



DIVISION OF
CORPORATION FINANCE

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

August 15, 2013

Via E-mail

Dr. John Knopf
Chief Executive Officer and President
Acceleron Pharma Inc.
128 Sidney Street
Cambridge, MA 02139

**Re: Acceleron Pharma Inc.
Registration Statement on Form S-1
Filed August 7, 2013
File No. 333-190417**

Dear Dr. Knopf:

We have reviewed your 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.

General

1. We note in your response to our prior comments 3, 6, and 18 you state that you have included Supplements A, B, and C, respectively. We did not receive copies of these supplements. Please provide the "test the water materials" referred to as Supplement A pursuant to Rule 418 of the Securities Act of 1933. Furthermore, please resubmit Supplement B and C. If you would like to request confidential treatment for these materials, please submit them in accordance with 17 C.F.R. § 200.83.
2. Please update your financial statements and related financial information as required by Rule 3-12 of Regulation S-X.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Critical Accounting Policies and Significant Judgments and Estimates

Stock-Based Compensation, page 53

3. We note your response to our prior comment 6. We have the following comments regarding your disclosure and accounting for stock-based compensation:
- As a continuing reminder, since you have not disclosed an estimated offering price, we are deferring a final evaluation of stock compensation and other costs recognized until the estimated offering price is specified. We may have further comments in this regard when the amendment containing that information is filed.
 - We acknowledge your response concerning your volatility rate of 69% based on "a group of similar companies that are publicly traded." Please refer to our comment number 1 above. We are deferring a final evaluation of this issue until the supplement is received and reviewed.
 - As a continuing reminder, please provide in your filing containing the IPO price range, a discussion of each significant factor contributing to the difference between the fair value as of the date of each grant and the estimated IPO price range. Please reconcile and explain the differences between the mid-point of your estimated offering price range and the fair values included in your analysis.
 - We acknowledge your response concerning new stock options granted. As a continuing reminder, please provide additional disclosure on those and any other equity issuances including stock options, warrants, convertible preferred stock and debt since the latest balance sheet date and provide additional disclosure through the date of effectiveness.

Notes to Financial Statements

8. Redeemable convertible preferred stock

Special Mandatory, page F-33

4. We acknowledge your response to our prior comment 16. As a continuing reminder, when determinable please disclose the amount and accounting for the conversion of the Series E Preferred Stock, if material, in a "subsequent event" footnote within your amended registration statement, which includes an IPO range.

10. Significant Agreements

Accounting Analysis, page F-41

5. We acknowledge your response to our prior comment 18. Please revise your disclosure to eliminate the use of the term "residual."

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

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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.

You may contact James Peklenk at (202) 551-3661 or Mary Mast at (202) 551-3613 if you have questions regarding comments on the financial statements and related matters. Please contact Matthew Jones at (202) 551-3786 or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ Jeffrey P. Riedler

Jeffrey P. Riedler
Assistant Director

cc: Marc Rubenstein
Ropes & Gray LLP
Prudential Tower
800 Boylston Street
Boston, MA 02199