

September 30, 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 March 15, 2013  
File No. 333-187313**

Dear Ms. Wray:

Actinium Pharmaceuticals, Inc. (the "Company") is in receipt of your comment letter dated September 18, 2013 regarding the above referenced filing. As requested in your letter, we have provided responses to the questions raised by the staff. After discussions with the staff, on September 30, 2013 we have withdrawn the Registration Statement on Form S-1 filed with the SEC on March 15, 2013. The reason for the withdrawal was to physically complete our share exchange with shareholders of Actinium Corporation that commenced on December 28, 2013. On September 25, 2013, 100% of the shares of Actinium corporation were exchanged for shares of the Company. The final 6.3% of the shares of Actinium corporation were exchanged for Company shares pursuant to a merger under Delaware law whereby the Company merged Actinium Corporation into itself (at the time of the merger the Company owned 93.7% of the shares of Actinium Corporation).

On this date hereof the Company is filing a new registration statement substantially similar to the Registration Statement filed on March 15, 2013, as amended on August 22, 2013. We are responding to the comments received on September 18, 2013 in this response letter and new registration statement, as applicable, filed with SEC today.

For your convenience, the matters are listed below, followed by Actinium Pharmaceuticals, Inc.'s (the "Company") responses:

Description of Business

Our Corporate History and Background

Acquisition of Actinium, page 36

1. We note your response to prior comment 18, in which you advise that you are seeking to register the resale of certain shares of your common stock with respect to which Actinium Corporation shareholders had not provided signed share exchange agreements as of the initial filing of the registration statement. As previously requested, please provide us with your legal analysis of whether the share exchange was completed on the date you initially filed your registration statement. In other words, provide a legal analysis under applicable state law discussing at what point you believe Actinium Corporation shareholders became, or will become, irrevocably bound to exchange the shares subject only to conditions outside their control (e.g., upon the December 28, 2013 "closing date" by virtue of the September 2012 shareholder vote approving the exchange, or upon each shareholder's execution of the Share Exchange Agreement, or upon the occurrence of some other event(s)). Please cite to relevant law that supports your conclusions. We again refer you for guidance to Question 139.06 of the Division of Corporation Finance's Compliance and Disclosure Interpretations of Securities Act Sections.

**RESPONSE:** In response to this comment we have withdrawn the registration Statement (File No. 333-187313); completed the remaining exchange of Actinium Corporation shares for Company shares of common stock on September 25, 2013; and filed a new registration statement, which is substantially similar to the Registration Statement filed on March 15, 2013, as amended on August 22, 2013.

---

Corporate History of Actinium, page 37

2. We note your disclosure that “IomabTM-b has completed a Phase I/II design trial.” Please tell us whether this trial was conducted in any way with humans. Additionally, please confirm whether this trail was conducted in the United States. Further, it is unclear from the disclosure whether you have applied to the FDA for an IND for this drug. Please advise. If you do not have an IND for this drug, please specifically state so in your disclosure, and provide an estimated timeline for your IND application.

**RESPONSE:** We have updated the disclosure on page 37 of the Registration Statement to address the questions in Comment 2.

Management’s Discussion and Analysis of Financial Condition and Results of Operations Recent Debt and Equity Offerings, page 49

3. We note your revised disclosure in response to prior comment 22. Please discuss possible proceeds that you may receive from the exercise of consulting firm and placement agent warrants. Additionally, you indicate that you intend to conduct offerings of either stock and/or debt and engage in licensing activities to meet your capital needs beyond 2013. Revise to quantify the amount of funds you need to raise beyond 2013 to continue to fund your operating needs for the next twelve months. As initially requested, in your plan of operations, please include a more detailed discussion of the extent to which you will be able to implement your business plan, and describe the individual stages of the plan that you will be able to complete if none, 25%, 50% or 75% of these funds are raised. Finally, ensure this disclosure is consistent with your disclosure throughout your registration statement and/or you clearly disclose the period your disclosure is referencing. In this regard, we note you cite differing amounts on pages 6 and 15 (\$4.6 million and \$25 million, respectively).

**RESPONSE:** We do not expect proceeds from the exercise of the outstanding consulting firm warrants and placement agent warrants since these warrants contain cash-less exercise provisions. We have updated the disclosure on page 49 of the Registration Statement.

We have revised the disclosure on page 49 to state that we do not need to raise funds to continue to fund our operating needs for the next twelve months. Additionally, we have revised our registration Statement on page 45 regarding the implementation of our business plan, and have described the individual stages of the plan that we will be able to complete if none, 25%, 50% or 75% of these funds are raised on page 49.

We have updated the disclosure on pages 6 and 15 to ensure the disclosure is consistent with our disclosure throughout the registration statement.

Changes in Registrant's Certifying Accountant, page 52

4. We note that the disclosure provided in response to prior comment 2 references subsequent periods through September 30, 2012. Please revise this date to be through December 28, 2012, as Item 304 requires the disclosure to relate to the "subsequent interim period preceding such resignation, declination or dismissal" and is intended to be the date of the change of accountants rather than the most recent interim period for financial reporting purposes.

**RESPONSE:** We have revised the date in the registration statement.

Directors and Executive Officers, page 53

5. We note from the revised disclosure provided on page 53 in response to prior comment 23 that Messers. Traversa and Seth were appointed as directors pursuant to the Company's charter by your former Series E preferred stockholders. Please advise as to the identity of the Series E preferred stockholders.

**RESPONSE:** We have revised the registration statement to identify the Series E preferred stockholders.

Security Ownership of Certain Beneficial Owners and Management, page 59

6. We note the revisions made to footnote 5 in response to prior comment 30. Please identify the natural person or persons who have sole or shared voting and/or investment power over the securities beneficially owned by Actinium Holdings Ltd. Alternatively, tell us why you do not believe you are required to do so.

**RESPONSE:** We have revised the registration statement to include the natural person who has sole or shared voting and/or investment power over the securities beneficially owned by Actinium Holdings Ltd.

Part II

Indemnification of Directors and Officers, page 71

7. We acknowledge your response to prior comment 1 advising that you are now incorporated in Delaware. We note, however, that you continue to state here that you are a Nevada corporation and discuss Nevada law in this section. Please revise.

**RESPONSE:** We have revised the “Indemnification of Directors and Officers” section to remove the discussion of Nevada law and include a discussion of Delaware law, our state of incorporation.

Signatures, page 74

8. We acknowledge your response to prior comment 36 and we reissue the comment. The registration statement must be signed by your controller or principal accounting officer in addition to your principal executive officer, principal financial officer, and a majority of the board of directors. Any person who occupies more than one of the specified positions that must sign on behalf of the registrant must indicate each capacity in which they sign. Please revise.

**RESPONSE:** We have revised the signature page of the registration statement to specify that Sergio Traversa is our “Principal Financial and Accounting Officer”.

Exhibit Index, page 75

9. In response to prior comment 37, you indicate that you have not filed your transaction management agreement with Jamess Capital Group, LLC, as an exhibit to the registration statement because it was terminated on March 31, 2013. It appears, however, that it may nonetheless be an agreement defining the rights of security holders under Item 601(b)(4) of Regulation S-K or a material agreement under Item 601(b)(10). We note in this regard your disclosure stating that you are seeking to register the resale of shares of common stock underlying warrants issued pursuant to the transaction management agreement with James Capital Group. Please file the agreement, or provide us with legal analyses to support your conclusion that you are not required to file this agreement by Item 601(b)(4) or (10). In this regard, please advise whether the company has any material ongoing rights and obligations under the agreement.

**RESPONSE:** We have filed the transaction management agreement with Jamess Capital Group, LLC as Exhibit 10.31 to the registration statement.

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