

September 14, 2018

VIA EDGAR AND FEDEX

Irene Paik
Erin Jaskot
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.
Post-Effective Amendment No. 1 to Form S-1 on Form S-3
Filed August 31, 2018
File No. 333-217320**

Dear Ms. Paik:

This letter is 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**”) in a letter dated September 11, 2018 (the “**Comment Letter**”) with respect to the Company’s filing of the Post-Effective Amendment No. 1 to Registration Statement on Form S-1 on Form S-3 (File No. 333-217320) filed with the Commission on August 31, 2018 (the “**Post-Effective Amendment**”).

For reference purposes, the text of the Comment Letter has been reproduced and italicized herein with our response below the numbered comment. All capitalized terms used and not otherwise defined herein shall have the meanings set forth in the Post-Effective Amendment.

The responses provided herein are based upon information provided to Goodwin Procter LLP by the Company. In addition to submitting this letter via EDGAR, we are sending via Federal Express four (4) copies of this letter.

General

1. *We note that you included December 31, 2016 audited financial statements in the Form S-1 declared effective July 23, 2017 and that this is the first post-effective amendment to the registration statement. We also note that you sought to add financial statements for the year ended December 31, 2017 to your prospectus on May 25, 2018 without the filing of the requisite post-effective amendment. If an offering continues for more than nine*

Ms. Paik
Aerpio Pharmaceuticals, Inc.
September 14, 2018
Page 2

months, you are required to update your registration statement by post-effective amendment if the information in the prospectus is more than 16 months old. Please tell us whether you engaged in the offer or sale of your securities between May 1, 2018 and the present. Refer to Section 10(a) (3) of the Securities Act and Rule 427. For additional guidance, please refer to Questions 113.01 and 113.02 of the Securities Act Forms Compliance and Disclosure Interpretations.

RESPONSE: Based on records of transfers obtained from the Company's transfer agent and insider filings by selling stockholders subject to such disclosure requirements, the Company confirms that it is aware that offers or sales were made after May 1, 2018 by certain selling stockholders named in the Company's registration statement on Form S-1, declared effective June 23, 2017 (the "Registration Statement"). However, the Company respectfully advises the Staff that from and after May 1, 2018, any shares sold by selling stockholders were eligible for resale under Rule 144 promulgated under the Securities Act. The Company supplementally advises the Staff that the shares in question were held for at least one year by the selling stockholders, the Company was current in its Exchange Act periodic reporting and none of the selling stockholders were affiliates of the Company.

The Company believes that the supplemental information contained herein is responsive to the Staff's comments. 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

cc: Stephen Hoffman, *Aerpio Pharmaceuticals, Inc.*
Michael Rogers, *Aerpio Pharmaceuticals, Inc.*
Kingsley Taft, *Goodwin Procter LLP*