

PROSPECTUS SUPPLEMENT NO. 2
(To Prospectus Dated June 23, 2017)



Aerpio Pharmaceuticals, Inc.
27,367,117 Shares
Common Stock

This prospectus supplement no. 2 supplements the prospectus dated June 23, 2017, relating to the offering and resale of up to 27,367,117 shares of our common stock, par value \$0.0001 per share, that were privately issued to selling stockholders in connection with a merger transaction and a private placement.

This prospectus supplement incorporates into our prospectus the information contained in our attached current report on Form 8-K, which was filed with the Securities and Exchange Commission on July 31, 2017.

You should read this prospectus supplement in conjunction with the prospectus, including any supplements and amendments thereto. This prospectus supplement is qualified by reference to the prospectus except to the extent that the information in the prospectus supplement supersedes the information contained in the prospectus.

This prospectus supplement is not complete without, and may not be delivered or utilized except in connection with, the prospectus, including any supplements and amendments thereto.

There is not currently, and there has never been, any established public trading market for any of our securities. Our securities are not currently eligible for trading on any national securities exchange, including the NASDAQ Stock Market, or any over-the-counter markets, including the OTC Markets—OTCQB tier, or OTCQB. We cannot assure you that our securities will become eligible for trading on any exchange or market. In connection with this offering, we have arranged for a registered broker-dealer to apply to have our common stock quoted on the OTCQB or another over-the-counter system. Until such time as our common stock is quoted on the OTCQB or another public trading market otherwise develops, the selling stockholders identified in the prospectus may only sell their shares of our common stock pursuant to the prospectus at a fixed price of \$5.00 per share. At and after such time, the selling stockholders may sell all or a portion of their shares through public or private transactions at prevailing market prices or at privately negotiated prices.

You should carefully consider matters discussed under the caption “Risk Factors” beginning on page 9 of the prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or the prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is July 31, 2017.

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

FORM 8-K

**CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934**

Date of Report (Date of earliest event reported): July 31, 2017

Aerpio Pharmaceuticals, Inc.
(Exact Name of Company as Specified in Charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

000-53057
(Commission
File Number)

61-1547850
(IRS Employer
Identification No.)

9987 Carver Road
Cincinnati, OH 45242
(Address of Principal Executive Offices) (Zip Code)

Company's telephone number, including area code: (513) 985-1920

Not Applicable
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Item 8.01 Other Events.

Aerpio Pharmaceuticals, Inc. (the “**Company**”), in collaboration with Peter Campochiaro, MD of the Wilmer Eye Institute of Johns Hopkins Medical Center, completed a single-center study of the safety and efficacy of three months of treatment with 15 mg twice daily AKB-9778 with concomitant PRN anti-vascular endothelial growth factor (“**anti-VEGF**”) therapy in 16 patients with retinal vein occlusion (nine with central vein occlusion and seven with branch vein occlusion) and a history of persistent macular edema on anti-VEGF monotherapy. The average duration of retinal vein occlusion at entry into the study was 4.7 years. At least one intravitreal (“**IVT**”) anti-VEGF dose was administered in 12/16 patients during the active treatment period of the study. A total of 14 IVT anti-VEGF injections were administered over the treatment period (0.88 injections / patient). Visual acuity improved from baseline by a mean of 8.7 letters (p=0.001). This increase in BCVA was accompanied by a significant reduction from baseline in macular edema as measured by central subfield thickness on sd-OCT (mean reduction 140 μm ; p=0.009). AKB-9778 was safe and well-tolerated in this study, with no serious or severe adverse events reported. The Company believes these results suggest that activation of Tie2 by AKB-9778 may be beneficial in patients with chronic retinal vein occlusion. However, these results are considered exploratory, given that this was an open-label, non-controlled study without a placebo or active control arm.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

AERPIO PHARMACEUTICALS, INC.

Date: July 31, 2017

By: /s/ Joseph H. Gardner
Joseph H. Gardner
Chief Executive Officer