

Suzanne Hayes  
Office of Healthcare and Insurance  
Division of Corporation Finance  
Securities and Exchange Commission  
100 F Street, N.E.  
Washington, D.C. 20549

**Re: Aerpio Pharmaceuticals, Inc.**  
**Registration Statement on Form S-1**  
**Filed April 14, 2017**  
**File No. 333-217320**

Dear Ms. Breslin,

This letter is confidentially submitted on behalf of Aerpio Pharmaceuticals, Inc. (the “**Company**”) in response to comments of the staff of the Division of Corporate Finance (the “**Staff**”) of the U.S. Securities and Exchange Commission (the “**Commission**”) with respect to the Company’s filing of the Registration Statement on Form S-1 on April 14, 2017 (the “**Registration Statement**”), as set forth in the Staff’s letter dated May 12, 2017 to Joseph Gardner, President and Chief Executive Officer (the “**Comment Letter**”). The Company is concurrently filing Amendment No. 1 to the Registration Statement (“**Amendment No. 1**”), which includes changes to reflect responses to the Staff’s comments and other updates.

For reference purposes, the text of the Comment Letter has been reproduced and italicized herein with responses below each numbered comment. Unless otherwise indicated, page references in the descriptions of the Staff’s comments refer to the Registration Statement, and page references in the responses refer to Amendment No. 1. All capitalized terms used and not otherwise defined herein shall have the meanings set forth in Amendment No. 1.

The responses provided herein are based upon information provided to Goodwin Procter LLP by the Company. In addition to confidentially submitting this letter via EDGAR, we are sending via Federal Express four (4) copies of each of this letter and Amendment No. 1 (marked to show changes from the Registration Statement).

Prospectus Summary  
Overview, page 2

1. *Please explain the meaning of terms at their first use, such as “molecule activator of the Tie-2 pathway,” “diabetic macular edema,” “hypoxia-inducible factor-1 alpha,” “humanized monoclonal antibody” and “anti-VEGF.”*

RESPONSE: The Company respectfully advises the Staff that it has updated its disclosure on pages 2-3, 14, and 51-53 in response to the Staff’s comment.

2. *Please revise to clarify and to present consistently in your Summary the current stage of development of your product candidate AKB-9778. From your disclosure on page 2 and in the fourth bullet point on page 4, it appears you have not yet begun phase 2 trials, but you also state in the first bullet point on page 4 that you have begun phase 2 development, and in the third bullet point on page 4 you appear to suggest that you have received positive results from phase 2 trials.*

RESPONSE: The Company respectfully advises the Staff that it has updated its disclosure on pages 2, 4, and 51 in response to the Staff’s comment.

Risks Associated with our Business, page 3

3. *Please add a bullet point disclosing that shareholders will have limited ability to influence corporate matters because a small number of your existing shareholders hold a significant amount of your outstanding common stock.*

RESPONSE: The Company respectfully advises the Staff that it has updated its disclosure on page 4 in response to the Staff’s comment.

Description of our Business  
Overview, page 52

4. *Please revise your disclosure to indicate the source of the statistics you present in the third and fourth paragraphs of this section, as well as the second full paragraph on page 64.*

RESPONSE: The Company respectfully advises the Staff that it has updated its disclosure on pages 51-52 and 63 in response to the Staff’s comment.

Our Solution AKB-9778, page 56

5. *It is inappropriate to highlight the results regarding change in retinal thickness from a single patient in your Phase 2 trial in the last paragraph on page 58 and in the table on page 59. Please revise to remove this disclosure or include additional context such as the changes in retinal thickness experienced by each patient in the trial.*

RESPONSE: The Company respectfully advises the Staff that it has updated its disclosure on page 58 in response to the Staff’s comment.

Clinical Results in DR, page 61

6. We note your comparison of AKB-9778's response rate in diabetic retinopathy severity measured in the Phase 2 study to that of ranibizumab, "an approved therapy for DR in the presence of DME." Please revise to eliminate the inference that your product candidate is more likely to be found effective for purposes of FDA approval.

RESPONSE: The Company respectfully advises the Staff that it has updated its disclosure on page 60 in response to the Staff's comment.

Certain Relationships and Related Person Transactions, page 116

7. We note your disclosure that Aerpio issued convertible promissory notes to certain related persons. Please revise your disclosure to include the rate or amount of interest that was payable on the notes since the beginning of your last fiscal year. Please refer to Item 404(a)(5) of Regulation S-K.

RESPONSE: The Company respectfully advises the Staff that it has updated its disclosure on pages 119-120 in response to the Staff's comment.

Selling Stockholders, page 126

8. Please provide us your analysis as to why each of the selling shareholders who received your shares in the merger and conversion transactions and the share cancellation transaction should not be deemed underwriters pursuant to Securities Act Rule 145(c). To the extent they are, please name them as underwriters and revise to clarify that the price at which they are offering their shares will remain fixed for the duration of the offering. If they are not, please provide us a basis for your conclusion, including a discussion of whether such selling shareholders were a party to or an affiliate of a party to the business combination transaction discussed in this prospectus. Refer to Section II.G of Securities Act Release 33-8869 (2007).

RESPONSE: The Company respectfully advises the Staff that based on its analysis of all of the circumstances behind these transactions, as discussed in greater detail below, it does not believe that the selling shareholders who received the Company's shares in the merger and conversion transactions and the share cancellation transactions should be deemed underwriters pursuant to Securities Act Rule 145(c).

The Company considered the definition of an "Underwriter" provided in Section 2(11) of the Securities Act in its analysis:

Section 2(11) of the Securities Act defines an "underwriter" to include: "any person who has purchased from an issuer with a view to, or offers or sells for an issuer in connection with, the distribution of any security, or participates or has a direct or indirect participation in any such undertaking, or participates or has a participation in the direct or indirect underwriting of any such undertaking..."

- a. The shares exchanged in the transactions described above (the "Securities") were not purchased with a view to distribute such Securities. As described in the Registration Statement, the Securities were originally purchased by the selling shareholders either (i) in

connection with an investment in Aerpio Therapeutics, Inc., the formerly private company party to the merger (“Aerpio”) or (ii) in the ordinary course of business in connection with employment at Aerpio or the exercise of Aerpio stock options. In both cases, the Securities were purchased with a long-term investment intent in Aerpio (for which such selling shareholders made representations to Aerpio at the time the Aerpio securities were acquired of such investment intent) and, after the transactions referenced above, the Company. In fact, with respect to the vast majority of Securities acquired in the merger, conversion and share cancellation transactions, the receiving shareholders entered into customary lockup agreements with the Company for a period of nine months. In addition, at the time of acquisition of the Securities, none of the selling shareholders had any agreements or understandings, directly or indirectly, with any person to distribute such Securities.

- b. The registration of the selling shareholder shares through the Registration Statement constitutes a valid secondary offering and is not an offering by or on behalf of the Company. The Company will not receive any proceeds from the sale of the shares and the Company has no contracts, commitments, arrangements or understandings with any of the selling shareholders who received shares in transactions described above to create a public market or carry out any transaction in the shares. As such, the selling shareholders are not acting as a conduit for the Company, and the Company believes that the present registered offering is properly suited as a secondary offering and not an indirect primary offering.

For the reasons set forth above, the Company respectfully submits to the Staff that the selling shareholders should not be deemed underwriters pursuant to the Securities Act. Finally, the Company respectfully advises the Staff that, except perhaps with respect to certain major shareholders of Aerpio who had representatives on Aerpio’s board of directors prior to the merger transaction (and who were named as the 5% stockholders in the Registration Statement) and Aerpio’s pre-merger directors and officers who received shares of the Company in the merger transaction, the selling shareholders were not a party to or an affiliate of a party to the business combination transaction discussed in the Registration Statement. However, even for these shareholders who could be deemed to be affiliates of Aerpio, such shareholders were longtime investors and shareholders in Aerpio, the Company believes that such shareholders have already incurred the economic risk of their investments. None of these shareholders have any arrangement with any person to participate in the distribution of these securities.

Zeta Acquisition Corp. II  
Financial Statements and Report of Independent Registered Public Accounting Firm, F-25

9. *Please tell us why these financial statements and, as applicable, the report of the independent registered public accounting firm do not provide disclosure of the Merger, the Conversion, the Share Cancellation and the Offering as discussed on page 87.*

RESPONSE: The Company respectfully advises the Staff that, as a result of the Merger which took place on March 15, 2017, the Company legally acquired the business of Aerpio Therapeutics, Inc. (“Aerpio”) and will continue the existing business operations of Aerpio as a public reporting company under the name Aerpio Pharmaceuticals, Inc. In accordance with ASC 805, “Business Combinations,” Aerpio is considered the accounting acquirer in the Merger and will account for the transaction as a recapitalization and reverse acquisition for financial reporting purposes. Consequently, the assets and liabilities and the historical operations that will be reflected in the Company’s consolidated financial statements will be those of Aerpio and will be recorded at their historical cost basis. Retrospective adjustment for the reverse acquisition has been made within the Company’s interim condensed consolidated financial statements for the three months ended March 31, 2017 to be included in Amendment No. 1, the period in which the transaction occurred.

Concurrent with the retrospective application for the reverse acquisition within the Company’s interim condensed consolidated financial statements for the three months ended March 31, 2017 to be included in Amendment No. 1, the consolidated financial statements of Aerpio have been updated and revised to reflect the reverse acquisition. As the accounting acquirer, the historical consolidated financial statements of Aerpio are now the historical consolidated financial statements of the Company. All share and per share figures in those consolidated financial statements reflect the exchange of each 2.3336572 shares of Aerpio capital stock, convertible

notes and share based awards, then outstanding, for 1 share of Company common stock at the effective time of the Merger. Consistent with reverse acquisition accounting treatment, the assets and liabilities and the historical operations that are reflected in these consolidated financial statements remain those of Aerpio and are recorded at their historical cost basis.

The financial statements of Zeta Acquisition Corp. II as originally issued and filed within its Annual Report on Form 10-K are no longer those of the registrant following the Merger and application of reverse acquisition accounting. With the Merger now closed and reflected within the financial statements to be included in Amendment No. 1, there is no longer a requirement to include the historical financial statements of Zeta Acquisition Corp. II within Amendment No. 1. In this regard, the historical financial statements of the Company are now those of Aerpio and no longer those of Zeta Acquisition Corp. II. For the reasons set forth above, the Company respectfully advises the Staff that it has removed the Zeta Acquisition Corp. II financial statements as of and for the years ended December 31, 2016 and 2015 within Amendment No. 1.

Exhibit 16.1

10. *Please explain to us why the filing includes this exhibit but does not include disclosures regarding changes in and disagreements with accountants on accounting and financial disclosure to which LWBJ, LLP refers.*

RESPONSE: The Company respectfully advises the Staff that it has updated its disclosure on page 98 in response to the Staff's comment. Additionally, the Company respectfully advises the Staff that the change in the independent registered public accounting firm was properly disclosed as required by Regulation S-K Rule 304 under Item 4.01 within the Company's Current Report on Form 8-K filed with the Securities & Exchange Commission on March 17, 2017.

Should you have any further comments or questions with regard to the foregoing, please contact the undersigned at 617-570-1955.

Sincerely,

/s/ Danielle Lauzon  
Danielle Lauzon

Enclosures  
Cc: Joseph Gardner, *Aerpio Pharmaceuticals, Inc.*  
Kingsley Taft, *Goodwin Procter LLP*