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

DIVISION OF
CORPORATION FINANCE

December 3, 2013

Via E-Mail
Nancy Stuart
Chief Operating Officer
Concert Pharmaceuticals, Inc.
99 Hayden Avenue, Suite 500
Lexington, MA 02421

Re: Concert Pharmaceuticals, Inc.
Confidential Draft Registration Statement on Form S-1
Submitted November 6, 2013
CIK No. 0001367920

Dear Ms. Stuart:

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 note that where we provide examples or references to portions of your filing to illustrate what we mean by our comments, they are examples and not exhaustive lists. If our comments are applicable to portions of the filings that we have not cited as examples, please make the appropriate changes elsewhere in the filing in accordance with our comments.

2. Please submit all exhibits as soon as practicable. We may have further comments upon examination of these exhibits.

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 note that you submitted a confidential treatment request on November 6, 2013. We will provide any comments to the confidential treatment request and the related disclosure in a separate comment letter.

Prospectus Summary
Our Product Candidates

5. Please revise the table on pages 2 and 97 to include the product name(s) and more specific indication(s) for the product candidate(s) in development under your collaboration agreement with Celgene.

CTP-354, page 3

6. Please revise your disclosure to describe briefly what you mean by "levels of receptor occupancy" the first time you introduce this concept.

Our additional collaborations and product candidates, page 4

7. You state that JZP-386 is intended to be used to treat narcolepsy, which is an "orphan disease." Please revise your disclosure to clarify:
   - if true, that narcolepsy is a "rare disease"; and
   - whether JZP-386 has received an orphan drug designation from the FDA or other foreign jurisdiction.

Management's discussion and analysis of financial condition and results of operations
Stock-based awards, page 74

8. We have reviewed your disclosure on stock-based awards and have the following comments:

   - Please update the table on page 75 through the date of effectiveness of your registration statement and include any new equity issuances such as preferred stock, warrants, etc. through the date of effectiveness. The current disclosure indicates that this table includes equity based awards through June 30, 2013.
   - Please note we may have additional comments on your accounting for stock compensation and related disclosure once you have disclosed an estimated offering

price. Please provide quantitative and qualitative disclosures explaining the difference between the estimated offering price and the fair value of each issuance.

Results of Operations
Research and Development Expenses, page 84

9. Please disclose the external research and development expenses incurred from inception to date for your significant programs.

Business
Potential advantages of product candidates based on our DCE Platform, page 96

10. Please revise your disclosure to describe briefly what you mean by "improve their metabolic profiles" and "prolonged pharmacokinetic profile."

Our Product Candidates, page 97

11. Please amend your disclosure to describe any INDs submitted for CTP-354 by indication and disclose when these INDs were filed and by whom. In addition, it appears form your disclosure on page 106 that no IND has been submitted for AVP-786. If you or someone else has not filed an IND for either of CTP-354 or AVP-786, please explain your decision not to file the applicable IND.

CTP-354, page 98

12. Please advise, with a view towards disclosure, whether you have an agreement or other arrangement in place with Merck with respect to your development of a deuterated analog of its L-838417 compound, and if not, whether there is a risk that Merck would have any claims to the technology underlying your CTP-354 program.

CTP-354 Clinical Development, page 101

13. Please revise your disclosure to explain what you mean by your statement on page 101 that the incidences of QTc prologation were not "clinically significant."

14. Please expand your disclosure to include a brief discussion of any risks or limitations posed by the small sample size of your Phase I imaging study of CTP-354.

C-10068, page 107

15. Please revise your disclosure to describe the material terms of your collaboration agreement with NIH and WRAIR, and file a copy of such agreement as an exhibit to your registration statement.

Collaborations
Celgene, page 110

16. You state that Celgene is obligated to pay you royalties "ranging from the mid-single digits to the low-double digits." Please revise your description of the Celgene agreement to specify the upper range of royalties within ten percent (e.g., teens, twenties, etc.)

Avanir, page 111

17. You state that Avanir is obligated to pay you royalties "ranging from the mid-single digits to the low-double digits." Please revise your description of the Avanir agreement to specify the upper range of royalties within ten percent (e.g., teens, twenties, etc.)

Jazz Pharmaceuticals, page 112

18. You state that Jazz Pharmaceuticals is obligated to pay you royalties "ranging from the mid-single digits to the low-double digits." Please revise your description of the Jazz Pharmaceuticals agreement to specify the upper range of royalties within ten percent (e.g., teens, twenties, etc.)

Regulation of Deuterium Oxide, page 129

19. You state that you have an import certificate for deuterium oxide that is valid until January 2014. Please expand your disclosure to explain whether you are seeking to extend or renew this certificate and any risks associated with its expiration.

Item 16. Exhibits and financial statement schedules.
(a) Exhibits, page II-3

20. Please file copies of the following as exhibits to your registration statement:
    - your agreement with Fast Forward LLC;
    - your executive bonus program (or if not set forth in any formal document, a written description thereof); and
    - the form of lock-up agreement.

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 Tabatha Akins at (202) 551-3658 or Joel Parker at (202) 551-3651 if you have questions regarding comments on the financial statements and related matters. Please contact Amy Reischauer at (202) 551-3793, John Krug at (202) 551-3862, or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ *Daniel Greenspan for*

Jeffrey P. Riedler
Assistant Director

cc: Via E-Mail
Lia Der Marderosian, Esquire
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109