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

**FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

AERPIO PHARMACEUTICALS, INC.
(Exact name of registrant as specified in its charter)

Delaware
(State or Other Jurisdiction of
Incorporation or Organization)

2834
(Primary Standard Industrial
Classification Code Number)

61-1547850
(I.R.S. Employer
Identification Number)

**9987 Carver Road
Cincinnati, OH 45242
(513) 985-1920**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**Stephen Hoffman
Chief Executive Officer
Aerpio Pharmaceuticals, Inc.
9987 Carver Road
Cincinnati, OH 45242
(513) 985-1920**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

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100 Northern Avenue
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APPROXIMATE DATE OF COMMENCEMENT OF PROPOSED SALE TO THE PUBLIC: From time to time after the effective date of this Registration Statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

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If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective on filing with the commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
Emerging growth company	<input checked="" type="checkbox"/>		

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 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

Title of securities to be registered	Amount to be registered(1)	Proposed maximum offering price per share(2)	Proposed maximum aggregate offering price	Amount of registration fee
Common Stock, \$0.0001 par value per share	2,973,682	\$1.68	\$4,995,785.76	\$605.49

- (1) Pursuant to Rule 416 under the Securities Act, this registration statement also covers such indeterminate number of additional shares of Common Stock as may be issuable with respect to the shares being registered hereunder as a result of any stock splits, stock dividends or similar transactions.
- (2) Pursuant to Rule 457(c) under the Securities Act, estimated solely for the purpose of calculating the registration fee and based on the average high and low prices of the Common Stock on the Nasdaq Capital Market on December 27, 2018, a date within five business days prior to the filing of this registration statement.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. The selling stockholders named in this prospectus may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and the selling stockholders named in this prospectus are not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

PRELIMINARY PROSPECTUS

Subject to completion, dated December 28, 2018



Aerpio Pharmaceuticals, Inc.

**2,973,682 Shares
Common Stock**

This prospectus relates to the offering and resale by the selling stockholders identified herein, from time to time, after we announce top line data for our TIME-2b clinical trial, of up to 2,973,682 shares of common stock, par value \$0.0001 per share, in one or more transactions, subject to market conditions and prices, liquidity objectives and other investment considerations. These shares were issued to the selling stockholders through an underwritten public offering that closed on June 28, 2018 and July 2, 2018, or purchased in open market transactions. We will not receive any proceeds from the sale of these shares by the selling stockholders. The selling stockholders may sell the shares from time to time, as set forth herein under “Plan of Distribution.” For a list of the selling stockholders, see the section entitled “Selling Stockholders” on page 13. We have borne and will continue to bear the costs relating to the registration of these shares.

Our common stock is traded on the Nasdaq Capital Market under the symbol “ARPO.” On December 27, 2018, the closing sale price of our common stock on the Nasdaq Capital Market was \$1.60 per share.

We may amend or supplement this prospectus from time to time by filing amendments or supplements as required. You should read the entire prospectus and any amendments or supplements carefully before you make your investment decision.

We are an “emerging growth company” as defined under the federal securities laws, and, as such, are eligible for reduced public company reporting requirements. See “Prospectus Summary—Implications of Being an Emerging Growth Company.”

The securities offered by this prospectus involve a high degree of risk. See “[Risk Factors](#)” beginning on page 7.

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

The date of this prospectus is _____, 2018.

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CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This prospectus includes and incorporates forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, which we refer to as the Securities Act, and Section 21E of the Securities Exchange Act of 1934, which we refer to as the Exchange Act. These statements are often, but not always, made through the use of words or phrases such as “anticipate,” “estimate,” “plan,” “project,” “continuing,” “ongoing,” “expect,” “believe,” “intend” and similar words or phrases. Any statements about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and may be forward-looking. Accordingly, these statements involve estimates, assumptions, risks and uncertainties, including the risks discussed in the section entitled “Risk Factors,” that could cause actual results to differ materially from those expressed in them. You should not place undue reliance on these forward-looking statements. Although forward-looking statements reflect management’s good faith beliefs, reliance should not be placed on forward-looking statements because they involve known and unknown risks, uncertainties and other factors, which may cause the actual results, performance or achievements to differ materially from anticipated future results, performance or achievements expressed or implied by such forward-looking statements. These forward-looking statements include, but are not limited to, statements about:

- the initiation, timing, progress and results of our research and development programs and future preclinical and clinical studies;
- our ability to advance any product candidates into, and successfully complete, clinical studies and obtain regulatory approval for them;
- the timing or likelihood of regulatory filings and approvals;
- the commercialization, marketing and manufacturing of our product candidates, if approved;
- the pricing and reimbursement of our product candidates, if approved;
- the rate and degree of market acceptance and clinical utility of any products for which we receive marketing approval;
- the implementation of our strategic plans for our business, product candidates and technology;
- the scope of protection we have and are able to establish and maintain for intellectual property rights covering our product candidates and technology;
- our expectations related to the use of proceeds from this offering and our existing cash resources, and estimates of our expenses, future revenues, capital requirements and our needs for additional financing;
- our ability to maintain and establish collaborations, as well as the expected benefits from such collaborations;
- our financial performance;
- developments relating to our competitors and our industry, including the impact of government regulation; and
- other risks and uncertainties, including those listed under the caption “Risk Factors” in this prospectus or any other documents incorporated by reference in this prospectus.

Discussions containing these forward-looking statements may be found throughout this prospectus. Forward-looking statements speak only as of the date the statements are made. We undertake no obligation to update the forward-looking statements or to reflect events or circumstances after the date of this document. The risks discussed in this prospectus should be considered in evaluating our prospects and future financial performance.

PROSPECTUS SUMMARY

The following summary highlights selected information contained elsewhere in this prospectus. This summary is not complete and does not contain all of the information that should be considered before investing in our common stock. Before making an investment decision, investors should carefully read the entire prospectus, paying particular attention to the risks referred to under the headings “Cautionary Statement Regarding Forward-Looking Statements,” “Risk Factors” and our financial statements and the notes to those financial statements. As used in this prospectus, unless the context requires otherwise, the terms “Company,” “we,” “our” and “us” refer to Aerpio Pharmaceuticals, Inc.

Overview

We are a biopharmaceutical company focused on advancing first-in-class treatments for ocular disease. Our lead product candidate, AKB-9778, a small molecule activator of the Tie2 pathway, is being developed for the treatment of non-proliferative diabetic retinopathy, or NPDR, a disease characterized by progressive compromise of blood vessels in the back of the eye. The Tie2 receptor is expressed almost exclusively in endothelial cells (cells that line the inside of blood vessels) and its activity is essential for maintaining vascular stability and preventing blood vessel compromise associated with diabetes. We have completed a Phase 2a trial of AKB-9778 in 144 patients with diabetic eye disease. Based on the results from this trial, we believe AKB-9778 has the potential to slow down or possibly reverse the damage to blood vessels caused by diabetes. In contrast to marketed treatments for NPDR that are administered by a physician via intraocular injection, we intend to deliver AKB-9778 systemically by self-administered subcutaneous injection, similar to insulin. We believe that this delivery method provides an opportunity to treat diabetic eye disease at an earlier stage and reduces the likelihood of developing vision-threatening complications.

In June 2017, we initiated a 48-week, double-masked, Phase 2b clinical trial, which we refer to as TIME-2b, in patients with NPDR who have not developed more serious complications such as diabetic macular edema, or DME, or proliferative diabetic retinopathy, or PDR. The TIME-2b study is a double-masked, placebo-controlled multi-center trial that is currently on-going and has enrolled 167 patients randomized evenly to receive either AKB-9778 15 mg subcutaneously once daily, AKB-9778 15 mg subcutaneously twice daily or placebo for a 48-week treatment period. The primary endpoint of the TIME-2b study is the percentage of patients who improve by at least 2 steps in DR Severity Score, or DRSS in the study eye. We expect to report top line results of the Phase 2b clinical trial in the second quarter of 2019.

Compromise of Tie2 function is also implicated in other vascular complications of diabetes. We believe systemic treatment with AKB-9778 may address some of the most debilitating of these complications, including diabetic nephropathy. If we are successful in developing and commercializing AKB-9778 for NPDR, we may conduct clinical trials to evaluate AKB-9778’s potential to reduce or delay the need for kidney dialysis.

In addition to diabetic vascular disease, existing preclinical and clinical evidence suggest the potential of AKB-9778 for reducing intraocular pressure in primary open angle glaucoma, or POAG, and ocular hypertension. We plan to initiate a Phase 1b clinical trial in the second quarter of 2019 to evaluate AKB-9778, administered via topical eye drops and, if we observe positive results, we expect to initiate a Phase 2 program for this indication.

In June 2018, we licensed AKB-4924, a selective stabilizer of hypoxia-inducible factor-1 alpha, or HIF-1 alpha to Gossamer Bio, Inc. AKB-4924 is being developed for the treatment of inflammatory bowel disease. HIF-1 alpha is involved in mucosal wound healing and the reduction of inflammation in the gastrointestinal tract. We have completed a single ascending dose clinical trial in healthy volunteers for AKB-4924 and initiated a multiple ascending dose, or MAD study in the second quarter of 2018. Gossamer is responsible for all remaining development and commercial activities for AKB-4924.

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ARP-1536, our humanized monoclonal antibody directed at the same target as AKB-9778, is in preclinical development. We are evaluating development options for ARP-1536, including subcutaneous injection for the treatment of diabetic vascular complications and intravitreal injection for the treatment of advanced diabetic eye disease such as DME or PDR.

Risks Associated with Our Business

Our business is subject to a number of risks of which you should be aware before making an investment decision. These risks are discussed more fully in the “Risk Factors” section of this prospectus immediately following this prospectus summary. These risks include the following:

- We have incurred significant losses since inception and anticipate that we will continue to incur significant losses for the foreseeable future and may never achieve or maintain profitability;
- We will require substantial additional financing. A failure to obtain this necessary capital when needed could force us to delay, limit, reduce or terminate our product development or commercialization efforts;
- We depend heavily on the success of one product candidate, AKB-9778, which is in Phase 2 clinical development. Even if we obtain favorable clinical results, we may not be able to obtain regulatory approval for, or successfully commercialize, AKB-9778;
- We have not obtained agreement with the FDA, EMA or other regulatory authorities on the design of our Phase 3 development program;
- Clinical drug development is a lengthy and expensive process with an uncertain outcome, and positive results from Phase 1 and Phase 2a clinical trials of AKB-9778 are not necessarily predictive of the results of our completed and any future clinical trials of AKB-9778. If we cannot replicate the positive results from our Phase 1 and Phase 2a clinical trials of AKB-9778 in our ongoing and subsequent clinical trials, we may be unable to successfully develop, obtain regulatory approval for and commercialize AKB-9778;
- We may experience delays in our planned Phase 2b clinical trial for AKB-9778 and we do not know whether planned clinical trials will begin on time, need to be redesigned, enroll patients on time or be completed on schedule, if at all;
- We rely on third parties to conduct preclinical studies and clinical trials for our product candidates, and if they do not properly and successfully perform their obligations to us, we may not be able to obtain regulatory approvals for our product candidates;
- We may not be successful in establishing and maintaining strategic collaborations, which could adversely affect our ability to develop and commercialize our product candidates, negatively impacting our operating results;
- If our efforts to protect our proprietary technologies are not adequate, we may not be able to compete effectively in our market;
- Our future commercial success depends upon attaining significant market acceptance of our product candidates, if approved, among physicians, patients, third-party payors and others in the medical community;
- Our independent registered public accounting firm has identified a material weakness in our internal control over financial reporting which will require remediation; and
- Our shareholders will have limited ability to influence corporate matters because a small number of our existing shareholders hold a significant amount of our outstanding common stock.

Underwritten Public Offering and the Selling Stockholders

On June 28, 2018, we closed an underwritten public offering for the sale of 11,688,000 shares of its common stock, and subsequently on July 2, 2018, we closed on the sale of an additional 1,720,200 shares of its common stock, pursuant to the underwriters' partial exercise of their option to purchase additional shares of common stock (the "2018 Offering"). This prospectus relates to the sale or other disposition by the selling stockholders named in this prospectus, from time to time, after we announce top line data for our TIME-2b clinical trial of up to 2,973,682 shares of our common stock, in one or more transactions, subject to market conditions and prices, liquidity objectives and other investment considerations. These shares were issued to the selling stockholders named in this prospectus through the 2018 Offering, or otherwise purchased by the selling stockholders in one or more open market transactions. Registration of the shares of Common Stock covered by this prospectus does not necessarily mean that all or any portion of such shares will be offered for sale by the selling stockholders.

Implications of Being an Emerging Growth Company

We qualify as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act, or JOBS Act, enacted in April 2012. An emerging growth company may take advantage of reduced reporting requirements that are otherwise applicable to public companies. These provisions include, but are not limited to:

- not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes- Oxley Act of 2002, or Sarbanes- Oxley Act;
- reduced disclosure obligations regarding executive compensation in our periodic reports, proxy statements and registration statements; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

We may take advantage of these provisions for up to five years after the first sale of our common equity securities pursuant to an effective registration statement under the Securities Act, which was our registration statement on Form S-1 that we filed in April 2017. However, if certain events occur prior to the end of such five year period, including if we become a "large accelerated filer," our annual gross revenues exceed \$1.07 billion or we issue more than \$1 billion of non-convertible debt in any three year period, we would cease to be an emerging growth company prior to the end of such five year period.

We may choose to take advantage of some but not all of these reduced burdens. We have taken advantage of certain of the reduced disclosure obligations regarding executive compensation in this registration statement and may elect to take advantage of other reduced burdens in future filings. As a result, the information that we provide to our stockholders may be different than you might receive from other public reporting companies in which you hold equity interests.

Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. However, we have irrevocably elected not to avail ourselves of this extended transition period for complying with new or revised accounting standards and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

We are also a "smaller reporting company" as defined in Rule 12b-2 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and have elected to take advantage of certain of the scaled disclosure available to smaller reporting companies.

Our Corporate Information

Our corporate headquarters are located at 9987 Carver Road, Cincinnati, Ohio 45242, and our telephone number is (513) 985-1920. We maintain a website at www.aerpio.com, to which we regularly post copies of our press

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releases as well as additional information about us. Our filings with the Securities and Exchange Commission, or SEC, will be available free of charge through the website as soon as reasonably practicable after being electronically filed with or furnished to the SEC. Information contained in our website does not constitute a part of this prospectus or our other filings with the SEC.

All brand names or trademarks appearing in this prospectus are the property of their respective holders. Use or display by us of other parties' trademarks, trade dress, or products in this prospectus is not intended to, and does not, imply a relationship with, or endorsements or sponsorship of, us by the trademark or trade dress owners.

THE OFFERING

Common Stock Offered by the Selling Stockholders	2,973,682 shares.
Common Stock Outstanding	40,588,004 shares.
Use of Proceeds	We will not receive any proceeds from the sale of the shares of common stock offered by the selling stockholders.
Plan of Distribution	The selling stockholders named in this prospectus, or their pledgees, donees, transferees, assignees or other successors-in-interest may, from time to time, sell, transfer or otherwise dispose of any or all of their shares on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices. The selling stockholders may resell their shares to or through underwriters, broker-dealers or agents, who may receive compensation in the form of discounts, concessions, or commissions. For additional information on the methods of sale that may be used by the selling stockholders, see “Plan of Distribution.”
Nasdaq Capital Market symbol	ARPO
Dividend Policy	We do not expect to pay any dividends on our common stock for the foreseeable future.
Risk Factors	You should read the “Risk Factors” section of this prospectus for a discussion of factors to consider carefully before deciding to invest in shares of our common stock.

Unless otherwise noted, the number of shares of our common stock outstanding prior to and after this offering is based on 40,588,004 shares outstanding as of December 27, 2018, and excludes:

- 3,351,132 shares of common stock issuable upon the exercise of options outstanding as of December 27, 2018 at a weighted average exercise price of \$3.73 per share;
- 2,959,562 shares of common stock reserved for future issuance under our incentive award plan; and
- 317,562 shares of our common stock issuable upon the exercise of a warrant at \$5.00 per share.

RISK FACTORS

Investment in any securities offered pursuant to this prospectus involves risks. You should carefully consider the risk factors incorporated by reference to our most recent Annual Report on Form 10-K, as revised or supplemented by our Quarterly Reports on Form 10-Q filed with the SEC since the filing of our most recent Annual Report on Form 10-K as well as any Current Reports on Form 8-K we file after the date of this prospectus, and all other information contained or incorporated by reference into this prospectus, as updated by our subsequent filings under the Exchange Act, and the risk factors and other information contained in the applicable prospectus supplement before acquiring any of such securities. The occurrence of any of these risks might cause you to lose all or part of your investment in the offered securities.

USE OF PROCEEDS

This prospectus relates to the offer and sale from time to time, after we announce top line data for our TIME-2b clinical trial, of up to 2,973,682 shares of common stock for the account of the selling stockholders referred to in this prospectus, in one or more transactions, subject to market conditions and prices, liquidity objectives and other investment considerations. We will not receive any proceeds from the resale of any of the shares offered by this prospectus by the selling stockholders.

DESCRIPTION OF CAPITAL STOCK

The following description of our common stock and preferred stock, together with the additional information we include in any applicable prospectus supplements, summarizes the material terms and provisions of the common stock and preferred stock that we may offer under this prospectus. The following description of our capital stock does not purport to be complete and is subject to, and qualified in its entirety by, our amended and restated certificate of incorporation and amended and restated bylaws, which are exhibits to the registration statement of which this prospectus forms a part, and by applicable law. The terms of our common stock and preferred stock may also be affected by Delaware law.

General

Our authorized capital stock consists of 300,000,000 shares of common stock, par value \$0.0001 per share, and 10,000,000 shares of undesignated preferred stock, par value \$0.0001 per share.

As of December 27, 2018, there were 40,588,004 shares of common stock outstanding and no shares of preferred stock outstanding. As of December 27, 2018, we had approximately 238 record holders of our capital stock.

Common Stock

The holders of outstanding shares of common stock are entitled to receive dividends out of assets or funds legally available for the payment of dividends of such times and in such amounts as the board from time to time may determine. Holders of common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders. There is no cumulative voting of the election of directors then standing for election. The common stock is not entitled to pre-emptive rights and is not subject to conversion or redemption. Upon liquidation, dissolution or winding up of our company, the assets legally available for distribution to stockholders are distributable ratably among the holders of the common stock after payment of liquidation preferences, if any, on any outstanding payment of other claims of creditors. Each outstanding share of common stock is duly and validly issued, fully paid and non-assessable.

Preferred Stock

Shares of preferred stock may be issued from time to time in one or more series, each of which will have such distinctive designation or title as shall be determined by our board of directors prior to the issuance of any shares thereof. Preferred stock will have such voting powers, full or limited, or no voting powers, and such preferences and relative, participating, optional or other special rights and such qualifications, limitations or restrictions thereof, as shall be stated in such resolution or resolutions providing for the issue of such class or series of preferred stock as may be adopted from time to time by the board of directors prior to the issuance of any shares thereof. Subject to the terms of any preferred stock designation that we may adopt from time to time, the number of authorized shares of preferred stock may be decreased (but not below the number of shares thereof then outstanding) by the affirmative vote of the holders of a supermajority (66 2/3%) of the voting power of all the then outstanding shares of our capital stock entitled to vote generally in the election of the directors, voting together as a single class, plus a supermajority (66 2/3%) of the voting power of the outstanding shares of each class entitled to vote thereon as a class.

While we do not currently have any plans for the issuance of additional preferred stock, the issuance of such preferred stock could adversely affect the rights of the holders of common stock and, therefore, reduce the value of the common stock. It is not possible to state the actual effect of the issuance of any shares of preferred stock on the rights of holders of the common stock until the board of directors determines the specific rights of the holders of the preferred stock; however, these effects may include:

- Restricting dividends on the common stock;

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- Diluting the voting power of the common stock;
- Impairing the liquidation rights of the common stock; or
- Delaying or preventing a change in control of our company without further action by the stockholders.

Other than in connection with shares of preferred stock (as explained above), which preferred stock is not currently designated nor contemplated by us, we do not believe that any provision of our amended and restated certificate of incorporation or bylaws would delay, defer or prevent a change in control.

Warrants

In connection with the private placement offering in March 2017, we agreed to issue to Raymond James & Associates, Inc., National Securities Corporation and Katalyst Securities LLC, each a U.S. registered broker-dealer, warrants to purchase up to an aggregate of 317,562 shares of common stock, with a term of three years and an exercise price of \$5.00 per share, which we refer to as the Placement Agent Warrants. The Placement Agent Warrants contain customary provisions for adjustment in the event of stock splits, subdivision or combination, mergers, etc.

Registration Rights

Registration Rights Agreement

In connection with the Merger and the Offering, we entered into a Registration Rights Agreement, pursuant to which we filed a registration statement with the SEC, or the Registration Statement, covering (a) the shares of common stock issued in the Offering, (b) the shares of common stock issuable upon exercise of the Placement Agent Warrants, (c) the shares of common stock issued in exchange for the equity securities of Aerpio outstanding prior to the Merger and (d) 1,000,000 shares of common stock, or collectively, the Registrable Shares. If we fail to maintain the Registration Statement continuously effective as to all Registrable Shares included in such Registration Statement or the holders of Registrable Shares cannot use the Registration Statement to resell the Registrable Shares for a period of more than 15 trading days (other than suspension of the Registration Statement in connection with its post-effective amendment in connection with filing our Annual Report on Form 10-K for the time reasonably required to respond to any comments from the SEC or during a permitted blackout period as described in the Registration Rights Agreement), we will make payments to each holder of Registrable Shares as monetary penalties at a rate equal to 12% of the Offering Price per annum for each share affected during the period; provided, however, that in no event will the aggregate of any such penalties exceed 5% of the Offering Price per share. No monetary penalties will accrue after the Registrable Shares may be resold without volume or other limitations under Rule 144 or another exemption from registration under the Securities Act.

We must keep the Registration Statement effective for five years from the date it is declared effective by the SEC or until (i) the Registrable Shares have been sold in accordance with such effective Registration Statement or (ii) the Registrable Shares have been previously sold in accordance with Rule 144. We must comply with the informational requirements of Rule 144 so long as any shares of common stock issued in the Offering are subject to Rule 144, regardless of whether we are subject to filing requirements under the Exchange Act.

We will pay all expenses in connection with any registration obligation provided in the Registration Rights Agreement, including, without limitation, all registration, filing, stock exchange fees, printing expenses, all fees and expenses of complying with applicable securities laws, and the fees and disbursements of our counsel and of our independent accountants and reasonable fees and disbursements of counsel to the investors. Each investor will be responsible for its own sales commissions, if any, transfer taxes and the expenses of any attorney or other advisor such investor decides to employ.

Aerpio Registration Rights Agreement

In addition, we entered into a separate registration rights agreement with certain of the pre-Merger stockholders of Aerpio and their affiliates, which we refer to as the Aerpio Registration Rights Agreement. The rights granted to such stockholders under the Aerpio Registration Rights Agreement take effect following such time as the Registration Statement described above no longer remains effective. The holders of 17,544,908 shares of our common stock are entitled to rights with respect to the registration of these securities under the Securities Act. The Aerpio Registration Rights Agreement includes demand registration rights, short-form registration rights and piggyback registration rights. All fees, costs and expenses of underwritten registrations under this agreement will be borne by us and all selling expenses, including underwriting discounts and selling commissions, will be borne by the holders of the shares being registered.

Following the date on which the Aerpio Registration Rights Agreement takes effect, we will be required, upon the written request of the holders of 30% of the registrable securities under the Aerpio Registration Rights Agreement, to file a registration statement on Form S-1 (if Form S-3 is not then available to us to use) and use commercially reasonable efforts to effect the registration of all or a portion of these shares for public resale. We are required to effect only two registrations pursuant to this provision of the Aerpio Registration Rights Agreement. In addition, if we are eligible to file a registration statement on Form S-3, upon the written request of the holders of at least 20% of the registrable securities, we will be required to use commercially reasonable efforts to effect a registration of such shares. We are required to effect only two registrations in any twelve month period pursuant to this provision of the Aerpio Registration Rights Agreement. The right to have such shares registered on Form S-3 is further subject to other specified conditions and limitations. If we register any of our securities either for our own account or for the account of other security holders, the holders of these shares are entitled to include their shares in the registration. Subject to certain exceptions contained in the Aerpio Registration Rights Agreement, we and the underwriters may limit the number of shares included in the underwritten offering to the number of shares which we and the underwriters determine in our sole discretion will not jeopardize the success of the offering. The Aerpio Registration Rights Agreement contains customary cross-indemnification provisions, under which we are obligated to indemnify holders of registrable securities in the event of material misstatements or omissions in the registration statement attributable to us, and they are obligated to indemnify us for material misstatements or omissions attributable to them.

Anti-Takeover Effects of Delaware Law and Provisions of our Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws

Some provisions of Delaware law, our amended and restated certificate of incorporation and our amended and restated bylaws contain provisions that could make the following transactions more difficult: acquisition of us by means of a tender offer; acquisition of us by means of a proxy contest or otherwise; or removal of our incumbent officers and directors. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in their best interest or in our best interests, including transactions that might result in a premium over the price of our common stock.

These provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging these proposals because negotiation of these proposals could result in an improvement of their terms.

Delaware Anti-Takeover Statute

We are subject to Section 203 of the Delaware General Corporation Law, which prohibits a person deemed an “interested stockholder” from engaging in a “business combination” with a publicly held Delaware corporation

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for three years following the date such person becomes an interested stockholder unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. Generally, an “interested stockholder” is a person who, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation’s voting stock. Generally, a “business combination” includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the board of directors, such as discouraging takeover attempts that might result in a premium over the price of our common stock.

Undesignated Preferred Stock

The ability to authorize undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of our company. These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management of our company.

Special Stockholder Meetings

Our bylaws provide that a special meeting of stockholders may be called only by a majority of our board of directors then in office.

Requirements for Advance Notification of Stockholder Nominations and Proposals

Our bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of the board of directors or a committee of the board of directors.

Elimination of Stockholder Action by Written Consent

Our certificate of incorporation eliminates the right of stockholders to act by written consent without a meeting.

Classified Board; Election and Removal of Directors

Our board of directors is divided into three classes. The directors in each class will serve for a three-year term, one class being elected each year by our stockholders, with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms. Because our stockholders do not have cumulative voting rights, our stockholders holding a majority of the shares of our common stock outstanding will be able to elect all of our directors. In addition, our directors may not be removed without cause, and removal of our directors for cause will require a supermajority (66 2/3%) stockholder vote. For more information on the classified board of directors, see the section titled “Management—Board Composition.” This system of electing and removing directors may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

Choice of Forum

Our amended and restated certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, then the United States District Court for the District of Delaware) will be the exclusive forum for any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty;

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any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our amended and restated certificate of incorporation or our bylaws; or any action asserting a claim against us that is governed by the internal affairs doctrine.

Amendment of Charter and Bylaw Provisions

The amendment of any of the above provisions in our amended and restated certificate of incorporation and bylaws, except for the provision making it possible for our board of directors to issue convertible preferred stock, would require a supermajority (66 2/3% and majority of the minority, if applicable) stockholder vote.

Sale or Liquidation

Our amended and restated certificate of incorporation includes provisions that require the approval of a supermajority (66 2/3% and majority of the minority, if applicable) vote of the outstanding shares of our capital stock in order to consummate a liquidation event.

The provisions of the Delaware General Corporation Law, our amended and restated certificate of incorporation and our bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC.

Stock Exchange Listing

Our common stock is listed on the Nasdaq Capital Market under the symbol “ARPO.”

SELLING STOCKHOLDERS

This prospectus covers the resale from time to time, after we announce top line data for our TIME-2b clinical trial, by the selling stockholders identified in the table below of up to an aggregate of 2,973,682 shares of our common stock, in one or more transactions, subject to market conditions and prices, liquidity objectives and other investment considerations. The selling stockholders acquired our securities pursuant to the 2018 Offering or in open market transactions. We will not receive any proceeds from the resale of the common stock by the selling stockholders.

The selling stockholders identified in the table below may from time to time offer and sell under this prospectus any or all of the shares of common stock described under the column “Shares Being Offered” in the table below. The table below has been prepared based upon information furnished to us by the selling stockholders. The selling stockholders identified below may have sold, transferred or otherwise disposed of some or all of their shares since the date on which the information in the following table is presented in transactions exempt from or not subject to the registration requirements of the Securities Act. Information concerning the selling stockholders may change from time to time and, if necessary, we will amend or supplement this prospectus accordingly and as required.

The following table sets forth the name of each selling stockholder and the number of shares of our common stock beneficially owned by the stockholder before this offering. The number of shares disclosed in the table below as beneficially owned are those beneficially owned as determined under the rules of the SEC. Such information is not necessarily indicative of ownership for any other purpose. Under the rules of the SEC, a person is deemed to be a beneficial owner of a security if that person has or shares voting power, which includes the power to vote or to direct the voting of such security, or investment power, which includes the power to dispose of or to direct the disposition of such security. In computing the number of shares beneficially owned by a selling stockholder and the percentage of ownership of that selling stockholder, shares underlying options or warrants held by that selling stockholder that are convertible or exercisable, as the case may be, within 60 days of December 27, 2018 are included. Those shares, however, are not deemed outstanding for the purpose of computing the percentage ownership of any other selling stockholder.

Name of Selling Stockholders	Shares Owned Before the Offering		Shares Being Offered	Shares Owned After the Offering	
	(#)	(%)(1)	(#)	(#)(1)(2)	(%)(1)(2)
OrbiMed Private Investments V, LP(3)	5,193,946	12.8%	777,500	4,416,446	10.9%
Satter Medical Technology Partners, L.P.(4)	3,316,182	8.2%	2,196,182	1,120,000	2.8%

* Denotes less than 1.0% of beneficial ownership.

- (1) Applicable percentage ownership is based on 40,588,004 shares of our common stock outstanding as of December 27, 2018.
- (2) Assumes the sale of all shares offered in this prospectus.
- (3) Consists of 5,193,946 shares of common stock owned by OrbiMed Private Investments V, LP (“OPI V”). OrbiMed Capital GP V LLC (“GP V”) is the general partner of OPI V. OrbiMed Advisors LLC (“OrbiMed Advisors”) is the managing member of GP V. By virtue of such relationships, GP V and OrbiMed Advisors may be deemed to have voting and investment power with respect to the shares held by OPI V and as a result may be deemed to have beneficial ownership of such shares. Chau Khuong, an employee of OrbiMed Advisors, is a member of the Company’s board of directors. OrbiMed Advisors exercises investment and voting power through a management committee comprised of Carl L. Gordon, Sven H. Borho and Jonathan T. Silverstein. Each of GP V, OrbiMed Advisors, Carl L. Gordon, Sven H. Borho, Jonathan T. Silverstein and Chau Khuong disclaims beneficial ownership of the shares held by OPI V, except to the extent of its or his pecuniary interest therein if any. The address of OPI V is c/o OrbiMed Advisors LLC, 601 Lexington Avenue, 54th FL, New York, New York 10022.
- (4) Represents shares held by Satter Medical Technology Partners, L.P., or SMTP, for which Muneer A. Satter has sole voting and dispositive power over all such shares. Does not include (a) 976,568 shares of common

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stock that are held by the Muneer A. Satter Revocable Trust for which Muneer A. Satter serves as trustee and, in such capacity, has sole voting and dispositive power over all such shares and (b) 1,145,267 shares of common stock that are held by various other trusts and other entities for which Muneer A. Satter serves as trustee, investment advisor or manager and, in such capacity, has sole voting and dispositive power over all such shares (collectively, the “Satter Investors”). The shares that are not registered on this registration statement were registered as part of a prior registration statement filed by the Company. The address of the Satter Investors and SMTP is c/o Satter Management Co., L.P., 676 North Michigan Avenue, Suite 4000, Chicago, Illinois 60610.

PLAN OF DISTRIBUTION

The selling stockholders, which as used herein includes donees, pledgees, transferees or other successors-in-interest selling shares of common stock or interests in shares of common stock received after the date of this prospectus from a selling stockholder as a gift, pledge, partnership distribution or other transfer, may, from time to time, sell, transfer or otherwise dispose of any or all of their shares of common stock or interests in shares of common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices.

The selling stockholders may use any one or more of the following methods when disposing of shares or interests therein:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The selling stockholders may, from time to time, pledge or grant a security interest in some or all of the shares of common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock, from time to time, under this prospectus, or under an amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act amending the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus. The selling stockholders also may transfer the shares of common stock in other circumstances, in which case the transferees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

In connection with the sale of our common stock or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of our common stock short and deliver these securities to close out their short positions, or loan or pledge the common stock to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The aggregate proceeds to the selling stockholders from the sale of the common stock offered by them will be the purchase price of the common stock less discounts or commissions, if any. Each of the selling stockholders

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reserves the right to accept and, together with their agents from time to time, to reject, in whole or in part, any proposed purchase of common stock to be made directly or through agents. We will not receive any of the proceeds from this offering.

The selling stockholders and any underwriters, broker-dealers or agents that participate in the sale of the common stock or interests therein may be “underwriters” within the meaning of Section 2(11) of the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. Selling stockholders who are “underwriters” within the meaning of Section 2(11) of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act.

To the extent required, the shares of our common stock to be sold, the names of the selling stockholders, the respective purchase prices and public offering prices, the names of any agents, dealer or underwriter, any applicable commissions or discounts with respect to a particular offer will be set forth in an accompanying prospectus supplement or, if appropriate, a post-effective amendment to this registration statement that includes this prospectus.

In order to comply with the securities laws of some states, if applicable, the common stock may be sold in these jurisdictions only through registered or licensed brokers or dealers. In addition, in some states the common stock may not be sold unless it has been registered or qualified for sale or an exemption from registration or qualification requirements is available and is complied with.

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares in the market and to the activities of the selling stockholders and their affiliates. In addition, we will make copies of this prospectus (as it may be supplemented or amended from time to time) available to the selling stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act.

LEGAL MATTERS

The validity of the shares of common stock being offered by this prospectus will be passed upon for us by Goodwin Procter LLP, Boston, Massachusetts. If the offered securities are distributed in an underwritten offering or through agents, certain legal matters may be passed upon for any agents or underwriters by counsel for such agents or underwriters identified in the applicable prospectus supplement.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K and Form 10-K/A for the year ended December 31, 2017, as set forth in their report thereon (which contains an explanatory paragraph describing conditions that raise substantial doubt about Aerpio's ability to continue as a going concern as described in Note 1 to the consolidated financial statements), which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements and other documents with the SEC. Our SEC filings are available to you on the SEC's Internet website at <http://www.sec.gov> or through our website at <http://www.aerpio.com>. The information set forth on our website is not part of this prospectus. You may also request a copy of these filings, at no cost, by writing or telephoning us at: 9987 Carver Road, Cincinnati, OH 45242, (513) 985-1920.

This prospectus is only part of a registration statement on Form S-3 that we have filed with the SEC under the Securities Act and therefore omits certain information contained in the registration statement. We have also filed exhibits and schedules with the registration statement that are excluded from this prospectus, and you should refer to the applicable exhibit or schedule for a complete description of any statement referring to any contract or other document. You may obtain a copy of the registration statement, including the exhibits and schedules, without charge, from the address listed above or from the SEC's Internet website.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC permits us to “incorporate” into this prospectus information that we file with the SEC in other documents. This means that we can disclose important information to you by referring to other documents that contain that information. The information incorporated by reference is considered to be part of this prospectus. Information contained in this prospectus and information that we file with the SEC in the future and incorporate by reference in this prospectus automatically updates and supersedes previously filed information. We incorporate by reference the documents listed below and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus and prior to the sale of all the shares covered by this prospectus or termination of the offering.

- Our Annual Report on Form 10-K, filed on March 15, 2018, as amended on April 6, 2018;
- Our Quarterly Reports on Form 10-Q filed on May 15, 2018, August 14, 2018, and November 7, 2018;
- Our Current Reports on Form 8-K filed on April 2, 2018, May 29, 2018, June 22, 2018, June 25, 2018 and June 27, 2018;
- The description of our common stock contained in our Registration Statement on Form 8-A filed on June 25, 2018, and any subsequent amendment thereto filed for the purpose of updating such description.
- Any other filings we make pursuant to the Exchange Act after the date of filing this registration statement and prior to its effectiveness (other than any information in such reports that is deemed to have been furnished to, rather than filed with, the SEC in accordance with SEC rules).

A statement contained in a document incorporated by reference into this prospectus shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, any prospectus supplement or in any other subsequently filed document which is also incorporated in this prospectus modifies or replaces such statement. Any statements so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

You may request a copy of these documents, including exhibits, which will be provided to you at no cost, by writing or telephoning us using the following contact information:

Aerpio Pharmaceuticals, Inc.
9987 Carver Road
Cincinnati, Ohio 45242
Telephone: (513) 985-1920

You should rely only on the information contained in this prospectus or on information to which we have referred you. We have not authorized anyone else to provide you with any information.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution

The following table indicates the expenses to be incurred in connection with the offering described in this registration statement, all of which will be borne by us. All amounts are estimates, other than the SEC registration fee.

SEC registration fee	\$605.49
Accounting fees and expenses	\$ *
Legal fees and expenses	\$ *
Miscellaneous	\$ *
Total	\$ *

* To be provided in an amendment

Item 15. Indemnification of Directors and Officers

We are incorporated under the laws of the State of Delaware. Section 145 of the Delaware General Corporation Law provides that a Delaware corporation may indemnify any persons who were, are, or are threatened to be made, parties to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of such corporation), by reason of the fact that such person is or was an officer, director, employee or agent of such corporation, or is or was serving at the request of such corporation as an officer, director, employee or agent of another corporation or enterprise. The indemnity may include expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding, provided that such person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the corporation's best interests and, with respect to any criminal action or proceeding, had no reasonable cause to believe that his or her conduct was illegal. A Delaware corporation may indemnify any persons who were, are, or are threatened to be made, a party to any threatened, pending or completed action or suit by or in the right of the corporation by reason of the fact that such person is or was a director, officer, employee or agent of such corporation, or is or was serving at the request of such corporation as a director, officer, employee or agent of another corporation or enterprise. The indemnity may include expenses (including attorneys' fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit provided such person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the corporation's best interests except that no indemnification is permitted without judicial approval if the officer or director is adjudged to be liable to the corporation. Where an officer or director is successful on the merits or otherwise in the defense of any action referred to above, the corporation must indemnify him or her against the expenses (including attorneys' fees) actually and reasonably incurred.

Our amended and restated certificate of incorporation and amended and restated bylaws provide for the indemnification of its directors and officers to the fullest extent permitted under the Delaware General Corporation Law.

Section 102(b)(7) of the Delaware General Corporation Law permits a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duties as a director, except for liability for any:

- transaction from which the director derives an improper personal benefit;
- act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payment of dividends or redemption of shares; or
- breach of a director's duty of loyalty to the corporation or its stockholders.

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Our amended and restated certificate of incorporation includes such a provision. Expenses incurred by any officer or director in defending any such action, suit or proceeding in advance of its final disposition shall be paid by us upon delivery to us of an undertaking, by or on behalf of such director or officer, to repay all amounts so advanced if it shall ultimately be determined that such director or officer is not entitled to be indemnified by us.

Section 174 of the Delaware General Corporation Law provides, among other things, that a director who willfully or negligently approves of an unlawful payment of dividends or an unlawful stock purchase or redemption may be held liable for such actions. A director who was either absent when the unlawful actions were approved, or dissented at the time, may avoid liability by causing his or her dissent to such actions to be entered in the books containing minutes of the meetings of the board of directors at the time such action occurred or immediately after such absent director receives notice of the unlawful acts.

As permitted by the Delaware General Corporation Law, we have entered into indemnity agreements with each of our directors and executive officers, that require us to indemnify such persons against any and all costs and expenses (including attorneys', witness or other professional fees) actually and reasonably incurred by such person in connection with any action, suit or proceeding (including derivative actions), whether actual or threatened, to which any such person may be made a party by reason of the fact that such person is or was a director or officer or is or was acting or serving as an officer, director, employee or agent of us or any of our affiliated enterprises, provided that such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to our best interests and, with respect to any criminal proceeding, had no reasonable cause to believe his or her conduct was unlawful. The indemnification agreements also set forth certain procedures that will apply in the event of a claim for indemnification thereunder.

At present, there is no pending litigation or proceeding involving any of our directors or executive officers as to which indemnification is required or permitted, and we are not aware of any threatened litigation or proceeding that may result in a claim for indemnification.

We have an insurance policy in place that covers our officers and directors with respect to certain liabilities, including liabilities arising under the Securities Act of 1933, as amended, or the Securities Act, or otherwise.

Item 16. Exhibits

(A) Exhibits

A list of exhibits filed with this Form S-3 is set forth on the Exhibit Index and is incorporated herein by reference.

Item 17. Undertakings

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if,

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in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the “Calculation of Registration Fee” table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (a)(1)(i), (a)(1)(ii), and (a)(1)(iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is a part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant’s annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan’s annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(h) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a

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claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

EXHIBIT INDEX

<u>Exhibit Number</u>	<u>Description</u>
3.1*	Amended and Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant's Form 8-K filed with the Securities and Exchange Commission on March 17, 2017)
3.2*	Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.3 to the Registrant's Form 8-K filed with the Securities and Exchange Commission on March 17, 2017)
4.1*	Form of Common Stock Certificate (incorporated by reference to the Company's Registration Statement on Form S-1 filed on April 14, 2017)
5.1**	Opinion of Goodwin Procter LLP
23.1**	Consent of Goodwin Procter LLP (included in Exhibit 5.1)
23.2**	Consent of Ernst & Young LLP, independent registered public accounting firm
24.1	Powers of Attorney (included on signature page)

* Previously filed.

** Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement on Form S-3 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Cincinnati, State of Ohio, on the 28th day of December, 2018.

AERPIO PHARMACEUTICALS, INC.

By: /s/ Stephen Hoffman, M.D., Ph.D.

Stephen Hoffman
Chief Executive Officer

Each person whose signature appears below constitutes and appoints Stephen Hoffman, Michael Rogers and Joseph Gardner, and each of them singly, as his true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement, and to file the same, with all exhibits thereto, and all other documents in connection therewith, with the Securities and Exchange Commission, granting unto each said attorney-in-fact and agents, full power and authority to do and perform each and every act in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or either of them or their or his substitute or substitutes may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement on Form S-3 has been signed by the following persons in the capacities and as of the dates indicated.

SIGNATURE	TITLE	DATE
<u>/s/ Stephen Hoffman</u> Stephen Hoffman	Chief Executive Officer (Principal Executive Officer)	December 28, 2018
<u>/s/ Michael Rogers</u> Michael Rogers	Chief Financial Officer (Principal Financial and Accounting Officer)	December 28, 2018
<u>/s/ Muneer A. Satter</u> Muneer A. Satter	Director and Chairman of the Board of Directors	December 28, 2018
<u>/s/ Joseph Gardner</u> Joseph Gardner, Ph.D.	Director	December 28, 2018
<u>/s/ Chau Khuong</u> Chau Khuong	Director	December 28, 2018
<u>/s/ Steven Prelack</u> Steven Prelack	Director	December 28, 2018
<u>/s/ Caley Castelein</u> Caley Castelein	Director	December 28, 2018
<u>/s/ Anupam Dalal</u> Anupam Dalal	Director	December 28, 2018

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SIGNATURE	TITLE	DATE
<u>/s/ Pravin Dugel</u> Pravin Dugel	Director	December 28, 2018
<u>/s/ Cheryl Cohen</u> Cheryl Cohen	Director	December 28, 2018

December 28, 2018

Aerpio Pharmaceuticals, Inc.
9987 Carver Road, Suite 420
Cincinnati, OH 45242

Re: Securities Registered under Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to you in connection with your filing of a Registration Statement on Form S-3 (as amended or supplemented, the "Registration Statement") filed on December 28, 2018 with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), relating to the registration of the offering by Aerpio Pharmaceuticals, a Delaware corporation (the "Company") of up to 2,973,682 shares (the "Shares") of the Company's common stock, par value \$0.0001 per share ("Common Stock") to be sold by the selling stockholders listed in the Registration Statement under "Selling Stockholders" (the "Selling Stockholders").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinions set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinions set forth below, on certificates of officers of the Company.

The opinion set forth below is limited to the Delaware General Corporation Law.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized and validly issued and are fully paid and nonassessable.

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement and to the references to our firm under the caption "Legal Matters" in the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ GOODWIN PROCTER LLP

GOODWIN PROCTER LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the reference to our firm under the caption “Experts” in the Registration Statement (Form S-3) and related Prospectus of Aerpio Pharmaceuticals, Inc. for the registration of 2,973,682 shares of its common stock and to the incorporation by reference therein of our report dated March 15, 2018, with respect to the consolidated financial statements of Aerpio Pharmaceuticals, Inc., included in its Amendment No. 1 to the Annual Report (Form 10-K/A) for the year ended December 31, 2017, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Cincinnati, Ohio
December 28, 2018