Study Data, including without limitation, patient records (subject to patient consent), and Case Report Forms, as necessary for completion of the Study, long-term follow-up, and compliance efforts, at Actinium's expense.

o. The Site warrants and represents that it will not use in the Study, in any capacity whatsoever, whether as employee, consultant, cold-Motor or agent, the services of any individual or entity who has been disbarred under Section 306 of the Federal Food, Drug and Cosmetic Act, or any other section of said act or its successor. The Site agrees to promptly notify Aptly if any individual or entity involVed in this study is the subject or a disbarment proceeding or becomes disbarred.

p. In the event the Investigator becomes unable to complete the Protocol for any reason, Site will, to the extent possible, propose a substitute Investigator with qualifications and experience at least equal to or greater than those of the Investigator for Actinium's approval, which approval shall not be unreasonably withheld, In the event Actinium and 'Site ago upon a substitute Investigator, tins Agreement shall continue in full force and effect. If Actinium and She are unable to agree on a substitute Investigator, this Agreement may be terminated in accordance with the provisions of this Agreement.

q. Subparagraphs 5,1-51) shall survive termination or expiration of this Agreement.

r. The Site and Investigator agree to notify ANN and Actinium as soon as possible of an adverse, serious or unexpected event, or any deviation in the Protocol permitted by 21 CFR 312.60(a)(2). The Investigator shall complete all reports when and in the manner required by 21 CFR 312.62 and 312.64. The Investigator shall make all other reports as required by 21 CFR 312,62 and 312,64.

s. Tice Site agrees to cooperate with any study monitor designated by Aptly to monitor this Study. The Site agrees to cooperate with authorized FDA employees conducting an audit or inspection, in the manner required by 21 CFR 312.68. The Investigator shall promptly notify Actinium of any request for an audit of the Study by the Site, the FDA or any other governmental agency. As required by law and Site's policy, if any inspection occurs, the Site will provide Actinium and Aptly with copies of all auditor (including FDA and 1RB) materials, correspondence, statements, forms and records that are received by the investigator or the Site. Site shall promptly implement any necessary corrective action. This provision shall survive termination or expiration of this Agreement.

t. "the Site warrants that its investigator has made all disclosures required regarding conflict of interest in connection with this Study.

u. The Site hereby assures Actinium that the Study will be reviewed and approved by its MB before any Study Drug is tested on a human subject, and further, that said 1RB is functioning in compliance with the applicable regulations and all times. The Site shall provide, upon request, evidence of In approvals related to this Study in a timely manner filing or request front Actinium or Aptly, whichever is the case. This provision shall survive termination or expiration of this Agreement.

6. Payment

a. Actinium will pay to Site, subject to the terms and conditions of this Agreement the sum of $38,500,88 for each Completed Subject of the Study, as set Ruth in the Site Budget and Payment schedule, attached to and made part of this Agreement as Appendix 1, In no event shall payments to the Site exceed $38,500.88 for each Completed Subject up to a maximum of sixty (60) Completed Subjects. All payments are gross in US Dollars; all approved invoices are net thirty (30) days.

Payment of all sums due hereunder shall be made by check payable to Site as follows:
Payable to: Johns Hopkins University
Tax ID No: 52-0595110

Address: Johns Hopkins University Central Lockbox
Bank of America
12529 Collections Center Drive
Chicago, IL 60693

Checks must also include the following:

IPN: 13031596
Investigator: Richard L. Wahl, M.D.

b. Any additional payments must be approved in advanCe by Actinium in writing.

e. The Site agrees to be responsible for invoicing Actinium in accordance with the Budget and Payment Schedule (Exhibit C).

d. Any equipment (except for the Study Drug) purchased by the Site as part of the Protocol shall be owned by the Site, shall be physically located at Site, and shall remain the property of Site following completion of the Study.

e. In no event is Actinium required to make any payment for any costs incurred with respect to Non-Qualified Subjects entered into the treatment phase of the Study or for any Subject who has not given written Informed Consent to participate in the Study.

f. Nothing contained herein shall be construed as requiring She, the Investigator or any Site research staff to work on any project or process which is prohibited by law or by any international treaty to which the United States of America is a party, or which may be harmful or detrimental to public health, patient safety or good clinical care or which may be considered to be immoral. No payment is subject to submission of favorable clinical results or evaluations.

g. Notwithstanding the foregoing, in no event shall any payment be made under this Agreement which is contrary to 42 LiSC 1320a-7b, as it or any successor law may be in effect from time to time. In accordance with the statute, in no event shall the Investigator or any member of his immediate family, receive any payment, loyalty, form of compensation, or remuneration of any nature, sort or description, for any use of all or any portion of the Study Drug by any hospital, clinic or other Site where he works. In no event shall any request for reimbursement or payment under any private or public health insurance carrier he made which is contrary to law.

7. Publications

(a) Actinium acknowledge that the Site and the . Investigator are free to publish, present, or use any results arising out of this Study for their own instructional, research, or publication objectives, provided that such publication does not disclose any of Actinium's Proprietary Information, as defined in this Agreement. Site agrees to submit the draft of any proposed publication to Actinium at least thirty (30) days prior to submission for publication, presentation, or use, and agrees, at the request of Actinium, to withhold any such submission for an additional period, not to exceed ninety (90) days to allow Actinium to the patent applications or to take any other action designed to protect its patent rights.

(b) The parties recognize that because this is a multi-center Study, the Site and the Investigator agree that the first publication of the results of the Study shall be made in conjunction with the presentation of a joint, multi-center publication of the Study results, with the investigators froM all sites contributing data, analyses, and comments. Actinium shall provide all Investigators access to the combined results and data provided by all sites performing the study. However, if no multi-site publication is submitted within twelve (12) months of the completion of the Study from all sites, or a multi-center publication is published in a shorter time the Site and the InVestigator shall be free to publish the Study results from their Site individually, subject to Actinium's rights under Section 7(a) of this Agreement.

8. Confidential information

a. The parties acknowledge that as part of the scientific collaboration between Actinium, Aptiv and the Site in connection with the Study, Aptly or Actinium may find it necessary to disclose certain confidential and proprietary information and trade secrets of Actinium and/or Aptiv. Such confidential and proprietary information includes, without limitation, the Protocol, all intellectual property contained ie the Study Drug, the design and manufacturing procesSes utilized to produce and test the Study Drug, the identity of Actinium's suppliers, data concerning scientific discoveries made by Actinium and/or Aptiv; Actinium's manufacturing strategies and processes; Actinium's marketing plans; data from Actinium's evaluations in animals and humans; Actinium's strategy kw or status of regulatory approval; or Actinium's forecasts of sales and sales data, and any other information which by its nature would be considered confidential (hereafter referred to collectively as "Actinium Confidential Information"), Such Actinium Confidential Information shall remain the confidential and proprietary properly of Actinium and shall he disclosed to Site's employees, affiliates or agents on a "need to know" basis, and who are bound by similar obligations to protect the Actinium Confidential Information from unauthorized disclosure.

b. The Site may find it necessary to disclose certain confidential and proprietary information and trade secrets of Site to Aptiv Such confidential and proprietary information includes, any data, records or other information disclosed to Apliv, or its designee, (hereinafter collectively, "Site Confidential Information"). Such Site Confidential information shall remain the confidential and proprietary property of Site and shall be disclosed to A ptiv's or its designees, employees, affiliates or agents on a "need to know" basis.

c. The Site and Actinium shall have joint ownership plait Confidential Data that is generated by this Study. Confidential Data shall include all Study results, which includes information entered onto patient case report forms and patient medical records. Actinium shall have the sole tight to use such Confidential Data for all commercial purposes, and Sites use shall be thrilled to those instances dealing with patient care and treatment, academic uses, and publication. Actinium shall have sole ownership of the original copies of all patient case report forms; however, Site shall have the right to retain one copy of each forth for documentation purposes. Notwithstanding anything to the contrary herein, Site may use study results in developing Sponsor Inventions or Other Inventions (as those toms are defined) and it will not be deemed a commercial use pursuant to this Section 8.

Subject to the terms and conditions of the Agreement, each party hereby agrees that during the term of the Study Agreeinent and for a period of three (3) years thereafter, neither party shall (i) publicly divulge, disseminate, publish or otherwise disclose any of the other party's confidential information without prior written consent; (ii) limit access to each party's confidential information to those of the other party's, co-workers and staff who are involved in the Study and have a need for such confidential information in connection with the conduct of the Study, and (iii) cause the return to the other party, as the case may be, any and all documents, drawings, sketches, designs, products or samples containing confidential information, together with any copies thereof, promptly upon termination by this Agreement or upon the other party's request therefore, provided that such obligations undertaken by the said party shall remain in force for five (5) years after completion of the Study with respect to the Chemical Manufacturing and Control Section, Toxicity Studies or Performance Studies.

d. Notwithstanding the foregoing, the obligations of confidentiality and nondisclosure shall not apply to the following information:

(1) Information that was in the public, domain prior to the date of disclosure to the receiving party coming into possession thereof, or becomes part of the public domain by publication or otherwise through no fault or unauthorized act or omission on the part of the receiving party;

(2) Information that is disclosed to the receiving party by a third party legally entitled to disclose such information, as demonstrated by competent evidence;

(3) Information that was rightfully in the possession of or already known to the receiving party as demonstrated by prior written records or other reliable evidence;

(4) Information that is independently developed by the receiving party without reference to any confidential information, as demonstrated by competent evidence; or

(5) Information that is required to be disclosed to a government authority or by order of a court of competent jurisdiction, provided that (a) such disclosure is subject to all applicable governmental or judicial protection available for like material; (b) reasonable advance notice is given to the disclosing party; and (c) the receiving party take all reasonable steps to limit the scope of such disclosure.

The terms of this Agreement supersede any previous non-disclosure agreements or any other preliminary representations or understandings that have been entered into by the parties to this Agreement with regard to the subject Study. The terms or this Agreement will be treated as confidential; however, the existence ()lithe Agreement and Study will not be confidential. The Site may maintain one archival copy of all Proprietaty Information for the purpose of demonstrating its compliance with Its obligations hereunder.

e. Site, in accordance with its policies and procedures, may post the Protocol on its internal database (referred to as "FYI") and share the Protocol, or portions thereof, as 'tummy i) to comply with applicable laws and regulations; ii) for internal patient care billing audits with Site's affiliates, and iii) to provide information to third party payors as necessary, in connection with the processing or payment all claim submitted in relation to a Study subject, Site shall also be allowed to post a synopsis of the Protocol on its recruitment website.

In addition, the parties agree that the Investigator may disclose the title of the Study on his curriculum vitae and grant application(s),

9. Intellectual Property

The parties further acknowledge and agree that Actinium is the owner or authorized licensee of the Study Drug. Neither Site nor Investigator shall obtain any license to make, have made, sell, distribute, rent, lease, or otherwise transfer or use the Study Drug or Actinium Confidential Information, or their derivatives. Actinium Confidential Information is licensed for use only on and in combination with the Study Drug, and may not be used on or with third party products without Aptiv's prior express written permission. This Agreement grants no implied rights.

Aptly on behalf of Actinium, hereby grants to Site a non-exclusive royally free license to the Intellectual Property for Site's own internal nonprofit research and education related purposes.

It is expressly agreed that neither Actinium nor Site transfer by operation of this Agreement to the other party hereto any patent right, copyright, or other proprietary right that either party owns or controls, except as specifically set forth herein.

Site agrees that any inventions, discoveries, or Improvements arising out of work performed hereunder that are dependent on Actinium's patent claims or are expressly anticipated by the protocol (hereinafter "Actinium's Inventions") shall bo assigned to Act:Minim and shall be-promptly disclosed by Site to Actinium.

All other inventions developed under this Agreement ("Other Inventions") that are developed solely by Site shall be owned by Site, All Other Inventions developed by one or more employees of both Actinium and She under this Agreement shall he ownedjointly by Actinium and Site Site shall grant Actinium no option to negotiate to obtain an exclusive, royalty bearing, worldwide license, including the right to sublicense, to make, have made, use, and sell products incorporating such sole Other Inventions or Institution's rights to jointly owned Other Inventions. Actinium's option may be exercised at any time during a period of one hundred and eighty (180) days (the "Option Period") after the written submission to Actiunium of each such Invention by notice in writing from Actinium to Site. Upon Actinium's exercise of its option with regard to any particular Invention, Site and Actinium will negotiate in good faith in an attempt to reach a license agreement satisfactory to both parties (the "Negotiation Period"). Unless extended by the written mutual consent of the parties, the Option Period and the Negotiation Period shall not exceed ten (10) months in the aggregate. Upon the expiration (lithe unexcreised option or the NegOtialion Period, Site shall have no further obligation to Actinium under this Agreement with regard to specific Other Inventions tinder consideration.

10. Indemnification

a. The Site shall, to the extent authorized by applicable law, indemnify, defend and hold harmless Actinium and Aptiv, their agents and employees (collectively the "Indemnitees") from any and all liabilities, claims, actions, or suits (collectively "Claims") resulting from the negligence or wrongful acts or omissions of the Site, the Investigator, their agents or employees pertaining to the activities of this Study and/or this Agreement, provided, however, that:

(i) the Site shall not indemnify, defend and hold harmless the indemnitees from Claims arising out of the negligence or wrongful acts or omissions of the Indemnitees;

(ii) the Site is promptly, and in any event within thirty (30) days after an I Wein ni tee's receipt of notice of any complaint, claim or injury relating to any loss subject to this indemnification, notified In writing of any such complaint, claim or injury;

(iii) the Site has sole control over the detense and settlement army such claim or suit, including the right to select defense counsel and to direct the defense or settlement of any such claim or suit, provided that Site shall not admit fault or liability on behalf of any Indemnitee in the defense and settlement of such claim or suit; and

(iv) the Indemnitees reasonably cooperate with the Site and its legal representatives in the investigation and defense of any claims or suits covered under this Section 12(b),

b. Actinium indemnification.

Actinium and Aptiv shall indemnify, defend and hold harmless the Site, Investigator, The Johns Hopkins Hospital, The Johns Hopkins Bayview Medical Center, and/or other affiliated and cooperating hospitals and institutions, as well as its trustees, directors, ()Moors, medical and professional staff, affiliates, employees, students, the members of the Institutional Review Boards, and other holding academic appointments within those institutions and agents and their respective successors, heirs and assigns (collectively the "Site Indemnitees"), against any liability, damage, loss or expense (including reasonable attorneys' fees and expenses of litigation) incurred by or imposed upon the Site Indemnitees or any one of them in connection with any third party claims, suits, actions, demands or judgments that arise from Site Indemnities participation in and/or performance of the subject Study

Actinium's indemnification shall not apply to any liability, damage, loss or expense attributable to (i) the negligent activities, reckless misconduct or intentional misconduct of the Site Indemnitees; (ii) (iii) failure of the Site I ndemnitees to adhere to the terms of the Protocol for the Study or follow all prior written instructions provided by Actinium or Aptly, (iv) actions of the Site Indemnitees in violation of applicable laws or regulations , or (v) material breach of this Agreement by the Site Indemnitees.

This obligation to indemnify is subject to the Site Indemnitees giving Actinium prompt notice of any claim, suit or demand and full control of any defense and settlements of such claim, suit or demand. The Site inderrinitees will also notify Actinium promptly in the event any one of them becomes aware of any potential claim, or likelihood of any potential claim of indemnification rights under this Section, Site Indemnitees will cooperate fully, at Actinium's expense, in the defense or settlement orally claim or action.

This Paragraph shall survive expiration or termination of this Agreement.

c. Study-Related Injury.
Subject to Section 10(b), above, Actinium agrees to reimburse the Site, other accredited medical care providers, or Study participants (as appropriate) for all reasonable costs incurred for the care and treatment of any illness or injury to a Subject resulting from his or her participation in the Study and that is not covered by the participant's medical insurance.

11. Insurance

The Site and Actinium shall, at its sole cost and expense, procure and maintain commercial general liability insurance or equivalent self insurance in amounts not less than V million per incident and $5 million annual aggregate with tweet to the Study.

12. Term and Termination

Unless earlier terminated in accordance with its terms, this Agreement shall commence on the date when it is signed by all parties, (the "Effective Date", and shall continue in full force and effect until two (2) years after the Study has been completed.

a. This Agreement shall be terminated immediately in the event that: I) the authorization and IND issued by the FDA is withdrawn, or 2) the approval of the IRE is withdrawn.

b. Except as otherwise provided in this section, any party may terminate this Agreement upon sixty (60) days prior written notice in the event of any material breach by another party of any material term or condition hereof; provided such breach is not cured within said sixty (60) day notice period.

c. Any party may terminate or suspend this Study immediately for the safety of Subjects, pursuant to applicable regulations. In such case, the patty terminating or suspending the study will provide prompt written notice to the other party.

d. Any party may terminate this Agreement upon written notice immediately in the event a party engages in criminal, unprofessional or fraudulent conduct.

e. AO)/ may terminate this Agreement upon sixty (60) days prior written notice in the event that: I) the Protocol is suspended by the 1R.13; 2) the Principal Investigator is unable to complete the Study and a substitute Principal Investigator cannot be agreed upon, or 3) if circumstances reasonably beyond Site's control preclude the Site from continuing the Study, and such suspension of the Study exceeds sixty (60) consecutive days or ninety (90) days in the aggregate In any year during the term (or renewal) of this Agreement.

f. Aptly may terminate this Agreement at any time upon one (1) month prior written notice to the Site. In such case, Aptly will provide funding of expenses actually incurred under the Study prior to the date of said notice or prior to ii patient's completion or the Study if said completion is in the best interest of the patient as reasonably determined by the Investigator. Site may terminate this Agreement at any time upon ninety (90) days prior written notice to Aptly.

g. Any provision of this Agreement, which provides continuous enforcement or operation thereof after the termination hereof, shall survive the termination of this agreement.

13. Effect of Termination

Except as otherwise provided herein, termination of this Agreement shall not be construed to release either party from any obligation hereunder which has matured prior to the date of said termination. Upon termination of this Agreement, Site shall promptly return to Aptly the Study Drug, Study Data, including without limitation, all CRF and Actinium Confidential Information at Aptiv's expense.

14. Translation Services

The Site shall provide the consent form applicable to the Study in written Form translated to the appropriate language to any non-English speaking minorities included in the Study. Any cost incurred by the Site for the development of a translated informed consent from the English original will be agreed upon in advance and reimbursed by Aptiv. The Site shall present Aptly with an invoice For translation services which Aptiv shall reimburse to the Site within thirty (30) days of receipt. The parties acknowledge that said translation costs are not included in the Study budget set out in Appendix 13 and are not included in the Total Cost of the Study.

15. Communications

All medical/scientific and other communications, reports and notices shall be delivered by hand, by facsimile, by secure electronic means or sent by first class mail postage prepaid and addressed as follows:

If to Aptiv: Anthony Apieella
278 l lalfway Pond Rd
Plymouth, MA 02360
Phone: 805-791-5305
Email: Anthorly.Apicella@aptivsolut ions,com

If to Actinium: Dragon Ode, COO/CMO
501 Fifth Avenue, 3[14] Floor
New York, NY 10017

If to Site: Michael B. Amey
Associate Dean, Research Administration
Office of Research Administration
The Johns Hopkins University School of Medicine
735 North Broadway, Suite 117

Baltimore, Maryland 21205
Phone: 410-955-1566
Fax: 410-502-6004
Email: intuncylahmi.cdu

With a copy to Investigator:

Richard Wahl, M.D.

601 North Caroline Street JI-TOC #3223
Baltimore, MD 21287
Phone: 410-614-3764
Fax: 443-287-2933
Email: nyillAgliml.edu

With a copy to:

John Crandall
601 North Caroline Street
JHOC ff4230
Baltimore, MD 21287
Phone: 410-502-2186
Fax: 410-614-9979
Email: jcrandalghtni.edu

If to Accounts Receivable:

Lee Ann Comeau

Research Department of Radiology
The Johns Hopkins University
Park East Rini/306F
600 N. Wolfe Street
Baltimore MD 21287
(tel) 410-614-9173
(fax) 410-614-6150
Icoutcal@liani.edu

16. Use of Names

Except as otherwise required by law, each party agrees not to use directly or by implication the names of the other party, nor any of the other party's affiliates or contractors, nor any abbreviations thereof, or of any staff member, faculty member, student, or employee of the other pad), in connection with any products, publicity, promotion, financing, advertising, or other public disclosure without the prior written permission of the other party or individual whose name or employee's name is to be used.

17. General Provisions

a. All rights and remedies hereunder are exclusive and not cumulative.

b. This Agreement may be amended only by written agreement signed by all parties.

c. It is expressly agreed by the parties hereto that the Site, the Investigator and Aptiv are independent contractors and nothing in this Agreement is intended to create an employer relationship, joint venture, or partnerships between the parties. No party has the authority to bind any other.

d. This Agreement, including all exhibits, constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all proposal, negotiations and other communications between the parties, whether written or oral, with respect to the subject matter hereof.

e. If any provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions or this Agreement shall not be impaired thereby, and the party against whom the holding is made, shalt be entitled to substitute a similar provision that preserves the benefit of the bargain.

f. The failure of any party to insist on strict performance of any provision of this Agreement or exercise any right hereunder will not constitute a waiver of that provision or right.

g. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original as against the party whose signature appears thereon, but all of which taken together shall constitute but one and the same instrument.

h. Each party hereto agrees to execute, acknowledge and deliver such further instruments and do all such further acts as may be necessary or appropriate in order to carry out the purposes and intent of this Agreement.

i. The paragraph headings contained in this Agreement are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement.

This Agreement shall be governed by and construed in accordance with the laws of the State of Maryland (excepting any conflict of laws provisions which would serve to defeat application of Maryland substantive law), Each of the Parties hereto agrees to venue in and submits to the exclusive jurisdiction of the state and/or federal courts located within the State of Maryland for any Shit, hearing or other legal proceeding of every nature, kind and description whatsoever in the event of any dispute or controversy arising hereunder or relating hereto, or in the event any ruling, finding or other legal determination is required or desired hereunder.

IN WITNESS WHEREOF, the parties intending to be legally bound have caused this Agreement to be executed by their duly authorized representatives or, in the case of the Investigator, have duly executed this Agreement, on the dates stated beneath their names:

SITE
Accepted by:
THE JOHNS HOPKINS UNIVERSITY

By: /s/ Michael B. Atney
Michael B. Atney
Associate Dean for Research Administration
Date: 9/25/12

ACTINIUM PHARMACEUTICALS, INC.
Accepted by:

Name: DRAGAN CICIC
Title: COOICMO
Dated: 9/26/2012

Read and Agreed to abide by the terms contained herein, but not as a party hereto :
INVESTtGATOR:

/s/ Richard L
Name: Richard L, Wahl, MD
Investigator:
Dated: 9-26-12

Appendix 1: JH-API Trial Budget

Schedule of Events/Assessments

A Phase I/II Study of Low Dose Cytarabine and Lintuzumab-Ac225 in Older Patients with Untreated Acute Myeloid Leukemia

	Baseline	LDAC Cycle 1 (days 1-28)					LDAC Cycle 2-12 (months 2-12)										
Assessment	(within 14 days prior to treatm.)	1-10	14-17	17-21	22-28		2	3	4	5 through 12							
Baseline Assessments																	
ICF(1)	400																
Demographics	X																
Hematology (2)	X	XX	XX	XX	IX		XXXX	XXXX	XXXX	XXXX	XXXX	CXXX	XXXX	XXXX	XXXX	XXXX	XXXX
Serum Chemistry (3)	X		X		X		XX	X	X	X	X	X	X	X	X	X	X
Bone Marrow Examination (4)	X				1500		X		X								
PT, PTT, Fibrinogen	X																
Thyroxine, TSH	50							50			50			50			50
Medical history	X																
PE	X																
Urinalysis (5)	X		X		X		X	X	X	X	X	X	X	X	X	X	X
Chest X-ray (6)	X																
ECG (6)	X																
Vital signs (7)	100		100	100													
HAHA (8)	150							150	150			150					
Premedications (9)		X	X	X	X												
Study Drug																	
LDAC (10)		X					X	X	X	X	X	X	X	X	X	X	X
Lintuzumab-Ac225 (11)			API supply	API supply													
Radiation Nephropathy Prophylaxis																	
Furosemide (12)		40	15	20	25												
Spironolactone (13)							125	125	125	125	125	125	125	125	125	125	125
Concomitant Medications (14)	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Adverse Event Assessment (15)		X	X	X	X		X										
Survival		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Patient Work Total	700	40	115	120	1525		125	325	275	125	175	275	125	175	125	125	175
TX room			1500	1500													
Study Drug Administration Fee			500	500													
Hotel Accommodation			800	800													
In-patient hospital fee	n/a																
Investigator Fee	800	800	800	800	200		100	100	100	100	100	100	100	100	100	100	100
Nuclear Medicine Fee	0	800	800	800	200		100	100	100	100	100	100	100	100	100	100	100
Nursing Fee	400	500	500	500	300		150	150	150	150	150	150	150	150	150	150	150
Data manager	400	400	400	400	100		100	100	100	100	100	100	100	100	100	100	100
Study Coordinator	400	400	400	400	100		100	100	100	100	100	100	100	100	100	100	100
Parking	20	20	20	20	20		20	20	20	20	20	20	20	20	20	20	20
Per patient fees sum	2720	2960	5635	5840	3045		695	895	845	695	745	845	695	745	695	695	745
Total per patient fee	28,732.00																
Applicable Overhead, if any	34%																
Total per patient fee w/ OH	38,500.88																

START-UP FEES	
IRB fee	4000
CTO fee	2500
Scientific Review fee	1500
Investigator review fee	5000
Pharmacy set up	4050
Sub-Totals	17050
Institutional Overhead	34%
Start-Up Fees Grand Total	22847

INVOICEABLE FEES		
Pharmacy Annual fee	2025	
Amendment processing fee	500	
Symbols used:		
Standard of care	x	(the number of x signs denotes the number of procedures in the given period)
Pricing to be filled in		

1. Informed consent form (ICF) obtained prior to any study-related procedures
2. Hematology assessments: complete blood count (CBC), Red Blood Cell count (RBC) with WBC differential and platelet count, hemoglobin, hematocrit. Timetable: Baseline, twice per week for the 1st 2 months, then CBC once every week.
3. Serum chemistry: Comprehensive biochemistry profile (including serum electrolytes, BUN, creatinine, glucose, calcium, phosphate, total protein, albumin, alkaline phosphatase, AST, total bilirubin), PO4, LDH, and uric acid. Assessments timetable: Baseline, every other week for the 1st 2 months, then every month.
4. Bone marrow aspiration or biopsy: morphology, cytogenetics (if not previously done), immunophenotyping, PCR analysis if applicable. Assessment timetable: Baseline, just before cycle 2 LDAC, after the end of cycle 4 LDAC, upon disease progression or before the 2nd cycle LDAC if the peripheral blood count shows ANC ≥ 1000 and the platelet count is ≥ 100,000 after 225Actinium-HuM195 treatment.
5. Urinalysis to include: pH, protein, ketones, Hb or blood, specific gravity and if abnormal, microscopic examination of the sediment. Timetable: every other week for the 1st month, then monthly.
6. ECG and Echocardiogram within 30 days of study entry
7. Vital signs to include temperature, pulse rate, respiration rate, blood pressure. Timetable: 15 minutes prior to each study drug infusion, every 15 minutes during the infusion, then 30, 60, 90 and 120 minutes after the infusions are completed.
8. Human anti-human antibody response: Baseline, then 2, 3 and 6 months after the last dose of study drug. Please include only payments for collecting and shipping from your site, as the tests will be done centrally.
9. Allopurinol, 300-600 mg po/day one day before administration of Lintuzumab-Ac225 and continued for 7 days after the 2nd (last) dose of study drug. For subjects with ANC ≤500/μL at study start, prophylactic antibiotic and antifungal therapy should be used.
10. First cycle of LDAC, 20 mg subQ every 12hrs X 10 D, given prior to the administration of study drug, then cycle 2 given 3 to 4 weeks after the 2nd dose of study drug for up to 12 cycles total.
11. 1st divided dose given 4-7 days after completion of LDAC cycle 1. 2nd divided dose given 4-7 days after dose #1
12. 40 mg po/day starting 1 day before LDAC administration and continuing until the end of cycle 1 (day 28)
13. 25 mg po/day starting 1 day after the last dose of furosemide at the end of cycle 1.
14. Concomitant medications: all medications taken for 28 days prior to the 1st dose of study drug and then all medications while on study
15. Adverse event assessments begin at the time of LDAC administration and continue until 30 days after the last dose of the study drug.

Exhibit 10.19

LICENSE AGREEMENT

This License Agreement (the "Agreement") effective as of the Effective Date, by and between Fred Hutchinson Cancer Research Center, a research institution organized as a nonprofit corporation under the laws of the state of Washington, having its principal offices at 1100 Fairview Avenue North, Seattle, Washington 98108, USA ("FHCRC") and Actinium Pharmaceuticals, Inc., a Delaware corporation, with principal offices at 391 Lafayette Street, Newark, NJ 07105 ("Company").

WHEREAS, FHCRC in accordance herewith, is in possession of BC8 monoclonal antibody and related master cell bank developed at FHCRC; and

WHEREAS, Company is desirous of acquiring a license to the materials discussed above in certain fields of use;

WHEREAS, FHCRC and Company are additionally entering into a Sponsored Research Agreement on mutually agreeable terms and conditions for performance of certain Projects;

WHEREAS, FHCRC is willing to grant a license to Company to know-how and the materials subject to the terms and conditions set forth herein;

NOW, THEREFORE, in consideration of the premises and the mutual covenants set forth herein, and for good and valuable consideration, the receipt and sufficiency of which are acknowledged, the parties hereto, intending to be legally bound, agree as follows:

1. Definitions

1.1 “Affiliate” or “Affiliates” means (i) any corporation, company or other entity in which a party directly or indirectly owns or controls at least fifty percent (50%) of the stock or other ownership interest entitled to vote in election of the Board of Directors; (ii) any corporation, company or other entity which directly or indirectly owns or controls at least fifty percent (50%) of the stock or other ownership interest of a party entitled to vote in the election of the Board of Directors. Affiliate or Affiliates also means any corporation, company or other entity which is under common control with a party.

1.2 “Commercially Reasonable Efforts” shall mean such application of effort and resources by the relevant party as would be consistent with its actions in respect of a product or compound owned or controlled by such party, which is of similar market potential and at a similar stage in its development or product life, taking into account, without limitation, with respect to a product issues of safety and efficacy, product profile, the proprietary position of the product, the then current competitive environment for the product and the likely timing of the product's entry into the market, the regulatory environment of the product, and other relevant scientific, technical and commercial factors. Notwithstanding the foregoing, to the extent that the performance of a party's responsibilities hereunder is adversely affected by the other party's failure to perform its responsibilities hereunder, such party will not be deemed to have failed to use its Commercially Reasonable Efforts in performing such responsibilities.

1.3 “Effective Date” means June 1, 2012.

1.4 “Licensed Field” means the treatment, diagnosis, prevention and monitoring of diseases and other medical conditions in humans and animals.

1.5 “Licensed Products” means any product or process which utilizes master cell bank (“MCB”) or the BC8 monoclonal antibody (“MAb”).

1.6 “Licensed Know-How” means the MCB, MCB documentation, BC8 MAb manufacturing documentation and all clinical, preclinical and technical data owned or controlled by FHCRC related to the BC8 program.

1.7 “Materials” means BC8 MAb and all relevant Investigational New Drug (“IND”) and Drug Master Files.

1.8 “Net Sales” means Company's, its Affiliates' and their sublicensees' gross receipts for the sale, lease, use or transfer of any Licensed Product to any third party, less the sum of the following:

- Discounts, credits, refunds, chargebacks and rebates actually allowed in amounts customary in the trade directly for a Licensed Product;
- Sales, use, excise, import, export, customs, and value added taxes, tariffs, and duties directly imposed on the Licensed Products and actually paid by Company, its Affiliates or any of their sublicensees;
- Actual, separately invoiced outbound freight and insurance costs actually paid by Company directly on Licensed Products;
- Amounts allowed or credited on returns of sales of Licensed Products; and
- Amounts that are written off as non-collectible for the sale of Licensed Products after Company's, its Affiliates' or their sublicensees' commercially reasonable efforts to collect such amounts, exclusive of costs of collection.

1.8.1 No deductions may be made for commissions paid to individuals for the sale of Licensed Products, whether they are independent sales agents or regularly employed _by Company, its Affiliates or their sublicensees, nor for any other cost incurred in the manufacture, marketing, sale, distribution, shipment, promotion, advertisement, exploitation or commercialization of Licensed Products.

1.8.2 In the case of Licensed Products transferred by Company or its Affiliate(s) to one another or to a third party where (i) such transferee is using such Licensed Products for the purposes of selling products or creating products for sale or for services in the commercial market (other than under a written agreement pursuant to which the transferee's use of the Licensed Product(s) is limited only to research purposes internal to such transferee for which such transferee does not derive a commercial or other economic benefit) and (ii) such transferee has, in connection with such transfer, paid consideration to Company in a form other than cash for Licensed Product, the Net Sales shall mean the cash consideration that the selling party would have received if they were sold to an unrelated, unaffiliated third party in an arm's length sale of the same product in similar quantities at the same time and place (the “Fair Market Value”).

1.8.3 Licensed Products will be considered "sold" when delivered, billed out, or invoiced, whichever comes first. For all Licensed Products used by Company as premiums to promote, market, sell or lease products or processes other than Licensed Products, the Licensed Products will be deemed to have been sold at the Fair Market Value.

1.8.4 A "sale" shall not include transfers or dispositions for (i) bona fide charitable purposes; (ii) when Licensed Products are distributed alone solely for promotional purposes for the Licensed Products; or (iii) if necessary, pre-clinical, clinical, regulatory or governmental purposes prior to receiving regulatory approval for sale or use of such Licensed Products in such country, for which no compensation or financial benefit for (i), (ii) or (iii) immediately above is received by, or accrued to, Company, its Affiliates or sublicensees.

1.8.5 With respect to a Licensed Product that is sold pre-packaged in combination with a special US FDA, or its foreign equivalent, approved device used for the administration of Licensed Products, or other US FDA, or its foreign equivalent, approved drug, where such special approved device or such other approved drug (or combination thereof) is not a Licensed Product, the Net Sales of such Licensed Product, for the purposes of determining royalty payments, shall be determined by multiplying the Net Sales of the combination product in a given country by the fraction A/(A+B) where A is the average published sales price in that country of such Licensed Product when sold separately in finished form in like quantities and B is the average published sale price in that country of such approved device or such other approved drug in the combined product sold separately in finished form in like quantities. In the event and only in the event such average published sale price in a given country of such approved device or such other approved drug in the combined product cannot be determined, Net Sales for the purposes of determining royalty payments for the combination product shall be calculated by multiplying the Net Sales of the combination product by the fraction A/C where A is the average published sale price in that country of such Licensed Product when sold separately in finished form and C is the average published sale price in that country of the combined product.

1.8.5.1 Notwithstanding Section 1.10.5 above, Section 1.10.5 does not apply and no reduction to Net Sales may be made pursuant thereto, for any such device or combination, where Company intends to apply any royalty reduction associated with such device or combination, or use thereof, under Section 3.3 below.

1.9 "Funded Research" means the research conducted for the Projects in the laboratory of Dr. John Pagel pursuant to the Sponsored Research Agreement.

1.10 "Project" means the activities set forth in the research work plan attached hereto as Exhibit C and as subsequently modified pursuant to the Sponsored Research Agreement.

1.11 “Sponsored Research Agreement” means the separate written agreement on mutually agreeable terms and conditions between FHCRC and Company by which Company shall pay to FHCRC the amount of One Hundred Fifty Thousand Dollars ($150,000.00) per year (including indirect cost) for the first two years and Two Hundred Fifty Thousand Dollars ($250,000.00) per year (including indirect cost) for the third and fourth year (“Annual Research Contribution Amount”) for a four year term in support of the Funded Research. The parties agree and acknowledge that the Sponsored Research Agreement shall provide the following: (i) commencing ninety (90) calendar days after the Effective Date, the Annual Research Contribution Amount shall be payable in quarterly installments; (ii) the parties intend that the scope of the research work plan for the Sponsored Research Agreement will be consistent with the research work plan set forth in Exhibit C; and (iii) upon Company receiving the first regulatory approval for the first Licensed Product, the Sponsored Research Agreement will be extended annually at the level of Two Hundred Fifty Thousand Dollars ($250,000.00) for five consecutive years which will be creditable to royalty payment owed to FHCRC as in Section 3.3.

1.12 “Territory” means all of the countries and territories of the world.

1.13 “US” means the United States of America, its territories and possessions.

2. Grant of License

2.1 Subject to the terms and conditions of this Agreement including but not limited to this Section 2, FHCRC hereby grants to Company and Company hereby accepts from FHCRC, an exclusive, worldwide right and license to use Materials solely in the Field, with the right to sublicense, to develop, have developed, register, use, make, have made, market, have marketed, distribute, have distributed, sell, have sold, offer for sale, and import Licensed Products FHCRC also grant to Company the exclusive right to utilize the Licensed Know-How solely to make Licensed Products and to sell Licensed Products in the Field. Further, Company's Affiliates that are sublicensed under the foregoing licenses shall have the right to further sublicense such rights pursuant to the terms of this Agreement.

2.2 The right and license granted to Company by FHCRC in Section 2.1 above is subject to (i) a reservation of rights by the FHCRC and its Affiliates, including the Seattle Cancer Care Alliance (“SCCA”), to make, have made, provide and use and practice the Materials including the BC8 MAb for the FHCRC' s, its Affiliates and the SCCA' s internal educational, academic, clinical and research purposes and for collaboration projects with other academic institutions, including non-commercial clinical trials with BC8 at its own discretion using isotopes other than iodine-131, bismuth-213 or actinium-225; (ii) any and all other rights of FHCRC not expressly granted to Company in this Agreement including but not limited to any right title and interest outside of the Licensed Fields, and (iii) any rights reserved to the United States Government and others in accordance with 35 U.S.0 200-205 and P.L. 96-517, as amended by P.L. 98620 and its implementing regulations for government purposes. For the sake of clarity, FHCRC will have right to continue to completion ongoing iodine-131 trials. Commencement of any new iodine-131, bismuth-213 or actinium-225 based trials by FHCRC under investigator INDs will be subject to mutual agreement with the Company. Company will provide BC8 for such trials at direct cost to the extent that it is available but will have no responsibility to fund other aspects of such trials, provided that the Company shall be kept informed of the progress and results of any such trials and have the option to commercialize compounds which are the subject of such trials.

2.3 Except as expressly provided for in this Agreement, no license or other rights, either express or implied, are granted by FHCRC to Company by the execution of this Agreement or the transfer of any materials or information hereunder, including but not limited to, any right, title and interest outside of the Licensed Field for any purpose including commercial or noncommercial production, use, sale or license.

2.4 Company shall not cause or permit any lien, mortgage, incumbrance, restriction, security interest or other legal or equitable claims to be entered or placed upon this Agreement, the license to Company under this Agreement or any rights, including sublicensing rights, under this Agreement. Company shall not offer, pledge or claim, or permit another to offer, pledge or claim, this Agreement, the license to Company under this Agreement, or any rights, including sublicensing rights, under this Agreement as security or a security interest for any purpose.

3. License Fees, Royalties and other Financial Consideration

3.1 In partial consideration for the right and license granted to Company pursuant to this Agreement, Company will pay to FHCRC all reasonable MCB and mAb related out-of-pocket expenses incurred after the Effective Date of this Agreement (except for costs of MCB and mAb related to use of mAb in FHCRC research programs), including storage, stability testing, QA/QC and manufacturing expenses within forty-five (45) days upon receiving an invoice for the amount from FHCRC.

3.2 In further consideration for the right and license granted to Company under this Agreement, Company will pay to FHCRC a milestone payment of $1,000,000 US in cash and equity (up to 50 percent equity in Company's discretion) upon first approval by the US FDA for the marketing and/or sale of the first Licensed Product in US. Such milestone payment will be due and payable to FHCRC within forty-five (45) days of Company, its Affiliates or sublicensees meeting or achieving the milestone. Any and all such milestone payments are not refundable and any and all milestone payments are only payable once, regardless of the number of times a milestone is achieved by one or more Licensed Product.

3.3 In further consideration for the right and license granted pursuant to this Agreement, Company will pay to FHCRC, for a period ending ten (10) ears after launch of each Licensed Product, on a country by country basis, a royalty in the amount of Two percent (2%) of the Net Sales of such Licensed Product in that country received by the Company and any and all sublicense(s). Company may reduce the royalty rate payable to FHCRC upon the approval of any biosimilar generic product. Company will negotiate with FHCRC in good faith for any such reduction. Payments made by Company to FHCRC pursuant to the Sponsored Research Agreement between the parties dated June 1, 2012 will be creditable against royalties payable pursuant to this Section 3.3.

3.4 Delivery of Materials

3.4.1 Delivery of aterials. Within sixty (60) days of the Effective Date, FHCRC will provide to Company the Materials listed in Exhibit B. If FHCRC is unable to provide any or all such Materials under Exhibit B, FHCRC will promptly inform Company and, the parties will negotiate in good faith to amend this Agreement appropriately.

3.4.2 Supply of Antibody. FHCRC shall make, or cause to be made, in two production runs, one lot of 100 vials of GMP BC8 antibody, 5mL per vial at 5mg./mL at its direct cost to be paid by Company and to be delivered to Company before the end of November, 2012. FHCRC shall make a second lot of the same size and specifications and under the same terms and conditions to be delivered on or before April 30, 2013. FHCRC shall also provide to Company all GMP required documentation for such lots, including, without limitation, batch records, test records and validation records.

4. Sublicenses

4.1 Subject to the terms and conditions of the this Agreement, Company will have the exclusive right to grant sublicenses to others for the Licensed Products in the Licensed Field to the extent of the license granted to Company hereunder. Company will be responsible for the performance of any and all sublicensees. Company will provide FHCRC a copy of any and all sublicense agreements within sixty (60) days of execution. Company may redact financial information from such copy. Company's sublicense agreements shall be made in a manner that is consistent with FHCRC' s rights and duties under this Agreement and the obligations of Company to FHCRC under this Agreement.

4.2 Termination of the license granted to Company by FHCRC under this Agreement will terminate all sublicenses which may have been granted by Company, provided, however, that any sublicensee who desires to continue its sublicense must so advise FHCRC in writing of sublicensee's desire to continue the sublicense within thirty (30) days of the sublicensee's receipt of written notice of the termination of Company's license and, subject to the sublicensee's agreement to assume relative to FHCRC all the obligations, including obligations for payment, contained in the sublicense agreement with Company, FHCRC shall continue the sublicense as a direct license from FHCRC.

4.3 Any sublicense granted by Company must contain provisions relative to termination and the conditions of continuance of any sublicenses in accordance with the provisions of this Agreement.

5. Commercially Reasonable Efforts

5.1 Company will pursue the development of the Licensed Products and will use Commercially Reasonable Efforts to develop and bring Licensed Products to market through a thorough program for marketing and commercialization of the Licensed Products in major markets of the Territory, including responsibility for conducting and funding all clinical trails and regulatory activities as set forth in a development plan as attached in Exhibit A. FHCRC shall have the opportunity, at its option, to participate as a clinical site for such trials, provided that it meets all relevant regulatory requirements. Furthermore and more specifically, Company will use Commercially Reasonable Efforts to develop and bring to market and sell at least one Licensed Product within the Licensed Field.

5.2 Company will use Commercially Reasonable Efforts to have the Licensed Products cleared

for marketing in those countries in which Company intends to market and/or sell Licensed Products by the responsible governmental agencies requiring such clearance. To accomplish such clearances at the earliest practicable date, Company will file, according to the usual practice of Company, any necessary data with such government agencies.

6. Confidentiality

6.1 FHCRC and Company recognize that each party may need to provide confidential and proprietary information from time to time to the other parties pursuant to this Agreement. In recognition of FHCRC as non-commercial, academic institution, Company agrees to limit to the extent possible the delivery of confidential information to FHCRC. FHCRC and Company agree to hold in confidence, in accordance with this Section 6, any information disclosed by one party to the other under this Agreement (hereinafter "Information"). Information will be provided in written or other tangible form whenever possible marked as "confidential", but if provided orally or in an other non-tangible form, the Information must be summarized in writing labeled as "confidential" and be provided to the receiving party within thirty (30) days of first disclosure to be considered confidential under this Agreement. For the purpose of this Agreement, "hold in confidence" means that FHCRC and Company will not disclose the Information of the other party to a third party and will protect the Information provided to it by the other party in the same manner in which it protects its own confidential information of similar nature, but in no event less than reasonable care. The Information will remain the property of the party disclosing such Information.

6.2 The obligations of the receiving party to maintain confidentiality under this Agreement will survive the expiration or termination of this Agreement and will endure for five (5) years from the date of first disclosure under this Agreement.

6.3 Information does not include:

(a) information that is already known to the receiving party prior to the Effective Date;
(b) information that is or becomes publicly known through no fault of receiving party;
(c) information that has been or is disclosed to the receiving party by a third party who was not or is not under any obligation of confidence or secrecy to the disclosing party at the time said third party discloses to the receiving party;
(d) information that is developed by employees of receiving party who had no knowledge of the Information, as evidenced by the contemporaneous written records of the receiving party;
(e) information that is approved for release by written authorization of the disclosing party; and
(f) information that is required to be disclosed by law, provided the receiving party promptly notifies the disclosing party in writing prior to such disclosure.

6.4 The parties further agree that Company shall have the right to disclose Confidential Information of FHCRC or the provisions of this Agreement to: (a) its Affiliates; (b) potential sublicensees, assignees or subcontractors for the purpose of allowing any such potential sublicensee, assignee or subcontractor to evaluate such technologies and to determine whether to enter into a sublicense, assignment or subcontracting arrangement; (c) sublicensees, assignees or subcontractors, for the purpose of allowing such sublicensee, assignee or subcontractor, as the case may be, to make, have made, use, market, sell or distribute Licensed Products; (d) a purchaser or potential purchaser of Licensed Products for the purpose and only to the extent necessary to generate Net Sales or a purchaser or potential purchaser all or substantially all of Company's assets; and (e) an investor or lender or prospective investor in or lender to the Company; provided, however, that, prior to any such disclosure, Company shall obtain a confidentiality agreement (substantially similar in form and content to the provisions of this Section 6) from the party to which such disclosures are to be made.

7. Representations and Disclaimer

7.1 FHCRC represents that (i) to the best of its knowledge, it is the owner of all right, title and interest in and to the Materials, free of any liens, licenses, encumbrances, restrictions and other legal or equitable claims other than any rights of the federal government under federal funding guidelines ; (ii) has the lawful right and authority to enter into this Agreement; (iii) to the best of its knowledge, the performance of its obligations under this Agreement will not conflict with or result in a breach of any agreements, contracts or other arrangements to which FHCRC is a party.

7.2 Company represents that (1) Company has the lawful right and authority to enter into this Agreement; (2) Company will maintain and utilize its commercially reasonable resources and personnel to perform Company's obligations under this Agreement in accordance with its terms; (3) to the best of its knowledge, the performance of its obligations under this Agreement will not conflict with or result in a breach of any agreements, contracts or other arrangements to which Company is a party.

7.3 All information, materials and property, whether tangible or intangible, which may be delivered hereunder to Company, will be delivered on an “as is, where is” basis without any express or implied warranty except as expressly set forth in Section 7.1 above. FHCRC HEREBY DISCLAIMS ANY AND ALL REPRESENTATIONS OR WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY IMPLIED WARRANTIES ARISING FROM ANY COURSE OF DEALING, USAGE, OR TRADE PRACTICE. FHCRC MAKES NO REPRESENTATIONS AND EXTENDS NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, AS TO THE USE OF THE LICENSED MATERIALS OR LICENSED PRODUCTS WILL NOT INFRINGE ANY PATENT, COPYRIGHT, TRADEMARK, OR OTHER RIGHTS. FHCRC ASSUMES NO RESPONSIBILITY WITH RESPECT TO THE EXPLOITATION OR COMMERCIALIZATION OF THE MATERIALS, LICENSED PRODUCTS OR THE MANUFACTURE, USE, SALE, LEASE OR DISTRIBUTION OF ANY METHODS, PROCESSES, APPARATUS, DEVICES, SYSTEMS, PRODUCTS, ARTICLES, AND/OR APPLIANCES DERIVED FROM OR USING THE LICENSED PRODUCTS BY COMPANY, ITS AFFILIATES OR SUBLICENSEES. FURTHER, NO PARTY WILL BE LIABLE FOR LOSS OF PROFITS, LOSS OF USE, OR ANY OTHER INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES EVEN IF FHCRC HAS BEEN ADVISED OF THE POSSIBILITY THEREOF.

8. Records, Reports, and Payments

8.1 Company will keep and maintain and will require any and all of its Affiliates and sublicensees to keep and maintain complete, accurate, and correct records and books relating to the sale or lease of the Licensed Products sufficient to determine the royalties payable to FHCRC for five (5) years following the end of the calendar year to which such records and books pertain.

8.2 Company will render to FHCRC calendar quarter reports for each calendar quarter during the term of this Agreement, provided a sale of Licensed Products has taken place. Within sixty (60) days following the end of each such calendar quarter (e.g. December 31, March 31, June 30, September 30), Company will provide to FHCRC a written report setting forth the following information with respect to the immediately preceding calendar quarter:

(a) accounting for all Licensed Products sold, distributed, used or leased;

(b) gross sales of Licensed Products;

(c) any applicable deductions, allowances, and charges as provided in Section 1.10 of this Agreement;

(d) total Net Sales;

(e) total of all milestone payments due and payable to FHCRC; and

(f) total royalties, milestone payments and other payments under this Agreement then due.

8.2.1 Prior to the first commercial sales or leases of any Licensed Product, Company shall provide to FHCRC a statement to that effect annually, within sixty (60) days of the end of each calendar year. After such first commercial sale, unless otherwise expressly provided for in this Agreement, Company will pay to FHCRC with each such report according to Section 8.2 and on the date each such report is due the total amount of royalty and any and all other amounts due and payable to FHCRC pursuant to this Agreement for each such calendar quarter period.

8.2.2 Company will be responsible for providing such reports in a timely manner to FHCRC on behalf of Company, its Affiliates and its sublicencees. Any amounts from Affiliates or sublicensees shall be supported by reports from the Affiliates and the sublicensees. Company shall require any Affiliate or sublicensee to prepare and render an appropriate report on behalf of the respective Affiliate or sublicensee.

8.3 The books and records of account relating to sales of Licensed Products kept by Company, its Affiliates or sublicensees, shall be made available upon reasonable notice, during normal business hours for examination by one or more auditors mutually agreed upon by the Parties, such auditor(s) to be independent of either party. The auditor(s) will be permitted to enter upon the premises of Company or the respective Affiliate or sublicensee, and, at FHCRC' expense, make and retain (subject to the confidentiality obligations of this Agreement) copies of any and all parts of said books and records of account, including invoices that are relevant to any report required to be rendered by Company or its Affiliates or sublicensees. Any amount found to have been owed but not paid will be paid promptly to FHCRC with interest at the rate equal to the prime rate in effect at the Chase Manhattan Bank (N.A.) on the due date with the addition of two percent (2%) per year. In the event any such audit shows that Company has underpaid its royalty obligation hereunder by the lesser of (i) more than ten percent (10%), or (ii) Thirty Thousand dollars ($30,000US), during any calendar quarter, Company will reimburse FHCRC for the out-of-pocket expense for such audit. FHCRC together shall conduct no more than one (1) audit per calendar year. In the event any such audit shows that the Company has overpaid its royalty obligation hereunder, such overpayment shall be credited against future royalty payments.

8.4 Royalty or other payments will be paid in United States dollars to FHCRC in Seattle, Washington or at such place as FHCRC may reasonably designate consistent with the laws and regulations controlling in any foreign country. Any withholding taxes which Company is required by law to withhold on remittance of the royalty payments will be deducted from the royalty paid. Company will furnish FHCRC through FHCRC with original copies of all official receipts for such taxes and assist FHCRC, at FHCRC' s expense, to recover any such taxes which FHCRC may be entitled to recover. If any royalties hereunder are based on Net Sales converted from foreign currency, such conversion will be made by using the average exchange rate at a first-class foreign exchange bank for the calendar quarter period to which such royalty payments relate.

9. intentionally left blank

10. Termination

10.1 If Company becomes bankrupt or insolvent, or files a petition in bankruptcy, or if the business of Company is placed in the hands of a receiver, assignee or trustee for the benefit of creditors, whether by the voluntary act of Company or otherwise, this Agreement will automatically terminate immediately without any notice whatsoever to Company.

10.2 If Company at any time defaults in any payment due to FHCRC, fails to provide any report due under this Agreement or makes any materially false report to FHCRC or commits a material breach of any covenant or undertaking set forth herein, including without limitation a breach of its obligations of Commercially Reasonable Efforts pursuant to Article 5 of this Agreement, FHCRC will have the right, in addition to all other remedies available, to terminate the license under this Agreement and revoke any and all licenses herein granted, by giving Company ninety (90) days prior written notice of the intended termination followed by an official notice of termination which will effect termination of this Agreement, provided, however, that if Company will have cured such breach within such ninety (90) day period, then this Agreement will remain in effect and the rights and licenses herein granted will be in force as if no breach had occurred on the part of Company. If there is a payment default that is disputed in good faith by the Company, the Company will not be deemed in default under this Section, provided it pays (a) any amount not in dispute when due and (b) any balance determined to be due together with interest on that amount at the rate specified in Section 8.3 upon resolution of the dispute by agreement, legally binding judgment or other resolution that is legally binding on the parties. In the event of termination under this Section, Company will continue to be obligated to pay to FHCRC any and all license fees, royalties, milestone payments, or other payments payable at the time of termination pursuant to this Section 10.

10.3 Both parties shall have the right, in addition to all other remedies available, to terminate this Agreement upon a material breach by the other party of any material covenant or undertaking set forth herein that remains uncured ninety (90) days following written notice thereof.

10.4 Company will have the right to terminate the license under this Agreement with or without cause at any time on ninety (90) days written notice to FHCRC delivered to FHCRC.

10.5 Upon termination of this Agreement for any reason other than a material breach, nothing herein will be construed to release either party from any obligation accrued prior to the effective date of such termination.

10.6 Subject to Section 10.4 above, upon termination of this Agreement for any reason, any and all rights granted herein to Company by FHCRC will immediately revert to FHCRC and neither party will make any further use of the Confidential Information of the other party.

10.7 Except in case of FHCRC's termination of this Agreement in accordance with Section 10.3, following termination of this Agreement by FHCRC, Company, its Affiliates and sublicenses may for a period of six (6) months after the effective date of such termination dispose of their existing inventory of Licensed Product on hand as of the effective date of termination. At the end of such six (6) months period the right to dispose of such Licensed Product shall cease. During this six (6) months period, Company's responsibilities and obligations to FHCRC under this Agreement will remain in full force and effect, including but not limited to Company's obligation of indemnification, insurance, and payment of royalties and fees on Licensed Products.

11. Legal Action

11.1 Legal Action. In the event any legal action is commenced against Company involving Materials or a Licensed Product or otherwise relating to this Agreement, whether or not FHCRC is named as a party to the legal action, Company shall keep FHCRC or its attorney nominee fully advised of the progress of the legal action and shall reimburse FHCRC for its reasonable legal costs (including attorney's fees) incurred as a result of FHCRC's monitoring of such action, FHCRC's being named a party to any such legal action, or when FHCRC's employees or agents are called as witnesses therein or asked to testify for or consult with Company in connection therewith. FHCRC agrees to cooperate with Company, to the extent reasonably possible and at Company's expenses, in any legal action brought pursuant to this Article 11.

12. Indemnification and Insurance

12.1 Company, its Affiliates and any of their sublicensees will, at all times during the term of this Agreement and thereafter, indemnify, hold harmless, and defend the FHCRC, its trustees, officers, directors, employees, agents, and affiliates from and against any and all claims, losses, damages, and/or liability of whatsoever kind or nature, as well as all costs and expenses, including legal expenses and reasonable attorneys' and expert fees, which arise or may arise at any time out of or in connection with any activity of Company involving the Licensed Products, including without limitation the manufacture, use, sale, lease, commercialization, licensing or distribution of any application derived from or using the Licensed Products, except to the extent such claims, losses, damages and/or liability is caused by the gross negligence or willful conduct of FHCRC or the indemnified party.

12.2 Company and any of Affiliates and their sublicensees will carry liability insurance at their own expense, reasonably adequate in accordance with industry custom and practice to assure its obligations to FHCRC under Section 12.1 of this Agreement. Company will provide satisfactory evidence of such insurance coverage to FHCRC upon the request of FHCRC.

13. Assignment

13.1 Company may assign or otherwise transfer this Agreement and the license granted hereby and the rights acquired by it to and only to an Affiliate or to the assignee or transferee of Company's entire business or of that part of Company's business to which the license granted hereby relates; provided, however, that such Affiliate or assignee or transferee agrees in writing to be bound by the terms and conditions of this Agreement. Except for an assignment or a transfers set forth in the preceding sentence, Company will give FHCRC thirty (30) days prior notice of such assignment and transfer and if FHCRC raises no reasonable objection in writing to such assignment or transfer within fifteen (15) days after FHCRC receives such notice, then FHCRC will be deemed to have approved such assignment or transfer so long as the assignee or transferee agrees in writing to be bound by the terms and conditions of this Agreement. If the assignee or transferee does not agree in writing to be bound by the terms and conditions of this Agreement within fifteen (15) days of any such request by FHCRC, then FHCRC will have the right to terminate this Agreement by providing written notice of termination to such transferee or assignee,

13.2 FHCRC may assign or otherwise transfer this Agreement to an Affiliate, without prior approval by Company provided that such assignee or transferee is bound by the terms of this Agreement.

14. Non-Use of Names

Neither party will use the names of the other party, nor any adaptation thereof, in any advertising, promotional or sales activities without prior written consent obtained from the other party in each separate case.

15. Export Controls

It is understood that FHCRC is subject to United States laws and regulations controlling the export of technical data, computer software, laboratory prototypes, and other commodities or materials that may require a license from the applicable agency of the United States Government or may require written assurances by Company that Company will not export data or other items commodities to certain foreign countries without prior approval of such agency. FHCRC neither represents that a license will not be required nor that, if required, it will be issued.

16. Survival

Sections 1, 6, 7, 8.1, 8.2, 8.3, 8.4, 10.9, 11.3, 11.5, 11.6, 11.7, 12, 14, 16, 17 and 18 of this Agreement shall survive termination or expiration of this Agreement.

17. Payments, Notices and Other Communications

Any payment, notice, or other communication pursuant to this Agreement will be sufficiently made or given on the date of mailing if sent to such party by certified first class mail or overnight express mail by recognized national carrier, postage prepaid, addressed to it at its address below or at a substitute address as it will designate by written notice given to the other party:

FHCRC: Vice President, Industry Relations and Technology Transfer
Fred Hutchinson Cancer Research Center
1100 Fairview Avenue N., J5-110
Seattle, Washington 98108, USA

Company: President and Chief Executive Officer
Actinium Pharmaceuticals, Inc.
391 Lafayette Street
Newark , NJ07105 USA

18. Miscellaneous Provisions

18.1 This Agreement will be construed, governed, interpreted, and applied in accordance with the laws of the State of Washington, U.S.A. without regard to conflicts-of-law rules and without giving effect to the United Nations Convention on contracts for the International Sale of Goods. Notwithstanding the foregoing, any questions affecting the construction and effect of any patent will be determined by the law of the country in which the patent was granted.

18.2 The parties hereto acknowledge that this Agreement (including the Exhibits hereto) together with the Sponsored Research Agreement set forth the entire agreement and understanding of the parties hereto as to the subject matter hereof, and supersedes and cancels any and all prior agreements between the parties relating to the subject matter except that the mutual non-disclosure Agreement between Company and FHCRC with an effective date of November 21, 2011 shall control the applicable transaction and events until the effective date of this Agreement. This Agreement will not be subject to any change or modification except by the execution of a written instrument subscribed to by the parties hereto.

18.3 The provisions of this Agreement are severable, and in the event that any provision of this Agreement will be determined to be invalid or unenforceable under any controlling body of law, such invalidity or unenforceability will not in any way affect the validity or enforceability of the remaining provisions hereof.

18.4 Company must mark the Licensed Products made, used, shipped to or sold in the United States with all applicable United States patent numbers. All Licensed Products made, used, shipped to or sold in other countries will be marked in such a manner as to conform with the patent laws and practice of the country of manufacture, use, shipment or sale.

18.5 The failure of either party to assert a right hereunder or to insist upon compliance with any term or condition of this Agreement will not constitute a waiver of that right or excuse a similar subsequent failure to perform any such term or condition by the other party.

18.6 Except as otherwise specifically provided in Section 13 of this Agreement, neither this Agreement nor any of the licenses or rights herein granted will be assignable or otherwise transferable by Company without the prior written permission of FHCRC, provided that Company shall have the right to sublicense its rights pursuant to Sections 2 and 4 of this Agreement.

18.7 This Agreement will be binding and enure to the benefit of the parties hereto and their respective affiliates, and permitted successors and assigns.

18.8 The representations, warranties, covenants, and undertakings contained in this Agreement are for the sole benefit of the parties hereto and their permitted successors and assigns and such representations, warranties, covenants, and undertakings will not be construed, unless expressly set forth in this Agreement, as conferring any rights on any other party.

18.9 Nothing contained in this Agreement will be deemed to place the parties hereto in a partnership, joint venture or agency relationship and neither party will have the right or authority to obligate or bind the other party in any manner.

18.10 This Agreement may be executed in two or more counterparts, each of which will be deemed an original, but all of which taken together will constitute one and the same instrument.

18.11 In the event of any dispute between the parties that arises from this Agreement, the prevailing party in any legal action that is brought to resolve such dispute will be entitled to recover its attorneys' fees and costs from the other party.

18.12 This Agreement shall be construed as if drafted by both parties in concert, and no ambiguity shall be construed against the particular party drafting the ambiguous language.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals and duly executed this License Agreement as of the day and year first set forth above.

Fred Hutchinson Cancer Research Center	**Actinium Pharmaceuticals, Inc.**
BY: /s/ Ulrich IViueller	BY: /s/ Dragan Cicic
NAME: Ulrich IViueller, Ph.D.	NAME: DRAGAN CICIC
TITLE: Vice President, Industry Relations And Clinical Research Support	TITLE: President And CEO
DATE: June 11, 2012	DATE: June 14, 2012

List of Exhibits

Exhibit A

Exhibit B

Exhibit C

EXHIBIT A

CLINICAL DEVELOPMENT PLAN

API's goal is to progress the BC8-I-131 program into a pivotal clinical trial as soon as possible. The initial development plan is envisioned as a Pivotal Phase II clinical trial.

This approach was considered the best and most likely in the discussion with leading transplanters. The trial would be a non-randomized single arm trial in advanced active AML patients (refractory and in florid relapse). All enrolled patients would receive reduced intensity external total body irradiation (TBI) plus fludarabine and BC8-I-131 at the MTD established in the earlier reference trial. There will be no control arm based on the input from hematologists and transplanters that these patients will not qualify for either myeloablative regimen (age, concomitant conditions) or reduced intensity myeloconditioning (futile) and all other alternatives are futile, therefore the patients will drop out of the trial if they are randomized to control arm.

The assumption is that FDA would require at least 40-60 patients to be treated in this single arm trial if they were to agree to it. If the expected improvement in survival is assessed to be 50% instead of two to three times the improvement, trial size may be 120 patients. Descriptive statistics with reference to historic controls would be the outcome. FDA may be less likely to allow this approach, given their recent positions on non-randomized trials, even in cancer.

If allowed, this study would take —2 years until submission and cost $ 9.9 MM if the trial size is 60 patients and 2.5 years at the cost of $ 13.9 MM for 120 patients.

Assumptions:

Patient population: ref/rel AML with active disease, patients not eligible for myeloablative HSCT
(patients over 50)
Trial design: single arm with historical controls, one year follow-up
Primary end-point: 1 year survival
Trial size: 60 patients
Number of centers: 5 - 7
Accrual per month per center: 1 patient

An IND submission for a pivotal trial requires that a number of tasks be completed or be in process. Most of them are independent of the protocol, i.e. will have to be done in exactly the same way regardless of the protocol design that will be finally accepted by the FDA (integrated safety and efficacy databases creation, all manufacturing tasks). During that process, i.e. during Q3 2012, API will approach the FDA and propose a single arm ref/rel AML trial as outlined above. Simultaneously, API will continue to work with the leading clinicians to explore pathways to a randomized trial in both ref/rel AML and HR MDS trial and if the FDA turns down a single arm design, API will submit an IND with a randomized trial protocol.

Given that adequate clinical supplies for study initiation are not slated to be available until the end of 2012, and preparations for the protocol and briefing document for the ref/rel AML trial were to begin in June, the meeting should occur in Q 3. If FDA does not accept the single arm AML trial approach, subsequent to the meeting the HR MDS randomized trial protocol would be submitted with a request for a T-Con with FDA, or alternatively a rel/ref AML randomized protocol, if it is possible to design it in a way acceptable to investigators. This should be scheduled during Q4 which would allow for

IND submission late Q4/early Q1 and trial initiation 30 days later. The total impact of the Ref/rel AML approach first would be 90-120 days, but most of this time will occur before CMC information needed for ND submission is available.

Manufacturing of BC8 antibody is currently taking place at FHCRC using a small batch method, but still adequate for transfer to other facilities (80L fill). It is a GMP compliant manufacturing facility, but is missing certain additional attributes FDA would like to see on BLA inspection. The plan will be to use BC8 manufactured at FHCRC for initial material, while we transfer the process to another cGMP facility. Initially, we will need to characterize material manufactured at FHCRC, and follow it for stability as well as use it in some comparability testing. This will constitute initial clinical supply as well. As we transfer the process to another facility, we will also qualify new reference material that will become the standard reference material (SRM). The FDA requested that FHCRC develop SRM two years ago, and FHCRC agreed to that but has not developed it so far, so the characterization of the FHCRC materials described above will have to move quickly.

Manufacturing of the final drug construct BC8-I-131 is currently taking place at the University of Washington. The process is in need of bringing up to commercial standards.

In order to develop larger scale manufacturing that would easily facilitate a multicenter trial, API proposes the following development plan:

- Order two “regular size” (80L) batches of the BC8 to be manufactured at FHCRC. Due to the continuous manufacturing schedule at FHCRC, it is estimated that the first new batch for API studies would be available in November 2012. The first batch would allow for treatment of approximately 20 patients.
- A second batch would need to be manufactured early in 2013 to ensure sufficient mAb supplies for approximately 6 months, i.e. until late 2013.
- At the same time, API would undertake process transfer, scale up, manufacturing, QA/QC, bioequivalence and accelerated stability studies of a larger batch of the mAb (approximately 125 - 200 patient doses), to be ready to use by the end of March 2013
- In the interim, existing dose material in the form of the BC8-1-131 construct, will be part of a stability/ shipping protocol and will undergo analytical testing to assure it remains potent under expected prep, ship and handling situations.
- In parallel, API would have process development conducted en route to develop a GMPcompliant centralized manufacturing process of the final construct (BC8-I-131) at a CMO. API continues discussions with potential contract manufacturers, three of which have been identified and one provided a quote.

The timing, order and form of all the steps outlined above will depend and may be significantly influenced by the Company funding, regulatory requirements and feedback, FHCRC collaboration, manufacturing issues that may arise and other factors commonly affecting development of new drugs.

EXHIBIT B

Materials to be delivered to Company

FHCRC will deliver to Company all available quantities of BC8 MAb except for those currently committed to the conduct of internal research, including clinical research, at FHCRC, and will undertake to cooperate with Company in the transfer of the MCB and the Working Cell Bank ("WCB") related there to (except for such portion of the WCB as is reasonably required by FHCRC to produce antibody for its own use) and to the facilities listed below. FHCRC will transfer all relevant INDs and Drug Master Files to Company. MAb, MCB and WCB shall be shipped in liquid nitrogen to the following sites: 1) 1/3rd of materials to BioReliance Corporation, 4920 Broschart Road, Rockville, MD 20850; and, 2) 2/3rds to ThermoFisher Scientific, 81 Wyman Street, Waltham, MA 02454. Included in the transfers will be manufacturing and characterization records for the MCB and WCB.

EXHIBIT C

RESEARCH WORK PLAN

Detailed research work plan will be determined by Sponsored Research Agreement and modified as needed and agreed to by both parties. Initial general direction of the research is further development of radioimmunotherapy for bone marrow conditioning/ablation prior to hematopoetic stem cell transplantation or bone marrow transplantation. The targeting agent during the first stage of development will be the BC8 monoclonal antibody.

The following lines of development will be initially pursued:

- Radiolabeling of BC8 with actinium 225, including in vitro and in vivo experiments and development of supporting regulatory documentation that may lead to clinical trials
- Development of high affinity engineered nanoparticles technology as means of binding alpha particle emitters to monoclonal antibodies
- Development of pretargeted radioimmunotherapy technology (PRIT) (streptavidin/biotin system)

The sequence of execution and details of this Research Work Plan will be determined in separate Sponsored Research Agreement.

Exhibit 10.20

2012 UNIT INVESTOR RIGHTS AGREEMENT

BY AND AMONG

ACTINIUM PHARMACEUTICALS, INC.

AND

THE INVESTORS PARTY HERETO

October __, 2012

2012 UNIT INVESTOR RIGHTS AGREEMENT

THIS 2012 UNIT INVESTOR RIGHTS AGREEMENT (the "***Agreement***") is entered into as of October__, 2012, by and among Actinium Pharmaceuticals, Inc., a Delaware corporation (the "***Company***"), the persons identified on Exhibit A hereto (the "***Investors***"), and the Placement Agent (defined below).

BACKGROUND

WHEREAS, the Investors are purchasing or otherwise acquiring Units (as defined herein) pursuant to the form of Unit Purchase Agreement (the "***Purchase Agreement***") attached as an exhibit to the Private Placement Memorandum (as defined herein);

WHEREAS, as a condition of entering into the Purchase Agreement, the Investors and the Placement Agent have requested that the Company agree to enter into this Agreement.

NOW, THEREFORE, in consideration of the mutual promises, representations, warranties, covenants and conditions set forth in this Agreement and in the Purchase Agreement, the parties, intending to be legally bound, mutually agree as follows:

Section 1GENERAL

1.1 **Definitions**. As used in this Agreement the following terms shall have the following respective meanings:

"Affiliate" means, with respect to any Person, any other Person who is an "affiliate" of such Person within the meaning of Rule 12b-2 of the General Rules and Regulations under the Exchange Act.

"Common Stock" means the shares of the Common Stock, $0.01 par value per share, of the Company.

"***Counterpart***" means a counterpart signature page to this Agreement in substantially the same form as Exhibit B attached to this Agreement.

"*Designated Holder*" shall have the meaning set forth in the Registration Rights Agreement.

"*Exchange Act*" means the Securities Exchange Act of 1934, as amended, and any rules or regulations promulgated thereunder, all as the same is in effect from time to time.

"***Form S-3***" means such form under the Securities Act as in effect on the date hereof or any successor form under the Securities Act that permits significant incorporation by reference of the Company's subsequent public filings under the Exchange Act

"*Holder*" means any Investor or the Placement Agent owning of record any Registrable Securities and any assignee of record of such Registrable Securities.

"***Indemnifiable Losses***" means shall mean all losses, liabilities, obligations, claims, demands, damages, penalties, settlements, causes of action, costs and expenses, including, without limitation, the actual reasonable costs paid in connection with an Indemnitee's investigation and evaluation of any claim or right asserted against such Indemnitee Party and all reasonable attorneys', experts' and accountants' fees, expenses and disbursements and court costs including, without limitation, those incurred in connection with the Indemnitee's enforcement of this Agreement and the indemnification provisions of Section 7 of this Agreement

"Registrable Securities then outstanding" means and shall be determined by the number of shares of Common Stock of the Company outstanding which are Registrable Securities plus the number of shares of Common Stock (or common stock of Pubco) issuable pursuant to outstanding securities that are then exercisable for or convertible into securities which are Registrable Securities.

"Rule 144" means Rule 144 under the Securities Act.

"Offering" means the offering of Units pursuant to the Private Placement Memorandum (defined below).

"Order of Cutbacks" has the meaning set forth in Section 2.2(b).

"Placement Agent" means Laidlaw & Company (UK) Ltd.

"*Person*" means any natural person, corporation, general partnership, limited partnership, limited liability partnership, limited liability company, proprietorship, joint venture, trust, association, union, entity or other form of business organization or any governmental or regulatory authority whatsoever.

"Private Placement Memorandum" means that certain Confidential Private Placement Memorandum dated October 1, 2012 describing the offering of Units.

"***Pubco***" has the meaning set forth in Section 2.1 hereof.

"Register," "registered," and "***registration***" each refers to a resale registration effected by preparing and filing a registration statement in compliance with the Securities Act, and the declaration or ordering of the effectiveness of such registration statement.

"***Registrable Securities***" means the following shares of the Company's Common Stock (referred to herein collectively as the "Stock"): (i) all shares of Common Stock issued as part of the Units, or all shares of common stock of Pubco issued pursuant to the Reverse Merger in exchange for the Common Stock issued as part of the Units, (ii) all shares of Common Stock issuable upon exercise of the Investor Warrants (as defined in the Private Placement Memorandum), or all shares of common stock of Pubco issuable upon exercise of the warrants issued pursuant to the Reverse Merger in exchange for such Investor Warrants, and (iii) all shares of Common Stock issuable upon exercise of the Laidlaw Warrant, or all shares of common stock of Pubco issuable upon exercise of the warrant issued by Pubco to the Placement Agent pursuant to the Reverse Merger in exchange for the Laidlaw Warrant, excluding in all cases, however, any Registrable Securities sold by a Person in a transaction in which an Investor's rights under this Agreement are not assigned; provided, however, that Registrable Securities shall not include any securities (A) sold to or through a broker or dealer or underwriter in a public distribution or a public securities transaction, (B) sold in a transaction exempt from the registration and prospectus delivery requirements of the Securities Act under Section 4(l) thereof so that all transfer restrictions and restrictive legends with respect thereto are removed upon the consummation of such sale, or (C) if the Investor thereof is no longer entitled to exercise any right provided in this Agreement.

"*Registration Rights Agreement*" means the Registration Rights Agreement, dated June 30, 2000 and amended by Amendment No. 1 dated September 29, 2011, between the Company and certain of its stockholders (other than the Holders).

"*Registration Rights Security*" shall have the meaning set forth Section 2.1(c).

"***Reverse Merger***" has the meaning set forth in Section 2.1(a).

"***Rule 415***" means Rule 415 under the Securities Act.

"*SEC*" or **"*Commission*"** means the Securities and Exchange Commission.

"*Securities Act*" means the Securities Act of 1933, as amended, and any rules or regulations promulgated thereunder, all as the same is in effect from time to time.

"Subsidiaries" means any Person of which a Company, directly or indirectly, through one or more intermediaries owns or controls at the time at least fifty percent (50%) of the outstanding voting equity or similar interests or the right to receive at least fifty percent (50%) of the profits or earnings or aggregate equity value.

"***Transaction Documents***" has the meaning ascribed to it in the Purchase Agreement.

"***Units***" means the units of the Company's securities as described in the Private Placement Memorandum.

Section 2REGISTRATION OF REGISTRABLE SECURITIES

2.1. Company Obligation of Reverse Merger and Registration.

(a) Within thirty (30) business days following the date of the closing of the sale of the first $5,000,000 in Units (the "**Minimum Offering Amount**") under the Offering (the "**Minimum Offering Closing Date**"), the Company agrees to effect a reverse merger transaction (whether by statutory merger or share exchange) between the Company and a shell company that is current in its reports filed with the SEC under the Exchange Act and whose securities are quoted in the over-the-counter market in the United States (**"Pubco**"), whereby the Company will become a wholly-owned subsidiary of Pubco and holders of the Company's equity or equity-linked securities will receive securities of Pubco in exchange for their securities of the Company (the "**Reverse Merger"**). Immediately prior to the Reverse Merger, Pubco will have no or nominal assets or operations, no material actual liabilities or contingent liabilities, and will be eligible to have its securities traded electronically through the Depository Trust Company (DTC). The Reverse Merger shall be subject to such other terms and conditions as are reasonably satisfactory to the Placement Agent and the Company.

(b) In the event that the Company does not fulfill its obligation to consummate the Reverse Merger within thirty (30) business days following the Minimum Offering Closing Date (the "**Reverse Merger Deadline**"), or otherwise cause its securities (or the securities of a successor of the Company) to become publicly traded within thirty (30) business days following the Reverse Merger Deadline, then upon written demand of the Placement Agent, the Company shall (i) effect the return of any funds then held in the escrow account for the Offering to the investors who deposited such funds in escrow, and (ii) issue to the Placement Agent and any investors whose subscriptions in the Offering have previously closed, on a pro rata basis, warrants to purchase a number of shares of Common Stock equal to five percent (5%) of the outstanding Common Stock of the Company on a fully diluted basis, exercisable for a period of five (5) years from their date of issuance at a price of $0.55 per share and otherwise identical terms as the B Warrants (as defined in the Private Placement Memorandum). Such warrant issuance by the Company shall be in full satisfaction of its obligations to the Placement Agent and such prior investors in the Offering with respect to the delinquency of the Reverse Merger. So long as the Placement Agent has not made such written demand, then the Placement Agent and the Company may continue to solicit and close subscriptions under the Offering notwithstanding the delinquency of the Reverse Merger, provided that the Placement Agent shall retain the right to make such written demand at any time prior to the termination of the Offering and upon such demand such warrant issuance shall be allocated pro rata among all investors who invest in the Offering prior to the consummation of the Reverse Merger.

(c) The Company shall cause Pubco to file with the SEC within forty-five (45) days of the date of the final closing of the Offering (the **"Filing Deadline"**), a registration statement registering for resale all Registrable Securities and any securities defined as "Registrable Securities" under the Registration Rights Agreement (the "**Registration Rights Securities**") requested to be registered by a Designated Holder (the "**Registration Statement**"). The holders of any Registrable Securities removed from the Registration Statement as a result of a Rule 415 or other comment from the SEC shall have "piggyback" registration rights for such Registrable Securities with respect to any registration statement filed by Pubco following the effectiveness of the Registration Statement which would permit the inclusion of such Registrable Securities that were removed from the Registration Statement, provided that any such removal shall be applied in the Order of Cutbacks. In no event shall any Registration Rights Securities be removed from the Registration Statement unless all Registrable Securities hereunder have also been removed. The Company shall cause Pubco to use its reasonable best efforts to have the Registration Statement declared effective within thirty (30) days of being notified by the SEC that the Registration Statement will not be reviewed by the SEC (and in such case of no SEC review, not later than sixty (60) days after the Filing Deadline) or within 180 days after the Filing Deadline in the event the SEC provides written comments to the Registration Statement (the **"Effectiveness Deadline"**).

(d) If the Registration Statement is not filed on or before the Filing Deadline or not declared effective on or before the Effectiveness Deadline, Pubco or, if the Reverse Merger has not then been consummated, the Company, shall pay to each Holder an amount in cash equal to one-percent (1.0%) of such Holder's investment amount in the Offering on every thirty (30) day anniversary of such Filing Deadline or Effectiveness Deadline failure until such failure is cured. The payment amount shall be prorated for partial thirty (30) day periods. The maximum aggregate amount of payments to be made by Pubco or the Company as the result of such failures, whether by reason of a Filing Deadline failure, Effectiveness Deadline failure or any combination thereof, shall be an amount equal to six percent (6%) of each Holder's investment amount. Notwithstanding the foregoing, no payments shall be owed with respect to any period during which all of the Holder's Registrable Securities may be sold by such Holder under Rule 144. Moreover, no such payments shall be due and payable with respect to any Registrable Securities if Pubco is unable to register due to limits imposed by the SEC's interpretation of Rule 415, provided that any such limitation is applied in the Order of Cutbacks.

(e) The Company shall maintain, or shall cause Pubco to maintain, the Registration Statement effective for one (1) year from the date it is declared effective by the SEC or until Rule 144 of the Securities Act is available to Holders with respect to all of their Registrable Securities, whichever is earlier (the "**Effectiveness Period**").

2.2. Piggyback Registration Rights.

(a) If the Registration Statement is not filed on or before the Filing Deadline or not declared effective on or before the Effectiveness Deadline, then if at any time or from time to time the Company or Pubco shall determine to register any of its equity securities for its own account in a direct public offering or an underwritten public offering, or for the account of selling security holders in a resale registration (a "**Resale Registration**"), the Company will, or shall cause Pubco to:

(i) prior to the filing of such registration give to the Holders written notice thereof; and

(ii) include in such registration (and any related qualification under blue sky laws or other compliance), and underwriting, if any, all the Registrable Securities (subject to Rule 415 related cutbacks applied in the Order of Cutbacks) specified in a written request or requests made within thirty (30) days after receipt of such written notice from the Company by any Holder.

(b) The right of any Holder to registration in an underwritten offering pursuant to this Section 2.2 shall be conditioned upon such Holder's participation in any underwritten offering and the inclusion of Registrable Securities in any underwriting to the extent provided herein. If any Holder requests pursuant to Section 2.2(a)(ii) above to distribute its securities through an underwritten offering, such Holder shall (together with the Company and any other stockholders distributing their securities through such underwriting) enter into an underwriting agreement in customary form with the underwriter or underwriters selected for such underwriting by the Company. Notwithstanding any other provision of this Section 2, in the case of an underwritten offering, if the Company or Pubco or the managing underwriter determines that marketing factors require a limitation of the number of shares to be underwritten or registered, the managing underwriter may limit the Registrable Securities to be included in such registration. The Company shall so advise the Holders and the other stockholders distributing their securities through such offering pursuant to piggyback registration rights, and the number of shares of Registrable Securities and other securities that may be included in the registration and underwriting shall be allocated among the holders (i) of Common Stock equivalents of Series E Preferred Shares (or shares of common stock of Pubco issued upon the Reverse Merger to the former holders of Series E Preferred Shares following the automatic conversion thereof immediately prior to the Reverse Merger), and (ii) only after all Common Stock equivalents of Series E Preferred Shares (or all shares of common stock of Pubco issued upon the Reverse Merger to the former holders of Series E Preferred Shares following the automatic conversion thereof immediately prior to the Reverse Merger) have been registered, on a pro rata basis among the Holders and holders of Common Stock equivalents of Series D Preferred Shares, Series C Preferred Shares, Series B Preferred Shares and Series A Preferred Shares (or holders of shares of common stock of Pubco issued to the former holders of such preferred shares following the automatic conversion thereof immediately prior to the Reverse Merger) and the Designated Holders of Registration Rights Securities (or all shares of common stock of Pubco issued upon the Reverse Merger to the former Designated Holders in exchange for Registration Rights Securities, and, finally, if any allocation remains available for registration after the foregoing, (iii) on a pro rata basis among any other participating securities holders. In the event the Company or the managing underwriter does determine that marketing factors require a limitation of the number of shares to be underwritten (the "Cutback"), such Cutback shall be applied first to reduce, pro rata, holders of Common Stock and common stock equivalents other than preferred stock and Registration Rights Securities (or holders of common stock and common stock equivalents of Pubco who received such common stock and common stock equivalents in exchange for Common Stock and Common Stock equivalents other than preferred stock and Registration Rights Securities pursuant to the Reverse Merger) excluding the Holders, next, pro rata, to reduce the Holders, the Designated Holders and any other holders of Common Stock equivalents of Series A Preferred Shares, Series B Preferred Shares, Series C Preferred Shares, and Series D Preferred Shares (or holders of shares of common stock of Pubco issued to the former holders of such preferred shares following the automatic conversion thereof immediately prior to the Reverse Merger) , all before it shall be applied pro rata to reduce holders of common stock equivalents of Series E Preferred Shares (or holders of shares of common stock of Pubco issued to the former holders of such Series E Preferred Shares following the automatic conversion thereof immediately prior to the Reverse Merger) (the foregoing order of cutbacks being referred to herein as the "***Order of Cutbacks***"). [Note to 2012 Unit Investors: The order of cutbacks is subject to modification to improve registration priority of 2012 Unit Investors with respect to cutbacks if the company is able to procure necessary amendments to existing Registration Rights Agreements prior to initial closing under Purchase Agreement **]** To facilitate the allocation of shares in accordance with the above provisions, the Company, Pubco or the underwriters may round the number of shares allocated to each Holder or other securities holder to the nearest 100 shares. If any Holder or other securities holder disapproves of the terms of any such underwriting, he or she may elect to withdraw therefrom by written notice to the Company or Pubco and the managing underwriter. Any securities excluded or withdrawn from such underwritten offering shall be withdrawn from such registration, and shall not be transferred in a public distribution without the prior written consent of the managing underwriter prior to one-hundred eighty (180) days after the effective date of the registration statement relating thereto.

(c) The Company shall have the right to terminate or withdraw any registration initiated by it under this Section 2 prior to the effectiveness of such registration, whether or not any Holder has elected to include securities in such registration.

Section 3. UNDERWRITTEN PUBLIC OFFERING.

The Company shall not cause, and shall ensure that Pubco does not cause, the registration under the Securities Act of any other shares of its common stock to become effective (other than registration of an employee stock plan, or registration in connection with any Securities Act Rule 145 or similar transaction) during the Effectiveness Period of a registration requested hereunder for an underwritten public offering if, in the judgment of the underwriter or underwriters, marketing factors would materially adversely affect the price of the Registrable Securities subject to such underwritten registration.

Section 4. OBLIGATIONS OF COMPANY

In addition to the obligations of the Company set forth in Section 2.1, and in no way in limitation of such obligations, whenever the Company or Pubco is required by the provisions of this Agreement to effect the registration of the Registrable Securities, the Company shall, or shall cause Pubco to: (i) prepare and file with the SEC such amendments and supplements to such registration statement and the prospectus used in connection therewith as may be necessary to make and to keep such registration statement effective during the Effectiveness Period, (ii) comply with the provisions of the Securities Act with respect to the sale or other disposition of all securities proposed to be registered in such registration statement for the Effectiveness Period; (iii) furnish to any Holder such number of copies of any prospectus (including any preliminary prospectus and any amended or supplemented prospectus), in conformity with the requirements of the Securities Act, as such Holder may reasonably request in order to effect the offering and sale of the Registrable Securities to be offered and sold; (iv) use its best efforts to register or qualify the Registrable Securities covered by such registration statement under the securities or blue sky laws of such states as the Holders shall reasonably request, maintain any such registration or qualification current for the Effectiveness Period, and take any and all other actions either necessary or reasonably advisable to enable Holders to consummate the public sale or other disposition of the Registrable Securities in jurisdictions where such Holders desire to effect such sales or other disposition; (v) take all such other actions either necessary or reasonably desirable to permit the Registrable Securities held by a Holder to be registered and disposed of in accordance with the method of disposition described herein; (vi) in the event of any underwritten public offering, enter into and perform its obligations under an underwriting agreement, in usual and customary form, with the managing underwriter of such offering; (vii) notify each Holder of Registrable Securities covered by such registration statement at any time when a prospectus relating thereto is required to be delivered under the Securities Act of the happening of any event as a result of which the prospectus included in such registration statement, as then in effect, includes an untrue statement of a material fact or omits to state a material fact required to be stated therein or necessary to make the statements therein not misleading in the light of the circumstances then existing, such obligation to continue for the Effectiveness Period; (viii) cause all such Registrable Securities registered pursuant hereunder to be listed on each securities exchange on which similar securities issued by the Company or Pubco are then listed; (ix) provide a transfer agent and registrar for all Registrable Securities registered pursuant hereunder and a CUSIP number for all such Registrable Securities, in each case not later than the effective date of such registration; and (x) use its best efforts to furnish, at the request of any Holder requesting registration of Registrable Securities pursuant to Section 3, if such securities are being sold through underwriters, or if such securities are not being sold through underwriters, on the date that the registration statement with respect to such securities becomes effective, (A) an opinion, dated such date as such registration statement becomes effective, of the counsel representing the Company for the purposes of such registration, in form and substance as is customarily given to underwriters in an underwritten public offering, addressed to the underwriters and to the Holders requesting registration of Registrable Securities and (B) a letter dated such date as such registration statement becomes effective, from the independent certified public accountants of the Company, in form and substance as is customarily given by independent certified public accountants to underwriters in an underwritten public offering and reasonably satisfactory to the Holders of a majority of the Registrable Securities being registered, addressed to the underwriters, if any, and to the Holders requesting registration of Registrable Securities. Notwithstanding the foregoing, the Company shall not be required to register or to qualify an offering of the Registrable Securities under the laws of a state if as a condition to so doing the Company is required to qualify to do business or to file a general consent to service of process in any such state or jurisdiction, unless the Company is already subject to service in such jurisdiction.

SECTION 5 EXPENSES OF REGISTRATION AND RESTRICTIVE LEGEND REMOVAL

(a) The Company or Pubco shall pay all of the fees and expenses (exclusive of underwriting discounts and commission and stock transfer taxes) incurred by the Company or Pubco in complying with Sections 2, 3 and 4 hereof in connection with any registration statement that is initiated pursuant to this Agreement, including, without limitation, all SEC and blue sky registration and filing fees, printing expenses, transfer agent and registrar fees, the fees and disbursements of the Company's outside counsel, the reasonable fees and disbursements of one special counsel to the Holders (not to exceed $20,000), and the expense of any special audits (not to exceed $20,000) incident to or required by any such registration (the "Registration Expenses"). If a registration proceeding is begun upon the request of Holders pursuant to Sections 3 or 4 but such request is subsequently withdrawn, then the Holders of Registrable Securities to have been registered may either: (i) bear all Registration Expenses of such proceeding, pro rata on the basis of the number of shares to have been registered, in which case the Company shall be deemed not to have effected a registration pursuant to Sections 3 or 4, as applicable, of this Agreement; or (ii) require the Company to bear all Registration Expenses of such proceeding, in which case the Company shall be deemed to have effected a registration pursuant to Section 3 or 4, as applicable, of this Agreement. Notwithstanding the foregoing, however, if at the time of the withdrawal, the Holders have learned of a material adverse change in the condition, business or prospects of the Company from that known to the Holders at the time of their request, then the Holders shall not be required to pay any of said Registration Expenses. In such case, the Company shall be deemed not to have effected a registration pursuant to Sections 3 or 4, as applicable, of this Agreement. Any underwriting discounts, fees and disbursements of any additional counsel to the Holders, selling commissions and stock transfer taxes applicable to the Registrable Securities registered on behalf of Holders shall be borne by the Holders of the Registrable Securities included in such registration. The expenses of any legal services or special audit required in connection with any registration, qualification or compliance pursuant to Section 3 or 4 in excess of twenty thousand dollars ($20,000) shall be borne pro rata by the Holders of Registrable Securities proposing to distribute such shares of Registrable Securities in such registration.

(b) Notwithstanding anything herein to the contrary, at the request of any Holder, the Company shall employ its counsel at the Company's expense to prepare any and all legal opinions necessary for the prompt removal of restrictive legends from certificates representing Registrable Securities as, when and to the extent such legends may be removed in compliance with the Securities Act and/or Rule 144.

SECTION 6 INDEMNIFICATION

6.1. The Company. To the extent permitted by law, the Company will, and shall cause Pubco to, indemnify Holders and each person controlling Holders within the meaning of Section 15 of the Securities Act, and each underwriter if any, of the Company's or Pubco's securities, with respect to any registration, qualification or compliance which has been effected pursuant to this Agreement, against all expenses, claims, losses, damages or liabilities (or actions in respect thereof), including any of the foregoing incurred in settlement of any litigation, commenced or threatened, arising out of or based on any untrue statement (or alleged untrue statement) of a material fact contained in any registration statement, prospectus, offering circular or other document, or any amendment or supplement thereto, incident to any such registration, qualification or compliance, or based on any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading, or any violation by the Company or Pubco of any rule or regulation promulgated under the Securities Act or Exchange Act or state securities law applicable to the Company or Pubco in connection with any such registration, qualification or compliance, and the Company or Pubco will reimburse Holders and each person controlling Holders, and each underwriter, if any, for any legal and any other expenses reasonably incurred in connection with investigating, preparing or defending any such claim, loss, damage, liability or action, provided that neither the Company nor Pubco will be liable in any such case to the extent that any such claim, loss, damage, liability or expense arises out of or is based on any untrue statement or omission or alleged untrue statement or omission, made in reliance upon and in conformity with written information expressly furnished to the Company or Pubco by such Holder or controlling person or underwriter seeking indemnification for use in connection with such registration by any such Holder, underwriter or controlling person.

6.2. Holders. To the extent permitted by law, each Holder shall, if Registrable Securities held by such Holder are included in the securities as to which such registration, qualification or compliance is being effected (the "Indemnifying Holder"), indemnify the Company and Pubco, each of their respective directors and officers and each person who controls the Company and Pubco within the meaning of Section 15 of the Securities Act, and each underwriter, if any, of the Company's or Pubco's securities with respect to any registration, qualification or compliance which has been effected pursuant to this Agreement, against all expenses, claims, losses, damages and liabilities (or actions in respect thereof), arising out of or based on any untrue statement (or alleged untrue statement) of a material fact made in reliance upon and in conformity with written information furnished to the Company or Pubco by such Indemnifying Holder contained in any such registration statement, prospectus, offering circular or other document, or any amendment or supplement thereto, incident to any such registration, qualification or compliance, or based on any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, or any violation by such Indemnifying Holder of any rule or regulation promulgated under the Securities Act applicable to such Indemnifying Holder in connection with any such registration, qualification or compliance, and the Indemnifying Holder will reimburse the Company or Pubco, such directors and officers and each person controlling Company and each underwriter, if any, for any legal or any other expenses reasonably incurred in connection with investigating, preparing or defending any such claim, loss, damage, liability or action, in each case to the extent, but only to the extent, that such untrue statement (or alleged untrue statement) or omission (or alleged omission) is made in such registration statement, prospectus, offering circular or other document, or any amendment or supplement thereto, incident to any such registration, qualification or compliance, in reliance upon and in conformity with written information furnished to the Company by such Indemnifying Holder, provided that in no event shall any indemnity under this Section 6.2 exceed the net proceeds of the offering received by such Indemnifying Holder; provided, further, that the indemnity agreement contained in this Section 6.2 shall not apply to amounts paid in settlement of any such loss, claim, damage, liability or action if such settlement is effected without the consent of the Indemnifying Holder (which consent shall not be unreasonably withheld); provided further, however, that the indemnity agreement contained in this Section 6.2 with respect to any preliminary prospectus shall not inure to the benefit of any Holder or underwriter, or any person controlling such Holder or underwriter, from whom the person asserting any such losses, claims, damages or liabilities purchased shares in the offering, if a copy of the prospectus (as then amended or supplemented if the Company shall have furnished any amendments or supplements thereto) was not sent or given by or on behalf of such Holder or underwriter to such person, if required by law so to have been delivered, at or prior to the written confirmation of the sale of the shares to such person, and if the prospectus (as so amended or supplemented) would have cured the defect giving rise to such loss, claim, damage or liability.

6.3. Defense of Claims. Each party entitled to indemnification under this Section 6 (the "Indemnified Party") shall give notice to the party required to provide indemnification (the "Indemnifying Party") promptly after such Indemnified Party has actual knowledge of any claim as to which indemnity may be sought, and shall permit the Indemnifying Party to assume the defense of any such claim or any litigation resulting therefrom, provided that counsel for the Indemnifying Party, who shall conduct the defense of such claim or litigation, shall be approved by the Indemnified Party (whose approval shall not unreasonably be withheld), and the Indemnified Party may participate in such defense at such party's expense; provided, however, that the Indemnifying Party shall pay such expense if representation of the Indemnified Party by counsel retained by the Indemnifying Party would be inappropriate due to actual or potential differing interests between the Indemnified Party and any other party represented by such counsel in such proceeding, and provided further that the failure of any Indemnified Party to give notice as provided herein shall not relieve the Indemnifying Party of its obligations under this Section 6 unless the failure to give such notice is materially prejudicial to an Indemnifying Party's ability to defend such action. No Indemnifying Party, in the defense of any such claim or litigation shall, except with the written consent of each Indemnified Party which consent shall not be unreasonably withheld, consent to entry of any judgment or enter into any settlement which does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party of a release from all liability in respect to such claim or litigation. No Indemnifying Party shall be required to indemnify any Indemnified Party with respect to any settlement entered into without the Indemnifying Party's prior written consent.

6.4. Contribution. If the indemnification provided for in this Section 6 is held by a court of competent jurisdiction to be unavailable to an Indemnified Party with respect to any losses, claims, damages or liabilities referred to herein, the Indemnifying Party, in lieu of indemnifying such Indemnified Party thereunder, shall to the extent permitted by applicable law contribute to the amount paid or payable by such Indemnified Party as a result of such loss, claim, damage or liability in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party on the one hand and of the Indemnified Party on the other, in connection with the violations that resulted in such loss, claim, damage or liability, as well as any other relevant equitable considerations. The relative fault of the Indemnifying Party and of the Indemnified Party shall be determined by a court of law by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission to state a material fact relates to information supplied by the Indemnifying Party or by the Indemnified Party and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission; provided, that in no event shall any contribution by a Holder exceed the net proceeds from the offering received by such Holder.

6.5. Conflict; Survival. Notwithstanding the foregoing, to the extent that the provisions on indemnification and contribution contained in the underwriting agreement entered into in connection with the underwritten public offering are in conflict with the foregoing provisions, the provisions in the underwriting agreement shall control. The obligations of the Company and Holders under Section 6 shall survive the completion of any offering of Registrable Securities in a registration statement.

SECTION 7 RULE 144 REPORTING

With a view to making available the benefits of certain rules and regulations of the SEC which may at any time permit the sale of the Registrable Securities to the public without registration, the Company agrees to, and agrees to cause Pubco to:

(a) Make and keep public information available, as those terms are understood and defined in Rule 144, at all times in accordance with the requirements of the Exchange Act from and after the effective date of the Reverse Merger;

(b) File with the SEC in a timely manner all reports and other documents required of the Company or Pubco under the Securities Act and the Exchange Act at any time after it has become subject to such reporting requirements; and

(c) So long as a Holder owns any Registrable Securities, furnish to such Holder forthwith upon request a written statement by the Company or Pubco as to its compliance with the current public information requirements of said Rule 144 and of the Exchange Act (at any time after it has become subject to such reporting requirements), a copy of the most recent annual or quarterly report of the Company or Pubco, and such other reports and documents of the Company or Pubco, and such other reports and documents so filed as a Holder may reasonably request in availing itself of any rule or regulation of the SEC allowing such Holder to sell any such securities without registration; and

(d) Take such action, including the voluntary registration of its common stock under Section 12 of the Exchange Act, as is necessary to enable the Holders to utilize Form S-3 for the sale of their Registrable Securities, such action to be taken as soon as practicable after the end of the fiscal year in which the first registration statement filed by the Company for the offering of its securities to the general public is declared effective.

SECTION 8 STANDOFF AGREEMENT

Upon the effectiveness of any registration statement for the underwritten public offering of equity securities of the Company or Pubco, if requested by the Company or Pubco and the managing underwriter, each Holder agrees not to offer to sell or sell, make any short sale of, loan, grant any option for the purchase of, or otherwise dispose of any securities of the Company or Pubco held by the Holder at any time during such period (other than those unregistered shares which are sold under Rule 144, if any), directly or indirectly, without the prior written consent of the Company, Pubco or the underwriters for such period of time following the effective date of the registration statement(not to exceed one-hundred eighty (180) days) as may be requested by the Company, Pubco and the managing underwriter, provided that the foregoing obligations shall apply only if all directors and executive officers of the Company and all other stockholders holding securities that, on an as converted or fully exercised basis, equate to greater than five percent (5%) of the issued and outstanding shares of Common Stock (or common stock of Pubco, as the case may be) and all other persons with registration rights (whether or not pursuant to this Agreement), enter into similar agreements. This Section 8 shall not apply to a registration relating solely to employee benefit plans, or to a registration relating solely to a transaction pursuant to Rule 145 under the Securities Act. In order to enforce the foregoing, the Company may impose stop-transfer instructions with respect to the Registrable Securities of each Holder (and the share or securities of every other person subject to the foregoing restrictions) until the end of such period.

From and after the date of this Agreement, the Company shall not, without the prior written consent of at least a majority of the outstanding Registrable Securities (the "Required Vote"), grant to future investors any registration rights on parity with or more favorable than the registration rights granted to the Holders hereunder.

SECTION 9 INDEMNIFICATION

The Company shall, and shall cause Pubco to, indemnify and hold harmless each Holder, each of their respective direct and indirect subsidiaries and Affiliates, and each of the respective partners, members, stockholders, equity holders, officers, directors, trustees and other fiduciaries, employees, agents, and representatives of any of the foregoing (collectively, referred to as the "***Indemnitees***" and individually as a "***Indemnitee***") from and against any and all Indemnifiable Losses resulting from, relating to or arising out of any claim or claims made against such Indemnitee in connection with any threatened, pending or completed action, suit, arbitration, investigation or other proceeding arising out of, or relating to the any Indemnitee's performance of its obligations or the exercise of any Indemnitee's rights in accordance with the terms of this Agreement, including actions taken in their capacity as directors or stockholders of the Company or Pubco; provided, however, that the Company and Pubco shall not be obligated to indemnify or hold harmless any Indemnitee under this Section 9 against any Indemnifiable Losses resulting from or arising out of any such action or claim if it has been adjudicated by a final and non-appealable determination of a court or other trier of fact of competent jurisdiction that such Indemnifiable Losses were the result of (a) a breach of such Indemnitee's fiduciary duty to the Company, (b) any action or omission made by the Indemnitee in bad faith, (c) any criminal action on the part of such Indemnitee or (d) such Indemnitee's willful misconduct.

The Company or Pubco shall reimburse, promptly following request therefor, all reasonable expenses incurred by an Indemnitee in connection with any threatened, pending or completed action, suit, arbitration, investigation or other proceeding arising out of, or relating to, the Indemnitees' actions in connection with any transaction undertaken in connection with this Agreement.

SECTION 10 CONFIDENTIALITY OF RECORDS

Each Holder agrees that it will keep confidential and not disclose, divulge or use for any purpose other than to evaluate and monitor its investment in the Company any confidential or proprietary information ("Confidential Information") which such party obtains from the Company pursuant to financial statements, reports and other information submitted by the Company to such party pursuant to this Agreement or the Purchase Agreement; *provided, however*, that the Investors may disclose Confidential Information (a) to their respective general partners, limited partners, members, stockholders, equity holders, Affiliates and any of the directors, officers and other representatives of any of the foregoing in accordance with their respective normal reporting practices, and to their respective attorneys, accountants, consultants and other professionals under an obligation of confidentiality and (b) to any prospective purchaser of any securities of the Company so long as such prospective purchaser is obligated not to disclose, divulge or use such Confidential Information to the same extent as the disclosing Investor. Each Holder shall use the same level of care with the Confidential Information that it uses with its own confidential information. "Confidential Information" shall not include the following: (i) information that is now in, or hereafter enters, the public domain through no fault of the Holder; (ii) information that previously was known by the Holder independently of the Company; (iii) information that is independently developed by the Holder without reference to Confidential Information; (iv) information that is disclosed with the written approval of the Company; or (v) information that is received from a third party without a duty of confidentiality. Notwithstanding the foregoing, no Holder shall be prohibited from disclosing Confidential Information that is required to be disclosed pursuant to any legal process or subpoena from any court, arbitrator, governmental body, official or authority or by applicable law; provided that the disclosing Holder takes reasonable steps to minimize the extent of such disclosure and provides the Company with reasonably prompt notice after becoming required to disclose such Confidential Information to afford the Company an opportunity to intervene and oppose such disclosure. This provision shall survive any termination of this Agreement. Notwithstanding anything herein to the contrary, this provision shall expire and become null and void and of no further force or effect upon the filing by Pubco of the so-called "super 8-K" under the Exchange Act following the closing of the Reverse Merger.

SECTION 11 MISCELLANEOUS

11.1 Governing Law.

This Agreement shall be governed by and construed under the laws of the State of New York, notwithstanding the conflicts of laws principles of the State of New York or any other jurisdiction. No suit, action or proceeding with respect to this Agreement may be brought in any court or before any similar authority other than in a court of competent jurisdiction in the State of New York and the parties hereby submit to the exclusive jurisdiction of such courts for the purpose of such suit, proceeding or judgment. Each of the parties hereto hereby irrevocably waives any right which it may have had to bring such an action in any other court, domestic or foreign, or before any similar domestic or foreign authority and agrees not to claim or plead the same. Each of the parties hereto hereby irrevocably and unconditionally waives trial by jury in any legal action or proceeding in relation to this Agreement and for any counterclaim therein.

11.2 Survival.

The representations, warranties, covenants, and agreements made herein shall survive any investigation made by any Holder and the closing of the transactions contemplated hereby. All statements as to factual matters contained in any certificate or other instrument delivered by or on behalf of the Company or Pubco, or their respective Subsidiaries or the Investors pursuant hereto in connection with the transactions contemplated hereby shall be deemed to be representations and warranties by the Company, Pubco or their respective Subsidiaries or the Investors, as applicable, hereunder solely as of the date of such certificate or instrument.

11.3 Successors and Assigns.

Except as otherwise expressly provided herein, the provisions hereof shall inure to the benefit of, and be binding upon, the successors and permitted assigns of the parties hereto and shall inure to the benefit of and be enforceable by each person who shall be a holder of Common Stock issued or issuable in the Offering from time to time; *provided, however*, that each such successor and permitted assign the transferee has agreed in writing to be bound by the terms of this Agreement as if such successor and permitted assign were an original Holder by executing the Counterpart.

11.4 Entire Agreement.

This Agreement constitutes the full and entire understanding and agreement between the parties hereto with regard to the subject matter hereof and thereof and no party hereto shall be liable or bound to any other party hereto in any manner by any representations, warranties, covenants and agreements except as specifically set forth herein and therein, with respect to the subject matter hereof.

11.5 Severability.

If any provision of the Agreement is held to be invalid, illegal, or unenforceable, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

11.6 Amendment and Waiver.

Any provision of this Agreement may be amended and the observance thereof may be waived (either generally or in a particular instance and either retroactively or prospectively), only with the written consent of the Company or Pubco and the Holders of a majority of the Registrable Securities then outstanding and any amendment or waiver so made shall be binding upon each Holder and the Company. In addition, any provision of this Agreement and the observance thereof may be waived (either generally or in a particular instance and either retroactively or prospectively) by any party so waiving in writing, such waiver to be enforceable solely against such party.

112.7 Delays or Omissions.

No delay or omission to exercise any right, power, or remedy accruing to any party hereto, upon any breach, default or noncompliance of any party under this Agreement shall impair any such right, power, or remedy, nor shall it be construed to be a waiver of any such breach, default or noncompliance, or any acquiescence therein, or of any similar breach, default or noncompliance thereafter occurring. Any waiver, permit, consent, or approval of any kind or character on part of any party hereto of any breach, default or noncompliance under the Agreement or any waiver on such party's part of any provisions or conditions of this Agreement must be in writing and shall be effective only to the extent specifically set forth in such writing. All remedies, either under this Agreement, by law, or otherwise afforded to the parties hereto, shall be cumulative and not alternative.

11.8 Notices.

All notices, requests, demands and other communications given or made in accordance with the provisions of this Agreement shall be addressed (i) if to a Holder, at such Holder's address, fax number or email address furnished on the signature pages hereof or such Holder's Counterpart hereto or as otherwise furnished to the Company or Pubco by the Holder in writing, or (ii) if to the Company or Pubco, to the attention of the President at such address, fax number or email address furnished on the signature page below or as otherwise furnished by the Company or Pubco in writing, and shall be made or sent by a personal delivery or overnight courier, by registered, certified or first class mail, postage prepaid, or by facsimile or electronic mail with confirmation of receipt, and shall be deemed to be given on the date of delivery when made by personal delivery or overnight courier, 48 hours after being deposited in the U.S. mail, or upon confirmation of receipt when sent by facsimile or electronic mail. Any party may, by written notice to the other, alter its address, number or respondent, and such notice shall be considered to have been given three (3) days after the overnight delivery, airmailing, faxing or sending via e-mail thereof.

11.9 Titles and Subtitles.

The titles of the sections and subsections of this Agreement are for convenience of reference only and are not to be considered in construing this Agreement.

12.10 Counterparts; Execution by Facsimile Signature.

This Agreement may be executed in any number of counterparts, each of which shall be an original, but all of which together shall constitute one instrument. This Agreement may be executed by facsimile signature(s) which shall be binding on the party delivering same, to be followed by delivery of originally executed signature pages.

[*SIGNATURES ON FOLLOWING PAGES*]

IN WITNESS WHEREOF, the parties hereto have executed this 2012 Unit Investor Rights Agreement as of the date set forth in the first paragraph hereof.

COMPANY:

ACTINIUM PHARMACEUTICALS, INC.

By:_____
Name: Jack V. Talley Title: President and Chief Executive Officer

Address:

Tel: ( )
Fax: ( )
email: jtalley@actiniumpharmaceuticals.com

PLACEMENT AGENT:

LAIDLAW & COMPANY (UK) LTD.

BY:_____
NAME:
TITLE:

ADDRESS:

TEL:
FAX:
EMAIL:

[Signature Page to 2012 Unit Investor Rights Agreement]

IN WITNESS WHEREOF, the parties hereto have executed this 2012 Unit Investor Rights Agreement as of the date set forth in the first paragraph hereof.

ACTINIUM HOLDINGS LIMITED

By:_____
Name:
Title:

Address:
Actinium Holdings Limited
c/o Michael Sheffery, Ph.D
OrbiMed Advisors LLC
767 Third Avenue, 30th Floor
New York, NY 10017

with a copy to:

Shalom Leaf, Esq.
Shalom Leaf, PC
600 Madison Avenue, 22nd Floor
New York, NY 10022

LAIDLAW & COMPANY (UK) LTD.

BY:_____
NAME:
TITLE:

ADDRESS:

TEL:
FAX:
EMAIL:

The Investors listed on Exhibit A to the Agreement have executed a Subscription Agreement with the Company which provides, among other things, that by executing the Subscription Agreement each Investor is deemed to have executed the 2012 UNIT INVESTOR RIGHTS AGREEMENT in all respects and is bound to the terms and conditions thereof as set forth in such Subscription Agreement.

[Signature Page to 2012 Common Stock Investor Rights Agreement]

Exhibit A
List of Investors

Exhibit B

Counterpart Signature Page

to

2012 Unit Investor Rights Agreement dated October __, 2012

for

Actinium Pharmaceuticals, Inc.

The undersigned hereby acknowledges receipt of a copy of that certain 2012 Unit Investor Rights Agreement, dated October __, 2012, among Actinium Pharmaceuticals, Inc., a Delaware corporation, Laidlaw & Company (UK) Ltd. and the Investors referred to therein and the undersigned (as hereafter amended from time to time, the "***Investor Rights Agreement***"), and hereby certifies to the other parties thereto that it has read and fully understands the Investor Rights Agreement, that it has had an opportunity to review and discuss the terms and conditions of the Investor Rights Agreement with its legal counsel and other advisors, and that it agrees to be bound by the terms and conditions of the Investor Agreement as if it were an original signatory thereto.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed on this ____ day of _____, 20__.

INVESTOR:

The Investors listed on Exhibit A to the Agreement have executed a Subsjcription Agreement with the Company which provides, among other things, that by executing the Subscription Agreement each Investor is deemed to have executed the 2012 UNIT INVESTOR RIGHTS AGREEMENT in all respects and is bound to the terms and conditions thereof as set forth in such Subscription Agreement.

Exhibit 10.21

AptivSolutions
Accelerating the Possibilities

Project Agreement Number: 1 Aptiv Project Number: ACTI-1903

This Project Agreement is made and entered into on September 30, 2011, the Effective Date, by and between **Actinium Pharmaceuticals, Inc.,** with offices at 391 Lafayette Street, Newark, NJ 07105 (hereinafter referred to as "Client") and **Aptiv Solutions, Inc.,** together with its Affiliates, with offices at 1925 Isaac Newton Square, Suite 100, Reston, Virginia 20190 (hereinafter referred to as "Aptiv").

WHEREAS, Client and Aptiv have entered into that certain Master Services Agreement for dated September 30, 2011(hereinafter referred to as the "Agreement"); and

WHEREAS, pursuant to the Agreement, Aptiv has agreed to perform certain Services in accordance with Project Agreements from time to time entered into by the Parties, as more fully provided in Section 2 of the Agreement, and Client and Aptiv now desire to enter into such a Project Agreement.

WHEREAS, Aptiv and Client desire that Aptiv provide certain Services with respect to a Phase I/II Advanced Myeloid Malignancy study, (the "Study") for the study of the drug ^{225}AC-HuM195 ("Study Drug") as set out in the Protocol titled: A Phase I/II Study on the Safety and Efficacy of ^{25}AC-HuM195 in Patients with Advanced Myeloid Malignancies, which is incorporated herein by reference.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties hereby agree as follows:

1. Project Specifications. Aptiv will perform the services described in the Project Specifications, attached hereto as Appendix A, in accordance with the Project Schedule, attached hereto as Appendix B and any other documents attached to this Project Agreement ("Services").

2. Compensation. For performance of these Services, Client will pay to Aptiv the amounts described in the Budget for Services and Pass-Through Budget set forth in Appendix C, which amounts will be payable pursuant to the Payment Schedule set forth in Appendix D.

2.1. A payment plan inclusive of a down payment element of twelve and a half percent (12.5%) of the total budget estimate, inclusive of Pass Through Expenses will be included in the Payment Schedule. The down payment is considered as an advance payment and shall be taken into account with the final payment(s) upon completion of the Services.

2.2. Down payment invoices are due immediately upon signature of this Project Agreement. All payments are to be made in accordance with the Agreement and due within thirty (30) days of invoice date.

AptivSolutions
Accelerating the Possibilities

3. Designated Contact Person (pending assignment of project team) For Aptiv Solutions:

Philip Dehazya, PhD
Program Director, Oncology Business Unit
Aptiv Solutions
800 Westchester Avenue
Rye Brook, New York 10573
Direct: +1 914.733.3445
Cell: +1 516.851.2329

For Client:

Dragan Cicic, MD
CEO
Actinium Pharmaceuticals, Inc.
Tel: 718 369 7089
Cell: 917 575 2057
E-mail: dcicic@actiniumpharmaceuticals.com

4. Term and Termination. The term of this Project Agreement will commence upon its execution by Aptiv and Client and will continue until completion of the Services Aptiv Solutions involvement with this project. Aptiv anticipates starting work in May, 2011 and expects to end in December 2014, as more fully described in Appendix B, provided, however, that either Party may terminate this Project Agreement in accordance with Section 4, Term and Termination, of the Agreement.

5. Incorporation by Reference; Conflict. The provisions of the Agreement are hereby expressly incorporated by reference into and made a part of this Project Agreement. In the event of a conflict between the terms and conditions of this Project Agreement and those of the Agreement, the terms of the Agreement will take precedence and control; provided however, in event of conflicts between the Project Agreement and the Agreement, Sections 3.0 Payment, 4.0 Term and Termination, the Project Agreement shall control.

IN WITNESS WHEREOF, the parties have hereunto signed this Project Agreement effective as of the day and year first written above.

APTIV SOLUTIONS, INC.	**ACTINIUM PHARMACEUTICALS, INC.**
Authorized Signature	Authorized Signature
Evp Business Developement	CEO
Title	Title
Nov 14, 2011	October 26, 2011
Date	Date

List of Appendices

Appendix A: Project Specifications
Appendix B: Project Schedule
Appendix C: Budget for Services and Pass-Through Budget
Appendix D: Payment Schedule

AptivSolutions
Accelerating the Possibilities

Appendix A: Project Specifications

The Project Manager will:

1. Create a Project Management Plan (PMP) based on the study deliverables and timelines, implements an action plan.

   The PMP will Include:
   - Detailed individual roles and responsibilities
   - Communication plan
   - Agreed timelines and milestones
   - Process and handling of investigator agreements and payments
   - Project Reports including patient-specific tracking
   - Contingency Plan for the study to include: enrollment, safety, etc.
   - SOPs to be followed

2. Periodically review actual progress of the study against the agreed standards and update the PMP as needed

3. Oversee site start-up activities

   a. Site activation process
   b. Develop study documents:
      1. Operations Manual
      2. Site Initiation Visit ("SIV") Presentation
      3. Monitoring Plan
         i. specify the monitoring frequency and objectives of each visit,
         ii. provide templates for study required documentation, including monitoring visits reports and expectation for submission of monitoring reports.
         iii. identify standards, for example average number of Case Report Form ("CRF") modules monitored per monitoring visit day, maximum number of un-monitored modules at site at any one time.

   c. Regulatory Binder oversight and set up of each site with Clinical Research Associate ("CRA") and Clinical Project Coordinator ("CPC")
      1. Ensure CRA awareness of study specific information with education and training of the assigned CRAs for study
      2. Regulatory/IRB/IEC: Collaborate with the regulatory department in the completion of site specific documents required for Ministry of Health ("MOH") submissions and prepare site specific regulatory documents with study information: IEC, MOH, Financial Disclosures for PI and all subs; 1572
      3. Regulatory document collection
      4. Insurance Certificates for country submissions
      5. Investigational Medicinal Product Dossier ("IMPD")

d. Work with site at all stages of regulatory document preparation and submission.
e. Collect and review all regulatory of documents submitted to IRB/EC
f. Complete site specific Critical Documents Checklist for sponsor (IP release)

4. Recruitment /Maintenance Phase

a. Oversight of CRAs
b. Ensure consistency across sites
c. CRA teleconferences for study updates
d. Ensure Protocol compliance
e. Track enrollment and site performance
f. Work with sites on enrollment/retention of subjects in collaboration with the CRA
g. Project Patient Visits per study schedule
h. Communicate between the Site and assigned CRA on patient status and tolerance of Investigational Product after treatment
i. Manage CRAs, in collaboration with the sites, to ensure Protocol compliance and Inclusion/Exclusion criteria adhered to, CRFs complete and up to date in order to meet study deliverables and monitoring visit schedule.

5. Monitoring

a. Review Monitoring Schedule for compliance to monitoring plan
b. Review trip reports for consistency and quality and provide feedback
c. Approve final trip report
d. Ongoing training for study team and sites, as evidenced by report details and data management
e. Assure Adverse Event reporting per regulations to IRB/EC
f. Risk Management reporting, as applicable
g. Communicate status of study monitoring and site management updates or issues to Actinium

The Project Manager and Lead CRA constitute the Project Management Team.
The overall Project Management Team will be responsible for the following tasks:

1. Implementation and ongoing maintenance of the PMP
2. Preparation and tracking of detailed timelines and deliverables
3. Assurance that milestones are fully understood and met by the team
4. Management of financial issues for assigned clinical study
5. Capacity planning and review of resource allocation
6. Coordination of team training
7. Oversight of internal project team meetings
8. Maintenance of project working files

9. Assurance that effective communication between departments and project team members occurs with identification and resolution of critical issues (communication plan as outlined in the PMP)
10. Recommendation of alternative approaches as necessary to ensure delivery of a timely and high quality project within budget (contingency planning)
11. Reviewing monitoring reports
12. Coordination and oversight of site monitoring activities, administrative interactions between investigators and Aptiv Solutions, and reporting to Actinium the sites' progress (monthly project progress reports)
13. Enrollment tracking
14. Implementation of all procedures and conducting the clinical program according to the agreed timelines, budget and in accordance with Good Clinical Practice and any applicable law.

Clinical Research Associates (CRAs)

The responsibilities of the CRAs include:

1. collaboration for regulatory submissions for MOH and EC, site monitoring, site support and management, data tracking, data review,
2. collaboration with the site for query resolution and assistance to the PM/Lead CRA in all study management related site issues, including but not limited to,
    a. informed consent design and IRB/IEC submissions.

3. Aptiv Solutions currently assumes up to 3 CRAs to be assigned to the study. Every effort will be made to resource with as few staff as possible, allowing for language skills, travel, etc.
    a. Aptiv Solutions Full-time employees (FTEs) CRAs will be assigned preferentially. Aptiv Solutions may occasionally assign contracted CRAs who are extensions of the Aptiv Solutions team, held to the same standards as Aptiv Solutions employees and perform according to Aptiv Solutions SOPs.

4. Study Initiation Visits (Sly)

The SIV will be conducted once all pre-study documents have been collected unless other arrangements are agreed with Actinium. It is estimated that site initiation visits will require one day of on-site time. The investigators and study personnel will be trained on all aspects of study procedures relating to patient screening, scheduling, evaluation, follow up, CRF completion, and drug use and accountability. The study regulatory binder (investigator site file) will be reviewed with the investigator. ICH/GCP requirements, including investigator responsibilities, will be reviewed.

5. Interim Monitoring Visits

Aptiv Solutions will conduct initial interim site visit within two weeks after the first patient is enrolled at each site unless otherwise directed by Actinium; subsequent monitoring visits will be scheduled depending on enrollment rate and data quality. The frequency and length of visits will be adjusted as agreed upon by Actinium and Aptiv Solutions.

Aptiv Solutions has assumed 12 one day (8 hours on-site) Interim Monitoring Visits per site. The monitoring plan can be written to allow the flexibility of more or fewer visits per site, as agreed upon with Actinium, as site-level enrollment warrants. The data quality will be reviewed after the first subject to identify any issues related to the protocol and retraining will occur, as applicable.

6. During site visits, Aptiv Solutions CRAs will
    a. Assess investigator adherence to FDA regulations, GCP/ICH Practices, and local regulatory guidelines
    b. Verify informed consent and HIPAA authorization
    c. Review all source documentation in comparison to the CRFs
    d. Check for missing or incomplete data and inconsistencies
    e. Ensure resolution of all queries for data clarification
    f. Obtain documentation updates for pertinent documents
    g. Verify that the protocol is being followed with respect to eligibility, study-mandated procedures, and timetable.

Aptiv Solutions will inventory investigational materials and review accountability records. Problems with accrual, protocol compliance, any adverse event reporting and follow-up, as well as CRF accuracy, completeness, and timeliness will be documented and discussed. Should any problems require it, Aptiv Solutions, Actinium, and the site will jointly develop an action plan with timelines for resolution.

7. Site Closeout Visits

Aptiv Solutions will perform the Site Closeout Visit once all Data Clarification queries have been resolved by the DM team and the Database Lock has occurred. Aptiv Solutions will review all patient files for completeness, review the study binder to assure all documentation is in place for FDA or other governing agency audit, perform final Investigational Product accountability, and authorize return or disposal of all unused study supplies.

8. Site Communication

The Aptiv Solutions Lead CRA will be the primary contact for the study sites and the CRAs related to monitoring matters. The Lead CRA may designate a CRA to be the site's primary contact in an effort to establish continuity between the site and CRA. The Lead CRA will consult with the Project Manager and Project Team, Aptiv Solutions Management and Actinium as needed. Aptiv Solutions will document pertinent telephone contacts with the sites and will file documentation as appropriate in the Trial Master File.

Interim site communication will consist of routine contact and follow-up with the study sites by the Lead CRA and/or the assigned CRA to address any questions or issues raised at or between monitoring visits. Examples include pending site-specific MOH/IRB/IEC questions or Investigational Product supply and distribution issues, resolution of queries, etc.

The Lead CRA or CRAs may also direct the Clinical Project Coordinator to contact the sites for missing Enrollment Logs and outstanding or deficient Regulatory Documents.

Clinical Project Coordinator (CPC)

1. The CPC will be responsible for all administrative support to the study team throughout the duration of the study.

2. The CPC is also responsible for all document management during the course of the study.

3. A Trial Master File or Study File/Country File will be established for the study which will be maintained in the United States.
    a. All project documents and materials, excluding budgetary information, will be stored in the file.
    b. The CPC is responsible for the set up and the maintenance of the Study File (SF).

4. In addition to the Study File, the CPC will set up and maintain the In-house Investigator Site Files (IHSF) for each individual site and respective country.
    a. The set up includes the initiation of the respective checklists for the country and each specific site
    b. ongoing maintenance and filing of all study documents to each respective section of the file.
    c. utilize the site checklists to reconcile the IHSF against the Investigator Site File throughout the course of the study and maintain a comprehensive list of all study documents filed at the site and Aptiv Solutions.

5. At the end of the study, electronic correspondence with Actinium will be saved to disc, archived with the SF, and returned to Actinium.
    a. The active SF will be stored in locking file cabinets on Aptiv Solutions premises and the cabinets will be locked during non-business hours.
    b. Upon completion of the project, the Aptiv Solutions Trial Master File will undergo a final reconciliation, be archived and transferred to Actinium per Aptiv Solutions SOPs.
    c. If requested, files can be archived to an off-site storage facility at an additional cost.

6. The CPC will support the entire study team including the PM, Lead CRAs, CRAs and other team members in the following tasks, including:
    a. Attending study TCs, taking notes, writing minutes, distributing minutes for internal review and feedback and then distributing final minutes.
    b. Set-up of the Trial Master File to include both the Study File (SF), the Country File (CF) and the Investigator Site Files(ISF)
    c. Creating a regulatory binder/Operations Binder for each site including printing the tabs, insertion of dividers and site documents.
    d. Creating the SF, CF and each ISF Checklist record that is maintained for all study documents as required per GCP, section 8.1

e. Maintenance of the SF, CF and each ISF throughout the course of the study to include review of study documents for completeness and accuracy when submitted, and then updating the checklist and scanning and filing the document. If errors/omissions noted, works with the site and CRA to resolve the issue. Obtain ongoing updates, as applicable
f. Schedule any Project Team meetings in collaboration with the PM/Actinium.
g. Contact sites and F/U as required for missing documents, follow up on questions, etc.
h. Creating all the shipping transmittals, per site, including the courier label for shipment.
i. Assembling mailing with study documents, transmittals and notifying the courier. This would include the Regulatory Binder and Operations Manual
j. Tracking receipt of mailing sent to the site through the return of the transmittal form
k. Printing documents for CRAs for SIV/IMV, as requested
l. Preparing required documents and checklists for the CRAs for monitoring visits
m. Processing all monitoring trip reports into Study Management System by scanning, entering data and filing hard copy, once approved by Lead CRA.
n. Running study reports as requested by PM. This would include the monitoring report and study progress report, and others, as requested
o. Miscellaneous assigned tasks as requested by team members

7. The CPC, in collaboration with the Lead CRA, will track monitoring visit reports and other visit related documents (e.g. confirmation, follow-up letters, and expense reports, regulatory documents, etc.) and enter these into the Study Management System (SMS) and Investigator Site File Checklist. The monitoring plan will be used as the quality check against the monitoring report to verify compliance with the study conventions. The CPC will maintain the SMS database, including entry and updating the system with site contact information and regulatory document information, etc throughout the course of the study. Study reports will be generated based on the data in the SMS.

Safety Management

Case managers are designated Clinical Safety Specialists (CSS) from our US office and Pharmacovigilence Scientists (PVS) from our EU office. In addition, the designated CSS or PVS will act as the safety project manager and will be the key contact for the Actinium on safety issues. They will also be responsible for the production of any contracted safety documents.

Case managers will:

1. Receive SAE reports, process in EmpiricaTrace, assure completeness with sites

2. Development of narrative
3. Distribute narratives to MM for review; incorporate in EmpiricaTrace
4. Manage, maintain, and generate required reports from EmpiricaTrace
5. Receive and process for completeness waiver requests; forward requests to MM; forward requests to Actinium
6. Document significant interactions in e-log, if not otherwise documented in safety process
7. Maintain shared FAQ log for medical issues, waivers granted, etc. for consistency and uniformity of response

Head of US / EU, Clinical Safety will:

1. Maintain supervisory responsibility for safety specialist performance
2. Respond to CSS issues, concerns, questions; document in e-log

The Clinical Safety Group at Aptiv Solutions will be responsible for receiving, tracking and entering SAEs in the database and for distribution to Actinium.

Expedited reports will be submitted to Regulatory Authorities by Aptiv Solutions; Aptiv Solutions will distribute copies of these reports to investigators.

Aptiv Solutions will provide a 24/7 fax line for receipt of SAE reports. Aptiv Solutions personnel will be available to further receive and process SAE reports according to Aptiv Solutions SOPs.

1. Aptiv Solutions will provide written instructions to the clinical study sites regarding SAE reporting procedures.
2. Serious adverse event reporting estimates are based on 10 total SAEs during the study.
3. Aptiv Solutions assumes that, for each SAE, there will be an initial SAE report and one follow-up report.
4. This budget does not include reconciliation of any separate Actinium SAE and clinical databases.

Medical Writing

Clinical Study Report

The Aptiv Solutions Medical Writer will be responsible for writing the study report based on an Aptiv Solutions report template and the statistical output. In addition, the Medical Writer can provide guidance with the protocol, ICF/IB, and statistical analysis plan as requested.

The Clinical Study Report will be written following ICH guidelines. Aptiv Solutions will prepare a Clinical/Statistical Report that consists of a summary of the clinical study with emphasis on clinical and statistical interpretations of the study. The report will describe the rationale of the study, the study plan and design and the statistical methodology. The report will be structured according to document specifications and the word processing format requested by Actinium. A QC review will be performed to check the accuracy of the number transfer from the analysis tables and figures to the report.

Preparation of the report also includes a Key Messages Meeting, which can be done via teleconference as needed. The purpose of this meeting is to discuss the results of the study in context of the objectives and endpoints stated in the protocol. This meeting also gives Actinium the opportunity to provide the "key messages" that should be developed in the report. Participants in the Key Messages Meeting include the Medical Writer and Actinium; the Medical Monitor/Advisor, and the PM. Other persons may participate as needed.

The report review process includes

1. two rounds of Actinium review and the incorporation of comments.
2. third version will be the final report delivered to Actinium.
3. final deliverable: Aptiv Solutions will supply an electronic copy of the report text in Microsoft Word format that will include internal hyper linking to in-text tables.

Regulatory Affairs

The Regulatory Affairs Group will be responsible for writing, compiling and submitting clinical trial applications globally, in the countries where this project will be conducted. In addition, the Group will handle protocol amendments during the project and submission of annual safety reports, as needed.

Aptiv Solutions will collect and submit all appropriate country specific regulatory documents, as appropriate and in accordance with ICH/GCP guidelines, in each country involved and the local ethics submissions for each investigational site, e.g., FDA Form 1572, curriculum vitae, medical licenses, protocol signature, the initial financial disclosure statements, and laboratory normal ranges.

In the event any regulatory documents are deficient or missing, Aptiv Solutions will contact the site to secure the outstanding items and resolve issues. Aptiv Solutions will provide the necessary support to confirm acceptance of IRB/IEC approval for release of study drug.

Aptiv Solutions will forward all original regulatory documents to Actinium for filing, as requested. In addition, Aptiv Solutions will maintain complete and current in-house regulatory files during the course of the project. These documents will be stored in the Trial Master File.

Legal Affairs

Aptiv Solutions will prepare a site agreement template based on the final protocol and discussions with Actinium. Note: site agreements are solely the responsibility of Actinium. This template will be charged at a fix fee. Alternatively, Aptiv Solutions will review and adapt a template provided by Actinium. Once this is finalized, Aptiv Solutions will adapt according to the requests from the individual sites and will submit, coordinate, negotiate and finalize the contracts with the participating institutions and/or physicians. In case of any translation, Aptiv Solutions can also provide and coordinate such services.

In case Actinium requires Aptiv Solutions to execute the final and approved site agreements, Aptiv Solutions can only carry out such work in the capacity as agent for and in the name of Actinium, and therefore, Actinium retains overall responsibility to the sites, and for payment matters. Aptiv Solutions will also provide administration of payment of investigator grants, hospital fees, and pharmacy fees, where appropriate, assuming advance funding has been provided by Actinium. The timing of such payments will be designed to compensate timely site performance at a rate to be agreed.

Aptiv Solutions will maintain invoice tracking to allow Aptiv Solutions to provide Actinium with a budget reconciliation of grant payments on a monthly basis.

Data Management and Statistics

Data Management & Statistics Team Leader (DMS-TL)

The Lead Data Manager will be assigned as the DMS-TL, and will coordinate data-management and statistical activities. The DMS-TL will be responsible for:

- Implementation and ongoing maintenance of the data management plan
- Preparation and tracking of detailed timelines and deliverables
- Assurance that milestones are fully understood and met by the team
- Capacity planning and review of resource allocation
- Maintenance of project working files
- Implementation of all procedures and conducting the clinical program according to the agreed timelines, budget and in accordance with Good Clinical Practice and any applicable law

Clinical Data Managers

A designated Clinical Data Manager will be responsible for data processing specifications, including validation checks specifications, discrepancy review, query handling, QC plan and data handling manual. The following CRF and Query flow involving Monitors and Data Management will be implemented.

- CRF pages are collected by the CRA (by module.)
- CRF pages received in Data Management are logged in on the tracking database.

- Copies of CRF pages are made (used as working copies by Data Managers.)
- Validation checks run as overnight jobs and generate discrepancies.
- Data discrepancies are reviewed by Data Managers. Relevant queries are generated as PDF files (Data Clarification Forms) and forwarded to the responsible monitor.
- Resolves and signed Data Clarification Forms (DCFs) with signed resolved queries are sent by the monitor to Aptiv Solutions Data Management.
- DCFs are tracked by data management in the tracking database and the Clintrial™ Database is updated accordingly.
- Copies of DCFs are made and originals are filed and stored in fire-safe secure filing area with original CRFs.
- All Data management status reports i.e. tracking, data entry, query management, will be updated and made available to the study team via H-System® Reports (Secure Internet.)

Clinical Database Programmers

1. Programming

   A Database Programmer and an independent database reviewer will develop and test the database. Highlights of the software development life cycle process include database development according to a validation protocol that documents the design requirements and specifications, database testing by programmers and end users using test CRF cases, and documented review and acceptance by end users. The database is considered validated when the expected results are the same as the actual results, and the end users verify that the database performs according to the requirements. The design procedures, testing results, and test CRF cases are filed in the Central Files.

2. Maintenance

   Database maintenance, including back-ups and off-site storage, will be provided throughout the study. All database modifications will be fully tested and documented in the same manner as above. Aptiv Solutions will run daily back-ups.

Statistician

A Lead/Senior Statistician will be assigned to this study and will be responsible for the implementation of the final statistical analysis plan (SAP) and production of all necessary statistical analyses including the statistical input for the study report. The SAP including tables and listing shells, will be produced by Aptiv Solutions and reviewed by Actinium. Before database closure a review meeting will be held to review all withdrawals, protocol deviations, and to define the populations to be analyzed. All tables and listings will be generated; Quality Control measures will be taken and reviewed according to Aptiv Solutions SOPs.

Statistical (SAS) Programmers
The Statistical SAS Programmers will be responsible for programming statistical tables, listings and graphs as described in the SAP. The project biostatistician will provide statistical programming specifications. The Statistical Programmers will be working under the responsibility of the Statistician and will program and validate all data tables and listings according to the SAP, using SAS 9.1. Data tables programming validations will be performed by double programming by an independent SAS programmer.

Study Communications
Please refer to the Budget for further assumptions regarding frequency, duration, and attendees of study communications.

Method of Communication	Key Participants	Frequency	Results
	Actinium Project Team	One - at Kickoff	Detailed agenda with minutes/action items completed post meeting. Meeting Goal:
Face-to-Face Meetings	Aptiv Solutions Project Team: Project Manager Clinical Project Coordinator Data Management Biostatistician Medical Monitor Clinical Safety Specialist Actinium Project Team	Monthly	Define roles, responsibilities of the project team; establish study timelines and milestone achievements; detail study contacts at Actinium and Aptiv Solutions; identify site start up process and drug release for initiation, review safety issues and study operations; clarify all functional teams deliverables Minutes of items discussed during monthly teleconferences, action items if necessary
Aptiv Solutions-Actinium Project Team Teleconferences	Aptiv Solutions Project Team: Project Manager Clinical Project Coordinator Data Management Clinical Safety Specialist		
Aptiv Solutions Team Meetings*	Aptiv Solutions Project Team: Project Manager Regional CRAs Clinical Project Coordinator Medical Writer Data Management Clinical Safety Specialist Clinical Project Coordinator Medical Writer Data Management Clinical Safety Specialist	Monthly	Results of team meetings may contribute to agendas for monthly team teleconferences

AptivSolutions™
Accelerating the Possibilities

*Attendees at internal team meetings will vary depending upon the stage of the study (example: The Aptiv Solutions Project Manager would attend all team meetings throughout entire project, CRAs would attend during site setup and while sites are active through site closeout, Medical Writer may only attend later meetings as preparations for CSR writing are underway, etc.)

General Budget Assumptions:

1. This budget is based on Protocol dated August 28, 2008 and amended on April 15, 2009.
2. All work will be performed on a unit.
3. Cost estimates are based on rates for Year 2011. An annual rate increase may be applied each January, to coincide with the fiscal year of Aptiv Solutions (up to 5%). Notification of the anticipated rate increase will be sent 30 days in advance of applying the rate increase each fiscal year.
4. Actual costs will be billed monthly at the annual rate that corresponds with the year in which the work is performed.
5. The budget cost estimate has been developed assuming 100% of sites are located in the US; 0% are located in Western Europe; and 0% are located in Central Eastern Europe. The budget is subject to revision if the site allocation is different than what is currently assumed.
6. Travel expenses for project-related activities, including site visits, are not included in the Aptiv Solutions service budget and will be billed to Actinium as direct pass-through costs.
7. Efforts relating to publication or presentation of results are not included in this budget.
8. All deliverables that require Actinium sign-off will require no more than two rounds of review/revisions and each round of review will require no more than 5 business days. Extension of Actinium review time resulting in unreasonable delays may result in budget modifications.
9. The budget covers only the services specified in this proposal.
10. Any changes that impact the project time frame or costs (out-of-scope-activities) will be addressed by means of a written Change Order, which must be signed by both parties.
11. Costs associated with Actinium requests for Aptiv Solutions attendance at scientific meetings, conferences and/or special presentations, or FDA meetings are not included in this budget; these efforts would be billed additionally.
12. Costs for services outsourced by Aptiv Solutions to other vendors are not included in the Aptiv Solutions service budget and will be billed to Actinium as direct pass-through costs.

AptivSolutions
Accelerating the Possibilities

Milestones		Total
N Subjects		74
N sites		6
N Countries	US only	1
N CRF Pages	Per subject	70
N Unique CRF Pages	Per subject	38
N Queries	Per 100 CRF Pages	10
N Statistical Tables	Unique/Non-Unique	30/0
N statistical Listings	Unique/Non-Unique	0 I 20/0
N Statistical Figures	Unique/Non-Unique	5/0
N CRAs		3
Start of Early Phase Activities	0	June 2011
Start of activities	Set Up IRBs, Pre study & initiation etc	June 2011
FPFV		TBD
LPFV		TBD
LPLV		TBD
LPLV		TBD
Database closure	standard 6 weeks after LPLV	TBD
Final Close Out Visits	4 wks after Database Closure	TBD
Final Tables, Listings, and Figures	6 wks after Database Closure	TBD
End of Activities: Final Study Report Ready	6 weeks after provision of final Sponsor-approved Tables, Listings, and Figures	TBD
Clinical Phase duration (months)	Start of activities to Site Close Out	42
Biometrics Phase Duration (months)	Start of DM to production of final listings	40
Total Project duration (months)	Start of activities to Final Study Report	44

AptivSolutions
Accelerating the Possibilities

Appendix C: Budget for Services and Pass-Through Budget

SUMMARY OF APTIV SOLUTIONS COSTS	**USD**
	133,493
CLINICAL CONDUCT SERVICE COSTS	**683,983**
PROJECT MANAGEMENT SERVICE COSTS	**336,000**
CLINICAL ADMINISTRATION SERVICE COSTS	**258,396**
DATA MANAGEMENT SERVICE COSTS	**246,087**
BIOSTATISTICS SERVICE COSTS	**72,448**
DATA MONITORING COMMITTEE	**0**
STUDY REPORT	**36,782**
OVERHEAD	**70,688**
TOTAL APTIV COSTS	**1,837,876**

STUDY PREPARATION SERVICE COSTS		**Unit Type**	**# Units**	**Unit Price**	**USD**
Project Plan	Project Plan Development and includes all sections (comm. Plan)	Per Plan	1	3,500	3,500
	Ongoing Maintenance of Project Plan:	Per Month	36	88	3,150
CRF - Assumed Review only	45 minutes per unique CRF page, 10 minutes per non-unique CRF page,2 DM reviews at 6 minutes per CRF page per review, 2 DM updates at 6 minutes per CRF page per review, 2 Statistician reviews at 6 minutes per CRF page per review, 1 hour Organisation Printing Subject Diary, 1 hour per page 2 rounds of PM/LCRA Clinical review.	Per Finalized CRF (Efforts based on Total/Unique Pages Assumed)	1	18,315	18,315

AptivSolutions
Accelerating the Possibilities

STUDY PREPARATION SERVICE COSTS		Unit Type	# Units	Unit Price	USD
Critical Document Collection (sites)	Critical Document Collection at Site Start up US	Per Site	6	1,519	9,114
Investigator Brochure	Assumes Review only by the Medical Writer (approx. 10 hours)	Per IB	1	1,720	1,720
Patient Informed Consent (Review Only)	ICF Template Review Only:	Per Template	1	1,720	1,720
	Review of Master version:	Per Review	1	688	688
US	Adapt for site requirements:	Per Site	6	172	1,032
	Review by Lead CRA of site versions:	Per Site	6	172	1,032
Other Documents Writing/Review/Tra nslation	Monitoring Plan Development (Review only):	Per Plan	1	1,720	1,720
	Monitoring Plan Maintenance:	Per Month	36	86	3,096
	Study Operations Manual Writing (Review only):	Per Manual	1	1,720	1,720
	Study Operations Manual	Per Month	36	86	3,096

AptivSolutions
Accelerating the Possibilities

STUDY PREPARATION SERVICE COSTS		Unit Type	# Units	Unit Price	USD
	Maintenance:				
Regulatory Affairs	RA - Reg Consultancy	Per Month	43	153	6,558
	RA -IND & Amendments	Per IND	1	48,984	48,984
			0	N/A	0
IRB/IEC Submissions	US	Per Submission/Si to	6	1,376	8,256
U.S. Investigator Meeting	Assumed a one day IM	Per Meeting	1	N/A	0
EU Investigator Meeting (EEU Sites Attend)		Per Meeting	1	N/A	0
Project Specific Training	Project review (protocol, CRFs, etc) for study team	Per Study/Trainin g	1	19,792	19,792
Sub-total for study preparation					**133,493**

AptivSolutions
Accelerating the Possibilities

CLINICAL CONDUCT SERVICE COSTS		Unit Type	# Units	Unit Price	USD
Pre-study Visit	Assumes no visits needed				
Initiation Visit	1 visit per site.				
6 sites US	1 hrs per visit prep, 7 hrs per visit on site, 3 hrs per visit for report writing and follow up, 9 hrs per visit travel US.	Per Visit	6	2,700	16,200
Monitoring Visit	**12 Visits per site.**				
6 sites US	1 hrs per visit prep, 8 hrs per visit on site, 3 hrs per visit for report writing and follow up, 9 hrs per visit travel US.	Per Visit	72	2,835	204,120
Closure Visit	**1 visit per site.**				
6 sites US	1 hrs per visit prep, 8 hrs per visit on site, 4 hrs per visit for report writing and follow up, 9 hrs per visit travel US.	Per Visit	6	2,970	17,820
Site Contact / Management	**Units per Site per Month:**				
6 sites US	43 months.	Per Site * Per Month	258	389	100,440
Clinical Safety Project Set-up	EmpiricaTrace Database request and set up (configuration - drug/reports), including QC/checking (including excel tracker). Safety Management Plan/Process Guideline development (including forms/completion guides) including one round of Actinium review (additional reviews fee-for-service).	Per Set-up	1	8,746	8,746
Clinical Safety Project Maintenance	Database Maintenance (updating, license, upgrades, internal QC/QA checks). Monthly report (including compliance report). Project safety maintenance (general filing, regulatory updating, etc.).	Per Month	42	1,190	49,980

CLINICAL CONDUCT SERVICE COSTS		Unit Type	# Units	Unit Price	USD
Case Management	Initial SAE processing: receipt, entry, coding, distribution, draft narrative creation, creation of CFF; follow-up SAE processing: receipt, entry, distribution and narrative revision. Medical review of SAEs by Safety Physician. SAE Follow-up management (2nd cycle), assumes 1 additional cycle: Processing: Site queries, receipt, entry, (re-coding), narrative revisions, distribution. Medical review of SAEs by Safety Physician.	Per SAE	74	2,676	198,024
Expedited Activities - US	Analysis of similar events, Preparation of safety letters(MedWatch form/mail merge), Mailing and distribution to FDA, Mailing/distribution to sites.	Per Expedited	7	1,258	8,806
End of Study Activities - Case Closure	Review case for completeness and prepare for finalization. Complete, lock, close SAE case to further modification. SAE Reconciliation.	Per Case	74	339	25,049
End of Study - Archival	Packaging and shipping files to the Sponsor.	Per Study	1	1,480	1,480
Documentation Management:	**TMF Startup**				
	TOC Document (SF/CF/ISF)	Per Study	1	350	350
	In-House Site File (IHSF) - Set Up electronic sites and Files/Folders including setup of the checklist	Per Site	6	158	945
	Investigator Site File (ISF)/Reg Binder - set-up folder/ship to site	Per Site	6	105	630
	Study File (SF) Set-Up /Folders/electronic file and checklists	Per Study	1	525	525

AptivSolutions
Accelerating the Possibilities

CLINICAL CONDUCT SERVICE COSTS		Unit Type	# Units	Unit Price	USD
	TMF (In-House Site File (ISF)) Maintenance				
6 sites US, 42 months	Per Site * Per Month	Per Site * Per Monitoring Visit	72	313	22,536
	TMF (Study File) Maintenance				
	Study File filing per month	Per Month	44	315	13,860
	Quality Control				
	PM (periodic review of IHSF, CF, SF to ensure files are complete and request correction if necessary)	Per Month	44	175	7,700
	TMF Close Out				
	Archive ISF reconciliation- transmittal completion	Per Study	6	697	4,182
	Study File	Per Study	1	2,590	2,590
Sub-total for clinical conduct					**683,983**

PROJECT MANAGEMENT SERVICE COSTS		Unit Type	# Units	Unit Price	USD
Project Management - US PM	40% FTE over set up phase	Per Month	3	11,200	33,600
Project Management - US PM	30% FTE during recruitment	Per Month	24	8,400	201,600
Project Management - US PM	20% FTE during treatment	Per Month	12	5,600	67,200
Project Management - US PM	30% FTE during close out for the US Project Manager.	Per Month	4	8,400	33,600

AptivSolutions
Accelerating the Possibilities

PROJECT MANAGEMENT ANAGEMENT SERVICE COSTS	Unit Type	# Units	Unit Price	USD
Sub-total for project management				336,000

CLINICAL ADMINISTRATION SERVICE COSTS		Unit Type	# Units	Unit Price	USD
CPC Activities - US CPC	20% FTE over set up phase	Per Month	3	3,360	10,080
CPC Activities - US CPC	15% FTE during recruitment	Per Month	24	2,520	60,480
CPC Activities - US CPC	7.5% FTE during treatment	Per Month	12	1,260	15,120
CPC Activities - US CPC	15% FTE during close out for the US CPC.	Per Month	4	2,520	10,080
Project Team Meeting	Assumes Monthly team meetings	Per Month	44	2,503	110,116
Actinium Meeting - Kickoff (Assumes 1 days in Duration)	Assumes one kick off meeting	Per Meeting	1	15,494	15,494
Actinium Meeting - Teleconferences	Assumes monthly calls	Per Teleconference	44	842	37,026
Sub-total for clinical administration					258,396

DATA MANAGEMENT SERVICE COSTS	Paper	Unit Type	# Units	Unit Price	USD
Biometrics Project Coordination	20 hours/month during DM startup and closeout.	Per Month	6	3,440	20,640

DATA MANAGEMENT SERVICE COSTS	Paper	Unit Type	# Units	Unit Price	USD
	4 hours/month during maintenance phase.	Per Month	35	688	24,080
Database Set up	4 hours per unique CRF page, 2 dictionaries set up, 3 hours per dictionary, 4 hours creation dummy patients, 38 hours testing, 1 day documentation, 4 hours Database set-up, 3 hours data transfer structure	Per Unique CRF Page	38	854	32,465
Database Maintenance	2 hours/month for maintenance and back up	Per Month	41	302	12,382
Data Handling Manual - Generation Maintenance & Filing	88 hours Data handling manual generation and maintenance.	Per Study	1	11,000	11,000
CRF Completion Guideline	30 min. per CRF page completion guidelines	Per CRF Page	70	63	4,375
Database Validation Checks Specification & Review	5 Checks per total CRF page, 15 Minutes per check specification and review; 2 reviews, 2 minutes per check per round of review, 4 updates, 4 hours per round of updates.	Per Validation Check	350	45	15,875
Data Validation Checks Programming & QC	5 Checks per total CRF page, 20 Minutes per check programming:, 12 Minutes per check testing, including dummy patient	Per Validation Check	350	75	26,417
Data Entry & CRF Tracking & Archiving (All CRF driven costs assume 15% of patients (-11) will	250 pages per day per person double data entry. Assumes 15% of patients (-11) will only complete 50% of the CRF pages; 40 min per	Per CRF Page	4795	6.21	29,760

AptivSolutions
Accelerating the Possibilities

DATA Paper MANAGEMENT SERVICE COSTS		Unit Type	# Units	Unit Price	USD
only complete 50% of the CRF pages	100 CRF pages - CRF Tracking; CRF Archiving 10 min per 100 CRF pages;				
Interim QC	2 interim QC day 2 days	Per QC	1	2,560	2,560
Final QC	3 final QC day 3 days.	Per QC	1	5,760	5,760
Data Import/Export	4 hours per data transfer, 3 transfers	Per Transfer	3	604	1,812
Patient Profile Programming - General Listings & Report	4 days Patient Profile Programming	Per Listing	8	624	4,992
Discrepancy Review and Data Consistency Review	1 discrepancy per CRF page, 1.5min. per discrepancy. 0.5 min. per page Data consistency review.	Per CRF Page	4795	4.43	21,250
Query Management	10 Queries per 100 CRF pages, 12 min. per query.	Per Query	479.5	25.03	12,000
Lab Normal Management Per Site	8 hours per site, Lab normal Management.	Per Site	6	1,000	6,000
SAE Reconciliation	74 SAEs in total, 30 min per SAE reconciliation by DM.	Per SAE	74	63	4,625
Database Lock	18 hours for Database lock	Per DB Lock	1	2,250	2,250
Conmed Coding & Review	5 concomitant Medications per patient, 4 min. per term.	Per Coded Term	370	6.00	2,220
AE Coding & Review	5 adverse events per patient, 5 min. per term.	Per Coded Term	370	7.60	2,812
SAE Coding & Review	1 SAE's per patient, 5 min. per term.	Per Coded Term	74	8.00	592
Medical Condition Coding & Review	5 medical conditions per patient, 4 min. per term.	Per Coded Term	370	6.00	2,220

DATA MANAGEMENT SERVICE COSTS	Paper	Unit Type	# Units	Unit Price	USD
Sub-total for data management					246,087

BIOSTATISTICS SERVICE COSTS		Unit Type	# Units	Unit Price	USD
Statistical Analysis Plan Writing & Review	60 hours Statistician.	Per Plan	1	13,800	13,800
Unique Tables	30 tables, 6 hours per table.	Per Unique Table	30	936	28,080
Unique Listings	20 listings, 3 hours per listing.	Per Unique Listing	20	468	9,360
Unique Figures	5 Figures, 3.5 hours per Figure.	Per Unique Figure	5	562	2,808
Final Analysis	60 hours final analysis.	Per Final Analysis	1	13,800	13,800
Stat.Report Writing & Review	20 hours	Per Report	1	4,600	4,600
Sub-total for biostatistics					72,448

STUDY REPORT		Unit Type	# Units	Unit Price	USD
Clinical Study Report	Write & QC Shell report, Incorporation of Sponsor comments and QC, Key Messages Report Meeting (preparation and attendance), Write fully integrated clinical trial report (assuming all tables, listings, patient narratives are provided by Clinical Safety) including all appendices, Medical Review, Quality control check of report (full check back to the raw data), Incorporation of Sponsor comments and QC, Collation of Electronic Appendices	Per Study Report	1	36,782	36,782
Sub-total for Study report					36,782

OVERHEAD					**USD**
Overhead 4% of Labor					**70,688**
Sub-total for Overhead					**70,688**
TOTAL					
APTIV					
COSTS					**1,837,876**

ESTIMATED PASSTHROUGH COSTS		USD
Qualification Visit Travel Expenses	Sites have been previously qualified	N/A
Initiation Visit Travel Expenses	6 Initiation Visits @ Est. 600/visit	3,600
Interim Monitoring Visit Travel Expenses	72 Interim Monitoring Visits @ Est. 600/visit	43,200
Closeout Visit Travel Expenses	6 Closeout Visits @ Est. 600/visit	3,600
IRB/IEC Fees	Estimated 3,000 per site	18,000
Regulatory Fees (HA Submissions)	Estimated 4,000 per country	4,000
Investigator Fees	Actinium will perform contracting and payment tasks for this project.	N/A
TOTAL ESTIMATED PASS- THROUGH COSTS		**72,400**

Appendix D: Payment Schedule

Initial Payment: USD$230,000, which is 12.5% of the Total Aptiv Solutions Services fees is due upon execution of this Project Agreement. Of this amount, Actinium Pharmaceuticals has already paid to Aptiv Solutions the amount of US$150,000 prior to execution of this Project Agreement which shall be credited against the Initial Payment referenced above. Upon execution of this Agreement and receipt of an appropriate invoice, Actinium Pharmaceuticals will pay Aptiv Solutions USD$80,000, being the difference between the total Initial Payment and the credited amount. The total Initial Payment of USD$230,000 will be credited against the final Project invoices.

In addition, 12.5% of the Pass Through Budget ($9,050) is due upon execution of this Project Agreement. This amount will be credited against the final invoices for Pass Through Costs.

Thereafter, invoices will be sent monthly for all work performed for the previous month on a unit basis in accordance with the annual rate that corresponds with the year in which the work is performed.

ITG [redacted]eutics Group, LLC

Proposal for

Actinium Pharmaceuticals, Inc.

^{225}Ac-Labeling of HuM195

March 30, 2007

Prepared by:

IsoTherapeutics Group, LLC
1004 S. Velasco St.
Angleton, TX 77515

Table of Contents

Proposal for Actinium Pharmaceuticals, Inc
^{225}Ac-Labeling of HuM195

Purpose

This is a proposal by IsoTherapeutics Group, LLC (ITG) for Actinium Pharmaceuticals, Inc. (API) to work on the improvement of ^{225}Ac-labeling of HuM195.

Responsibilities

API will provide
- HuM195 monoclonal antibody and applicable information
- ^{225}Ac as required
- Applicable data from prior work
- Funding

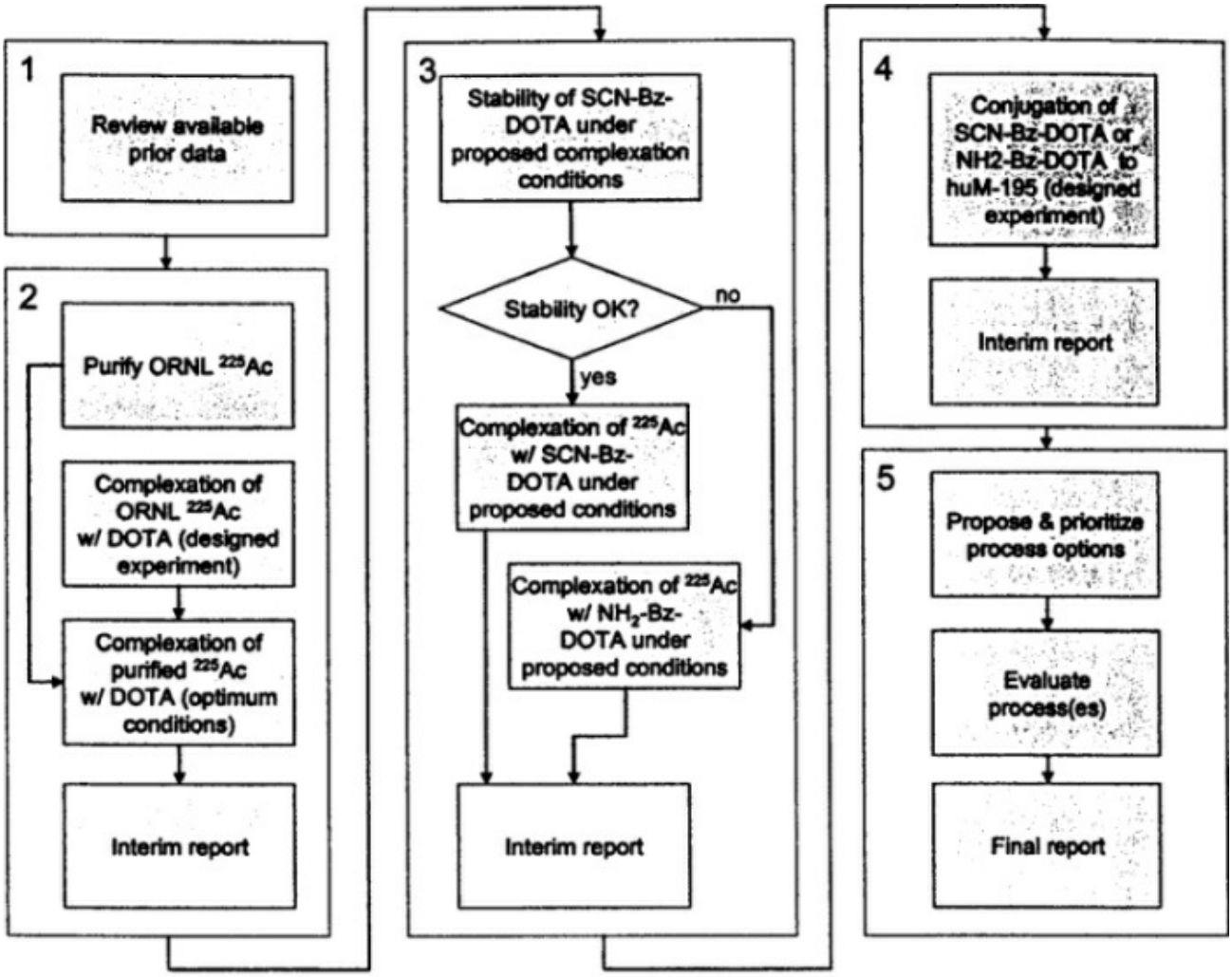
ITG will provide
- Supplies and materials
- Laboratory facility
- Labor
- Interim and final reports
- Consulting as as requested and authorized by API in writing

Study Proposal Executive Summary

The object of this work is to improve the overall yield of ^{225}Ac labeling of HuM195 monoclonal antibody (mAb). The proposal is staged as indicated in the flow chart (Figure 1) and in the outline below. The proposal is intended to be flexible, with both parties reviewing the results of each Stage prior to initiation of the next Stage. The scope, deliverables, and estimated costs for the next stage will be adjusted as mutually agreed upon prior to initiation of that Stage. The estimated total cost to API for the entire proposal as outlined herein is $112,000. Details on the cost breakdown and payment terms are found in later sections.

In addition to the defined portions of this proposal, ITG will provide, at API's request, additional consulting as needed on matters outside the scope of this proposal. This will be done at an hourly rate of $200.

Figure 1. Flow chart of stages proposal



The finished radiopharmaceutical is assembled from three parts, the mAb, the bifunctional chelant (BFC), and the ^{225}AC. There are two stepwise ways of accomplishing this, conjugation followed by complexation:

1) mAb + BFC 4 mAb-BFC 2) mAb-BFC + ^{n5}Ac mAb-BFC-^{225}Ac

or complexation followed by conjugation:

1) BFC + ^{225}AC --> BFC-^{225}AC 2) mAb + BFC-^{225}Ac 4 mAb-BFC-^{225}Ac

The former method may be preferable from a manufacturing standpoint; however, the best results to date have been by the later approach. This proposal will explore both methods with the goal being maximization of ^{225}Ac labeling yield.

In Stage 1, all available data from prior work will be reviewed. This includes work done by Memorial Sloan-Kettering Cancer Center (MSKCC), Oak Ridge National Laboratory (ORNL), and The Dow Chemical Company (Dow).

In Stage 2, complexation conditions for ^{225}AC will be optimized in a designed experiment using DOTA, a surrogate for the bifunctional chelating agent (BFC) SCN-Bz-DOTA. Additionally, ^{225}AC will be purified and this purified "-*Ac will be complexed using the optimized conditions.

In Stage 3, the stability of the SCN-Bz-DOTA BFC will be evaluated under the conditions found to be optimum for ^{225}AC complexation. If stability is an issue, *i.e.* if the BFC degrades under conditions required to obtain significant ^{225}AC complex, then an alternative conjugation procedure involving the *in situ* formation of SCN-Bz-DOTA from NH2-Bz-DOTA will be investigated. Complexation of ^{225}AC using the BFC(s) will be performed.

In Stage 4, the conjugation of the BFC will be optimized in a designed experiment. Finally, in Stage 5, process options will be prioritized and evaluated.

A brief outline of the stages in the plan is given below.

1. Stage 1 — Review previous work
    a. MSKCC (McDevitt)
    b. ORNL
    c. Dow Chemical

2. Stage 2 — Complexation w/ DOTA
    a. Purify 2z Ac
    b. Complex ORNL ^{225}AC w/ DOTA (designed experiment)
    c. Complex purified ^{225}AC w/ DOTA (optimum conditions)
    d. Interim report

3. Stage 3 — Complexation with BFC
    a. Stability of SCN-Bz-DOTA under optimum complexation conditions
    b. Complex ^{225}AC w/ SCN-Bz-DOTA or
    c. Explore use of NH2-SCN-DOTA
    d. Interim report

4. Stage 4 — Conjugation
    a. Optimize BFC conjugation to HuM195 using trace^{In}Lu
    b. Interim report

5. Stage 5 — Label HuM195 w/ ^{225}AC
    a. Propose & prioritize process options
    b. Evaluate proposed process(es)
    c. Final report

Study Proposal - Details

Additional detail for the staged proposal follows. Proposed deliverables for each Stage are listed. It is understood that, with mutual agreement, these details will evolve as the project progresses. Additionally, deliverables and funding will be agreed upon prior to the initiation of each stage.

Stage 1— Review previous work

In this stage, all available data from prior work on the optimization of ^{225}AC labeling will be reviewed. The data will come from various sources; API, MSKCC, ITG, and Dow. It is understood, however, that ITG (former Dow employees who worked on this problem while at Dow) does not have direct access to Dow confidential information.

This stage will be performed at no charge and is, in fact currently underway.

Deliverables:

1. Defined plan to move forward

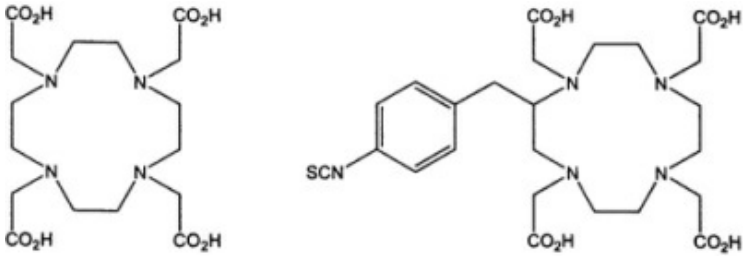
Stage 2 — Complexation w/ DOTA

In this stage, the complexation of ^{225}AC will be optimized in a designed experiment. Parameters to be explored are pH, time, temperature, concentration, and buffers. DOTA will be used as a surrogate for the BFC SCNBz-DOTA. The BFC has a reactive isothiocyanate group (SCN-) to attach to a lysine residue on the mAb. The presence of this SCN- group would complicate the experiments on optimizing the complexation conditions. As can be seen from the structures in Figure 2 below, the chelating portion of the BFC is DOTA.

Consideration will be given to the potential sensitivities of the SCN- moiety (in the case of complexation first) or of the mAb (in the case of conjugation first) when optimum conditions are decided upon.

In parallel with this designed experiment, we will attempt to purify ^{225}Ac of any metallic contaminants that could potentially interfere with the chelation. Metal-specific resins may be employed to accomplish this. The purified ^{225}AC will then be complexed with DOTA and these results compared to those above with the unpurified ^{225}AC. Alternate sources of ^{225}Ac may also be examined. The estimated cost to API for Stage 2 is $37,000.

Figure 2. Structures of DOTA and the BFC SCN-Bz-DOTA



Deliverables:

1. Optimum ^{225}Ac-DOTA complexation conditions defined
2. Interim report

Stage 3 - Complexation w/ BFC

In this stage the stability of the BFC will be examined under the conditions determined to be optimum for complexation. This will be important if complexation is done prior to conjugation. If the SCN- survives these conditions, then ^{225}AC will be complexed with the BFC to verify these conditions. If stability of the BFC is an issue, i.e. if the SCN- moiety is hydrolyzed to a significant extent under the complexation conditions, then the use of NH2-Bz-DOTA will be explored. This is the precursor to SCN-Bz-DOTA which can be made *in situ* during the conjugation reaction. The estimated cost to API for Stage 3 is $33,000.

Deliverables:

1. Assessment of SCN-Bz-DOTA stability
2. Complexation conditions for either SCN-Bz-DOTA or NH2-Bz-DOTA
3. Interim report

Stage 4 - Conjugation

Using ^{177}Lu as a tracer, the conjugation conditions for the BFC (either SCN-BzDOTA or NH2-Bz-DOTA) will be optimized in a designed experiment. Parameters to be varied may include pH, time, temperature, concentration, and buffers. Consideration will be given to the known stability of the HuM195 mAb. Determination of immunoreactivity of the mAb (e.g. by ELISA) is not part of this proposal but may be optionally added.

The trace ^{177}Lu will allow the determination of conjugation yield and average loading value (ALV), i.e. the number of BFCs per mAb. Optionally, the conjugation yield and ALV can be determined using MALDI-TOF mass spectrometry. This is not a part of this proposal, but may be added with mutual agreement. The estimated cost to API for Stage 4 is $21,000.

Deliverables:

1. Optimum conjugation conditions
2. Interim report

Stage 5 - Label HuM195 w/ ^{22}AC

In this stage, options for ^{225}Ac labeling of HuM195 will be proposed and prioritized. These options include process order (complexation-conjugation or conjugation-complexation) and conditions for complexation and conjugation. The preferred process will be evaluated. The estimated cost to API for Stage 5 is $21,000.

Deliverables:

1. Defined process maximizing the ^{225}Ac labeling yield
2. Final report

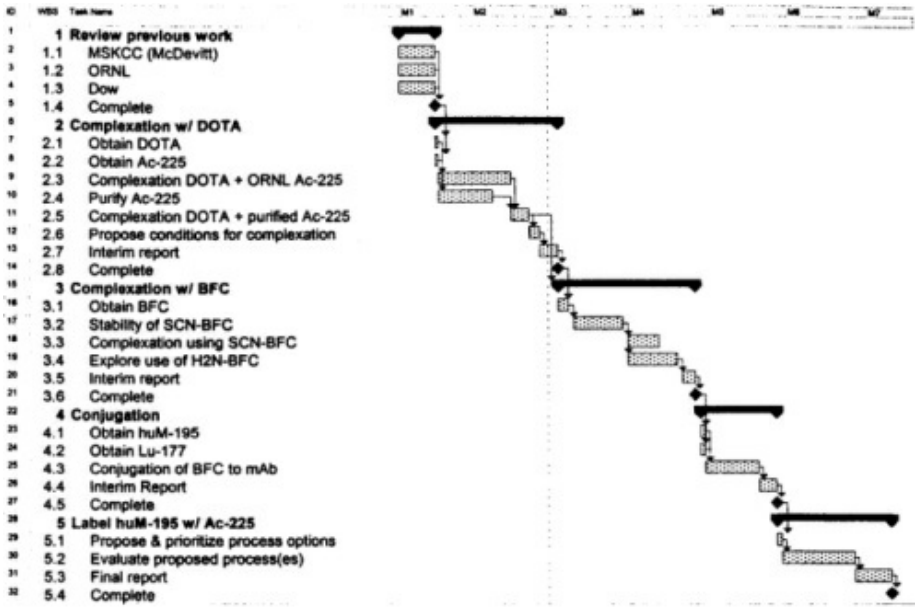
ITG Consultation Services

At the request of API, ITG is willing to provide consultation services in areas not specifically delineated in this proposal, e.g. technology transfer or manufacturing oversight. These services will be performed at an hourly rate of $200.

Time Estimate

The estimated time required for the various stages of this proposal is indicated in the Gantt chart in Figure 3 below. It is understood that this is an estimate and that scope changes and unforeseen issues may affect the timeline.

Figure 3. Gantt Chart



Cost Estimate and Payment Schedule

Cost Estimate

The cost estimate for the stages of this project is given in the table below. It is understood that, with mutual agreement, scope changes may result in modifications to this estimate.

	M&S	Labor	Other Expenses	Total
1. Review previous work	$ -	$ -	$ -	$ -
2. Complexation w/ DOTA	$ 2,000	$ 30,000	$ 5,000	$ 37,000
3. Complexation w/ BFC	$ 2,000	$ 28,000	$ 3,000	$ 33,000
4. Conjugation	$ 3,000	$ 18,000	$ -	$ 21,000
5. Label HuM195 w/ Ac-255	$ -	$ 21,000	$ -	$ 21,000
Total	$ 7,000	$ 97,000	$ 8,000	$ 1 112,000

Consultation work outside the above defined stages will be performed at a cost of $200/hour.

Payment Schedule

Payment by API to ITG for each stage will be made as follows:

50% prior to initiation of each stage
50% upon completion of the final deliverable for that stage

Deliverables and cost will be mutually agreed upon prior to initiation of each stage. The final deliverable will be a report on the work done during that stage.

Fees for consultation services, if used, will be billed monthly.

Payment is due on receipt of invoice.

Signatures

Agreed upon and accepted by:

/s/ Howard S. Wachtler	Date 5/4/07	/s/ R. Keith Frank, Ph.D.	Date 1/26/07
HOWARD S. WACHTLER		R. Keith Frank, Ph.D.	
PRESIDENT & CEO		PRESIDENT & CEO	
Actinium Pharmaceuticals, Inc.		IsoTherapeutics Group, LLC	

CLINICAL TRIAL AGREEMENT

THIS CLINICAL TRIAL AGREEMENT ("Agreement") is made by and between The University of Texas M.D. Anderson Cancer Center, a member institution of The University of Texas System " system" having a principal place of business at 1515 Holcombe Blvd. Houston, TX 77030 ("Site") and Actinium Pharmaceuticals, Inc. with an address of 391 Lafayette Street, Newark, New Jersey 07105 ("Actinium"). This Agreement is entered into this 6th day of August 2012.

This Agreement provides for the conduct of a clinical investigation using a proprietary drug which is not, at this time, cleared for human use by the Food and Drug Administration. Any use of this drug must be pursuant to an Investigational New Drug Exemption (IND 10807) held by Actinium. Aptiv Solutions, Inc., a Delaware corporation having a principal place of business at 1925 Isaac Newton Square, Suite 100, Reston, VA 20190 ("Aptiv") has been engaged by Actinium to oversee and manage the Study.

In consideration of the mutual covenants and conditions set forth in this Agreement and for good and valuable consideration, the sufficiency of which is hereby acknowledged, the parties hereby agree as follows:

1. Definitions. When used in this Agreement, the listed terms shall have the following meanings:

   a. "Study" means the conduct of human research using the Study Drug manufactured by Actinium on Qualified Subjects at the Site pursuant to the protocol which has been reviewed and approved by the IRB and the FDA prior to the commencement of the Study.

   b. "Protocol" means the details of that certain clinical Study to be performed pursuant to this Agreement entitled A Phase 1/II Study of Low Dose Cytarabine and Actinium-255 Hum195 in Older Patients with Untreated Acute Myeloid Leukemia. The Protocol, including any amendments is hereby incorporated for reference purposes only and made part of this Agreement.

   c. "IRB" means the institutional review board of Site.

   d. "Study Drug" means the compound known as Actinium-255 Hum 195.

   e. "Study Data" means all of the data collected and records compiled during the Study relating to the conduct of the Study and/or the Study Drug. Study Data includes without limitation, all records prepared by the Investigator and all clinical research assistants, all Case Report Forms, all Screening records, all records on Qualified Subjects, Completed Subjects, Withdrawn Subjects, Uncompleted Subjects and Non-Qualified Subjects, all Informed Consent forms, all adverse/unexpected/serious or other reportable events, and all modifications, adjustments, suggestions for improvement of the Study Drug.

   f. "Potential Subject" is a patient or individual who could possibly participate in the Study.

   g. "Screening" is the process of identifying Potential Subjects and of conducting the examinations and tests necessary to select Qualified Subjects for the Study.

   h. "Qualified Subject" is a subject who, on inclusion in the treatment phase of the Study, has met all of the inclusion criteria and none of the exclusion criteria in the Protocol and has given his/her written Informed Consent to participate in the Study.

   i. "Completed Subject" is a Qualified Subject who has completed the Study and met the minimum attendance and compliance standards in the Protocol for evaluation of the safety and effectiveness of the Study Drug.

   j. "Withdrawn Subject" is a Qualified Subject who has been withdrawn from the Study because of treatment failure or adverse event, but who otherwise met the Protocol entry requirements.

   k. "Uncompleted Subject" is a Qualified Subject who was initially included in the Study but who failed to complete the Study satisfactorily because of insufficient clinic attendance, poor compliance, voluntary withdrawal, and loss to follow-up or other Protocol violations.

1. "Non-Qualified Subject" is a subject who has not met the inclusion criteria as defined in the Protocol.

m. "Informed Consent Form" means the written form agreed upon by Actinium and the Site in conformance with all applicable FDA regulations and guidances, and approved by the IRB for use in this Study.

n. "Case Report Form (CRF)" means the report in the Actinuim format which is completed by the Investigator or his/her authorized designee documenting the use of the Study Drug in subjects.

o. "FDA" means the Food and Drug Administration of the United States Department of Health and Human Services, and any successor government agency.

P- "Investigator's Brochure" is a document describing the Study Drug, which is provided to the Investigator prior to the start of the Study.

q. "Investigator" means Farhad Ravandi-Kashani,MD

2. Compliance with laws and procedures.

a. All parties shall conduct the Study in accordance with all applicable laws, regulations and guidances, as each of the foregoing may be amended from time to time. Without limiting the foregoing, the parties expressly agree to comply with 21 CFR 312 - Investigational New Drug Application, 21 CFR 50 - Protection of Human Subjects, and 21 CFR 56 — Institutional Review Boards.

b. The Site agrees to comply with the terms of this Agreement and all IRB and FDA procedures and applicable decisions for the Study.

3. Scope of Study

a. This Study is governed by this Agreement. All parties agree that no Study Drug shall be used on a subject until the IRB and the FDA have both approved the Study. After the FDA and IRB approval, the Protocol may only be amended when: 1) there is written agreement between the Site and Actinium to amend the Protocol, and 2) any and all such amendments have been reviewed and approved by the IRB and FDA. No Protocol amendments shall be implemented until receipt of the IRB and FDA written approval. Nothing in this paragraph shall limit the Investigator's ability to act under 21 CFR 312.50, 312.60, 312.62, 312.64 (Subpart D).

b. The Site agrees to strictly comply with all IRB procedures and policies which govern the review, approval and conduct of this Study.

c. The parties agree that Screening for Qualified Subjects shall begin within thirty (30) days of receipt of the following: 1) written approval of the Study and the Informed Consent by the IRB, 2) notification by Aptiv or Actinium that the FDA has granted the Investigational New Drug Application for the Study Drug, and 3) completion of Initiation Visit of the Site by Aptiv and Actinium for Study participation. The goal of the Study is to enroll up to ten (10) Qualified Subjects per year. The Site agrees to use its reasonable best efforts to complete subject enrollment as soon as practical, after commencement of Screening at each dose group.

4. Responsibilities of Actinium

a. Actinium represents and certifies that it has the authority to enter into this Agreement on its own behalf.

b. Actinium agrees to provide to the Site and the Investigator the information necessary to properly conduct the Study, including without limitation, the Protocol, the Investigator's Brochure and data of any prior investigations of the Study Drug. Actinium agrees to provide any new information related to the safety and efficacy of the Study Drug as such information becomes available during the course of the Study. Actinium advises the Site and the Investigator that the effectiveness and safety in humans of the Study Drug have not been fully investigated.

c. Actinium shall provide, free of charge to Institution, the necessary quantity of the Study Drug. Actinium or Aptiv shall ship the Study Drug only to the Site.

d. Aptiv shall monitor the Study and shall require evidence that IRB review and approval are obtained.

Actinium agrees that Institution, its affiliates and all Study team members shall have the sole authority over the clinical care of the Study subjects and nothing in this Agreement shall prevent Institution or Investigator from taking any action which is, in the reasonable medical judgment of the Study team members, in the Study subject's best interest. Any time Actinium or Aptiv becomes aware of a significant Study subject safety issue it will communicate such information to Institution. Actinium further agrees to promptly report to Institution the results of any monitoring reports that could affect the safety of Study participants, influence the conduct of the Study, alter the Institutional Review Board ("IRB") approval to continue the Study, and/or affect the willingness of Study Subjects to continue in the Study. During the Study and after its completion, Actinium shall promptly report to Institution and the Investigator any Study results that could directly affect the safety or medical care of Study Subjects.. Institution and the Principal Investigator shall cooperate with Actinium/Aptiv and/or its designee in the performance of its duties as study monitor. Actinium/Aptiv's rights in this Section shall be subject to Actinium/Aptv's compliance with Institution's reasonable measures for purposes of confidentiality, safety, and security, and will be further subject to Actinium/Aptiv's compliance with Institution's premises rules that are generally applicable to all persons at Institution's facilities. Should Actinium/Aptiv utilize one or more third party(s) in exercising its rights in this paragraph, Actinium/Aptiv certifies that such party(s) shall be subject to an obligation of confidentiality consistent with the obligations of confidentiality required of Actinium hereunder and such third party(s) shall be subject to any and all conditions up Actinium/Aptiv' s rights that are set forth in this Section, If Actinium/Aptv obtains, learns of, comes in contact with, or otherwise has access to any patient health and medical information, Actinium/Aptv will keep such information confidential and will comply with all applicable laws regarding the confidentiality of such information and Actinium/Aptv will not use or disclose such patient health and medical information in a manner that would violate any applicable law (including the HIPAA Privacy Regulations) if such use or disclosure were made by Institution.

5. Responsibilities of Site

a. The Site certifies and represents that Investigator is an employee of the Site, and is sufficiently qualified by training and experience to conduct the Study using the Study Drug. A true and complete copy of the Investigator's current curriculum vitae is attached as Exhibit B and made part of this Agreement.

b. The Site certifies that the Investigator to its knowledge has never been involved in any investigation or research at the Site which was terminated by the FDA, National Institutes of Health (NTH) or any sponsor for non-compliance.

c. The Site certifies and represents that Investigator to its knowledge has not been disbarred under Section 306 of the Federal Food, Drug and Cosmetic Act, or any other section of said act or its successor, and further, that the Investigator to its knowledge will not use in any capacity, the services of any individual or entity which has been so disbarred, in any aspect of this Study. The Site agrees to notify Actinium immediately if the Investigator or any individual or entity involved in this Study is the subject of a disbarment proceeding or becomes disbarred.

d. In addition to and without limiting the obligations of Section 2a above, the Site agrees to conduct the Study in strict accordance with this Agreement, the Protocol, all associated documentation provided by Aptiv (e.g. CRF, CRF Completion guidelines, User Manuals, and Regulatory Binder documentation), applicable regulations, and all conditions of approval imposed by the reviewing IRB or FDA. The Site shall permit the use of the Study Drug only on Qualified Subjects under Investigator's personal supervision only for the purpose of the Study. The Site shall not supply the Study Drug to any other person or entity not authorized under FDA regulation to receive it, nor to any person for any purpose other than the Study. The Site shall not modify or alter the Study Drug. The Site shall maintain proper control of all Study Drug inventory and return of unused quantities of Study Drug as required by regulation and directed by Actinium and at the reasonable expense of Actinium.

The Site agrees that the Investigator will personally supervise or perform all testing of the Study Drug involving human subjects.

e. The Site agrees to maintain all records and make all reports as required by regulation, the Study, the IRB and this Agreement.

f. The Site agrees to use its reasonable best efforts, on a diligent and continuous basis, to recruit Qualified Subjects, to prepare true and accurate Case Report Forms, to make all required reports, to complete the Study within the time limits set forth in this Agreement, and to perform all long-term follow-up examinations, visits and data collection as required by the Study and/or regulation from time to time. In addition, all CRF and Study Data shall be submitted to Aptiv within ten (10) days of written request. This provision shall survive termination or expiration of this Agreement.

g. The Site shall exclusively use the Informed Consent. The Site agrees that the 1RB approved consent form must be provided to and acknowledged by Actinium prior to use. The Site agrees that the Investigator shall not conduct any screening procedures, enroll any Potential Subject nor use the Study Drug on any Potential Subject who has not given written consent by signing and dating the specified Informed Consent form. The Site agrees that Investigator shall personally ensure that all the requirements for obtaining informed consent are met.

h. The Site agrees that Investigator will follow good medical practice and exercise the customary standard of care practiced in his professional specialty.

i. The Site ensures that Investigator will provide sufficient accurate financial disclosure information to allow Actinium or Aptly to submit a complete and accurate certification or disclosure statement as required under 21 CFR part 54, as it may be amended from time to time. Further, the Site agrees that the Investigator shall promptly update this financial disclosure information if any relevant changes occur during the course of the Study and for one (1) year following completion of the study. The Site also agrees that Investigator will update this financial disclosure information promptly after the request by Actinium or Aptiv. The Site understands that this information shall be submitted in any marketing application involving the Study Drug. This provision shall survive termination or expiration of this Agreement.

j. The Site agrees to provide sufficient resources to the IRB to enable the IRB to operate as required by law, regulation and its own procedures.

k. During the Study, and subject to the terms of this Agreement, Site agrees to use reasonable efforts to cause the Investigator to conduct the Study pursuant to the Protocol and to provide to Investigator reasonable access to all Site facilities, staff and resources which the Investigator determines necessary or desirable to the conduct of the Study. Without limiting the foregoing, the Site agrees to make available a Study coordinator, qualified by training and experience and reasonably acceptable to Actinium and Aptiv, to manage all administrative functions of the Study, including but not limited to, meeting with Actinium and Aptiv. All such Site facilities, staff and resources used in the Study are subject to the supervision of the Investigator.

1. The Site agrees to provide the facilities necessary to the conduct of the Study, and to notify Actinium and Aptiv promptly, but no later than 2 administrative business days after the discovery, of any failure of the Investigator, the Site or the 1RB itself, to follow any of the established protocols for the Study.

m. The Site agrees to allow Aptiv and Actinium reasonable access to the study site and to facilities and staff as reasonably needed to conduct long-term follow-up of Study subjects, at Actinium/Aptiv's expense. The Site will ensure that the Investigator will be reasonably available during normal regular business hours and at reasonable intervals to meet with a study monitor to review the status of the Study and discuss any pending issues. Aptiv will provide no less than thirty (30) days advance notice of monitoring visits and will use all reasonable efforts to coordinate the scheduling of the visits with the Investigator and Study Coordinator. This provision m shall be subject to Section 4d above.

n. The Site agrees to allow Actinium and Aptly reasonable access to Study Data, including without limitation, patient records (subject to patient consent), and Case Report Forms, as necessary for completion of the Study, long-term follow-up, and compliance efforts, at Actinium's expense.

o. The Site certifies and represents that it will not knowingly use in the Study, in any capacity whatsoever, whether as employee, consultant, contractor or agent, the services of any individual or entity who has been disbarred under Section 306 of the Federal Food, Drug and Cosmetic Act, or any other section of said act or its successor. The Site agrees to notify Aptiv immediately if any individual or entity involved in this Study is the subject of a disbarment proceeding or becomes disbarred.

P. In the event the Investigator becomes unable to complete the Protocol for any reason, Site will, to the extent possible, propose a substitute Investigator with qualifications and experience at least equal to or greater than those of the Investigator for Actinium's approval, which approval shall not be unreasonably withheld. In the event Actinium and Site agree upon a substitute Investigator, this Agreement shall continue in full force and effect. If Actinium and Site are unable to agree on a substitute Investigator, this Agreement may be terminated in accordance with the provisions of this Agreement.

q. Subparagraphs 5J-5P shall survive termination or expiration of this Agreement.

r. The Site and Investigator agree to notify Aptiv and Actinium as soon as possible, but in no event later than twenty-four (24) administrative business hours after each discovery of a serious event in the Protocol permitted by 21 CFR 312.60(a)(2). The Investigator shall complete all reports when and in the manner required by 21 CFR 312.62 and 312.64. The Investigator shall make all other reports as required by 21 CFR 312.62 and 312.64.

s. The Site agrees to cooperate with any study monitor designated by Aptiv to monitor this Study (subject to Section 4b above). The Site agrees to cooperate with authorized FDA employees conducting an audit or inspection, in the manner required by 21 CFR 312.68. The Investigator shall promptly notify Actinium of any request for an audit of the Study by the Site, the FDA or any other governmental agency. If any inspection occurs and to the extent permitted by law, the Site will provide Actinium and Aptiv with copies of all auditor (including FDA and IRB) materials, correspondence, statements, forms and records that are received by the Investigator or the Site. Actinium and Aptiv shall assist the Investigator in responding to any FDA or IRB correspondence and promptly implementing any necessary corrective action. This provision shall survive termination or expiration of this Agreement.

t. The Site certifies that its Investigator has made all the necessary disclosures required regarding conflict of interest in connection with this Study.

u. The Site hereby assures Actinium that the Study will be reviewed and approved by its IRB before any Study Drug is tested on a human subject, and further, that said IRB is functioning in compliance with the applicable regulations and at all times. The Site shall provide, upon request, evidence of IRB approvals related to this Study in a timely manner, This provision shall survive termination or expiration of this Agreement. The Site certifies that the Site has not, except as has been previously disclosed to Actinium and Aptiv in writing, in the last five (5) years been involved in any study which was terminated by any IRB, the FDA, National Institutes of Health (NIH) or any sponsor for non-compliance.

6. Payment

a. In support of the performance of the Study, Actinium will pay to Site, subject to the terms and conditions of this Agreement the sum of US$19,445.77 for each Completed Subject of the Study, as set forth in the Site Budget and Payment schedule, attached to and made part of this Agreement as Exhibit C. In no event shall payments to the Site exceed US$19,445.77 for each Completed Subject up to a maximum of sixty (60) Completed Subjects. All payments are gross in US Dollars; all approved invoices are net thirty (30) days.

Payment of all sums due hereunder shall be made by check payable as follows:

The University of Texas, M.D. Anderson Cancer Center
P.O Box 4390
Houston, TX 77210-4390
Attn. Grants and Contracts Accounting
Tax ID: 74-6001118

b. Any additional payments must be approved in advance by Actinium in writing.

c. The Site agrees to be responsible for invoicing Actinium in accordance with the Budget and Payment Schedule (Exhibit C).

d. Any equipment (except for the Study Drug) purchased by the Site as part of the Protocol shall be owned by the Site, shall be physically located at Site, and shall remain the property of Site following completion of the Study.

e. In no event is Actinium required to make any payment for any costs incurred with respect to Non-Qualified Subjects entered into the treatment phase of the Study or for any Subject who has not given written Informed Consent to participate in the Study.

f. Nothing contained herein shall be construed as requiring Site, the Investigator or any Site research staff to work on any project or process which is knowingly prohibited by law or by any international treaty to which the United States of America is a party, or which may be harmful or detrimental to public health, patient safety or good clinical care or which may be considered to be immoral. No payment is subject to submission of favorable clinical results or evaluations.

g. Notwithstanding the foregoing, in no event shall any payment be made under this Agreement which is contrary to 42 USC 1320a-7b, as it or any successor law may be in effect from time to time. In accordance with the statute, in no event shall the Investigator receive any payment, royalty, form of compensation, or remuneration of any nature, sort or description, for any use of all or any portion of the Study Drug by any hospital, clinic or other Site where he works. In no event shall any request for reimbursement or payment under any private or public health insurance carrier be made which is contrary to law.

7. Publications

Actinium acknowledge that it is Site's policy that the results of the Study must be publishable and the Investigator and others employed by Site or who are engaged in the Study be permitted to present at symposia, national or regional professional meetings and to publish in journals, theses or dissertations or otherwise in their sole discretion, the methods and results of the Study.

The parties recognize that because this is a multi-center Study, there is a need for a coordinated approach to any publication or public disclosure of the data or results of this Study. To that end, there will be no publication or public disclosure of such data or results by the Site or Investigator until a multi-center publication is submitted for publication or presentation by Actinium, or its designee. However, if no multi-site publication is submitted by Actinium or its designee within twelve (12) months of the completion termination, or abandonment of the Study from all sites, the Site and the Investigator shall be free to publish for non-commercial purposes the Study results from there Site as follows. If the Site or the Investigator wishes to publish or publicly disclose Study and data or results the Site will submit any proposed manuscript or publication to Actinium for comment at least thirty (30) days prior to its submission for publication or other disclosure. The Site will review and consider in good faith comments received from Actinium during such thirty (30) day period. If requested to do so by Actinium, Site agrees to remove confidential information provided by Actinium prior to submitting the manuscript or publication, excluding Study data / results or any other information that may be required by the publishing source. Actinium will make every reasonable attempt to notify the Site within said thirty (30) days of receipt of the proposed publication whether it is desirable to file a patent application on any inventions contained in the proposed publication. In the event Actinium decides to pursue patent protection, Actinium shall have the right to defer publication for an additional thirty (30) days to permit the filing of any desired patent application.

8. Confidential Information

a. The parties acknowledge that as part of the scientific collaboration between Actinium, Aptiv and the Site in connection with the Study, Aptiv or Actinium may find it necessary to disclose certain confidential and proprietary information and trade secrets of Actinium and/or Aptiv. Such confidential and proprietary information includes, without limitation, the Protocol, all intellectual property contained in the Study Drug, the design and manufacturing processes utilized to produce and test the Study Drug, the identity of Actinium's suppliers, data concerning scientific discoveries made by Actinium and/or Aptiv; Actinium's manufacturing strategies and processes; Actinium's marketing plans; data from Actinium's evaluations in animals and humans; Actinium's strategy for or status of regulatory approval; or Actinium's forecasts of sales and sales data, and any other information which by its nature would be considered confidential (hereafter referred to collectively as "Actinium Confidential Information"). Such Actinium Confidential Information shall remain the confidential and proprietary property of Actinium and shall be disclosed to Site's employees, affiliates or agents on a "need to know" basis, and who are bound by similar obligations to protect the Actinium Confidential Information from unauthorized disclosure.

b. The Site may find it necessary to disclose certain confidential and proprietary information and trade secrets of Site to Actinium or Aptiv Such confidential and proprietary information includes, any data, records or other information disclosed to Actinium or Aptiv, or its designee, (hereinafter collectively, "Site Confidential Information"). Such Site Confidential Information shall remain the confidential and proprietary property of Site and shall be disclosed to Actinium/Aptiv or its designees, employees, affiliates or agents on a "need to know" basis.

c. Each party hereby agrees that for a period of five (5) years after the disclosure of such confidential information or the termination of the Agreement neither party shall (i) publicly divulge, disseminate, publish or otherwise disclose any of the other party's confidential information without prior written consent; (ii) limit access to each party's confidential information to those of the other party's, co-workers and staff who are involved in the Study and have a need for such confidential information in connection with the conduct of the Study, and (iii) cause the return to the other party (at the reasonable expense of the requesting party), as the case may be, any and all documents, drawings, sketches, designs, products or samples containing confidential information, together with any copies thereof, promptly upon termination of this Agreement or upon the other party's request therefore., provided that to the extent permitted by all applicable laws and regulations, such obligations undertaken by the said party shall remain in force with respect to the Chemical Manufacturing and Control Section, Toxicity Studies or Performance Studies.

d. Notwithstanding the foregoing, the obligations of confidentiality and nondisclosure shall not apply to the following information:

(1) Information that was in the public domain prior to the date of disclosure to the receiving party coming into possession thereof, or becomes part of the public domain by publication or otherwise through no fault or unauthorized act or omission on the part of the receiving party;

(2) Information that is disclosed to the receiving party by a third party legally entitled to disclose such information, as demonstrated by competent evidence;

(3) Information that was rightfully in the possession of or already known to the receiving party as demonstrated by prior written records;

(4) Information that is independently developed by the receiving party without reference to any confidential information, as demonstrated by competent evidence; or

(5) Information that is required to be disclosed to a government authority or by order of a court of competent jurisdiction, provided that (a) such disclosure is subject to all applicable governmental or judicial protection available for like material; (b) reasonable advance notice is given to the disclosing party and disclosing party is provided with an opportunity to comment on such proposed disclosure; and (c) the receiving party take all reasonable steps to limit the scope of such disclosure.

(6) Information that is required to be disclosed in order to obtain consent from patients or subjects who may wish to enroll in the Study, provided, however that the information will be disclosed only to the extent necessary and will not be provided in answer to unsolicited inquires by telephone or to individuals who are not eligible Study candidates, provided further, however, that such information disclosed to a patient or subject shall continue to be Confidential Information under this Agreement.

e. Site, in accordance with its policies and procedures, may post the Protocol on its internal database (referred to as "FYI") and share the Protocol, or portions thereof, as necessary i) to comply with all applicable laws and regulations; ii) for internal patient care billing audits with Site's affiliates, and iii) to provide information to third party payors as necessary, in connection with the processing or payment of a claim submitted in relation to a Study subject. Site shall also be allowed to post a synopsis of the Protocol on its recruitment website.

In addition, the parties agree that the Investigator may disclose the title of the Study on his curriculum vitae and grant application(s).

9. Intellectual Property

The parties acknowledge that it is unlikely that an invention will result during the performance of the Study. Site, on behalf of itself and its employees, consultants and agents, agree that excluding medical records and Lab notebooks, all research data and results which is conceived and/or reduced to practice during the conduct of the Study and arising from the performance of the Study ("Intellectual Property") shall be property of Actinium, subject to Institution's right to use the results and data of the Study for its internal research, academic, and patient-care purposes. The Site shall promptly disclose all said Intellectual Property to Aptiv after notification of any such Intellectual Property is received by Institution's Office of Technology Commercialization. The Site also represents that it has obtained sufficient authority to make this grant from all individuals that Site makes available to perform this Agreement and to provide good and clear title to Actinium. Additionally, Site, on behalf of itself and all of its employees, contractors and agents, hereby grants Actinium the right to file, prosecute and defend any such patent applications, at Actinium's own cost and expense. Site agrees to render all reasonable assistance to Actinium in the filing, prosecution and defense of any such patent application at Actinium's own cost and expense.

The parties further acknowledge and agree that Actinium is the owner or authorized licensee of the Study Drug. Neither Site nor Investigator shall obtain any license to make, have made, sell, distribute, rent, lease, or otherwise transfer or use the Study Drug or Actinium Confidential Information, or their derivatives. Actinium Confidential Information is licensed for use only on and in combination with the Study Drug, and may not be used on or with third party products without Actinium's prior express written permission. This Agreement grants no implied rights.

Aptly on behalf of Actinium, hereby grants to Site a non-exclusive royalty free license to the Intellectual Property for Site's own internal nonprofit research, patient care,and education related purposes.

10. Indemnification

a. Site shall, to the extent authorized under the Constitution and laws of the State of Texas, indemnify and hold harmless from liability resulting from the negligent acts or omissions of Site, its agents or employees pertaining to the activities to be carried out pursuant to the obligations of this Agreement; provided, however, that Site shall not hold Actinium harmless from claims arising out of the negligence or willful malfeasance of Actinium, its officers, agents, or employees, or any person or entity not subject to Actinium's supervision or control.

Actinium shall indemnify and hold harmless System, Site, their Regents, officers, agents and employees from any liability or loss resulting from judgments or claims against them arising out of the activities to be carried out pursuant to the obligations of this Agreement, including but not limited to, the use by Actinium of the results of the Study; provided, however, that the following is excluded from Actinium 's obligation to indemnify and hold harmless:

a. the negligent failure of Site to comply with any applicable governmental requirements or to adhere to the terms of the Protocol; or

b. the negligence or willful malfeasance by a Regent, officer, agent, or employee of Site or System.

This obligation to indemnify is subject to the Site Indemnitees giving Actinium written notice of any claim, suit or demand and full control of any defense and settlements of such claim, provided, however, such settlements shall not require Site to contribute to the settlements, admit fault or require Site to change its operations or business practices, suit or demand. The Site Indemnitees will also notify Actinium promptly in the event any one of them becomes aware of any potential claim, or likelihood of any potential claim of indemnification rights under this Section. Site Indemnitees will reasonably cooperate, at Actinium's expense, in the defense or settlement of any claim or action. This provision shall be subject to the statutory duties of the Texas Attorney General.

This Paragraph shall survive expiration or termination of this Agreement.

c. Study-Related Injury.

Subject to Section 10(b), above, Actinium agrees to pay for all reasonable costs incurred for the care and treatment of any illness or injury to a Subject resulting from his or her participation in the Study.

11. Insurance

Each Party will maintain in effect appropriate insurance or self-insurance in amounts sufficient to meet its liability obligations under this Agreement. Each Party's coverage will comply with applicable laws, rules, regulations and insurance guidelines. Notwithstanding the foregoing, Institution, as a member institution of System, is an agency of the State of Texas and is self-insured pursuant to The University of Texas System Professional Medical Malpractice Self-Insurance Plan, under the authority of Section 59.01, Texas Education Code. Institution has and will maintain in force during the term of this Agreement adequate insurance or financial resources to cover its indemnification obligations hereunder.

12. Term and Termination

Unless earlier terminated in accordance with its terms, this Agreement shall commence on the date when it is signed by all parties, (the "Effective Date", and shall continue in full force and effect until two (2) years after the Study has been completed.

a. This Agreement shall be terminated immediately in the event that: 1) the authorization and IND issued by the FDA is withdrawn, 2) the approval of the IRB is withdrawn; or 3) the Investigator has not included any Qualified Subjects in the Study in accordance with Paragraph 3.c. and after the Study has been open to enrollment for twenty-four (24) months.

b. Except as otherwise provided in this section, any party may terminate this Agreement uponthirty (30) days prior written notice in the event of any material breach by another party of any material term or condition hereof; provided such breach is not cured within said thirty (30) day notice period.

c. Any party may terminate or suspend this Study immediately for the safety of Subjects, pursuant to applicable regulations. In such case, the party terminating or suspending the study will provide prompt written notice to the other party.

d. Any party may terminate this Agreement upon written notice immediately in the event a party engages in criminal, unprofessional or fraudulent conduct.

e. Actinium may terminate this Agreement upon thirty (30) prior written notice in the event that: 1) the Protocol is suspended by the IRB; 2) the Principal Investigator is unable to complete the Study and a substitute Principal Investigator cannot be agreed upon, or 3) if circumstances reasonably beyond Site's control preclude the Site from continuing the Study, and such suspension of the Study exceeds sixty (60) consecutive days or ninety (90) days in the aggregate in any year during the term (or renewal) of this Agreement.

f. Actinium may terminate this Agreement at any time upon one (I) month prior written notice to the Site. In such case, Site may terminate this Agreement at any time upon thirty (30) days prior written notice to Actinium.

g. Any provision of this Agreement, which provides continuous enforcement or operation thereof after the termination hereof, shall survive the termination of this agreement.

13. Effect of Termination

Except as otherwise provided herein, termination of this Agreement shall not be construed to release either party from any obligation hereunder which has matured prior to the date of said termination. Upon termination of this Agreement, Site shall promptly return to Actinium and Aptiv the Study Drug, Study Data, including without limitation, all CRF and Actinium Confidential Information at Actinium's or Aptiv's expense. In the event of early termination, Actinium shall liable for all reasonable costs incurred or obligated by Institution at the time of such termination.

14. Diversity in Study Population - Translation Services

The Site endorses the National Institute of Health's policy concerning the inclusion of minorities in study populations. The Investigator is encouraged to recruit patients into the Study without regard to ethnic background. The Site shall provide the consent form applicable to the Study in written form translated to the appropriate language to any non-English speaking minorities included in the Study. Any cost incurred by the Site for the development of a translated informed consent from will be agreed upon in advance and reimbursed by Actinium or Aptiv. The Site shall present Actinium or Aptiv with an invoice for translation services which Actinium or Aptiv shall reimburse to the Site within thirty (30) days of receipt. The parties acknowledge that said translation costs are not included in the Study budget set out in Appendix B and are not included in the Total Cost of the Study.

15. Communications

All medical/scientific and other communications, reports and notices shall be delivered by hand, by facsimile, by secure electronic means or sent by first class mail postage prepaid and addressed as follows:

If to Aptiv: Anthony Apicella
Aptiv Solutions
225 Turnpike Rd.
Sothborough, MA 01772

If to Actinium: Dragan Cicic, CEO
391 Lafayette Street
Newark, NJ 07105

If to Site : M.D. Anderson Cancer Center
1515 Holcombe Blvd. Unit 1676
Houston, TX 77030
Attn: Renee Gonzales, Sponsored Programs

With a Copy to: M.D. Anderson Cancer Center
1020 Holcombe Blvd. Suite 1500
Houston, TX 77030
Attn: Chief Legal Officer

If to Investigator: M.D. Anderson Cancer Center
1515 Holcombe Blvd. Unit 0428
Houston, TX 77030

In no event shall Site or the Investigator file any communication they are legally required to file with the FDA or any other regulatory agency, without first notifying Aptiv, unless otherwise requested by the FDA or other regulatory agency.

16. Use of Names

Except as otherwise required by law, each party agrees not to use or cite in any manner the name of the other party or its employees in any commercial or non-commercial advertising, article, press release or in any other forms of writing or publication medium without the prior written permission of the party or individi ial whose name or employee's name is to be used.

17. General Provisions

a. All rights and remedies hereunder are exclusive and not cumulative.

b. This Agreement may be amended only by written agreement signed by all parties.

c. It is expressly agreed by the parties hereto that the Site, the Investigator and Aptiv are independent contractors and nothing in this Agreement is intended to create an employer relationship, joint venture, or partnerships between the parties. No party has the authority to bind any other.

d. This Agreement, including all exhibits, constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all proposal, negotiations and other communications between the parties, whether written or oral, with respect to the subject matter hereof.

e. If any provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions of this Agreement shall not be impaired thereby, and the party against whom the holding is made, shall be entitled to substitute a similar provision that preserves the benefit of the bargain.

f. The failure of any party to insist on strict performance of any provision of this Agreement or exercise any right hereunder will not constitute a waiver of that provision or right.

g. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original as against the party whose signature appears thereon, but all of which taken together shall constitute but one and the same instrument.

h. Each party hereto agrees to execute, acknowledge and deliver such further instruments and do all such further acts as may be necessary or appropriate in order to carry out the purposes and intent of this Agreement.

h. The paragraph headings contained in this Agreement are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement.

i. Site is an agency of the state of Texas, and under the constitution and laws of the state of Texas, Site possess certain rights and privileges and is subject to certain limitations and restrictions. Notwithstanding any provision hereof, nothing herein in intended to be, nor may it be construed to be, a waiver of the sovereign immunity of the state of Texas or a prospective waiver or restriction of any of the rights, remedies, claims, and privileges of the state of Texas. Moreover, notwithstanding the generality or specificity of any provision hereof, the provisions of this Agreement enforceable only to the extent authorized by the constitution and laws of the state of Texas; accordingly, the provisions of this Agreement will not be enforceable to the extent any provision (1) conflicts with or is not authorized by the constitution or laws of the state of Texas, or (2) Site did not have the power or authority to agree to such provision.

j. Neither Party will be required to perform any act or to refrain from any act in violation of any applicable state or federal law. In this regard, this Agreement are subject to, and the Parties will comply with all applicable local, state, and federal laws, statutes, rules, and regulations, and all applicable judicial or administrative orders. Any provision of any law, statute, regulation, or order that is inconsistent with any provision of this Agreement shall be deemed to have superseded the terms of this Agreement. The Parties, however, will use their reasonable efforts to accommodate the terms and intent of this Agreement to the greatest extent possible consistent with the requirements of the law and negotiate in good faith toward amendment of this Agreement in such respect. If the Parties are unable to agree to new or modified terms as required to bring the entire Agreement into compliance, either Party may terminate this Agreement on sixty days written notice to the other Party.

IN WITNESS WHEREOF, the parties intending to be legally bound have caused this Agreement to be executed by their duly authorized representatives or, in the case of the Investigator, have duly executed this Agreement, on the dates stated beneath their names:

THE UNIVERSITY OF TEXAS M.D ANDERSON CANCER CENTER READ AND ACKNOWLEDGED

READ AND ACKNOWLEDGE

/s/ Renee Gonzales
Name: Renee Gonzales
Title: Assistant Ditector, Sponsored programs
Dated: 8-28-12

ACTINIUM PHARMACEUTICALS, INC.
Accepted by:

/s/ Dragon Cicici
Name: Dragan Cicici
Title: COO
Dated:9-5-2012

Read and Understood by:
INVESTIGATOR:

Name: Farhad Ravandi-Kashani, MD

Investigator: Farhad Ravandi-Kashani
Dated: 8/27/12

[Notary Seal]

Exhibit C- Part 1

PI Name: Ravandi-Kashani, Farhad
Sponsor: Actinium Pharma
Protocol Number: 2012-0434
Contract Number: CS2012-0003746
Budget Compiled by: Jeffrey Sarmiento
Date Completed 7/17/2012

Title : A Phase I/II Study of LDAC and Lintuzumab-AC225 in Older Patients with Untreated Acute Myeloid Leukemia

Overhead Rate	25%	**Effective Start Date of CTA**	08/06/12
Number of Patients Budgeted for this CTA	24	**Effective Expiration Date of CTA**	2 years after study completion

Institutional Related Charges	Amount	Overhead	Notes
IRB Protocol Approval Fee	$ 5,000	n/c	Required institutional fee of $5,000 for review and approval of clinical trials. Required institutional fee of $1,500 for review and approval of lab studies, Prospective Chart Reviews and Retrospective Chart Reviews. One Time flat rate, no renewal fee, no resubmission fee.
IRB Translation Fee	$ 1,000	n/c	$1,000 for Informed Consent Translation Fee, mandatory for all protocols.
Investigational Pharmacy Service	$ 1,500	n/c	Required institutional fee for set-up & initiation of the investigational pharmacy services
PI Initiation Fee	$ 5,000	n/c	Costs to cover regulatory and contract negotiation leading to activation of the study
Departmental Initiation Fee	$ 1,500	n/c	Required institutional fee to recoup cost of department administration time & processing of trial initiation.
Leukemia Research Services Administration Fee	$ 500	n/c	Review and Admin. Fee. Required to recoup the cost of initial set-up & use for all contracts needing Leukemia Research Services
Sub-Total Institutional Fees	$ 14,500	$ -	

Total Up-Front Fees $14,500 **INITIAL PAYMENT: DUE WITHIN 30 DAYS OF EXECUTION OF CONTRACT**
UNLESS OTHERWISE SPECIFIED IN THE CTA

Patient Care/Personnel Related Charges	Amount	Overhead	Notes
PDMS User Fee	$ 6,000	$ 1,500	Required institutional fee for patient registration in the Protocol Data Management System (PDMS), which is a computer-based information management system that maintains and processes patient information through data collection and management, tracking mechanisms and analysis ; IRB mandates the use of PDMS for regulatory compliance issues, and since the PDMS system is supported by our NCI core grant. Please refer to policy for fee schedule.
Experimental Pharmacy Fee	$ 3,600	$ 900	Required institutional fee for experimental pharmacy review, management, handling and inventory control; Please refer to policy for fee schedule
Personnel			
Leukemia Department Core Funds	$ 37,898	$ 9,475	Administrative personnel and supplies (Salary dollars includes 28% fringe), storage of documents pertaining to protocol, close-out visit
Research Salaries	$ 229,913	$ 57,478	Research nurse, departmental research pharmacists, and data managers effort
Principal Investigator	$ 2,308	$ 577	1% base salary minimum requirement as required by MDA Institutional Policy
Personnel Fringe	$ 65,022	$ 16,255	28% of all salary dollars
Consulting Costs/Travel/Equipment			
Consulting Costs	$ -	$ -	
Supplies	$ 300	$ 75	project related supply expenses for duration of study - Costs are total over the life of the study, and are included in the approved per patient budget.
Patient Care Charges	$ 30,603	n/c	**Amount may be calculated based on CA per pt amount, if applicable.**
Other Expenses			
Leukemia Research Services (Salaries)	$ 3,000	$ 750	Salary effort for PKs, PDs, ECGs, shipping of Research Pathology Slides
Leukemia Research Services (Fringe)	$ 840	$ 210	(28% fringe for LRS Salaries)
Other Expenses		$	
Subtotal Personnel /Patient Care	$ 379,484	$ 87,220	$ 466,704
GI Personnel/Patient Care Costs	$ 466,704		$ 466,704
Total Direct Costs	$ 393,984	**Total Indirect Costs** $ 87,220	$ 481,204

Per Patient Costs $ 19,446

GRAND TOTAL STUDY COST	$ 481,204	**Includes Up-Front Costs and OH, EXCLUDES invoicable charges**

Payment Schedule

$ 33,946 upon execution of contract (cost of one patient and institutional fees)
$14,500 The institutional fees are non refundable

$ 2,434.06	Screening	$ 950.00	Cycle 7
$ 3,099.36	Cycle 1	$ 900.00	Cycle 8
$ 900.00	Cycle 2	$ 1,115.58	Cycle 9
$ 1,165.58	Cycle 3	$ 900.00	Cycle 10
$ 950.00	Cycle 4	$ 900.00	Cycle 11
$ 900.00	Cycle 5	$ 1,115.58	Cycle 12
$ 1,115.58	Cycle 6	$ 3,000.00	End of Treatment

Exhibit C-Part 2-1

Schedule of Events/Assessments

A Phase I/II Study of Low Dose Cytarabine and Lintuzumab-Ac225 in Older Patients with Untreated Acute Myeloid Leukemia

	Baseline	LDAC Cycle 1 (days 1-28)				days 29-56					LDAC Cycle 2-12 (months 2-12)										
		w1	w2	w3	w4	w5	w6	w7	w8												
Assessment	(within 14 days prior to treatment)	1–10	14-17	17-21	22-28						2	3	4	Through 12							
Baseline Assessments																					
ICF(1)	200																				
Demographics	x																				
Hematology(2)	x	X X	X X	X X	X X						X X X X	X X X X	X X X X	X X X X	X X X X	X X X X	X X X X	X X X X	X X X X	X X X X	X X X X
Serum Chemistry(3)	x		X		X						XX	X	X	X	X	X	X	X	X	X	X
Bone Marrow Examination(4)	x				X						X		X								
PT, PTT, Fibrinogen	x																				
Cytogenetics, FISH	215.74											215.58			215.58			215.55			215.58
Medical History	x																				
PE	x																				
Urinalysis(5)	x	49.65		49.88		49.88					X	X	X	X	X	X	X	X	X	X	X
Chest X-ray(6)	x																				
ECG(6)	x																				
Vital signs(7)	x		x	x																	
HAMA(8)	50											50	50			50					
Pharmacokinetics(9)		x	x	x	x																
Study Drugs																					
LDAC(10)		x									X	X	X	X	X	X	X	X	X	X	X
Lintuzumab-Ac225(11)			API supply	API supply																	
Antibiotic/Antifungal Prophylaxis																					
Furosemide(12)		x	x	x	x																
Spironolactone(13)											X	X	X	X	X	X	X	X	X	X	X
Concomitant Medications(14)	x	x	x	x	x						X	X	X	X	X	X	X	X	X	X	X
Adverse Event Assessment(15)		x	x	x	x						X										
Survival		x	x	x	x						X	X	X	X	X	X	X	X	X	X	X
Patient Visit Total	492.54	99.65	0	49.88	0						0	265.58	50	0	215.58	50	0	215.55	0	0	215.58
Study Drug Administration Fee																					
Local Accommodation																					
Equipment/Hospital fee	NA																				
Investigator Fee	217.12	400	400	400	400						200	200	200	200	200	200	200	200	200	200	200
Monitor Visit/Site Fee	0	200	200	200	200																
Nursing Fees	217.12	400	400	400	400						200	200	200	200	200	200	200	200	200	200	200
Data Manager	417.12	300	300	300	300						300	300	300	300	300	300	300	300	300	300	300
Study Coordinator	417.12	300	300	300	300						200	200	200	200	200	200	200	200	200	200	200
Parking																					
Per patient/Per visit	[illegible]	[illegible]	1600	[illegible]	1600						900	1165.58	950	900	1115.58	950	900	1115.55	900	900	1115.58
Total per patient fee	13,486																				

Symbols used:

Standard of care	x	(the number of x signs denotes the number of procedures in the given period)
Procedure to be billed to		

1 Informed consent form (ICF) obtained prior to any study-related procedures
2 Hematology assessments: complete blood count (CBC), Red Blood Cell count (RBC) with WBC differential and platelet count, hemoglobin, hematocrit. Timepoints: Baseline, twice per week for the 1st 2 months, then CBC once every week.
3 Serum chemistry: Comprehensive biochemistry profile (including serum electrolytes, BUN, creatinine, glucose, calcium, phosphate, total protein, albumin, alkaline phosphatase, AST, total bilirubin), PO4, LDH, and uric acid. Assessments: Baseline, every other week for the 1st 2 months, then every month.
4 Bone marrow aspiration and biopsy: morphology, cytogenetics (if not previously done), immunophenotyping, PCR analysis if applicable.
Assessment timepoints: Baseline, just before cycle 2 LDAC, after day [illegible] of cycle 1 LDAC, upon disease progression or before the 3rd cycle LDAC if the peripheral blood count shows ANC ≥ 1000 and the platelet count is ≥ 100,000 after [illegible]
5 Urinalysis: to include pH, protein, ketones, bilirubin, blood, specific gravity and if abnormal, microscopic examination of the sediment. Timepoints: every other week for the 1st month, then monthly.
6 ECG and Chest X-ray: within 30 days of study entry
7 Vital signs to include temperature, pulse rate, respiration rate, blood pressure. Timepoints: 15 minutes prior to each study drug infusion, every 15 minutes during the infusion, then 30, 60, 90 and 120 minutes after the infusion is completed.
8 Human anti-human antibody response: Baseline, then 2, 3 and 6 months after the 1st dose of study drug. Please include only payments for collecting and shipping from your site, as the test will be done centrally.
9 Allopurinol, 300-600 mg po/day one day before administration of lintuzumab-Ac225 and continued to 7 days after the 2nd (last) dose of study drug. For subjects with ANC ≤500/µL at study start, prophylactic antibiotic and antifungal therapy should be used.
10 First cycle of LDAC 20 mg subQ every 12 hrs X BID, given prior to the administration of study drug, then cycle 2 given [illegible] after the 2nd dose of study drug for up to 12 cycles total.
11 1st divided dose given 4-7 days after completion of LDAC cycle 1. 2nd divided dose given 4-7 days after dose #1
12 40 mg po/day starting 1 day before LDAC administration and continuing until the end of cycle 1 (day 28)
13 25 mg po/day starting 1 day after the finish of furosemide until the end of cycle 1
14 Concomitant medications: all medications taken ≤ 28 days prior to the 1st dose of study drug and any [illegible] modifications [illegible] study.
15 Adverse event assessments begin at the time of LDAC administration and continue until 30 days after the last dose of the study drug.

START-UP FEES	
IRB fee: Protocol Approval & Translation Fee	0.00
CTO fee: PI, Department, and Leukemia Clinical Research Services Initiation Fees	7,000
Pharmacy set-up: Investigator Pharmacy Fee	1,500
Start-Up Fees Total	14,500.00

Invoicable Items		
Protocol Amendment	$	2,500.00
Screen Failures	$	1,500.00
Extra compensation is needed when sponsor changes requirements on Case Report Forms (CRFs) once study has already started. Per Patient.	$	972.00
Extra compensation is needed when sponsor request any retrospective review: 1) CRF already monitored previously by another CRO or another CRO employee; 2) changes in CRF requirements; 3) supplying CRF templates late in the study.5% Per Patient.	$	972.00
Extra compensation is needed for training on Electronic CRF systems.	$	9,334.59
Extra compensation is needed per query for system generates queries due some kind of database glitch or error on Electronic CRF systems. Per Query.	$	144.48

Payment Schedule		
upon execution of contract (cost of pre, patient and institutional Fees $14500 The institutional fees are non refundable)	$	33,946.03
Screening	$	2,434.25
Cycle 1	$	3,099.22
Cycle 2	$	900.22
Cycle 3	$	1,165.58
Cycle 4	$	900.22
Cycle 5	$	900.22
Cycle 6	$	1,115.58
Cycle 7	$	900.22
Cycle 8	$	900.22
Cycle 9	$	1,115.58
Cycle 10	$	900.00
Cycle 11	$	900.00
Cycle 12	$	1,115.58
End of Treatment	$	3,500.00

Exhibit 10.24

AMENDMENT No. 1 TO RESEARCH AGREEMENT

This Amendment No. 1 to Research Agreement ("Amendment") is made and entered into as of November 2, 2012 by and between Actinium Pharmaceuticals, Inc., ("Sponsor") and The University of Texas M.D. Anderson Cancer Center ("Institution"), a member institution of the University of Texas System ("System").

RECITALS

A. Sponsor and Institution entered into a Sponsored Research Agreement on August 6, 2012 (the "Agreement").

B. Sponsor and Institution wish to amend the terms of the Agreement as set forth below.

NOW, THEREFORE, it is hereby agreed as follows:

1. Amended Exhibit C - part 1 as enclosed replaces the same Exhibit C - part 1 from the Clinical Trial Agreement between The University of Texas M.D. Anderson Cancer Center and Actinium Pharmaceuticals, Inc. dated August 6, 2012.

2. Except as expressly provided in this Amendment, all other terms, conditions and provisions of the Agreement shall continue in full force and effect as provided therein.

IN WITNESS WHEREOF, Sponsor and Institution have entered into this Amendment effective as of the date first set forth above.

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Dragan Cicic
Dragan Cicic, MD
Title: COO/CMO

Date: November 2, 2012

THE UNIVERSITY OF TEXAS M. D. ANDERSON CANCER CENTER

By: /s/ Renee Gonzales
Renee Gonzales
Title: Assistant Director, Sponsored Programs

Date: November 28, 2012

Read and Understood

By: /s/ Farhad Ravandi-Kashani
Farhad Ravandi-Kashani,M.D.
Title: Principal Investigator

Date: November 26, 2012

[Notary Seal]

CLINICAL TRIAL AGREEMENT BETWEEN UNIVERSITY OF TEXAS MD ANDERSON CANCER CENTAR AND ACTINIUM PHARMACEUTICALS, INC. - AMENDMENT 1

AMENDED EXHIBIT C - Part 1

PI Name: Ravandi-Kashani, Farhad

Sponsor: Actinium Pharma

Protocol Number: 2012-0434

Contract Number:

IReD checklist number: 37046

Associated FReD checklist numbers:

CRF Budget Analyst:

Budget Compiled by: Jeffrey Sarmiento

Date Completed 7/17/2012

Revised by: Lauren El-Issa

Finalized Date

Title: A Phase I/II Study of LDAC and Lintuzumab-AC225 in Older Patients with Untreated Acute Myeloid Leukemia

Overhead Rate	25%	Effective Start Date of CTA	
Number of Patients Budgeted for this CTA	24	Effective Expiration Date of CTA	

Authorized Signature	Co Ctr	Institutional Related Charges	Amount	Overhead	Notes
		IRB Protocol Approval Fee	$ 5,000	n/c	Required institutional fee of $5,000 for review and approval of clinical trials. Required institutional fee of $1,500 for review and approval of lab studies, Prospective Chart Reviews and Retrospective Chart Reviews. One time flat rate, no renewal fee, no resubmission fee.
		IRB Translation Fee	$ 1,000	n/c	$1,000 for Informed Consent Translation Fee, mandatory for all protocols.
		Investigational Pharmacy Service	$ 1,500	n/c	Required institutional fee for set-up & initiation of the investigational pharmacy services
		PI Initiation Fee	$ 5,000	n/c	Costs to cover regulatory and contract negotiation leading to activation of the study
		Departmental Initiation Fee	$ 1,500	n/c	Required institutional fee to recoup cost of department administration time & processing of trial initiation.
		Leukemia Research Services Administration Fee	$ 500	n/c	Review and Admin. Fee. Required to recoup the cost of initial set-up & use for all contracts needing Leukemia Research Services
		Sub-Total Institutional Fees	$ 14,500	$ -	
		Total Up-Front Fees	$14,500		**INITIAL PAYMENT: DUE WITHIN 30 DAYS OF EXECUTION OF CONTRACT UNLESS OTHERWISE SPECIFIED IN THE CTA**
		PDMS User Fee	$ 6,000	$ 1,500	Required institutional fee for patient registration in the Protocol Data Management System (PDMS), which is a computer-based information management system that maintains and processes patient information through data collection and management, tracking mechanisms and analysis ; IRB mandates the use of PDMS for regulatory compliance issues, and since the PDMS system is supported by our NCI core grant. Please refer to policy for fee schedule.
		Experimental Pharmacy Fee	$ 3,600	$ 900	Required institutional fee for experimental pharmacy review, management, handling and inventory control; Please refer to policy for fee schedule.
		Personnel			
		Leukemia Department Core Funds	$ 38,737	$ 9,684	Administrative personnel and supplies (Salary dollars includes 28% fringe), storage of documents pertaining to protocol, close-out visit
		Research Salaries	$ 231,270	$ 57,818	Research nurse, departmental research pharmacists, and data managers effort
		Principal Investigator	$ 2,308	$ 577	1% base salary minimum requirement as required by MDA Institutional Policy
		Co-Principal Investigator	$ 4,542	$ 1,136	1% base salary minimum requirement as required by MDA Institutional Policy
		Personnel Fringe	$ 66,971	$ 16,668	28% of all salary dollars
		Consulting Costs/Travel/Equipment			
		Consulting Costs	$ -	$ -	
		Supplies	$ 300	$ 75	project related supply expenses for duration of study - Costs are total over the life of the study, and are included in the approved per patient budget.
		Patient Care Charges	$ 30,603	n/c	**Amount may be calculated based on CA per pt amount, if applicable.**
		Other Expenses			
		Leukemia Research Services (Salaries)	$ 3,000	$ 750	Salary effort for PICs, PDs, ECGs, shipping of Research Pathology Slides
		Leukemia Research Services (Fringe)	$ 840	$ 210	(28% fringe for LRS Salaries)
		Other Expenses		$ -	
		Subtotal Personnel /Patient Care	$ 387,874	$ 89,318	$ 477,192
		GT Personnel/Patient Care Costs	$ 477,192		$ 477,192
		Total Direct Costs	$ 402,374	**Total Indirect Costs** $ 89,318	$ 491,692
		Per Patient Costs	$ 19,883		
		GRAND TOTAL STUDY COST	$ 491,692	**Includes Up-Front Costs and OH, EXCLUDES invoicable charges**	

Payment Schedule

$ 34,383.00 upon execution of contract (cost of one patient and institutional fees)
$14,500 The institutional fees are non refundable

$ 2,384	Screening
$ 3,345	Cycle 1
$ 900	Cycle 2
$ 1,184	Cycle 3
$ 950	Cycle 4
$ 900	Cycle 5
$ 1,124	Cycle 6
$ 950	Cycle 7
$ 900	Cycle 8
$ 1,124	Cycle 9
$ 900	Cycle 10
$ 900	Cycle 11
$ 1,124	Cycle 12
$ 3,200	End of Treatment

$ 3,200.00 per visit per patine after C12

Accepted by: Date: 29-Oct-12

Dragan Cicic, MD
COO/CMO
Actinium Pharmaceuticals, Inc.

Exhibit 10.25

Actinium Pharmaceuticals, Inc.

June 19, 2011

Sloan-Kettering Institute for Cancer Research
1275 York Avenue
New York, NY 10021
Attn: Andrew Maslow

Dear Andrew:

Following up on our recent discussions I am writing to confirm the agreement between Sloan-Kettering Institute for Cancer Research (SKI) and Actinium Pharmaceutical, Inc. (API) as follows:

1) By letter of April 9, 2010 ("Letter") SKI agreed on behalf of itself and certain related parties to forbear and defer collection of certain Obligations (as defined in that letter, a copy of which is attached hereto). Actinium Holdings Limited, an affiliate of SKI owns a majority of the currently issued and outstanding capital stock of API. In order to facilitate the consummation of API's Series E Preferred Stock financing, SKI and its related parties agree to cancel, forgive and release API from all further liability for the Obligations which are set forth in the Letter.

2) API agrees to re-affirm its ongoing support of the actinium related research being conducted at SKI and has budgeted the following amounts for the support of that research and maintenance of the intellectual property estate that is licensed to API:

2011	$50,000
2012	$200,000
2013	$250,000

Please acknowledge your agreement by signing and returning to me a counterpart of this letter agreement (including by fax or email) at which time it will become a binding agreement between us as of the date first written above.

ACTINIUM PHARMACEUTICALS, INC.

By: _____
Name:
Title:

SLOAN-KETTERING INSTITUTE
FOR CANCE SEARCH

By: /s/ Andrew D. Maslow
Name: Andrew D. Maslow
Title: Director Office of Industrial Affairs

Exhibit 10.26

Sloan-Kettering Institute for Cancer
Research 1275 York Avenue
New York, NY 10021

April 9, 2010

Dr. Dragan Cicic, President
Actinium Pharmaceuticals, Inc.
clo Stempel Bennett Claman & Hochberg, P.C.
675 Third Avenue, 31st Floor
New York, NY 10017

Dear Dragan:

Reference is made to certain obligations of Actinium Pharmaceuticals, Inc. ("API") to Sloan-Kettering Institute for Cancer Research ("SKI") and its related or affiliated entities (such entities, together with SKI, Memorial Sloan-Kettering Cancer Institute, Inc. ("MSKCC") and Memorial Hospital for Cancer and Allied Diseases, the "SKI Parties") in the approximate amount of $260,000 on the date hereof (the "Current Obligations"), consisting of obligations under (i) Section 5 and Section 6.3 of the License, Development and Commercialization Agreement, dated as of February 11, 2002, between SKI, API and Actinium Pharmaceuticals, Ltd. (the "License Agreement"); and (ii) Section 5 of the Clinical Trial Agreement, dated as of February 26, 2006, between SKI and its affiliate Memorial Hospital for Cancer and Allied Diseases and API (the "Clinical Trial Agreement"). Prior to January 1, 2012, API will incur additional obligations to SKI under Section 5 and Section 6.3 of the License Agreement and may incur other obligations to one or more of the SKI Parties for the goods and/or services provided (the "Forbearance Period Obligations," the Forbearance Period Obligations, together with the Current Obligations, the "Obligations").

In consideration of certain grants made by General Atlantic Group Limited on the date of this letter to MSKCC, SKI agrees to forbear, and to cause the other SKI Parties to forbear, from collecting the Obligations, or from otherwise enforcing its or their rights in respect of the Obligations, during the period from the date hereof until the earliest to occur of any of the following (the "Forbearance Period"): (i) January I, 2012; (ii) the date on which API has raised a minimum of US $3,000,000 in new equity financing in one or more equity financing transactions; (iii) the dissolution, liquidation, winding-up, bankruptcy or insolvency of API; the effecting of any assignment for the benefit of the creditors of API; the appointment of a trustee, conservator or similar official for all or a substantial portion of the property or assets of API; nr the initiation of any proceeding in respect of any of the foregoing or any similar proceeding; (iv) the assertion by API or any person acting in the right of, or on behalf of, API of any claims against any of the SKI Parties or any of their respective directors, trustees, officers, employees or agents (collectively, the "SKI Related Parties"), the initiation of any legal, equitable, arbitral, regulatory or other proceeding against any of the SKI Related Parties by API or any person acting in the right of, or on behalf of, API; (v) the material breach by API of any of its obligations to any of the SKI Parties under the License Agreement, the Clinical Trial Agreement or any other agreement or arrangement involving API and any of the SKI Parties, other than the breach of API's payment obligations in respect of the Obligations; (vi) any action or omission by API or any person acting in the right of, or on behalf of, API that would deny or call into question the validity or enforceability of any or all of the obligations of API to any of the SKI Parties (including, without limitation, the Obligations) or the assertion by API or any person acting in the right of, or on behalf of, API of any defense (other than the forbearance provided hereby) in respect of any such obligations; and (vii) the transfer of all or substantially all of the assets or business of API; any merger, consolidation, share exchange or other business combination of API with or into another entity, if, following such event, the stockholders of API immediately prior to such event do not directly or indirectly own a majority of the outstanding voting stock of API; or the sale, transfer or other disposition of shares of stock representing a majority of the outstanding voting stock of API, specifially excluding, however, the transfer by General Atlantic Group Limited of the shares of Actinium Holdings Limited to MSKCC on the date hereof and MSKCC's subsequent transfer of such shares to AHLB Holdings, LLC on the date hereof.

In addition, during the Forbearance Period, (x) the SKI Parties shall not terminate the License Agreement under Section 12.2 of the License Agreement, and (y) API shall be deemed to be satisfying all of its obligations under the License Agreement to use "Reasonable Commercial Efforts" (as defined in the License Agreement) and all other similar diligence standards and efforts with respect to API's obligations under the License Agreement and the Clinical Trial Agreement.

API acknowledges and agrees that, except as specifically provided in this letter agreement, the SKI Parties reserve all rights in respect of the Obligations, and API irrevocably waives any claim of waiver, laches, estoppel or any similar claim to the extent arising out of or related to the performance by SKI of its obligations under this letter agreement (or any actions or omissions of any of the other SKI Parties consistent with the obligations under this letter agreement).

This letter agreement shall be governed by New York law applicable to agreements made and to be fully performed in the State of New York. The undersigned agree that any and all claims arising under this letter or relating thereto shall be heard and determined exclusively in the United States District Court for the Southern District of New York or in the courts of the State of New York located in the City and County of New York, and the undersigned agree to submit themselves to the personal jurisdiction of those courts and not to raise any objection to venue being had in those courts. THE UNDERSIGNED IRREVOCABLY WAIVE ANY RIGHT TO JURY TRIAL.

[Remainder of this page intentionally left blank.]

If you are in agreement with the foregoing, please sign and return to us a counterpart of this letter agreement (including by fax or e-mail), at which time it will become a binding agreement between us.

SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH

Date

By: /s/ Andrew D. Maslow
Name: ANDREW D. MASLOW
Title: DIRECTOR, OFFICE OF INDUSTRIAL AFFAIRS

Accepted and agreed as of the date first ‘sritten above:

ACTINIUM PHARMACEUTICALS, INC.

By: _____
Name:
Title:

If you are in agreement with the loregoing, please sign and return to us a counterpart of this letter igrecinent (including by fax or e-mail). at which time it will become a binding agreement between us.

SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH

By: _____
Name
Title

Accepted and agreed as of the date first ‘sritten above:

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Dragan Cicic
Name: DRAGAN CICIC
Title: CEO

Exhibit 10.27

July , 2011

Actinium Pharmaceuticals, Inc.
391 Lafayette Street, Newark, NJ
07105 Attention: Dragan Cicic, M.D.

Re: Waiver of Anti-dilution Rights, New Issuance Notice and Notice of Exercise of Preemptive Rights; Agreements Regarding Indemnification, Insurance and Other Matters

Gentlemen:

Reference is made to that certain Stockholders Agreement by and among Actinium Pharmaceuticals, Inc. (the "Company"), Actinium Pharmaceuticals, Ltd., Actinium Holdings Limited ("AHL" and formerly named General Atlantic Investments Limited) and the Stockholders listed on Schedule A thereto, dated June 30, 2000 (the "Stockholders Agreement"). Capitalized terms used and not otherwise defined herein shall have the meanings ascribed to such terms in the Stockholders Agreement. The Company intends to sell up to 27,586,207 shares of Series E Convertible Preferred Stock (the "New Securities") pursuant to a draft Series E Preferred Stock Purchase Agreement (the "Purchase Agreement") by and among the Company and the Purchasers identified on Exhibit A thereto (the "Sale").

Waiver of New Issuance Notice

In connection with the Sale, pursuant to Section 4.1 of the Stockholders Agreement, the Company is required to send to AHL a New Issuance Notice specifying (i) the number of New Securities proposed to be issued, and (ii) the proposed purchase price of the New Securities.

AHL hereby waives, solely for the purposes of the Sale, any and all rights that it has in accordance with Section 4.1 of the Stockholders Agreement to receive a New Issuance Notice.

Notice of Exercise of Preemptive Rights

Pursuant Section 4.2(a)(i) of the Stockholders Agreement, AHL has the right to purchase its Proportionate Percentage of the New Securities issued in the Sale upon the same terms and conditions as the Company proposes to sell the New Securities pursuant to the Purchase Agreement, plus its pro rata share of any Excess New Securities.

AHL hereby waives its right to purchase its Proportionate Percentage of the New Securities issued at each Closing pursuant to the Purchase Agreement, as well as its pro-rata share of any Excess New Securities available to be purchased at each such Closing (subject to the consummation of the Initial Closing (as defined in the Purchase Agreement)).

Waiver of Anti-Dilution Adjustment

AHL hereby waives its right to any anti-dilution adjustment to which it would be entitled pursuant to Article IV(C) 5.3 of the Company's Certificate of Incorporation as it might otherwise apply to the sale and issuance of the New Securities.

Agreements Regarding Indemnification, Insurance and Other Matters

In consideration of the foregoing waivers and for other good and valuable consideration, receipt of which is hereby acknowledged, the Company covenants and agrees with AHL as follows:

1. From and after the date hereof, the Company will not, and will not permit any of its subsidiaries to, eliminate or otherwise reduce the right of any present or former director or officer of the Company, Actinium Pharmaceuticals Limited, a Bermuda corporation that has merged into the Company ("APL"), and/or the present and former subsidiaries the Company or APL (all such entities, collectively, the "Company Group") who currently serves, or at any time prior to the date hereof served, in any such capacity (all such directors and officers, collectively "Company Group Managers") to be indemnified against any costs or expenses (including reasonable attorneys' fees), judgments, fines, losses, claims, damages or liabilities of any nature whatsoever, incurred in connection with any claim, action, suit, proceeding or investigation, whether civil, criminal, administrative or investigative, arising out of or pertaining to matters existing or occurring on, prior to or after the date hereof, whether asserted or claimed prior to, on or after the date hereof, arising, in whole or in part, out of or pertaining to the fact that he or she is or was, or at any time in the future will have been, a Company Group Manager or is or was, or at any time in the future will have been, serving at the request of any entity in the Company Group (or at the request of any present or former affiliate (as such term is defined in Rule 405 under the Securities Act of 1933, as amended) of the Company for and on behalf of any entity in the Company Group as a director, officer, employee, fiduciary or agent of another corporation, partnership, joint venture, trust, other entity or otherwise, or to be advanced expenses, in any of the foregoing cases, to the fullest extent that such Company Group Manager would be entitled to be indemnified or advanced expenses under applicable law, the Company's or any such subsidiaries' certificate or articles of incorporation or bylaws or equivalent documents or any applicable contract (collectively, the "Applicable Documents"), in each case, as in effect on the date hereof. The Company further represents and warrants that from April 8, 2010 through and including the date hereof there has not been any adverse change in any term or provision of any of the Applicable Documents regarding indemnification or advancement of expenses.

2. Until April 30, 2016, the Company and its subsidiaries will maintain in effect directors' and officers' liability insurance covering all Company Group Managers in at least the same manner and to the same extent that such Company Group Managers are covered as on the date hereof. The Company further represents and warrants that from April 8, 2010 through and including the date hereof there has not been any adverse change in any such coverage.

3. If, on or prior to April 30, 2016, the Company or any of its subsidiaries or any of their respective successors or assigns (i) consolidates with or merges into another person or entity and shall not be the continuing or surviving corporation or entity of such consolidation or merger or (ii) transfers all or substantially all of its properties and assets to another person or entity, then, and in each case, proper provisions shall be made so that the Company Group Managers (and each of them) shall have at least the same rights, if any, in respect of indemnification, advancement of expenses and directors' and officers' liability insurance coverage to be provided by any such surviving entity or any transferee following any such consolidation, merger or transfer as are applicable following any such consolidation, merger or transfer to the non-continuing directors and officers of the Company or its subsidiaries or their successors and assigns, as applicable, serving immediately prior to any such event.

4. The rights of each of the Company Group Managers under this letter agreement shall be in addition to, and not in lieu of, the respective rights such Company Group Managers may have under the Applicable Documents, any other documents and instruments and any applicable laws.

This letter agreement (i) contains the entire agreement and understanding of the parties concerning its subject matter and supersedes all prior and contemporaneous agreements, oral or written; (ii) may not be amended or otherwise modified except in a writing signed by each of the parties hereto; (iii) shall be binding on, and inure to the benefit of, each of the parties hereto and their respective successors and assigns; and (iv) shall be governed and construed in accordance with the laws of the State of Delaware without regard to the conflict of laws principles of the State of Delaware or any other jurisdiction. The parties acknowledge and agree that each of the Company Group Managers (including their respective successors and assigns) is an intended third-party beneficiary of this letter agreement.

Very truly yours,

ACTINIUM HOLDINGS LIMITED

By: /s/ Michael Sheffery
Michael Sheffery

Accepted and agreed as of the date written above:

ACTINIUM PHARMACEUTICALS, INC.

By: _____

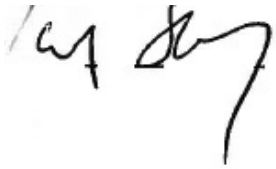
IN WITNESS WHEREOF, the undersigned shareholders of the Company have executed this Action by Written Consent effective as of the 7th day of July, 2011.

SHAREHOLDERS:

Actinium Holdings Limited
144,605 Common Shares, 1,000,000 Series A Preferred Shares, 4,083,333 Series B Preferred Shares, 666,667 Series C-2 Preferred Shares, 502,604 Series C-3 Preferred Shares, 4,250,000 Series C-4 Preferred Shares, 3,000,000 Series D Preferred Shares.

And Actinium Holdings Limited by proxy for the following shareholders, solely to the extent that the consent or approval of such shareholders is required under Section 6.6 of the Stockholders Agreement dated June 30, 2000 among the Company and certain of its shareholders:

Herbert Frank	15,225 Common Shares
Damon Hostin	8,526 Common Shares
Dr. Maurits Geerlings, Jr.	240,859 Common Shares
Peter G. Kuipers	14,413 Common Shares
William **0.** Weiss	37,047 Common Shares
Jean Lyon	17,255 Common Shares
Norval E. Carey	48,111 Common Shares
Linda Fennelly	23,548 Common Shares
Sandra Sherman	14,413 Common Shares
N. V. Organon	21,418 Common Shares, 627,914 Series B Preferred Shares, 800,000 Series C-1 Preferred
Richard P. Fennelly	35,119 Common Shares
Joel Koenig IRA	25,273 Common Shares
Joel and Gloria Koenig	25,273 Common Shares
Dennis Fennelly	23,548 Common Shares
Dr. George Ehrlich	15,225 Common Shares
H.J. Hangelbroek	15,225 Common Shares



Signature

Title: President, Actinium Holdings Limited

Name: Michael Sheffery

Exhibit 10.28

CLINICAL TRIAL AGREEMENT
(SK#11731)

THIS AGREEMENT is made and entered into as of the 25th day of February, 2006 (hereinafter "Effective Date") by and between

SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH and its affiliate **MEMORIAL HOSPITAL FOR CANCER AND ALLIED DISEASES** both having a principal place of business at 1275 York Avenue, New York, New York 10021, membership corporations of the State of New York (hereinafter "SKI/MEMORIAL"), and

ACTINIUM PHARMACEUTICAL INC., a corporation having its principal place of business at 25b HANOVER Road, Florham Park, NJ 07932 (hereinafter "COMPANY").

WITNESSETH

WHEREAS, SKI/MEMORIAL will conduct a clinical trial entitled **"Phase I Trial of Targeted Nano Generator (Actinium 225-Labeled Humanized Anti CD33 Monoclonal Ab HuM195" or** "Study Drug") **in Patients with Advanced Myeloid Malignancy" (IRB#** 02-017, hereinafter "Study").

WHEREAS, COMPANY conducts business in the development, manufacture and sale of therapeutic products, and is interested in partial sponsorship of the Study in exchange for access to the data resulting from the Study.

NOW, THEREFORE intending to be legally bound and upon the terms, conditions and covenants hereinafter set forth, SKI/MEMORIAL and COMPANY *agree* as follows:

ARTICLE I -THE STUDY

1.1 SKI/MEMORIAL has established and maintains a Leukemia Service, a Division of Hematologic Oncology, in the Department of Medicine and has acquired expertise in conducting research investigations, clinical trials and laboratory test evaluations.

1.2 The Study under this Agreement will be conducted under the protocol approved by SKI/MEMORIAL'S Human Subject Institutional Review Board (hereinafter "IRB"), based on the draft protocol annexed hereto as Exhibit A (hereinafter "Protocol"). SKI/MEMORIAL shall submit the Protocol for approval to the IRB and the United States Food and Drug Administration (hereinafter the "FDA"). COMPANY shall supply Actinium-225 and HuMI 95 after COMPANY has:

a. received a mutually executed copy of this Agreement
b. received documentation from SKI/MEMORIAL that SKTJMEMORIAL'S IRB has approved the Protocol.

Promptly after SKI/MEMORIAL'S IRB has approved the final Protocol, SKI/MEMORIAL shall forward a copy to COMPANY. SKI/MEMORIAL shall also forward any subsequent change to the Protocol to COMPANY.

1.3 As part of this Agreement, SICEMEMOR1AL shall appoint Joseph G. Jurcic, M.D. and/or such other physicians as it may deem appropriate as investigators (hereinafter "Investigators") to oversee the Study. If Dr. Jurcic should become unable to complete the Study, SKI/MEMORIAL shall consult with COMPANY regarding the appointment of a new principal investigator.

1.4 The Investigators on behalf of SKI/MEMORIAL shall prepare and maintain records and case histories with all pertinent data documented as required by the Protocol on case report forms supplied by COMPANY. The parties shall hold all patient data confidential, and information provided to COMPANY shall not disclose patient health information, except to the extent that the patient consent form permits. COMPANY may disclose reports and other information to an independent data management company, provided the management company is bound to hold such information in confidence.

1.5 The Investigators shall also promptly notify COMPANY and the IRB of any adverse reaction in the course of the Study of which they become aware

1.6 SKI/MEMORIAL and COMPANY agree that in the performance and documentation of the Study they shall adhere to all applicable government laws, rules, regulations and guidelines, including but without limitation the Health Insurance Portability and Accountability Act of 1996 ("IIIPAA") and its regulations and official guidance promulgated thereunder, and those of the FDA, including among others the Generic Drug Enforcement Act of 1992 (21 USC §§ 305,306). Certifications and other documents required by these statutes and regulations, such as those relating to financial conflicts of interest and debarment from performing clinical trials, shall be provided as necessary.

1.7 COMPANY shall provide SKI/MEMORIAL with any investigational protocols, pre- clinical or background information which are germane to the Study.

1.8 Upon SKI/MEMORIAL'S request, COMPANY shall provide, without cost to SKI/MEMORIAL, sufficient amounts of Actinium 225 and HuM195 to conduct the Study.

1.9 SKI/MEMORIAL shall permit COMPANY to monitor the progress of the Study through site visits and review of Study reports and related documentation. The parties agree that COMPANY may engage a third party of COMPANY's choosing to conduct the Study monitoring.

1.10 SKI/MEMORIAL shall provide the physician, laboratory, statistical, and clinical support staff levels of effort required to complete the Study

ARTICLE U — REPORTS

2.1 SKI/MEMORIAL shall keep COMPANY advised of the status of the Study via periodic reports. The frequency of reports shall be mutually agreed to by both parties. There shall also be a final report of the Study presented to COMPANY within sixty (60) days of the Study completion.

2.2 All reports submitted to COMPANY shall become the property of COMPANY and may be used by COMPANY for its internal uses. If COMPANY desires to release the reports or any contents in the reports to the public domain by any means or methods such as press releases, publications, meeting presentations, COMPANY must first obtain written_ consent from SKI/MEMORIAL.

ARTICLE III - PUBLICATION

3.1 Notwithstanding anything contained herein to the contrary including without limitation Article IV, SKI/MEMORIAL may freely publish the results of its investigative findings hereunder. The authorship and contents (including scientific conclusions and professional judgments) of any paper submitted shall be determined by SK /MEMORIAL. SKI/MEMORIAL shall provide COMPANY with a copy of the papers prepared for publication prior to their submission to a scientific journal or presentation at scientific meetings. COMPANY shall have thirty (30) days to review the papers. COMPANY shall not make any editorial changes in the papers, but may delete any of its Confidential Information (as defined in Article V) contained therein. COMPANY personnel shall be acknowledged With customary scientific practice.

ARTICLE IV - CONFIDENTIAL INFORMATION

4.1 In order to effectively complete the Study, it may be necessary or desirable for the parties to disclose proprietary, trade secret and/or information relating to patients (hereinafter "Confidential Information") to one another.

4.1.1 All medical records (or other patient information) not transcribed into the case report forms are Confidential Information of SKI/MEMORIAL, and do not need to be marked "Confidential". There shall be no time limit on the parties' obligation to maintain the confidentiality of patient identifiable health information, including information whose identifiers may be ascertained by the exercise of reasonable effort through investigation. Patient identifiable health information shall be protected in compliance with all applicable regulations, rules and statutes. COMPANY agrees to refrain from publishing or disclosing any part of such confidential medical records or from using it except as necessary to discuss and analyze the results of the Study, to ensure research integrity, to communicate with the FDA and other regulatory authorities, and other wise as required by law or specifically permitted by authorizations or consents signed by Study subjects, or waivers of authorization granted by an **IRB** overseeing the Study ("Permitted Activities"). COMPANY also agrees to restrict the use and disclosure of any individually identifiable health information gained through the Permitted Activities to its workforce, contractors, subcontractors, Study collaborators and agents who must have access to that information in order directly to support or facilitate the Permitted Activities, and to use the necessary means to bind those parties to these restrictions and requirements, as though these restrictions and requirements applied to these entities directly.

4.1.2 Any other Confidential Information shall be marked as "Confidential" or, if provided to the other party orally, shall be reduced to writing marked as "Confidential" and sent to the other party within ten (10) days of the oral disclosure, except that this requirement shall not apply to patient information, which is always Confidential Information. Each party agrees that such other Confidential Information of the other party disclosed to it or to its employees or an independent data management company shall for three (3) years after disclosure:

(a) be used only in connection with the legitimate purposes of this Agreement;
(b) be disclosed only to those who have a need to know it; and
(c) be safeguarded with the same care normally afforded confidential information in the possession, custody or control of the party holding the Confidential Information.

The foregoing shall not apply when, after and to the extent the Confidential Information disclosed:

i. can be demonstrated to have been in the public domain prior to the date of the disclosure; or
ii enters the public domain through no fault of the receiving party; or
iii. was already known to the receiving party at the time of disclosure as evidenced by written records in the possession of the receiving party prior to such rime; or
iv. is subsequently received by the receiving party in good faith from a third party without breaching any confidential obligation between the third party and the disclosing party; or
v. was independently developed, as established by tangible evidence, by the receiving party without reference to information or material provided by the disclosing party; or
vi. is required to be disclosed for minimal compliance with court orders, statutes or regulations or SKI/MEMORIAL audits for compliance with such regulatory requirements, provided that prior to any such disclosure to the extent reasonably practicable, the parry from whom disclosure is sought shall promptly notify the other party and shall afford such other party the opportunity to challenge or otherwise lawfully seek limits upon such disclosure of Confidential Information.

ARTICLE V - COMPENSATION

5.1 Definitions

For purposes of this Agreement, the following definitions apply:

i. Screening is the process of identifying potential subjects according to the entrance criteria outlined in the Protocol and of conducting the examinations and test specified in the Protocol necessary to select qualified subjects for the Study. For any given subject, the screen phase ends and the treatment phase begins when the subject has been enrolled into a treatment group under the Protocol and has been dispensed any Study Drug or placebo by SKI/MEMORIAL according to the study design and regimen described in the Protocol.

ii A qualified subject is one who, upon entrance into the treatment phase of the Study, met all of the entrance criteria and none of the exclusion criteria in the Protocol and for whom knowing, written informed consent to participate was obtained in accordance with sub-Article 6.1.ii herein.

iii. A completed subject is a qualified subject who completed the full term of the Study and met the minimum attendance and compliance standards in the Protocol so that the Study Drug can be evaluated for safety or effectiveness.

iv. A completed case report form is a set of Clinical research Database (CRDB) generated reports submitted to the COMPANY for a completed subject which meets the requirements set forth in the Protocol.

v. An incomplete subject is a qualified subject who started the Study but failed to complete the Protocol satisfactorily because of insufficient clinic attendance, poor compliance, voluntary withdrawal, or other violations of the Protocol.

5.2 Amounts of Payment

The compensation to SKI/MEMORIAL for the Study shall be calculated as follows:

i. For each completed case report form (set of CRDB generated reports) on a completed subject, COMPANY will pay ten thousand U.S. Dollars ($10,000).

ii For each case report (CRDB generated report) on an incomplete subject, the COMPANY will pay two thousand and five hundred U.S. Dollars ($2,500).

iii. SKI/MEMORIAL will receive no compensation for the examinations and tests conducted in non-qualified subjects under the screening or treatment phases of the Protocol.

iv. A start-up pharmacy fee of three thousand dollars ($3,000) for preparation, dispensing and logging of drug; an annual pharmacy fee of one thousand five hundred ($1,500) for each year the study remains active.

Under this Agreement the maximum compensation for which COMPANY is responsible is three hundred and twenty eight thousand U.S. Dollars ($328,000), which is based on SKI/MEMORIAL enrolling a maximum of 30 qualified subjects, a maximum of 10 incomplete and pharmacy fee.

5.3 Other Conditions of Payment

i. SKI/MEMORIAL agrees to use reasonable efforts to follow the Protocol, recruit, screen and enroll qualified subjects, prepare case report forms and any reports required in the Protocol.

ii The parties agree that the screening phase will begin as soon as practicable after the signing of this Agreement. Each subject will be considered to be a completed, or incomplete patient, as appropriate, only after SKI/MEMORIAL has produced all completed case report forms (set of CRDB generated reports) and COMPANY has accepted the completed case report forms (set of CRDB generated reports).

iii. iii. In the event the Study is terminated prior to the anticipated Study completion date as described in Article VIE herein, COMPANY will pay actual expenses incurred by SKI/MEMORIAL for all completed and incomplete patients accrued to the date of termination, as detailed above. If the Study is terminated by COMPANY prior to the planned completion date for its convenience and without cause, COMPANY agrees to pay for those subjects active in the treatment phase at the termination date as if they had completed the Study.

iv. The dates and financial arrangements in this Agreement can be changed only by written amendment to this A a cement, signe and eIC uteri by both parties.

5.4 Schedule of Payment

In consideration for SKI MEMORIAL'S participation and to cover a p on of the costs associated with the Study, COMPANY shall pay SKI/MEMORIAL a total of three hundred and twenty five thousand -U.S. Dollars (328,000) payable as follows:

a. $ 50,000 of the ($328,000) within thirty (30) days after the execution of this Agreement; and

b. the remainder, as outlined in Sections 6.2 and 6.3, upon COMPANY'S receipt of final case reports (set of CRDB generated reports) on each group of 3 of the patients enrolled into the Study in accordance with the Protocol.

The above payments shall constitute full and final compensation to SKI/MEMORIAL under this Agreement unless agreed otherwise in writing by both parties.

5.4 SKI/MEMORIAL shall discuss if COMPANY so requests, budgetary matters with COMPANY, but reserves the right to be the final control on budgetary categories and expenditures.

The checks shall be made payable to Sloan-Kettering Institute for Cancer Research (Sloan-Kettering Institute Tax I.D. No. 13-1624182) and shall be forwarded to:

Memorial Sloan-Kettering Cancer Center Office of Industrial
Affairs
P. O. Box 27718
New York, New York 10087-27718

COMPANY should note on its check stub or in its transmittal letter that the payment relates to a Clinical Trial Agreement, SK#I1731, under the direction of Dr. Jurcic.

ARTICLE VI - INDEPENDENT CONTRACTOR

Both parties shall, at all times during the performance of this Agreement, remain as independent contractors and the Agreement shall not make the parties partners, joint venturers, or agents of one another. No party to this Agreement shall have the power to bind or obligate the other party

ARTICLE VII - TERM AND TER1VIINATIION

7.1 This Agreement shall commence on the Effective Date of this Agreement and shall continue until completion as provided in the Protocol, which is estimated to occur twenty four (24) months from the Effective Date hereof.

7.2 This Agreement can be terminated by either SKI/MEMORIAL or COMPANY with or without cause upon thirty (30) days prior written notice without penalty to either party. Notwithstanding any notice period SKI/MEMORIAL may immediately cease provision of services pursuant to the Protocol if either the Principal Investigator or the IRB determines that immediate cessation is appropriate for patient safety.

7.3 In the event that this Agreement is terminated prior to completion of the Study, *the* amount due to SKI/MEMORIAL from COMPANY shall be $ 10,000 for each patient who was enrolled in the Study any time between the Effective Date and the date of termination of this Agreement. For purposes of this Agreement enrollment shall mean a patient that has signed the IRB-approved patient Informed Consent Form for the Study and successfully passed any pretreatment screening that is required.

7.4 If COMPANY terminates the Agreement prior to completion of the Study, COMPANY shall, if permitted by law and requested by SKI/MEMORIAL, supply SKI/MEMORIAL, free of charge, with sufficient Study Material to allow SKI/MEMORIAL to complete the treatment of those patients participating in the Study on the date of SKI/MEMORIAL'S receipt of COMPANY'S termination notice.

7.5 Sections 1.5, 7.4, 7.5, 11.1-3, and 11.5 and Articles II, III, IV, VIII, IX, and X shall all survive the termination of this Agreement.

ARTICLE VIII - REPRESENTATIONS AND WARRANTIES

8.1 SKI/MEMORIAL represents and warrants to COMPANY that:

(i) to the best of its knowledge, it is authorized to enter into this Agreement, and that unless otherwise provided by SKI/MEMORIAL'S agreement with PDL its execution, delivery and performance of this Agreement will not conflict with or constitute a default under any other agreement to which it is a party or by which its assets are bound;

(ii) all aspects of SKI/MEMORIAL'S facilities which may be used in the performance of the Study have been fully validated and are in compliance with applicable federal, state and local governmental requirements; it will obtain ERB review and approval of informed consent documentation, Study Protocol, and other relevant documentation prior to initiation of the Study;

(iii) it will adhere to all aspects of the Protocol, including but not limited to patient enrollment criteria;

(iv) it will manufacture, hold, and store the Study Drug in accordance with all applicable federal, state, and local governmental regulations;

(v) it will maintain proper control and inventory over the Actinium-225 and Study Drug.

8.2 COMPANY represents and warrants to SKI/MEMORIAL that it is authorized to enter into this Agreement, to provide HuM195 under this agreement and that its execution, delivery and performance of this Agreement will not conflict with or constitute a default under any other agreement to which it is a party or by which its assets are bound.

8.3 COMPANY represents and warrants that it obtained the Hu_Ml 95 from Protein Design Labs, Inc. (hereinafter "PDL ") who has been made aware of and authorized the present Study.

8.4 COMPANY and SKI/MEMORIAL represent and warrant to each other that:

(i) Neither they nor their employees, agents and subcontractors who provide services in connection with this Agreement have been excluded from participation in, or otherwise sanctioned by Medicare, Medicaid or any other federal, state or local health care program, and will promptly notify the other party if it or any such entity becomes so excluded or sanctioned during the term of this Agreement.

(ii) o the best of its knowledge, it is authorized to enter into this Agreement, and that unless otherwise provided by SKI/MEMORIAL'S agreement with PDL its execution, delivery

ARTICLE IX - OWNERSHIP RIGHTS

9.1 Preservation of Data. Notwithstanding anything else in this Agreement to the contrary, unless specifically instructed otherwise in writing by COMPANY, SKI/MEMORTAL shall retain and preserve one (1) copy of all records relating to the Study for two (2) years after the last marketing authorization for the Study Drug has been approved or COMPANY has discontinued its research with respect to the Study Drug and the FDA has been notified, or such longer period as shall be required by law (such period being referred to herein as the "Retention Period"). At the end of such period, SKI/MEMORIAL may destroy all such material upon giving COMPANY written notice of its intent to do so at least sixty (60) days prior to destruction.

9.2 Inventions. "Inventions" shall mean any invention that is conceived, developed and reduced to practice during or as a result of the performance of the Study. Inventions conceived or reduced to practice solely by SKI/MEMORIAL or its faculty, staff, employees, or students shall be the sole property of SKI/MEMORIAL. Inventions conceived and reduced to practice solely by COMPANY or its employees or subcontractors or agents shall be the sole property of COMPANY. Inventions conceived and reduced to practice jointly by SKI/MEMORIAL or its faculty, staff, employees, or students, together with one or more employees, subcontractors or agents of COMPANY, shall be owned jointly by SKI/MEMORIAL and COMPANY.

9.3 To the extent SKI may legally do so, SKI/MEMORIAL grants to COMPANY a right of first refusal to obtain an exclusive license to SKI's interest in any jointly owned Inventions, through good faith negotiations and on commercially reasonable terms. The option shall extend for a period of six (6) months following disclosure of the Invention to the COMPANY. In the event the parties, acting in good faith, fail to reach a mutually acceptable agreement within three (3) months after commencing negotiations, SKI/MEMORIAL shall be entitled to negotiate a license with a third party for such patent applications.

9.4 Retention of Non-Exclusive License by SKI/MEMORIAL. SKI/MEMORIAL shall retain an irrevocable, non-assignable, royalty free license to use for non-commercial research purposes any Inventions licensed to COMPANY pursuant to Section 9.3.

9.5 U.S. Government's Rights. It is understood that the U.S. government partially sponsors this Study and, therefore, has certain rights to Inventions made under the Study.

ARTICLE X — INDEMNIFICATION - INSURANCE

10.1 COMPANY shall indemnify, defend and hold SKI/MEMORIAL, and their affiliate corporation Memorial Sloan-Kettering Cancer Center harmless from and against all claims, causes of action, suits, damages and costs arising out of, resulting from, or otherwise in respect of, the manufacture and/or use of Actinium-225 or 225Ac-M195 by COMPANY'S staff or agents, except where such claims, causes of action, suits, damages and costs are the result of noncompliance with the Study Protocol or are the result of gross negligence or willful misconduct by SKI/MEMORIAL, its investigators, staff, or agents. COMPANY shall have no obligation to indemnify, defend or hold SKI/MEMORIAL and their affiliate corporation, Memorial Sloan-Kettering Cancer Center, harmless from and against all claims, causes of action, suits, damages and costs arising directly from a failure by SKIJME.MORIAL, its staff or agents to : (i) comply with any applicable FDA or other governmental requirement; (ii) adhere to the terms of the Protocol. Furthermore, COMPANY shall indemnify, defend and hold SKI/MEMORIAL, and their affiliate corporation Memorial Sloan-Kettering Cancer Center harmless from and against all claims, causes of action, suits, damages and costs arising out of COMPANY'S use of the report or data of the Study.

10.2 SKI/MEMORIAL shall indemnify, defend or hold COMPANY harmless from and against all claims, causes of action, suits, damages and costs arising directly from a failure by SKI/MEMORIAL, its staff or agents to: (1) comply with any applicable FDA or other governmental requirement; (ii) adhere to the terms of the Protocol, except to the extend that such claims arise out of COMPANY'S gross negligence or willful misconduct.

10.3 As a condition to a party's right to indemnification hereunder, the claiming party must inform the other party of a claim as soon as is practical after it receives notice of the claim, permit the indemnifying party to control the defense of such claim, to select and engage counsel of its own choice to defend against such claims and to settle any claims or suits at its discretion, and otherwise cooperate fully with the indemnifying party in the defense of such claim. In no event shall the indemnifying party have any obligation hereunder with respect to claims or suits settled or compromised without its prior written consent.

ARTICLE XI— GENERAL

11.1 No right or license is granted under this Agreement by either party to the other either expressly or by implication, except those specifically set forth herein.

11.2 Unless otherwise specified in this Agreement, nothing contained in this Agreement shall impose an obligation of exclusivity on one party by the other. Both parties reserve the right to enter into and participate in other activities (either alone or with a third party) including, but not limited to, clinical trials and sponsored research projects.

11.3 All matters affecting the interpretation, validity and performance of this Agreement shall be governed by the laws of the State of New York applicable to agreements made and to be performed wholly within the State of New York. This Agreement, including the Protocol, sets forth the entire understanding between the parties herein, and cannot be changed or amended except by written agreement executed by the parties. In the event of any inconsistency in this Agreement, the inconsistency shall be resolved by giving precedence first, to the Articles of this Agreement, and then, to the Protocol. Notwithstanding the above, in the event of a conflict between the text of this Agreement and the text of the final, IRB-approved Protocol, the anal Protocol shall control with respect to any matter for which the United States Food and Drug Administration (hereinafter "FDA") has promulgated regulations addressing the requirement set forth in the Protocol; this Agreement shall govern for all other matters. This Agreement may not be assigned by either party without the prior written consent of the other party.

11.4 All notices to be given by either party to the other shall be made in writing, delivered by any means providing proof of delivery, at the following addresses respectively:

All notices to be given by either party to the other shall be made in writing, delivered by any means providing proof of delivery, at the following addresses respectively:

SKI/MEMROIAL

Memorial Sloan-Kettering Cancer Center
1275 York Avenue
New York, New York 10021

(Attention: Director, Office of Industrial Affairs
(Copy: Mr. James S. Quirk, Senior Vice President)

COMPANY

Actinium Pharmaceuticals
25B HANOVER Road
Florham Park, NJ 07932

(Attention: Howard S. Wachtler, President and CEO)

Any notice shall be effective as of its date of receipt.

11.5 Except as set forth in Articles 3 and 4, as requifed by law and/or as may be required in order to maintain a party's status as an exempt organization under Section 501(c)(3) of the Internal Revenue Code and regulations thereunder, neither SICINEMORIAL nor COMPANY shall release any information., publicity, news releases or other public announcement, written or oral, with regard to the Agreement or any amendment thereto or to performance hereunder, to newspapers or any other mass communication media without the prior written approval of the other parry. COMPANY shall not use the name of SKI/MEMORIAL and their affiliate corporation Memorial Sloan-Kettering Cancer Center, or a variant of any of the foregoing in any advertising, packaging or other promotional material in connection with the Study Drug except as may be required by law.

11.6 If anyone or more of the provisions of this Agreement is held to be invalid or unenforceable from which no appeal can be or is taken, the provision shall be considered severed from this Agreement, and shall not serve to invalidate the remaining provisions hereof, so long as the essential benefits of this Agreement will still be realized. The parties shall make a good faith effort to replace the invalid or unenforceable provision with a valid one that, in its economic effect, is most consistent with the invalid or unenforceable provision.

IN WITNESS THEREOF, SKI/MEMORIAL and COMPANY have caused this Agreement to be executed in duplicate by their respective duly authorized officers.

ACTINIUM PHAR1VIACEUTI INC.

By: /s/ Howard S. Wachtler Date: April 12, 2006

Howard S. Wachtler
President and CEO
Actinium Pharmaceuticals, Inc.

SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH, AND MEMORIAL HOSP AL OR CANCER AND ALLIED DISEASES

By: /s/ Howard S. Wachtler Date: April 10, 2006

Gustave J. Bernhardt
Director
Research Resources Management

By: /s/ George J. Bosl Date: April 4, 2006

George J. Bosl, M.D.
Chairman
Department of Medicine

By: /s/ Stephen Nimer Date: March 30, 2006

Stephen Nimer, M.D.
Head
Div, of Hematology Oncology

By: /s/ Joseph G. Jurcic Date: March 29, 2006

Joseph G. Jurcic
Principal Investigator

Exhibit 10.29

_____ , 2011

Actinium Pharmaceuticals, Inc.

Attention: Dragan Cicic, M.D.
By Fax transmission to 610-910-3463

Re: Waiver of Registration Rights

Gentlemen:

Reference is made to that certain Registration Rights Agreement by and among Actinium Pharmaceuticals, Inc. (the "Company"), Actinium Pharmaceuticals, Ltd., Actinium Holdings Limited ("AHL" and formerly named General Atlantic Investments Limited) and certain stockholders of the Company, dated June 30, 2000 (the "Rights Agreement"). Capitalized terms used and not otherwise defined herein shall have the meanings ascribed to such terms in the Rights Agreement. The Company intends to sell up to 26,568,266 shares of Series E Convertible Preferred Stock (the "New Securities") pursuant to a draft Series E Preferred Stock Purchase Agreement (the "Purchase Agreement") by and among the Company and the Purchasers identified on Exhibit A thereto (the "Sale").

Waiver of Registration Rights

In order to induce the Purchasers to Purchase the New Securities in connection with the Sale, AHL hereby waives and agrees that it will not exercise at any time, any and all rights that it has in accordance with Articles 3, 4 or 5 of the Rights Agreement.

Very truly yours,

ACTINIUM HOLDINGS LIMITED

By: _____

Accepted and agreed as of the date written above:

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Dragan Cicic

Exhibit 99.3

Unaudited pro forma combined financial information of Cactus Ventures, Inc. and Actinium Pharmaceuticals, Inc.

The unaudited pro forma information below gives effect to the share exchange between Cactus Ventures, Inc. and Actinium Pharmaceuticals, Inc. as if it had been consummated as of the beginning of the applicable period. The unaudited pro forma information has been derived from the historical Financial Statements of these two companies. The unaudited pro forma information is for illustrative purposes only. You should not rely on the unaudited pro forma financial information as being indicative of the historical results that would have been achieved had the acquisition occurred in the past or the future financial results that the Company will achieve after the merger.

Cactus Ventures, Inc. and Actinium Pharmaceuticals Inc.
Pro Forma Combined Balance Sheets
(Unaudited)

	Cactus Ventures Inc. September 30, 2012	Actinium Pharmaceuticals Inc. September 30, 2012	Pro Forma Adjustments		Pro Forma Combined
Current Assets					
Cash	$ -	$ 2,566,669	$ 4,300,000	(1)	$ 6,866,669
R&D reimbursement receivable	-	187,765	-		187,765
Prepaid expenses and other current assets	-	41,066	-		41,066
Deferred financing costs	-	32,523	-		32,523
Total current assets	-	2,828,023	4,300,000		7,128,023
Property and equipment, net	-	2,616	-		2,616
Total Assets	$ -	$ 2,830,639	$ 4,300,000		$ 7,130,639
Liabilities and Stockholders' Equity (Deficit)					
Current liabilities					
Accounts payable and accrued expenses	$ 31,136	$ 576,624	(31,136)	(3)	$ 576,624
Accounts payable - related party	-	243,600	-		243,600
Convertible notes payable, net	-	802,479	-		802,479
Derivative liabilities	-	5,204,348	-		5,204,348
Total current liabilities	31,136	6,827,051	(31,136)		6.827,051
Notes payable-related parties	72,857	-	(72,857)	(3)	-
Total liabilities	103,993	6,827,051	(103,993)		6,827,051
Shareholders' equity (deficit)					
Preferred stock-series A	-	10,000	(10,000)	(1)	-
Preferred stock-series B	-	47,112	(47,112)	(1)	-
Preferred stock-series C-1	-	8,000	(8,000)	(1)	-
Preferred stock-series C-2	-	6,667	(6,667)	(1)	-
Preferred stock-series C-3	-	5,026	(5,026)	(1)	-
Preferred stock-series C-4	-	42,500	(42,500)	(1)	-
Preferred stock-series D	-	30,000	(30,000)	(1)	-
Preferred stock-series E	-	266,061	(266,061)	(1)	-
Common stock	111,550	24,078	(105,355)	(1)	211,303
			181,030	(2)	
Additional paid- in capital	63,885	48,430,356	(181,030)	(2)	52,958,497
			4,820,721	(1)	
			103,993	(3)	
			(279,428)	(4)	
Accumulated deficit	(279,428)	(52,866,212)	279,428	(4)	(52,866,212)
Total shareholders' equity (deficit)	(103,993)	(3,996,412)	4,403,993		303,588
Total liabilities and shareholders' equity (deficit)	$ -	$ 2,830,639	$ 4,300,000		$ 7,130,639

Pro forma footnotes:

(1) To record estimated minimum net proceeds from the sale of common stock, conversion of notes payable and conversions of preferred stock of Actinium to common stock concurrent with the reverse merger.
(2) To record 100% of Actinium Pharmaceuticals, Inc.'s fully diluted shares in exchange for 99% ofCactus Ventures, Inc. shares.
(3) To eliminate accrued expenses and notes payable of Cactus Ventures, Inc. upon reverse merger. Actinium Pharmaceuticals Inc. is not assuming the related debt.
(4) To eliminate accumulated deficit of Cactus Ventures, Inc.

Cactus Ventures, Inc. and Actinium Pharmaceuticals, Inc.
Pro Forma Combined Statements of Operations
For the Nine Months Ended September 30, 2012
(Unaudited)

	Cactus Ventures, Inc. September 30, 2012	Actinium Pharmaceuticals, Inc. September 30, 2012	Pro Forma Adjustments	Pro Forma Combined
Revenues	$ -	$ -	$ -	$ -
Operating expenses				
Research and development, net	-	2,723,459	-	2,723,459
General and administrative	15,624	1,520,221	-	1,535,845
Depreciation and amortization	-	429	-	429
Total operating expense	15,624	4,244,109	-	4,259,733
Loss from operations	(15,624)	(4,244,109)		(4,259,733)
Other (income) expense:				
Interest expense	4,040	952,241	(4,040) (2)	952,241
Change in fair value of derivative liabilities	-	287,604	-	287,604
Total other (income) expense	4,040	1,239,845	(4,040)	1,239,845
Net loss	$ (19,664)	$ (5,483,954)	$ 4,040	$ (5,499,578)
Net loss per common share - basic and diluted	$ (0.01)	$ (2.28)		$ (0.26)
Weighted average number of common shares outstanding - basic and diluted	11,155,008	2,407,805	7,567,541 (1)	21,130,354

Pro forma footnotes:

(1) To adjust weighted average number of common shares outstanding as if the shares issued under the merger were issued and outstanding at the beginning of the period.
(2) To eliminate expense. Actinium Pharmaceuticals Inc. is not assuming the related debt.

Cactus Ventures, Inc. and Actinium Pharmaceuticals, Inc.
Pro Forma Combined Statements of Operations
For the Year Ended December 31, 2011
(Unaudited)

	Cactus Ventures, Inc. December 31, 2011	Actinium Pharmaceuticals, Inc. December 31, 2011	Pro Forma Adjustments		Pro Forma Combined
Revenues	$ -	$ -	$ -		$ -
Operating expenses					
Research and development, net	-	323,788	-		323,788
General and administrative	9,952	2,959,246	-		2,969,198
Depreciation and amortization	-	633	-		633
Total operating expense	9,952	3,283,667	-		3,293,619
Loss from operations	(9,952)	(3,283,667)	-		(3,293,619)
Other (income) expense:					
Interest expense	4,759	175,094	(4,759)	(2)	175,094
Gain on retention of deposit	(25,000)	-			(25,000)
Change in fair value of derivative liabilities	-	(13,966)			(13,966)
Total other (income) expense	(20,241)	161,128	(4,759)		136,128
Net income (loss)	$ 10,289	$ (3,444,795)	4,759		$ (3,429,747)
Net income (loss) per common share - basic and diluted	$ 0.01	$ (1.43)			$ (0.19)
Weighted average number of common shares outstanding - basic and diluted	11,155,008	2,407,805	7,567,541	(1)	21,130,354

(1) To adjust weighted average number of common shares outstanding as if the shares issued under the merger were issued and outstanding at the beginning of the period.
(2) To eliminate expense. Actinium Pharmaceuticals Inc. is not assuming the related debt.