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

DIVISION OF
CORPORATION FINANCE

June 10, 2013

Via E-mail
Thomas J. van Haarlem, MD
President and Chief Executive Officer
Aerie Pharmaceuticals, Inc.
135 US Highway 206, Suite 15
Bedminster, New Jersey 07921

Re: Aerie Pharmaceuticals, Inc.
Draft Registration Statement on Form S-1
Submitted May 13, 2013
CIK No. 0001337553

Dear Dr. van Haarlem:

We have reviewed your draft 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 providing the requested information and either submitting an amended draft registration statement or publicly filing your registration statement on EDGAR. 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 the information you provide in response to these comments and your amended draft registration statement or filed registration statement, we may have additional comments.

General

1. Please update your financial statements and financial information throughout the filing to include the quarterly period ended March 31, 2013 as required by Rule 3-05 of Regulation S-X.

2. Please supplementally provide us with copies of all written communications, as defined in Rule 405 under the Securities Act, that you, or anyone authorized to do so on your behalf, present to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of the communications. Similarly, please supplementally provide us with any research reports about you that are published or distributed in reliance upon Section 2(a)(3) of the Securities Act of 1933 added by Section 105(a) of the Jumpstart Our Business Startups Act by any broker or dealer that is participating or will participate in your offering.

Prospectus Summary, page 1

Aerie's First-in-Class Product Pipeline, page 2

3. In your overview of AR-13324 on page 4, as well as in your discussion of that product candidate on pages 72-73, please explain why it is that you do not consider this to be one of your "advanced" product candidates, particularly since it appears to be at the same developmental stage as both AR-12286 and PG286.

Risk Factors Associated with Our Business, page 5

4. In this summary, please include a bullet point that states that your independent registered public accounting firm has issued an opinion that expresses doubt about your ability to continue as a going concern.

Risk Factors, page 11

"Failure can occur at any stage of clinical development . . .," page 14

5. We note your statement that you may voluntarily suspend or terminate your clinical studies in the event that you believe they present an unacceptable risk for their participants. Please state whether or not you have ever in fact suspended or terminated a clinical study and, if so, the reasons(s) why you took this action.

"We will need to obtain additional financing to fund our operations . . .," page 22

6. Please state in this risk factor the total net cash flows used by your operating activities from your inception through March 31, 2013.

"Our short operating history may make it difficult for you to evaluate the success of our business to date and to assess our future viability," page 23

7. You make reference in this risk factor to "acquiring" your product candidates, which appears to contradict your disclosure in other sections of your registration statement. Please confirm for us whether any or all of your product candidates were in fact acquired from a third-party and, if so, disclose in both your Prospectus Summary and your Business discussion when and from whom these acquisitions were made. If you in fact developed each of your product candidates internally, please remove the word "acquiring" from this risk factor.

"We depend upon our key personnel and our ability to attract and retain employees," page 31

8. Please include in this risk factor the names and positions of those key employees whose departure might, in your opinion, create a material adverse effect.

"We will incur significant increased costs as a result of operating as a public company, and our management will be required to devote substantial time to compliance initiatives . . .," page 37

9. In this risk factor and on page 61 where you discuss the costs of being a public company, please include, to the extent practicable, an estimate of the annual costs associated with being a public company.

Use of Proceeds, page 42

10. Please expand this disclosure to specify the amount of proceeds you intend to dedicate to the clinical costs of each of your product candidates.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Financial Overview
Research and Development, page 51

11. You disclose on page 2 that you have three product candidates completing or expecting to complete clinical phase 2b in the next several months and one pre-clinical product candidate. For your key research and development projects, please disclose the costs incurred during each period presented and to date. If you do not track or are not able to track research and development expenses by product candidate, please disclose so and why.

Critical Accounting Policies and Use of Estimates
Stock Based Compensation
Common Stock Valuations, page 55

12. We will further evaluate your accounting for stock compensation, beneficial conversion features, and related disclosure when your IPO price has been set. In this regard, we note that you granted 1.5 million stock options in March 2013, 1.7 million stock options in October 2012, $3 million of convertible notes in December 2012 and March 2013, and 681,816 warrants with an exercise price of $.01 in March 2013. Please expand your disclosure to address the following:

    - Disclose how you determined a discount for lack of marketability of 18% was appropriate at December 31, 2012;

    - Once you can reasonably estimate the IPO price, qualitatively and quantitatively discuss each significant factor contributing to the difference between each valuation and the estimated IPO price;

    - Clarify in the filing why no change in fair value of your common stock occurred between the October 2012 and March 2013 valuations and between the January 2012 and September 2012 valuations. In this regard, please discuss any

qualitative factors such as results of trials, etc. that would factor into the assumptions used in your valuation;

- Disclose the intrinsic value of the outstanding vested and unvested options based on the estimated IPO price as of the most recent balance sheet date presented in the registration statement;

- If the convertible feature of the March 2013 note issuance is not accounted for as an embedded derivative, please provide us your analysis of whether or not a beneficial conversion feature is required to be recorded pursuant to ASC 470-20-30; and

- Continue to update your disclosure for all equity related transactions, including any options, warrants, or convertible note or preferred stock issuances, through the effective date of the registration statement.

Business, page 64

AR-12286, page 69

13. Please revise your disclosure to clarify, in layman's terms, the meaning of:

    - serine/threonine specific;
    - protein kinase;
    - actomyosin; and
    - phosphorylate

14. Please describe, as concisely as possible, the mechanics of how AR-12286 targets and inhibits Rho Kinase activity.

AR-13324, page 72

15. Please explain the meaning of the term, "the NET."

AR-13533, page 73

16. Please explain the meaning of the term "pro-drug."

Intellectual Property, page 74

17. It appears that you currently hold no composition of matter patents in the United States for AR-12286 and none in any jurisdiction for PG286. Please confirm that this is correct, and amend your disclosure both here and in the risk factor , "We may not be able to protect our proprietary technology…"on pages 26-27, to state this explicitly.

Shares Eligible for Future Sale
Lock-up Agreements, page 110

18. Please file a copy of the form lock-agreement as an exhibit to your registration statement. If it is to be filed as an exhibit to your underwriting agreement, please confirm this for us.

Notes to the Financial Statements
Note 6. Notes Payable, page F-11

19. Please explain to us and revise the filing, including but not limited to the financial statements, related notes, and capitalization table, to reconcile the 20,979,476 shares of Series A-3 convertible preferred stock issued and outstanding as stated on the face of the balance sheet, to Item 15 which discloses that 10,000,000 shares were issued in 2007, and 2,000,000 shares and 10,979,476 shares were issued in February 2011.

20. You state that in connection with the issuance of the 2012 Notes you determined that a conversion feature had an embedded derivative requiring bifurcation and separate accounting. Please disclose the fair value of the embedded derivative and how the amount was derived. Also, you state that the warrant liability had a fair value of $0 as of the closing date of the sale of the 2012 Notes and as of December 31, 2012 which appears to conflict with your disclosure in Note 10 on page F-17 which says the warrants had a fair value of $728,000.

Note 10. Stock Purchase Warrants, page F-16

21. Please revise your disclosures for the number of stock purchase warrants outstanding in connection with the convertible note agreements issued in 2012, 2010, and 2009. Based on your disclosure at the bottom of page F-16 we recalculate these shares as 2,969,316 shares, which are 10,029 shares less than your disclosure of 2,979,345. It appears that you have included the 10,029 shares issued in 2006 to your calculation.

22. We acknowledge your statement that "…the Company has not had any down rounds historically since the warrants were issued." This is not a sufficient explanation to explain why you have not used a more complex binomial pricing model appropriate for the valuation of your warrants with down-round protection provisions. Please revise your estimate for the fair value of your warrants or explain to us why using a binomial pricing model would not result in a fair value that is materially different from using Black Scholes.

Note 15. Subsequent Events, page F-21

23. Please disclose the exercise price of the warrants granted in connection with the Series B convertible stock issuance.

24. Please disclose the accounting treatment for the conversion feature of the note payable issued in March 2013.

If you intend to respond to these comments with an amended draft registration statement, please submit it and any associated correspondence in accordance with the guidance we provide in the Division's October 11, 2012 announcement on the SEC website at http://www.sec.gov/divisions/corpfin/cfannouncements/drsfilingprocedures101512.htm.

Please keep in mind that we may publicly post filing review correspondence in accordance with our December 1, 2011 policy (http://www.sec.gov/divisions/corpfin/cfannouncements/edgarcorrespondence.htm). If you intend to use Rule 83 (17 CFR 200.83) to request confidential treatment of information in the correspondence you submit on EDGAR, please properly mark that information in each of your confidential submissions to us so we do not repeat or refer to that information in our comment letters to you.

You may contact Christine Allen at (202) 551-3652 or Mary Mast at (202) 551-3613 if you have questions regarding comments on the financial statements and related matters. Please contact Scot Foley at (202) 551-3383, Daniel Greenspan at (202) 551-3623 or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ Daniel Greenspan for

Jeffrey P. Riedler
Assistant Director

cc: Andrew B. Barkan, Esq.
Steven G. Scheinfeld, Esq.
Fried, Frank, Harris, Shriver & Jacobson LLP
One New York Plaza
New York, New York 10004