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

DIVISION OF
CORPORATION FINANCE

February 5, 2015

Via E-mail
Armando Anido
Zynerba Pharmaceuticals, Inc.
Chairman and Chief Executive Officer
170 North Radnor Chester Road, Suite 350
Radnor, Pennsylvania 19087

Re: **Zynerba Pharmaceuticals, Inc.**
**Draft Registration Statement on Form S-1**
**Submitted January 12, 2015**
**CIK No.: 0001621443**

Dear Mr. Anido:

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.

Table of Contents

1. We note your statements on the bottom of the Table of Contents page that, "[i]ndustry publications and surveys generally state that the information contained therein has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such 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 from your registration statement.

Prospectus Summary, page 1

2. Please describe the meaning and significance of the term "pro-drug" at your first reference.

3. Please expand your disclosure to briefly explain the extent to which your intellectual property relating to either ZYN001 or ZYN002 was developed internally or licensed from a third party, and if so, from whom.

Our Product Candidates, page 3

4. We note your disclosures relating to U.S. Market Size on page 3. Please include the dates to which these disclosures refer and make any corresponding changes throughout the prospectus.

Use of Proceeds, page 43

5. Pursuant to the requirements of Item 504 of Regulation S-K, you must disclose the approximate amount of proceeds intended to be used for each such purpose. Accordingly, please revise your disclosure to provide your best reasonable estimate of the amount of proceeds that will be used for each of the following:

    - to fund development efforts of your product candidates, ZYN001 for the treatment of patients with peripheral neuropathic pain, fibromyalgia and chronic cancer pain; and

    - to fund development efforts of your product candidates ZYN002 for the treatment of patients with refractory epilepsy and osteoarthritis.

6. Please expand your disclosure to include how far in the clinical development process you expect the proceeds from this offering will enable you to reach for each of the product candidates by indication.

Research and Development Expenses, page 53

7. You state that you "track and record information regarding external research and development expenses for each study or trial that we conduct." Please expand your disclosures to include the total costs incurred during each period presented and from inception to date for each key research and development project.

Fair Value of Common Stock and Stock-Based Compensation, page 55

8. Please note we may have comments on your accounting for stock compensation or any beneficial conversion features 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.

U.S. Government Rights, page 81

9. Please revise your disclosure to clarify whether the United States government could have any claim or right to use the intellectual property related to ZYN001 or ZYN002.

Manufacturing, page 81

10. Please expand your disclosure regarding your manufacturing agreements with ProSolus Pharmaceuticals and University of Iowa Pharmaceuticals to provide the material terms of each agreement, each party's rights and obligations, the duration of the agreement, termination provisions and any payment provisions. Also, please file the agreements as exhibits.

Albany College of Medicine, page 98

11. We note the Patent Assignment Consideration Agreement ("Agreement") filed as Exhibit 10.17. Please disclose the products to which this intellectual property relates and the nature of the patent protection. Please advise us and clarify in the disclosure whether all right, title and interest in and to the Inventions and Assigned Patent Rights as defined in the Agreement is the same as all of ACP's right, title and interest in the patent applications that were assigned to the Company. If not, please revise this section to explain any difference in scope of the assigned property. Please also disclose if the rights assigned to the Company are now exclusively held by the Company. If not, identify the parties who share rights to use the assigned intellectual property with the Company.

Non-Employee Directors, page 101

12. Please expand your disclosure regarding Messrs. Wagenheim and Gailar to briefly describe the principal business of any corporation or other organization in which such occupations and employment were carried on and whether any such entities are a parent, subsidiary or affiliate, in accordance with Item 401 of Regulation S-K.

Separation Agreement and Patent Assignment with Ms. Stinchcomb, page 107

13. Please include all amounts paid to Ms. Stinchcomb pursuant to the Separation Agreement in the Summary Compensation Table, in accordance with Item 402(n)(2)(ix)(D) of Regulation S-K.

14. Please expand your disclosure to describe the certain competitive activities that Ms. Stinchcomb is prohibited from engaging in for two years pursuant to the Separation Agreement.

Policies and Procedures for Related Party Transactions, page 117

15. We note your disclosure with respect to the subsequent ratification of related party transactions by your proposed audit committee. Please expand your disclosure to explain

the effects to the company and stockholders if any related party transaction does not receive ratification following the consummation of a related party transaction.

Other Comments

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

17. Please confirm that the graphics included in your registration statement are the only graphics you will use in your prospectus. If those are not the only graphics, please provide any additional graphics prior to their use for our review.

18. 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.

You may contact at James Peklenk at (202) 551-3661 or Lisa Vanjoske at (202) 551-3614 if you have questions regarding comments on the financial statements and related matters. Please contact Tara Keating Brooks at (202) 551-8336 or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ Jeffrey P. Riedler

Jeffrey P. Riedler
Assistant Director

cc: Via E-mail
Steven J. Abrams
Pepper Hamilton LLP