



DIVISION OF  
CORPORATION FINANCE

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

June 2, 2014

Via E-mail

Bertrand C. Liang  
Chief Executive Officer  
Pfenex Inc.  
10790 Roselle Street  
San Diego, CA 92121

**Re: Pfenex Inc.  
Draft Registration Statement on Form S-1  
Submitted May 5, 2014  
CIK No. 0001478121**

Dear Mr. Liang:

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 submit all exhibits as soon as practicable. We may have further comments upon examination of these exhibits.
2. Please provide us proofs of any additional graphic, visual or photographic information you will provide in the printed prospectus prior to its use, for example in a preliminary prospectus. Please note that we may have comments regarding this material.
3. 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.

4. We will deliver any comments to your confidential treatment request via separate letter. Please be advised that we will have to grant the confidential treatment request before we can act upon any request for effectiveness of the registration statement you will file.

Pfenex, Inc., page 2

5. Please expand the discussion in the first paragraph to state, if true, that you currently have no products approved for commercial sale and have not received any revenues from the sale of product candidates.
6. We note the pipeline chart on page 3. To prevent potential investor confusion, please remove from this table the column referring to global sales.
7. Please expand the chart to include the related indication for each product candidate for which an indication is not currently provided. Additionally, please remove from the pipeline chart the products with a status described as formulation development, process development, or entering process development since the designation as a product candidate appears to be premature.

“If we fail to attract and keep senior management and key scientific personnel....” page 17

8. Please expand the discussion to state the extent and nature of employment agreements with your senior management and senior scientists.

Market and Industry Data, page 56

9. Please note that it is not appropriate to state or imply that you do not have liability for the statements in your registration statement. Your statement on page 56 that you have not independently verified any information attributed to third-party sources could imply that you are not taking liability for this information. In order to eliminate any inference that you are not liable for all of the information in your registration statement, please delete this statement or include a statement specifically accepting liability for information that appears in your registration statement that was obtained from third-party sources.

Use of Proceeds, page 57

10. We note your statement that you intend to use a certain amount of the net proceeds from this offering to fund the ongoing and planned clinical development of PF582 as well as to fund your share of the costs of the clinical development of PF530. Please specify how you anticipate allocating the proceeds among your respective clinical studies, whether

ongoing or planned, and estimate how far you expect the offering proceeds will enable you to advance each of your clinical programs.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 65

Critical Accounting Policies, Significant Judgments and Use of Estimates  
Stock-Based Compensation, page 71

11. We may have additional comments on your accounting for stock compensation once you have disclosed an estimated offering price. Please supplementally provide us with a quantitative and qualitative analysis explaining the difference between the estimated offering price and the fair value of each equity issuance through the date of effectiveness for the preceding twelve months.

Results of Operations  
Research and Development, page 75

12. Please revise your disclosure to also include inception-to-date research and development amounts for each research and development program disclosed in the table on page 75.

Business, page 81

Overview, page 81

13. Please disclose whether you currently have any active INDs. If so, please specify the filing date(s), the names under which the INDs were submitted if not your own name, the product candidates, and indication(s) for which you have any active INDs.

Pfenex Expression Technology, page 89

14. Please define the following terms:
  - "titer;"
  - "bacterial periplasm;"
  - "protease genes;"
  - "chaperone and/or disulfide bond isomerase genes;" and
  - "obligate aerobe growth nature."

Competition, page 117

15. If you are aware of any particular competing product candidates, please disclose the stage(s) of development.

Intellectual Property, page 118

16. Please expand your discussion of your patent profile to clarify which of your material patents and patent applications are owned and which are licensed, indicating from whom such patents or applications are licensed. Please also disclose the type of patent protection covered by each material patent or patent application.
17. At their first use, please spell out the abbreviated terms “TDCC” and “DGTI.”

Description of Capital Stock  
Common Stock, page 145

18. Please disclose the vote required by security holders to take action, as required by Item 202(a)(1)(v) of Regulation S-K.

Notes to Financial Statements

Note 12. Significant Research and Development Agreements  
Funding Agreements, page F-22

19. You appear to be accounting for your funding agreements with The U.S. Department of Health and Human Services and The National Institute of Allergy and Infectious Diseases as production contracts under ASC 605-35. Please tell us how you determined under ASC 912-730-15-2 that these contracts did not meet the requirements of research and development contracts with the federal government.

General

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.

Bertrand C. Liang  
Pfenex Inc.  
June 2, 2014  
Page 5

You may contact Dana Hartz at (202) 551-3648 or Joel Parker at (202) 551-3651 if you have questions regarding comments on the financial statements and related matters. Please contact Christina De Rosa at (202) 551-3577, John Krug at (202) 551-3862 or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ Jeffrey P. Riedler

Jeffrey P. Riedler  
Assistant Director

cc: Via E-mail  
Daniel R. Koeppen  
Wilson Sonsini Goodrich & Rosati  
Professional Corporation  
12235 El Camino Real, Suite 200  
San Diego, CA 92130