



DIVISION OF
CORPORATION FINANCE

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

May 4, 2012

Via E-mail

Dr. Benjamin Warner
Chief Executive Officer
Caldera Pharmaceuticals, Inc.
278 DP Road, Suite D
Los Alamos, NM 87544

**Re: Caldera Pharmaceuticals, Inc.
Amendment No. 1 to Registration Statement on Form S-1
Filed on April 20, 2012
File No. 333-179508**

Dear Dr. Warner:

We have reviewed your amended registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Amendment No. 1 to Registration Statement on Form S-1/A

General

1. Please note that we will be providing comments to you on your confidential treatment request under separate cover.

Prospectus Cover Page

2. Since you appear to qualify as an "emerging growth company," as defined in the Jumpstart Our Business Startups Act, please disclose on your prospectus cover page that you are an emerging growth company and revise your prospectus to:
 - Describe how and when a company may lose emerging growth company status;

- Briefly describe the various exemptions that are available to you, such as exemptions from Section 404(b) of the Sarbanes-Oxley Act of 2002 and Section 14A(a) and (b) of the Securities Exchange Act of 1934; and
- State your election under Section 107(b) of the JOBS Act:
 - If you have elected to opt out of the extended transition period for complying with new or revised accounting standards pursuant to Section 107(b), include a statement that the election is irrevocable; or
 - If you have elected to use the extended transition period for complying with new or revised accounting standards under Section 102(b)(1), provide a risk factor explaining that this election allows you to delay the adoption of new or revised accounting standards that have different effective dates for public and private companies until those standards apply to private companies. Please state in your risk factor that, as a result of this election, your financial statements may not be comparable to companies that comply with public company effective dates. Include a similar statement in your critical accounting policy disclosures.

In addition, consider describing the extent to which any of these exemptions are available to you as a Smaller Reporting Company.

Risk Factors, page 3

General

3. Please refer to your response to Comment 46. You indicate in your response that you have added language to the second risk factor regarding your limited marketing capabilities. However, no revision appears in this amendment. It appears that your limited marketing capability is a material risk to your business, given that you have begun initial marketing of the XRpro instrument and your future operating results will suffer if your products do not achieve commercial acceptance. Please add a separate risk factor that discusses your limited marketing capabilities and the fact that you do not anticipate expending large sums of money on a sales force or marketing efforts.

“We currently have spent and may continue to spend significant resources . . .,” page 7

4. Please refer to your response to Comment 9. Please expand this risk factor to describe when you filed suit against LANS and the stage of your pending litigation. Although you cross-reference a portion of the Business section in this risk factor that contains detailed disclosure, the risk factors section should include all material information that investors should consider in making an investment decision.

“Our internal controls over financial reporting may not be effective . . .,” page 9

5. You state in this risk factor that “[o]ur management will be required to report on our internal controls over financial reporting under Section 404 commencing in fiscal year

2012.” Please note that if you qualify as an emerging growth company, you are no longer required to comply with the auditor attestation requirements of Section 404. Please revise accordingly, as appropriate.

“Our lack of an independent audit committee and audit committee financial expert . . .” page 10

6. Please refer to your response to Comment 34. You indicate in your response that you have revised the heading of this risk factor to indicate the effect of your lack of an independent audit committee and audit committee financial expert on your ability to obtain a listing. However, no revision appears in this amendment. Please revise your heading and expand your risk factor discussion accordingly.

Use of Proceeds, page 12

7. We note your disclosure that you intend to use the proceeds received from the exercise of warrants for general working capital purposes, including for the payment of marketing and personnel expenses. Please expand this statement to disclose whether you anticipate that you will have proceeds remaining following the payment of marketing and personnel expenses. If so, to the extent practicable, please address how the remaining proceeds will be allocated.

Business, page 12

Our Current and Future Business, page 13

8. You indicate on page 13 that your pending government contracts contain Bayh-Dole and related provisions for disposition of intellectual property. Please briefly describe “Bayh-Dole and related provisions” in the first instance you refer to these laws.

Our Analysis Technology, page 16

9. Please refer to your response to Comment 49. You indicate that the excerpts from the DiscoverRx Corporation sales catalog and the Fischer Scientific sales catalog attached to your response letter contain the pricing information of reagents. However, it is unclear how the sales catalogues demonstrate that the use of a reagent in the analysis process can typically cost \$0.50 or more per compound. In your next response letter, please provide more information.

Legal Proceedings, page 16

10. Please refer to your response to Comment 57. Although you have expanded your disclosure in this section to update the progress of your legal proceedings as of the latest practicable date, your discussion does not include a description of the relief you seek for each proceeding. Please revise your disclosure accordingly.

Dilution, page 18

11. We acknowledge your response to Comment 3. Please revise your disclosure of your historical net tangible book deficit to include any derivative liability and exclude the preferred stock classified in the mezzanine. In addition, please add disclosure regarding your pro forma net tangible book value after your offering and, if this amount is negative, a statement that clarifies that the dilution to be experienced by investors in your offering will be greater than the anticipated offering price.

Management's Discussion and Analysis of Financial Condition and Results of Operations

Results of Operations for the year ended December 31, 2011 and the year ended December 31, 2010

Revenues, page 19

12. Please refer to your response to comment 55. Item 101(c)(1)(viii) of Regulation S-K states that government orders that are firm but not yet funded would be considered backlog orders. Please explain why the two existing contracts for which you are still providing services and for which you expect to receive cash for such services are considered future commitments by the government but not backlog orders.

Selling, general and administrative expenses, page 20

13. We note that the drivers you discuss do not address the majority of the increase in selling, general and administrative expenses. Please revise your disclosure to include additional factors that contributed to the increase in expense.

Liquidity and Capital Resources, page 21

14. Please refer to your response to comment 60. Please expand your discussion of liquidity and capital resources to include a discussion of cash provided by/used in operating activities, investing activities and financing activities for the year ended December 31, 2010 in addition to the information you provided for December 31, 2011. Please discuss the factors that drive the cash flows and address any material changes in the underlying drivers.

Executive Compensation and Other Information, page 24

Director Independence, page 26

15. Please refer to your response to Comment 33. We requested in that comment that you remove all references to Rule 10A-3 from your prospectus, as it is not applicable to your facts and circumstances. On page 26, you indicate that Messrs. Zimmerman and Rothman are "independent" in accordance with the requirements of Rule 10A-3 under the

Exchange Act. Please revise this discussion to remove the reference to Rule 10A-3, and provide the disclosure required by Item 407(a)(1)(ii) of Regulation S-K.

Consolidated Balance Sheets, page F-1

16. Please refer to your response to comment 68. Please explain why the number of authorized Series A Convertible Preferred Stock is disclosed on the Balance Sheet as well as page F-18 as 500,000 shares but is disclosed in the response as well as throughout the filing as 400,000 shares. We note that you amended your Articles of Incorporation on April 10, 2012 but it is not clear how many shares were authorized before the amendment. Please clarify.

Notes to the Consolidated Financial Statements

2. Accounting Policies and Estimates
Revenue Recognition, page F-10

17. Please refer to your response to comment 75. It appears as though you deleted your policy for recognition of government contract revenue. Please revise your disclosure to include the policy for government contract revenue similar to your disclosure on page 22. It is still not clear how your policy is in compliance with ASC 912-605-25. Please expand your policy to clarify how your method for recognizing revenue under government research contracts is appropriate.

7. Derivative Financial Liability, page F-15

18. Please refer to your response to comment 78. Please explain to us how the anti dilution clause meets the scope of ASC 505-50. Specifically address whether and how the patent rights acquired are either goods or services as contemplated in ASC 505-50-05 and 505-50-15-2a. Also, please clarify if this anti dilution provision of the license agreement will still be in place if Los Alamos National Security sells their shares in this offering. If this provision goes away upon the sale of shares, please clarify if the instrument would be considered freestanding under ASC 480. Finally, please explain how you came to the conclusion in your response that the obligation is a derivative liability in terms of ASC 815-40.

17. Litigation
Seddie Bastanipour and Joel Bellows Suit, page F-25

19. Please refer to your response to comment 79. Your revised disclosure only addresses why an accrual was not recorded for this matter. Please revise your disclosure to include an estimate of the possible loss or range of loss related to the Bellows suit or a statement that such an estimate cannot be made. Please refer to ASC 450-20-50-3 and 50-4.

Signatures

20. Please refer to your response to Comment 81. We note that Dr. Warner has signed this registration statement in the capacity of Chief Executive Officer and Principal Financial Officer. However, the registration statement has not been signed by your controller or principal accounting officer pursuant to Instruction 1 to "Signatures" in Form S-1. Please amend your Form S-1 to have your controller or principal accounting officer sign this Form S-1 in this capacity. If Dr. Warner is also your controller or principal accounting officer, please indicate beneath his signature that he is signing the Form S-1 in the capacity of chief executive officer, chief financial officer, and controller or principal accounting officer.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Act of 1933 and all applicable Securities Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging 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.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

Dr. Benjamin Warner
Caldera Pharmaceuticals, Inc.
May 4, 2012
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You may contact Vanessa Robertson at (202) 551-3649 or Mark Brunhofer at (202) 551-3638 if you have questions regarding comments on the financial statements and related matters. Please contact Rose Zukin at (202) 551-3239, John Krug at (202) 551-3862, or me at (202) 551-3710 with any other questions.

Sincerely,

/s/ Jeffrey Riedler

Jeffrey P. Riedler
Assistant Director

cc: Hank Gracin, Esq.
Gracin & Marlow, LLP
405 Lexington Avenue, 26th Floor
New York, NY 10174