

Actinium Pharmaceuticals, Inc.
501 Fifth Avenue, 3rd Floor
New York, NY 10017

October 28, 2013

VIA EDGAR

Katherine Wray
Attorney-Advisor
Division of Corporation Finance
Securities and Exchange Commission
100 F Street N.E.
Washington, D.C. 20549

**Re: Actinium Pharmaceuticals, Inc. (Formerly Cactus Ventures, Inc.)
Registration Statement on Form S-1
Filed September 30, 2013
File No. 333-191468**

Dear Ms. Wray:

We are in receipt of your comment letter dated October 24, 2013 regarding the above referenced filing. As requested in your letter, we have provided responses to the questions raised by the staff. For your convenience, the matters are listed below, followed by Actinium Pharmaceuticals, Inc.'s (the "Company") responses:

Prospectus Summary

The Offering, page 5

1. Please revise your use of proceeds discussion here to indicate, as you have on page 50, that you do not expect to receive any proceeds from the exercise of your outstanding B- warrants, Stock Offering warrants, consulting firm warrants, and placement agent warrants since these warrants contain cash-less exercise provisions.

RESPONSE: We have revised the use of proceeds discussion on page 5 to indicate that we do not expect to receive any proceeds from the exercise of your outstanding B- warrants, Stock Offering warrants, consulting firm warrants, and placement agent warrants since these warrants contain cash-less exercise provisions.

Risk Factors

“The filing of our Registration Statement on form S-1 on March 15, 2013” page 15

2. Your disclosure in this risk factor appears to limit the definition of the term “Share Exchange” to the acquisition by Cactus Ventures, Inc. on December 28, 2012 of “21% of the issued and outstanding capital stock of Actinium Corporation from [Actinium Shareholders] in exchange for the issuance of 4,309,015 shares of Common Stock of the Company to the Actinium Shareholders.” You go on to disclose that “investors in the Share Exchange may potentially be entitled to bring suit against the Company for offering a non-exempt security without registering it, and such investor may be able to obtain rescission with interest, or damages if the investor sold the securities for less than he or she purchased them.” This disclosure suggests that only those investors who had exchanged their shares on December 28, 2012 may potentially be entitled to bring suit and obtain rescission or damages. Please expand your definition of “Share Exchange,” or otherwise revise the risk factor to clearly indicate that any Actinium Shareholder who exchanged his or her shares until September 30, 2013 may potentially have such rights; or tell us why you do not believe this would be the case.

RESPONSE: We have revised the risk factor disclosure on page 15 to clearly indicate that any Actinium Shareholder who exchanged his or her shares until September 25, 2013 (the final exchange date) may potentially be able to obtain rescission with interest, or damages if such investor sold the securities for less than he or she purchased them.

Changes in Registrants Certifying Accountant, page 52

3. We note your revisions made in response to prior comment 4. Please make a similar revision to your disclosure in section (a) regarding disagreements and reportable events with respect to your former accountant.

RESPONSE: We have revised the disclosure on page 52 in response to your comment 3.

Part II

Recent Sales of Unregistered Securities, page II-2

4. We note your disclosure that each of the offerings described in this section was made in reliance on Section 4(2) of the Securities Act and Rule 506 of Regulation D; that each purchaser in the offerings represented that he or she was an “accredited investor” as defined in Rule 501 of Regulation D; and that there were no non-accredited investors in any of the offerings. Please describe for us further what steps you took, if any, to establish a reasonable belief that every purchaser in these offerings was an accredited investor. In this regard, we note the relatively large number of selling shareholders and your disclosure that they received the shares being offered for resale in private placements by the company.

RESPONSE: For each of the offerings described in “Recent Sales of Unregistered Securities” on page II-2 of the Form S-1, prior to accepting any subscription amount from an investor the Company had each investor complete an “Accredited Investor Certification”, whereby each investor certified that such investor was an accredited investor per the provisions of Rule 501 of Regulation D.

The Company also had each investor complete a “Purchaser Questionnaire”, whereby each investor listed its Annual Income, Liquid Net Worth and Net Worth.

Exhibits

5. We note your discussion beginning on page 58 regarding your employment agreement with Dr. Dave. Please file the agreement as an exhibit to your registration statement. See item 601(b)(10)(iii) of regulation S-K.

RESPONSE: We have included our Employment Agreement with Dr. Dave as Exhibit 10.32 to the Form S-1.

The Company acknowledges that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Sincerely,

Actinium Pharmaceuticals, Inc.

By: /s/ Kaushik J. Dave

Kaushik J. Dave

President and Chief Executive Officer