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

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**FORM 8-K**

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

**Date of Report (Date of Earliest Event Reported): June 26, 2018**

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**AERPIO PHARMACEUTICALS, INC.**

(Exact name of registrant as specified in its charter)

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**Delaware**  
(State or other jurisdiction  
of incorporation)

**000-53057**  
(Commission  
File Number)

**61-1547850**  
(I.R.S. Employer  
Identification No.)

**9987 Carver Road**  
**Cincinnati, OH**  
(Address of principal executive offices)

**45242**  
(Zip Code)

**Registrant's telephone number, including area code (513) 985-1920**

**Not Applicable**

(Former name or former address, if changed since last report)

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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:

- 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 or Rule 12b-2 of the Securities Exchange Act of 1934.

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.

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### Item 1.01. Entry into a Material Definitive Agreement.

On June 26, 2018, Aerpio Pharmaceuticals, Inc., a Delaware corporation (the “Company”), entered into an underwriting agreement (the “Underwriting Agreement”) with Guggenheim Securities, LLC., as representative of the several underwriters party thereto (collectively, the “Underwriters”), related to a public offering (the “Offering”) of 11,688,000 shares of the Company’s common stock, \$0.0001 par value per share (the “Common Stock”), at a public offering price of \$3.85 per share (the “Offering Price”). Pursuant to the terms of the Underwriting Agreement, the Underwriters were also granted a 30-day option to purchase up to an additional 1,753,200 shares of Common Stock at the Offering Price (the “Underwriter Option”). The net proceeds to the Company, after deducting the underwriting discount and estimated expenses associated with the Offering, are expected to be approximately \$41.8 million. The closing of the Offering is expected to occur on or about June 28, 2018, subject to the satisfaction of customary closing conditions.

The Common Stock is being offered and sold pursuant to a prospectus dated April 11, 2018 and a prospectus supplement dated June 25, 2018, in connection with a takedown from the Company’s shelf registration statement on Form S-3 (Registration No. 333-223113) (as amended, the “Registration Statement”), which the U.S. Securities and Exchange Commission declared effective on April 11, 2018.

The Underwriting Agreement contains customary representations, warranties, covenants, conditions to closing, indemnification and other obligations of the parties and termination provisions. The foregoing description of the Underwriting Agreement does not purport to be complete and is qualified in its entirety by reference to the text of the Underwriting Agreement, which is included as Exhibit 1.1 to this Current Report on Form 8-K and incorporated by reference herein.

The Underwriting Agreement has been filed with this Current Report on Form 8-K to provide investors and security holders with information regarding its terms. It is not intended to provide any other factual information about the Company. The representations, warranties and covenants contained in the Underwriting Agreement were made only for purposes of such agreement and as of specific dates, were solely for the benefit of the parties to such agreement, and may be subject to limitations agreed upon by the contracting parties.

A copy of the legal opinion of Goodwin Procter LLP, relating to the validity of the shares issued in the Offering, is filed as Exhibit 5.1 to this Current Report on Form 8-K and is filed with reference to, and is hereby incorporated by reference into, the Registration Statement.

### Item 8.01. Other Events.

As previously announced by the Company, the Company’s Common Stock commenced trading on the Nasdaq Capital Market on June 26, 2018. On June 25, 2018, the Company issued a press release announcing the launch of the Offering. On June 26, 2018, the Company issued a press release announcing the pricing of the Offering. Copies of the press releases are attached hereto as Exhibit 99.1 and Exhibit 99.2 and are incorporated herein by reference.

### Item 9.01. Financial Statements and Exhibits.

(d) Exhibits

Exhibit No.	Description
1.1	<a href="#"><u>Underwriting Agreement, dated June 26, 2018, between the Company and Guggenheim Securities, LLC, as representative of the several underwriters party thereto.</u></a>
5.1	<a href="#"><u>Opinion of Goodwin Procter LLP.</u></a>
23.1	<a href="#"><u>Consent of Goodwin Procter LLP (included in its opinion filed as Exhibit 5.1).</u></a>
99.1	<a href="#"><u>Press release dated June 25, 2018.</u></a>
99.2	<a href="#"><u>Press release dated June 26, 2018.</u></a>

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.

Date: June 27, 2018

**AERPIO PHARMACEUTICALS, INC.**

By: /s/ Stephen Hoffman, M.D., Ph.D.  
Stephen Hoffman, M.D., Ph.D.  
Chief Executive Officer

11,688,000 Shares

AERPIO PHARMACEUTICALS, INC.

Common Stock

UNDERWRITING AGREEMENT

June 26, 2018

GUGGENHEIM SECURITIES, LLC

As representative of the several Underwriters  
named in Schedule I hereto

c/o Guggenheim Securities, LLC

330 Madison Avenue

New York, New York 10017

Ladies and Gentlemen:

Aerpio Pharmaceuticals, Inc., a Delaware corporation (the "Company"), proposes to issue and sell to the several underwriters named in Schedule I hereto (the "Underwriters") for whom you are acting as representative (the "Representative") an aggregate of 11,688,000 shares (the "Firm Shares") of the common stock, par value \$0.0001 per share, of the Company ("Common Stock"). The Company also proposes to sell to the several Underwriters, for the sole purpose of covering over-allotments in connection with the sale of the Firm Shares, at the option of the Underwriters, up to an additional 1,753,000 shares of Common Stock (the "Option Shares"). The Firm Shares and the Option Shares are hereinafter referred to collectively as the "Shares".

The Company confirms as follows its agreements with the Representative and the several other Underwriters.

1. (a) The Company represents and warrants to, and agrees with, each of the Underwriters that, as of the date hereof, as of the Applicable Time (as defined below) and as of the Closing Date (as defined below) and each Option Closing Date (as defined below), if any:

(i) The Company has prepared and filed with the Securities and Exchange Commission (the "Commission") a registration statement on Form S-3 (File No. 333-223113), and such amendments to such registration statement as may have been required to the date of this Agreement, under the Securities Act of 1933, as amended (the "Securities Act"), and the rules and regulations (the "Rules and Regulations") of the Commission thereunder. Such

registration statement, at any given time, including any amendments thereto to such time, and the Rule 462(b) Registration Statement (as defined below), if any, the exhibits and any schedules thereto at such time, the information contained in the form of final prospectus filed with the Commission pursuant to Rule 424(b) under the Securities Act and deemed by virtue of Rule 430B under the Securities Act to be part of the Initial Registration Statement at the time it was declared effective or such part of the Rule 462(b) Registration Statement, if any, the documents incorporated by reference therein pursuant to Item 12 of Form S-3 under the Securities Act at such time and the documents and information otherwise deemed to be a part thereof or included therein by Rule 430B under the Securities Act (the "Rule 430B Information") or otherwise pursuant to the Rules and Regulations at such time, is herein called the "Registration Statement." The Registration Statement at the time it originally became effective is herein called the "Initial Registration Statement";

The prospectus in the form in which it appeared in the Initial Registration Statement is herein called the "Base Prospectus." Each preliminary prospectus supplement to the Base Prospectus (including the Base Prospectus as so supplemented) that described the Shares and the offering thereof, that omitted the Rule 430B Information and that was used prior to the filing of the final prospectus supplement referred to in the following sentence is herein called a "Preliminary Prospectus." The Preliminary Prospectus relating to the Shares that was included in the Registration Statement immediately prior to the Applicable Time (as defined below) is hereinafter called the "Pricing Prospectus." Promptly after the execution and delivery of this Agreement, the Company will prepare and file with the Commission a final prospectus supplement to the Base Prospectus relating to the Shares and the offering thereof in accordance with the provisions of Rule 430B and Rule 424(b) of the Rules and Regulations. Such final supplemental form of prospectus (including the Base Prospectus as so supplemented), in the form filed with the Commission pursuant to Rule 424(b) under the Securities Act is herein called the "Prospectus." As of the determination date referenced in Rule 164(h) of the Rules and Regulations, the Company may be considered to be an "ineligible issuer" in connection with the offering of the Shares pursuant to Rules 164, 405 and 433 under the Securities Act. If applicable, any "issuer free writing prospectus" as defined in Rule 433 under the Securities Act, shall be called the "Issuer Free Writing Prospectus." Any reference herein to the Base Prospectus, any Preliminary Prospectus, the Pricing Prospectus or the Prospectus shall be deemed to refer to and include the documents incorporated by reference therein pursuant to Item 12 of Form S-3 under the Securities Act as of the date of such prospectus.

For purposes of this Agreement, all references to the Registration Statement, the Base Prospectus, any Preliminary Prospectus, the Pricing Prospectus, the Prospectus or any amendment or supplement to any of the foregoing shall be deemed to include the copy filed with the Commission pursuant to its Electronic Data Gathering, Analysis and Retrieval System ("EDGAR"). All references in this Agreement to financial statements and schedules and other information that is "described," "contained," "included" or "stated" in the Registration Statement, the Base Prospectus, any Preliminary Prospectus, the Pricing Prospectus or the Prospectus (or other references of like import) shall be deemed to mean and include all such financial statements and schedules and other information that is incorporated by reference in or otherwise deemed by the Rules and Regulations to be a part of or included in the Registration Statement, the Base Prospectus, any Preliminary Prospectus, the Pricing Prospectus or the

Prospectus, as the case may be. All references in this Agreement to amendments or supplements to the Registration Statement, the Base Prospectus, any Preliminary Prospectus, the Pricing Prospectus or the Prospectus shall be deemed to mean and include the subsequent filing of any document under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and which is deemed to be incorporated by reference therein or otherwise deemed by the Rules and Regulations to be a part thereof. At the time of the filing of the Initial Registration Statement with the Commission, the conditions for use of Form S-3, set forth in the General Instructions thereto, were satisfied. The Initial Registration Statement was declared effective by the Commission under the Securities Act on April 11, 2018. Other than a registration statement, if any, increasing the size of the offering (a “Rule 462(b) Registration Statement”), filed pursuant to Rule 462(b) under the Securities Act, which became effective upon filing, no other document with respect to the Initial Registration Statement has heretofore been filed with the Commission. No stop order suspending the effectiveness of the Registration Statement, any post-effective amendment thereto or the Rule 462(b) Registration Statement, if any, has been issued, and no proceeding for that purpose has been initiated or threatened by the Commission. Any request on the part of the Commission for additional information from the Company has been satisfied in all material respects.

The Registration Statement, any Rule 462(b) Registration Statement and any post-effective amendments thereto, at the time that it became effective (including each deemed effective date with respect to the Underwriters pursuant to Rule 430B or otherwise under the Securities Act), at all other subsequent times until and including the Closing Date (as defined herein) (and, if any Option Shares are purchased, at each Option Closing Date) (as defined herein)), and the Prospectus, at the time of filing or the time of first use within the meaning of the Rules and Regulations, at all subsequent times until and including the Closing Date and the Option Closing Date, as applicable, and at the Closing Date and Option Closing Date, as applicable, complied and will comply in all material respects with the requirements of the Securities Act, the Rules and Regulations and the Exchange Act, and did not and will not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading. The Prospectus, as amended or supplemented, as of its date, or the time of first use within the meaning of the Rules and Regulations, at all subsequent times until and including the Closing Date and the Option Closing Date, as applicable, and at the Closing Date and the Option Closing Date, as applicable, did not and will not include an untrue statement of a material fact or omitted or will omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The representations and warranties set forth in the two immediately preceding sentences do not apply to statements in or omissions from the Registration Statement or the Prospectus made in reliance upon and in strict conformity with information furnished to the Company in writing by any Underwriter through the Representative expressly for use in the Registration Statement or the Prospectus, it being understood and agreed that the only such information provided by any Underwriter is that described as such in Section 9(b) hereof. No order preventing or suspending the use of any Preliminary Prospectus, the Pricing Prospectus or any Issuer Free Writing Prospectus has been issued by the Commission. The documents incorporated by reference in any Preliminary Prospectus or the Prospectus complied, and any further documents so incorporated will comply, when filed with the Commission, in all material respects with the requirements of the Exchange Act or the Securities Act, as applicable, and the rules and regulations of the Commission thereunder.

The documents incorporated by reference in any Preliminary Prospectus or the Prospectus did not, and any further documents filed and incorporated by reference therein will not, when filed with the Commission, contain an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading. The Pricing Prospectus complied, and the Prospectus will comply, in all material respects when filed with the Commission pursuant to Rule 424(b) under the Securities Act and on the Closing Date and the Option Closing Date, as applicable, with the requirements of the Securities Act and the Rules and Regulations thereunder.

(ii) Each Preliminary Prospectus, Pricing Prospectus, any Issuer Free Writing Prospectus and the Prospectus filed as part of the Initial Registration Statement as originally filed or as part of any amendment thereto, or filed pursuant to Rule 424 under the Securities Act, complied when so filed in all material respects with the requirements of the Securities Act, the Rules and Regulations and the Exchange Act and each Preliminary Prospectus, Pricing Prospectus, any Issuer Free Writing Prospectus and the Prospectus delivered to the Underwriters for use in connection with this offering was identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T;

(iii) For the purposes of this Agreement, the “Applicable Time” is 8:30 a.m. (Eastern time) on the date of this Agreement; the Registration Statement, the Pricing Prospectus and any other documents listed in Schedule II hereto, taken together (collectively, the “Pricing Disclosure Package”) as of the Applicable Time, did not include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading;

(iv) The Company has filed a registration statement pursuant to the Exchange Act to register the Common Stock, and such registration statement has been declared effective;

(v) The Company has been duly incorporated and is validly existing as a corporation in good standing under the laws of the State of Delaware, with power and authority (corporate and other) to own, lease and operate its properties and conduct its business as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus and to enter into and perform its obligations under this Agreement, and has been duly qualified as a foreign corporation for the transaction of business and is in good standing under the laws of each other jurisdiction in which it owns or leases properties or conducts any business so as to require such qualification, except where the failure so to qualify or be in good standing would not have a material adverse effect on the Company and its subsidiaries, considered as one enterprise;

(vi) Each subsidiary of the Company (each a “Subsidiary”) has been duly incorporated (or organized) and is validly existing as a corporation (or other organization) in good standing under the laws of the jurisdiction of its incorporation (or organization), with power and authority to own, lease and operate its properties and conduct its business as described

in the Pricing Prospectus, and has been duly qualified as a foreign corporation (or other organization) for the transaction of business and is in good standing under the laws of each other jurisdiction in which it owns or leases properties or conducts any business so as to require such qualification, except where the failure so to qualify or be in good standing would not have a Material Adverse Effect (as defined below); all of the issued and outstanding capital stock (or other ownership interests) of each Subsidiary has been duly and validly authorized and issued, is fully paid and non-assessable and is owned by the Company, directly or through Subsidiaries, free and clear of any security interest, mortgage, pledge, lien, encumbrance, claim or equity;

(vii) The Company has an authorized capitalization as set forth in the Registration Statement, the Pricing Disclosure Package and the Prospectus, and all of the issued and outstanding shares of capital stock of the Company have been duly and validly authorized and issued, are fully paid and non-assessable and conform to the descriptions thereof contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus; and none of the issued and outstanding shares of capital stock of the Company are subject to any preemptive or similar rights;

(viii) The Shares have been duly and validly authorized and, when issued and delivered to and paid for by the Underwriters in accordance with the terms of this Agreement, will be duly and validly issued and fully paid and non-assessable and will conform to the descriptions thereof contained in the Prospectus; and the issuance of such Shares is not subject to any preemptive or similar rights;

(ix) This Agreement has been duly and validly authorized, executed and delivered by the Company;

(x) The issue and sale of the Shares, the execution of this Agreement by the Company and the compliance by the Company with all of the provisions of this Agreement and the consummation of the transactions herein contemplated will not conflict with or result in a breach or violation of any of the terms or provisions of, or constitute a default under, any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of the Subsidiaries is a party or by which the Company or any of the Subsidiaries is bound or to which any of the property or assets of the Company or any of the Subsidiaries is subject, nor will such action result in any violation of the provisions of the certificate or articles of incorporation or by-laws (or other organization documents) of the Company or any of the Subsidiaries or any statute or any order, rule or regulation of any court or governmental agency or body having jurisdiction over the Company or any of the Subsidiaries or any of their properties; and no consent, approval, authorization, order, registration or qualification of or with any such court or governmental agency or body is required for the issue and sale of the Shares or the consummation by the Company of the transactions contemplated by this Agreement, except for the registration under the Securities Act of the Shares, the approval by the Financial Industry Regulatory Authority (“FINRA”) of the offering, listing of the Company’s common stock on the Nasdaq Capital Market and such consents, approvals, authorizations, registrations or qualifications as may be required under state securities or Blue Sky laws in connection with the purchase and distribution of the Shares by the Underwriters;



(xi) Ernst & Young LLP, which has certified certain financial statements of the Company and the Subsidiaries is an independent registered public accounting firm as required by the Securities Act, the Rules and Regulations and the Public Company Accounting Oversight Board. The financial statements, together with related schedules and notes, included in the Registration Statement, the Pricing Disclosure Package and the Prospectus comply in all material respects with the requirements of the Securities Act and present fairly the consolidated financial position, results of operations and changes in financial position of the Company and the Subsidiaries on the basis stated in the Registration Statement at the respective dates or for the respective periods to which they apply; such statements and related schedules and notes have been prepared in accordance with generally accepted accounting principles consistently applied throughout the periods involved, except as disclosed therein; and the selected financial data and the summary financial data included in the Registration Statement, the Pricing Disclosure Package or the Prospectus present fairly the information shown therein and have been compiled on a basis consistent with that of the financial statements included in the Registration Statement. Any pro forma financial statements of the Company and the Subsidiaries and the related notes thereto included or incorporated by reference in the Registration Statement and the Pricing Prospectus present fairly the information shown therein, have been prepared in accordance with the Commission's rules and guidelines with respect to pro forma financial statements and have been properly compiled on the bases described therein, and the assumptions used in the preparation thereof are reasonable and the adjustments used therein are appropriate to give effect to the transactions and circumstances referred to therein. The interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement fairly presents the information called for in all material respects and has been prepared in accordance with the Commission's rules and guidelines applicable thereto;

(xii) Neither the Company nor any Subsidiary has sustained since the date of the latest audited financial statements included or incorporated by reference in the Pricing Disclosure Package any material loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree, otherwise than as set forth or contemplated in the Pricing Prospectus; and, since the respective dates as of which information is given in the Registration Statement, the Pricing Disclosure Package and the Pricing Prospectus, (1) there has not been any change in the capital stock or long-term debt of the Company or any of the Subsidiaries, (2) there has not been any material adverse change, or any development involving a prospective material adverse change, in or affecting the general affairs, business, prospects, management, financial position, shareholders' equity or results of operations of the Company and the Subsidiaries, considered as one enterprise, (3) there have been no transactions entered into by, and no obligations or liabilities, contingent or otherwise, incurred by the Company or any of the Subsidiaries, whether or not in the ordinary course of business, which are material to the Company and the Subsidiaries, considered as one enterprise, or (4) there has been no dividend or distribution of any kind declared, paid or made by the Company on any class of its capital stock, in each case, otherwise than as set forth or contemplated in the Pricing Disclosure Package;

(xiii) Neither the Company nor any of the Subsidiaries is (1) in violation of its certificate or articles of incorporation or bylaws (or other organization documents) or (2) in violation of any law, ordinance, administrative or governmental rule or regulation applicable to the Company or any of the Subsidiaries, or (3) in violation of any decree of any court or governmental agency or body having jurisdiction over the Company or any of the Subsidiaries, or (4) in default in the performance of any obligation, agreement or condition contained in any bond, debenture, note or any other evidence of indebtedness or in any agreement, indenture, lease or other instrument to which the Company or any of the Subsidiaries is a party or by which any of them or any of their respective properties may be bound, except, in the case of clauses (2), (3) and (4), where any such violation or default, individually or in the aggregate, would not have a material adverse effect on the general affairs, business, prospects, management, financial position, shareholders' equity or results of operations of the Company and the Subsidiaries, considered as one enterprise (a "Material Adverse Effect");

(xiv) Each of the Company and each Subsidiary has good and marketable title to all real and personal property owned by it, in each case free and clear of all liens, encumbrances and defects except such as are described in the Registration Statement, the Pricing Disclosure Package or the Prospectus or such as do not materially affect the value of such property and do not interfere with the use made and proposed to be made of such property by the Company or any Subsidiary; and any real property and buildings held under lease by the Company or any Subsidiary are held under valid, subsisting and enforceable leases with such exceptions as are not material and do not interfere with the use made and proposed to be made of such property and buildings by the Company or any Subsidiary;

(xv) Other than as set forth in the Registration Statement, the Pricing Disclosure Package and the Prospectus, there are no legal or governmental proceedings pending to which the Company or any of the Subsidiaries is a party or of which any property of the Company or any of the Subsidiaries is the subject which, if determined adversely to the Company or the Subsidiary, individually or in the aggregate, would have or may reasonably be expected to have a Material Adverse Effect, or would prevent or impair the consummation of the transactions contemplated by this Agreement, or which are required to be described in the Registration Statement or the Pricing Disclosure Package; and, to the Company's knowledge, no such proceedings are threatened or contemplated by governmental authorities or others;

(xvi) The Company and the Subsidiaries possess all permits, licenses, approvals, consents and other authorizations (collectively, "Permits") issued by the applicable federal, state, local or foreign regulatory agencies or bodies necessary to conduct the businesses now operated by them; the Company and the Subsidiaries are in compliance with the terms and conditions of all such Permits and all of the Permits are valid and in full force and effect, except, in each case, where the failure so to comply or where the invalidity of such Permits or the failure of such Permits to be in full force and effect, individually or in the aggregate, would not have a Material Adverse Effect; and neither the Company nor any Subsidiary has received any written notice of proceedings relating to the revocation or material modification of any such Permits;

(xvii) The Company owns or has obtained all necessary licenses for the patents, patent applications, patent rights, inventions, know-how (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems or procedures), copyrights, trademarks, service marks and trade names, and other intellectual

property (collectively “Intellectual Property”) described in the Registration Statement, the Pricing Disclosure Package or the Prospectus as being owned by or licensed to it or which are necessary for the conduct of its business as currently conducted or as currently proposed to be conducted (collectively, the “Company Intellectual Property”) except as described in the Registration Statement, the Pricing Disclosure Package or the Prospectus. To the knowledge of the Company, except as described in the Registration Statement, the Pricing Disclosure Package or the Prospectus: (i) there are no third parties who have rights to any Company Intellectual Property, except for customary reversionary rights of third-party licensors with respect to Intellectual Property that is disclosed in the Registration Statement, the Pricing Disclosure Package or the Prospectus as licensed to the Company; and (ii) there is no infringement, misappropriation or other violation by third parties of any Company Intellectual Property. There is no pending or, to the Company’s knowledge, threatened action, suit, proceeding or claim by others, except as described in the Registration Statement, the Pricing Disclosure Package or the Prospectus: (A) challenging the Company’s rights in or to any Company Intellectual Property, and the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim; (B) challenging the validity, enforceability or scope of any Company Intellectual Property, and the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim; or (C) asserting that the Company infringes, misappropriates or otherwise violates, or would, upon the commercialization of any product or service described in the Registration Statement, the Pricing Disclosure Package or the Prospectus as under development, infringe, misappropriate or otherwise violate, any Intellectual Property rights of others, and the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim. The Company has taken all steps reasonably necessary to secure its interest in the Company Intellectual Property, including obtaining all necessary assignments from each of its employees, consultants and contractors pursuant to a written agreement containing a present tense assignment of all Intellectual Property created by such employee, consultant or contractor, except as described in the Registration Statement, the Pricing Disclosure Package or the Prospectus. The Company has taken commercially reasonable steps to protect and maintain all Company Intellectual Property, including without limitation to preserve the confidentiality of any trade secrets. All Company Intellectual Property that is material to the Company’s business is valid and enforceable, except as described in the Registration Statement, the Pricing Disclosure Package or the Prospectus. The Company is not in violation of any Company License Agreements (as defined below). The license agreements by which the Company has been licensed Intellectual Property owned by third parties (“Company License Agreements”) are in full force and effect and constitute legal, valid and binding obligations of Company, and to the Company’s knowledge, the other parties thereto;

(xviii) No material labor dispute with the employees of the Company or the Subsidiaries exists, or, to the knowledge of the Company, is imminent. The Company is not aware of any existing or imminent labor disturbance by the employees of any of its or any Subsidiary’s principal suppliers, manufacturers, customers or contractors, which, individually or in the aggregate, may reasonably be expected to result in a Material Adverse Effect;

(xix) The Company and the Subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks (including without limitation, risks related to clinical trials and product liability) and in such amounts as are prudent and customary in the businesses in which they are engaged; neither the Company nor any Subsidiary has been refused any insurance coverage sought or applied for; and the Company has no reason to believe that either it or any Subsidiary will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not have a Material Adverse Effect;

(xx) The Company and each of its Subsidiaries have made and keep books, records and accounts, which, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company and its Subsidiaries. The Company maintains a system of internal accounting controls sufficient to provide reasonable assurance that (1) transactions are executed in accordance with management's general or specific authorizations; (2) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles and to maintain accountability for assets; (3) access to assets is permitted only in accordance with management's general or specific authorization; (4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences; and (5) the interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement is in conformity with generally accepted accounting principles and is updated as necessary to comply in all material respects with the requirements of the Securities Act and the Commission's rules and guidelines applicable thereto and present fairly the consolidated financial position, results of operations and changes in financial position of the Company and the Subsidiaries on the basis stated in the Registration Statement at the respective dates or for the respective periods to which they apply;

(xxi) Since the date of the latest audited financial statements included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package or the Prospectus, (a) the Company has not been advised of (1) any significant deficiencies in the design or operation of internal controls that could adversely affect the ability of the Company and each of its Subsidiaries to record, process, summarize and report financial data, or any material weaknesses in internal controls and (2) any fraud, whether or not material, that involves management or other employees who have a significant role in the internal controls of the Company and each of its Subsidiaries, and (b) since that date, there has been no change in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting;

(xxii) The Company maintains disclosure controls and procedures (as such term is defined in Rule 13a-15(e) under the Exchange Act) that comply with the requirements of the Exchange Act; and such disclosure controls and procedures are effective;

(xxiii) All United States federal income tax returns of the Company and the Subsidiaries required by law to be filed have been filed and all taxes shown by such returns or otherwise assessed, which are due and payable, have been paid, except assessments against which appeals have been or will be promptly taken and as to which adequate reserves have been provided. The Company and the Subsidiaries have filed all other tax returns that are required to

have been filed by them pursuant to applicable foreign, state, local or other law, except insofar as the failure to file such returns, individually or in the aggregate, would not result in a Material Adverse Effect, and have paid all taxes due pursuant to such returns or pursuant to any assessment received by the Company or any Subsidiary except for such taxes, if any, as are being contested in good faith and as to which adequate reserves have been provided. The charges, accruals and reserves on the books of the Company and the Subsidiaries in respect of any income and corporation tax liability for any years not finally determined are, in conformity with generally accepted accounting principles, adequate to meet any assessments or re-assessments for additional income tax for any years not finally determined;

(xxiv) There are no statutes, regulations, documents or contracts of a character required to be described in the Registration Statement, the Pricing Disclosure Package or the Prospectus or to be filed as an exhibit to the Registration Statement which are not described or filed as required;

(xxv) Neither the Company nor any of the Subsidiaries is in violation of any statute or any rule, regulation, decision or order of any governmental agency or body or any court, domestic or foreign, relating to the use, production, disposal or release of hazardous or toxic substances or relating to the protection or restoration of the environment or human exposure to hazardous or toxic substances (collectively, "environmental laws"), owns or operates any real property contaminated with any substance that is subject to any environmental laws, is liable for any off-site disposal or contamination pursuant to any environmental laws, or is subject to any claim relating to any environmental laws, which violation, contamination, liability or claim, individually or in the aggregate, would have a Material Adverse Effect; and the Company is not aware of any pending investigation which might lead to such a claim;

(xxvi) Each employee benefit plan, within the meaning of Section 3(3) of the Employee Retirement Income Security Act of 1974, as amended ("ERISA"), that is maintained, administered or contributed to by the Company or any Subsidiary for employees or former employees of the Company and its affiliates has been maintained in compliance with its terms and the requirements of any applicable statutes, orders, rules and regulations, including but not limited to ERISA and the Internal Revenue Code of 1986, as amended (the "Code"), except to the extent that failure to so comply, individually or in the aggregate, would not have a Material Adverse Effect. No prohibited transaction, within the meaning of Section 406 of ERISA or Section 4975 of the Code has occurred with respect to any such plan excluding transactions effected pursuant to a statutory or administrative exemption;

(xxvii) Neither the Company nor any of its Subsidiaries, or any director, officer, agent, employee or to the Company's knowledge, any other person associated with or acting on behalf of the Company or any of its Subsidiaries, has (i) used any corporate funds for any unlawful contribution, gift, entertainment or other unlawful expense relating to political activity; (ii) made any direct or indirect unlawful payment to any foreign or domestic government official or employee from corporate funds, (iii) violated or is in violation of any provision of the Foreign Corrupt Practices Act of 1977, or (iv) made any bribe, unlawful rebate, payoff, influence payment, kickback or other unlawful payment;

(xxviii) There is and has been no failure on the part of the Company or any of the Company's directors or officers, in their capacities as such, to comply with any provision of the Sarbanes-Oxley Act of 2002, as amended, and the rules and regulations promulgated in connection therewith, including Section 402 related to loans and Sections 302 and 906 related to certifications;

(xxix) There are no persons with registration rights or other similar rights to have securities registered pursuant to the Registration Statement or otherwise registered by the Company under the Securities Act, which rights have not been waived in writing;

(xxx) The Company is not and, after giving effect to the offering and sale of the Shares as contemplated herein and the application of the net proceeds therefrom as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, will not be an "investment company", as such term is defined in the Investment Company Act of 1940, as amended (the "Investment Company Act");

(xxxi) The Company has not distributed and, prior to the later to occur of the Closing Date (as defined in Section 4 hereof) and completion of distribution of the Shares, will not distribute any offering materials in connection with the offering and sale of the Shares, other than the Pricing Prospectus, the Prospectus and, subject to compliance with Section 6 hereof, any Issuer Free Writing Prospectus; and the Company has not taken and will not take, directly or indirectly, any action designed to cause or result in, or which constitutes or might reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the sale of the Shares. The Company (a) has not alone engaged in any Testing-the-Waters Communication and (b) has not authorized anyone other than the Representative to engage in Testing-the-Waters Communications. The Company reconfirms that the Representative have been authorized to act on its behalf in undertaking Testing-the-Waters Communications. The Company has not distributed any Written Testing-the-Waters Communications other than those listed on Schedule II hereto. "Written Testing-the-Waters Communication" means any Testing-the-Waters Communication that is a written communication within the meaning of Rule 405 under the Securities Act;

(xxxii) The statistical and market and industry-related data included in the Pricing Prospectus and the Prospectus are based on or derived from sources which the Company believes to be reliable and accurate or represent the Company's good faith estimates that are made on the basis of data derived from such sources, and the Company has obtained the written consent to the use of such data from sources to the extent required;

(xxxiii) Any certificate signed by any officer of the Company delivered to the Underwriters or to counsel for the Underwriters shall be deemed a representation and warranty by the Company to the Underwriters as to the matters covered thereby;

(xxxiv) From the time of initial filing of the Registration Statement with the Commission (or, if earlier, the first date on which the Company engaged directly or through any Person authorized to act on its behalf in any Testing-the-Waters Communication (as defined below)) through the date hereof, the Company has been and is an "emerging growth company," as defined in Section 2(a)(19) of the Securities Act (an "Emerging Growth Company");

(xxxv) The Company, and to the Company's knowledge, its directors, officers, employees or agents, are in material compliance with, to the extent applicable to the company, : the Federal Food, Drug and Cosmetic Act (21 U.S.C. § 301 et seq.) and, the regulations promulgated pursuant to such laws, and any other similar federal, state or local laws (collectively, the "FD&C Act. None of the Company or any of its directors, officers, employees or, to the Company's knowledge, agents is debarred, suspended or excluded, or has been convicted of any crime that would result in a debarment, suspension or exclusion, from any federal or state government health care program The Company has not received notice, in writing, of any ongoing claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any U.S. or non-U.S. federal, state, local or other governmental or regulatory authority, governmental or regulatory agency or body, court, arbitrator or self-regulatory organization (each, a "Governmental Authority") or third party alleging that any product operation or activity is in violation of any FD&C Act or has any knowledge that any such Governmental Authority or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding. The Company is not a party to and has no ongoing reporting obligations pursuant to any corporate integrity agreement, deferred prosecution agreement, monitoring agreement, consent decree, settlement order, plan of correction or similar agreement imposed by any Governmental Authority;

(xxxvi) The Company has filed, obtained, maintained or submitted all reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Health Care Law and all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete, correct and not misleading in all material respects on the date filed (or were corrected or supplemented by a subsequent submission, if so required by law). The Company has not, either voluntarily or involuntarily, initiated, conducted, or issued or caused to be initiated, conducted or issued, any recall, market withdrawal or replacement, safety alert, or other notice or action relating to any alleged product defect or violation and, to the Company's knowledge, no third party has initiated or conducted any such notice or action;

(xxxvii) The research, studies and tests conducted by or on behalf of the Company have been and, if still pending, are being conducted in accordance with experimental protocols, procedures and controls pursuant to all Health Care Laws and Permits; the descriptions of the results of such research, studies and tests contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus are accurate and complete in all material respects and fairly present the data derived from such research, studies, and tests; except to the extent disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company is not aware of any research, studies or tests, the results of which the Company believes reasonably call into question the research, study or test results described or referred to in the Registration Statement, the Pricing Disclosure Package and the Prospectus when viewed in the context in which such results are described; and, except to the extent disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company has not received any notices or correspondence from any Governmental Authority requiring the termination, suspension or material modification of any research, study or test conducted by or on behalf of the Company; and

(xxxviii) Any certificate signed by any officer of the Company delivered to the Underwriters or to counsel for the Underwriters shall be deemed a representation and warranty by the Company to the Underwriters as to the matters covered thereby.

2. Subject to the terms and conditions herein set forth, (a) the Company agrees to sell to each of the Underwriters, and each of the Underwriters agrees, severally and not jointly, to purchase from the Company, at a purchase price per share of \$3.62 (the "Purchase Price"), the number of Firm Shares (to be adjusted by you so as to eliminate fractional shares) determined by multiplying the aggregate number of Firm Shares to be sold by the Company hereunder by a fraction, the numerator of which is the aggregate number of Firm Shares to be purchased by such Underwriter as set forth opposite the name of such Underwriter in Schedule I hereto and the denominator of which is the aggregate number of Firm Shares to be purchased by all of the Underwriters from the Company hereunder, and (b) in the event and to the extent that the Underwriters shall exercise the election to purchase Option Shares as provided below, the Company agrees to sell to each of the Underwriters, and each of the Underwriters agrees, severally and not jointly, to purchase from the Company, at the Purchase Price, the number of Option Shares (to be adjusted by you so as to eliminate fractional shares) determined by multiplying the number of Option Shares as to which such election shall have been exercised by the fraction set forth in clause (a) above.

The Company hereby grants to the Underwriters the right to purchase at their election up to 1,753,200 Option Shares, at the Purchase Price, for the sole purpose of covering over-allotments in connection with the sale of the Firm Shares. The Underwriters may exercise their option to acquire Option Shares in whole or in part from time to time only by written notice from the Representative to the Company, given within a period of 30 calendar days after the date of this Agreement and setting forth the aggregate number of Option Shares to be purchased and the date on which such Option Shares are to be delivered, as determined by the Representative but in no event earlier than the Closing Date or, unless the Representative and the Company otherwise agree in writing, earlier than two or later than ten business days after the date of such notice.

3. It is understood that the several Underwriters propose to offer the Firm Shares for sale to the public upon the terms and conditions set forth in the Prospectus.

4. The Company will deliver the Firm Shares to the Representative through the facilities of the Depository Trust Company ("DTC") for the accounts of the Underwriters, against payment of the purchase price therefor in Federal (same day) funds by wire transfer drawn to the order of the Company at the office of Goodwin Procter LLP, 100 Northern Avenue, Boston, MA 02210, at 10:00 A.M., New York time, on June 28, 2018, or at such other time not later than seven full business days thereafter as the Representative and the Company determine, such time being herein referred to as the "Closing Date". For purposes of Rule 15c6-1 under the Exchange Act, the Closing Date (if later than the otherwise applicable settlement date) shall be the settlement date for payment of funds and delivery of securities for all the Firm Shares. Delivery of the Firm Shares will be made by credit to the accounts designated by the Representative through DTC's full fast transfer or DWAC programs.



Each time for the delivery of and payment for the Option Shares, being herein referred to as an "Option Closing Date", which may be the Closing Date, shall be determined by the Representative as provided above. The Company will deliver the Option Shares being purchased on each Option Closing Date to the Representative through the facilities of DTC for the accounts of the Underwriters, against payment of the purchase price therefor in Federal (same day) funds by wire transfer drawn to the order of the Company. Delivery of the Option Shares will be made by credit to the accounts designated by the Representative through DTC's full fast transfer or DWAC programs.

5. The Company covenants and agrees with each of the Underwriters as follows:

(a) The Company, subject to Section 5(b), will comply with the requirements of Rule 430B under the Securities Act, and will notify the Representative immediately, and confirm the notice in writing, (i) when any post-effective amendment to the Registration Statement shall become effective, or any supplement to the Prospectus or any amended prospectus shall have been filed, to furnish the Representative with copies thereof, and to file promptly all material required to be filed by the Company with the Commission pursuant to Rule 433(d) under the Securities Act, (ii) of the receipt of any comments from the Commission, (iii) of any request by the Commission for any amendment to the Registration Statement or any amendment or supplement to the Prospectus or for additional information, (iv) of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or of any order preventing or suspending the use of any Preliminary Prospectus, or of the suspension of the qualification of the Shares for offering or sale in any jurisdiction, or of the initiation or threatening of any proceedings for any of such purposes, and (v) if the Company ceases to be an Emerging Growth Company at any time prior to the later of (A) completion of the distribution of the Shares within the meaning of the Securities Act, and (B) completion of the 90-day restricted period referred to in Section 5(j) hereof. The Company will promptly effect the filings necessary pursuant to Rule 424(b) under the Securities Act and will take such steps as it deems necessary to ascertain promptly whether the form of prospectus transmitted for filing under Rule 424(b) was received for filing by the Commission and, in the event that it was not, it will promptly file such prospectus. The Company will make every reasonable effort to prevent the issuance of any stop order and, if any stop order is issued, to obtain the lifting thereof at the earliest possible moment.

(b) The Company will give the Representative notice of its intention to file or prepare any amendment to the Registration Statement (including any filing under Rule 462(b) under the Securities Act), or any amendment, supplement or revision to the Prospectus, or any Issuer Free Writing Prospectus, will furnish the Representative with copies of any such documents a reasonable amount of time prior to such proposed filing or use, as the case may be, and will not file or use any such document to which the Representative or counsel for the Underwriters shall reasonably object.

(c) The Company will use its best efforts to qualify the Shares for offering and sale under the securities laws of such jurisdictions as you may reasonably request and to comply with such laws so as to permit the continuance of sales and dealings therein in such jurisdictions for as long as may be necessary to complete the distribution of the Shares, provided that nothing in this Section 5(c) shall require the Company to qualify as a foreign corporation in any jurisdiction in which it is not already so qualified, or to file a general consent to service of process in any jurisdiction.

(d) The Company has furnished or will deliver to the Representative, without charge, three signed copies of the Initial Registration Statement as originally filed, any Rule 462(b) Registration Statement and of each amendment to each (including exhibits filed therewith or incorporated by reference therein) and signed copies of all consents and certificates of experts, and will also, upon your request, deliver to the Representative, without charge, a conformed copy of the Registration Statement as originally filed and of each amendment thereto (without exhibits) for each of the Underwriters. The copies of the Registration Statement and each amendment thereto furnished to the Underwriters will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T.

(e) The Company has delivered to each Underwriter, without charge, as many written and electronic copies of each Preliminary Prospectus as such Underwriter reasonably requested, and the Company hereby consents to the use of such copies for purposes permitted by the Securities Act. The Company will furnish to each Underwriter, without charge, prior to 5:00 P.M., New York time on the business day next succeeding the date of this Agreement and from time to time thereafter during the period when the Prospectus is required to be delivered in connection with sales of the Shares under the Securities Act or the Exchange Act or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act, such number of written and electronic copies of the Prospectus (as amended or supplemented) as such Underwriter may reasonably request. The Prospectus and any amendments or supplements thereto furnished to the Underwriters will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T.

(f) The Company will comply with the Securities Act, the Rules and Regulations and the Exchange Act so as to permit the completion of the distribution of the Shares as contemplated in this Agreement and in the Prospectus. If at any time when, in the opinion of counsel for the Underwriters, a prospectus is required to be delivered in connection with sales of the Shares under the Securities Act or the Exchange Act (or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act), any event shall occur or condition shall exist as a result of which it is necessary, in the opinion of counsel for the Underwriters or for the Company, to amend the Registration Statement or amend or supplement the Prospectus or to file under the Exchange Act any document which would be deemed to be incorporated by reference in the Prospectus in order that the Prospectus will not include any untrue statements of a material fact or omit to state a material fact necessary in order to make the statements therein not misleading in the light of the circumstances existing at the time it (or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act) is delivered to a purchaser, or if it shall be necessary, in the opinion of either such counsel, at any such time to amend the

Registration Statement or amend or supplement the Prospectus in order to comply with the requirements of the Securities Act, the Rules and Regulations or the Exchange Act, the Company will promptly prepare and file with the Commission, subject to Section 5(b), such amendment or supplement as may be necessary to correct such statement or omission or to make the Registration Statement or the Prospectus or any document which would be deemed to be incorporated by reference in the Prospectus in order to comply with the Securities Act or the Exchange Act, and the Company will furnish to the Underwriters such number of written and electronic copies of such amendment or supplement as the Underwriters may reasonably request. The Company will provide the Representative with notice of the occurrence of any event during the period specified above that may give rise to the need to amend or supplement the Registration Statement or the Prospectus as provided in the preceding sentence promptly after the occurrence of such event. If at any time following the distribution of any Written Testing-the-Waters Communication there occurred or occurs an event or development as a result of which such Written Testing-the-Waters Communication included or would include an untrue statement of a material fact or omitted or would omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances existing at that subsequent time, not misleading, the Company will promptly notify the Representative and will promptly amend or supplement, at its own expense, such Written Testing-the-Waters Communication to eliminate or correct such untrue statement or omission.

(g) The Company will make generally available (within the meaning of Section 11(a) of the Securities Act) to its security holders and to the Representative as soon as practicable, an earnings statement (in form complying with the provisions of Rule 158 under the Securities Act) covering a period of at least twelve consecutive months beginning after the effective date of the Registration Statement.

(h) The Company will use the net proceeds received by it from the sale of the Shares in the manner specified in the Prospectus under the heading "Use of Proceeds".

(i) The Common Stock will be listed on the Nasdaq Capital Market subject to completion of the sale of the Shares pursuant to this Agreement, and the Company will use its best efforts to effect and maintain the listing of the Common Stock (including the Shares) on the Nasdaq Capital Market.

(j) During a period of 90 days from the date of the Prospectus, the Company will not, without the prior written consent of the Representative, (i) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend or otherwise transfer or dispose of, directly or indirectly, any Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock, or (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of Common Stock, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of Common Stock or such other securities, in cash or otherwise, other than (1) the Shares to be sold hereunder, (2) the issuance of options to acquire shares or other awards of Common Stock granted pursuant to the Company's benefit plans existing on the date hereof that are referred to in the Prospectus, as such plans may be amended, or (3) the issuance of shares of Common Stock upon the exercise or settlement of any such options or awards.

(k) The Company, during the period when the Prospectus is required to be delivered in connection with sales of the Shares under the Securities Act or the Exchange Act (or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act), will file all documents and reports required to be filed with the Commission and the Nasdaq Capital Market pursuant to the Exchange Act within the time periods required by the Exchange Act and the Rules and Regulations of the Commission or the rules and regulations of the Nasdaq Capital Market thereunder.

(m) The Company will file with the Commission such information on Form 10-Q or Form 10-K as may be required pursuant to Rule 463 under the Securities Act.

(n) During a period of five years from the effective date of the Registration Statement, the Company will furnish to you copies of all reports or other communications (financial or other) furnished to shareholders generally, and to deliver to you as soon as they are available, copies of any reports and financial statements furnished to or filed with the Commission or any national securities exchange on which any class of securities of the Company is listed; provided that the Company will be deemed to have furnished such reports and financial statements to the extent they are filed on EDGAR.

(o) If the Company elects to rely upon Rule 462(b) under the Securities Act, the Company will file a Rule 462(b) Registration Statement with the Commission in compliance with Rule 462(b) by 10:00 P.M., Washington, D.C. time, on the date of this Agreement, and at the time of filing either to pay to the Commission the filing fee for the Rule 462(b) Registration Statement or to give irrevocable instructions for the payment of such fee pursuant to Rule 111(b) under the Securities Act.

(p) If so requested by the Representative, the Company shall cause to be prepared and delivered, at its expense, within one business day from the effective date of this Agreement, to the Representative an "electronic Prospectus" to be used by the Underwriters in connection with the offering and sale of the Shares. As used herein, the term "electronic Prospectus" means a form of the most recent Preliminary Prospectus, any Issuer Free Writing Prospectus or the Prospectus, and any amendment or supplement thereto, that meets each of the following conditions: (i) it shall be encoded in an electronic format, satisfactory to the Representative, that may be transmitted electronically by the Representative and the other Underwriters to offerees and purchasers of the Shares; (ii) it shall disclose the same information as such paper Preliminary Prospectus, Issuer Free Writing Prospectus or the Prospectus, as the case may be; and (iii) it shall be in or convertible into a paper format or an electronic format, satisfactory to the Representative, that will allow investors to store and have continuously ready access to such Preliminary Prospectus, Issuer Free Writing Prospectus or the Prospectus at any future time, without charge to investors (other than any fee charged for subscription to the Internet generally). The Company hereby confirms that, if so requested by the Representative, it has included or will include in the Prospectus filed with the Commission an undertaking that, upon receipt of a request by an investor or his or her representative, the Company shall transmit or cause to be transmitted promptly, without charge, a paper copy of such paper Preliminary Prospectus, Issuer Free Writing Prospectus or the Prospectus to such investor or representative.

(q) The Company will promptly notify the Representative if the Company ceases to be an Emerging Growth Company at any time prior to the later of (i) completion of the distribution of the Shares within the meaning of the Securities Act, and (ii) completion of the 90-day restricted period referred to in Section 5(j).

6. (a) The Company represents and agrees that, without the prior consent of the Representative, it has not made and will not make any offer relating to the Shares that would constitute a “free writing prospectus” as defined in Rule 405 under the Securities Act; each Underwriter represents and agrees that, without the prior consent of the Company and the Representative, it has not made and will not make any offer relating to the Shares that would constitute a free writing prospectus; any such free writing prospectus the use of which has been consented to by the Company and the Representative is listed on Schedule II hereto;

(b) The Company has complied and will comply with the requirements of Rule 433 under the Securities Act applicable to any Issuer Free Writing Prospectus, including timely filing with the Commission or retention where required and legending; the Company represents that it has satisfied and agrees that it will satisfy the conditions under Rule 433 under the Securities Act to avoid a requirement to file with the Commission any electronic road show;

(c) The Company agrees that if at any time following issuance of an Issuer Free Writing Prospectus any event occurred or occurs as a result of which such Issuer Free Writing Prospectus would conflict with the information in the Registration Statement, the Pricing Prospectus or the Prospectus or would include an untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in light of the circumstances then prevailing, not misleading, the Company will give prompt notice thereof to the Representative and, if requested by the Representative, will prepare and furnish without charge to each Underwriter an Issuer Free Writing Prospectus or other document which will correct such conflict, statement or omission; provided, however, that this representation and warranty shall not apply to any statements or omissions in an Issuer Free Writing Prospectus made in reliance upon and in strict conformity with information furnished in writing to the Company by an Underwriter through the Representative expressly for use therein.

7. The Company covenants and agrees with the several Underwriters that, whether or not the transactions contemplated by this Agreement are consummated or the Agreement is terminated (subject to clause (viii) below), the Company will pay or cause to be paid all costs and expenses incident to the performance of its obligations under this Agreement, including (i) the fees, disbursements and expenses of the Company’s counsel, accountants and other advisors; (ii) filing fees and all other expenses in connection with the preparation, printing and filing of the Registration Statement, each Preliminary Prospectus, any Issuer Free Writing Prospectus and the Prospectus and amendments and supplements thereto and the mailing and delivering of copies thereof to the Underwriters and dealers; (iii) the cost of printing or producing this Agreement, closing documents (including any compilations thereof) and such other documents as may be required in connection with the offering, purchase, sale and delivery of the Shares; (iv) all

expenses in connection with the qualification of the Shares for offering and sale under state securities laws as provided in Section 5(c), including filing fees and the reasonable fees and disbursements of counsel for the Underwriters in connection with such qualification and in connection with the Blue Sky survey (not to exceed \$10,000); (v) all fees and expenses in connection with listing the Common Stock (including the Shares) on the Nasdaq Capital Market; (vi) the filing fees incident to, and the reasonable fees and disbursements of counsel for the Underwriters in connection with, securing any required review by FINRA of the terms of the sale of the Shares (not to exceed \$20,000); (vii) all fees and expenses in connection with the preparation, issuance and delivery of the certificates representing the Shares to the Underwriters, including any stock or other transfer taxes and any stamp or other duties payable upon the sale, issuance or delivery of the Shares to the Underwriters; (viii) all out-of-pocket expenses incurred by the Representative (not to exceed \$75,000), including fees and expenses of counsel for the Underwriters, provided that such expenses shall only be paid if the transaction contemplated by this Agreement with respect to the sale of the Shares is consummated; (ix) the cost and charges of any transfer agent or registrar; (x) the transportation and other expenses incurred by the Company in connection with presentations to prospective purchasers of Shares (provided, however, that the Underwriters shall pay 50% of the cost of any aircraft chartered in connection with the road show); and (xi) all other costs and expenses incident to the performance of its obligations hereunder which are not otherwise specifically provided for in this Section.

8. The several obligations of the Underwriters hereunder to purchase the Shares on the Closing Date or each Option Closing Date, as the case may be, are subject to the performance by the Company of its obligations hereunder and to the following additional conditions:

(a) The Prospectus shall have been filed with the Commission pursuant to Rule 424(b) under the Securities Act within the applicable time period prescribed for such filing by the Rules and Regulations and in accordance with Section 5(a); all material required to be filed by the Company pursuant to Rule 433(d) under the Securities Act shall have been filed with the Commission within the applicable time period prescribed for such filing by Rule 433 under the Securities Act; if the Company has elected to rely upon Rule 462(b) under the Securities Act, the Rule 462(b) Registration Statement shall have become effective by 10:00 P.M., Washington, D.C. time, on the date of this Agreement; no stop order suspending the effectiveness of the Registration Statement or any part thereof or the Prospectus or any part thereof or any Issuer Free Writing Prospectus shall have been issued and no proceeding for that purpose shall have been initiated or threatened by the Commission or any state securities commission; and all requests for additional information on the part of the Commission shall have been complied with to your reasonable satisfaction.

(b) The representations and warranties of the Company contained herein are true and correct on and as of the Closing Date or the Option Closing Date, as the case may be, as if made on and as of the Closing Date or the Option Closing Date, as the case may be, and the Company shall have complied with all agreements and all conditions on its part to be performed or satisfied hereunder at or prior to the Closing Date or the Option Closing Date, as the case may be.

(c) Subsequent to the execution and delivery of this Agreement and prior to the Closing Date or the Option Closing Date, as the case may be, there shall not have occurred any downgrading, nor shall any notice have been given of (i) any downgrading, (ii) any intended or potential downgrading, or (iii) any review or possible change that does not indicate an improvement, in the rating accorded any securities of or guaranteed by the Company or any Subsidiary by any “nationally recognized statistical rating organization”, as such term is defined for purposes of Rule 436(g)(2) under the Securities Act.

(d) (i) Neither the Company nor any Subsidiary shall have sustained since the date of the latest audited financial statements included or incorporated by reference in the Pricing Disclosure Package any material loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree, otherwise than as set forth or contemplated in the Pricing Disclosure Package, and (ii) since the respective dates as of which information is given in the Registration Statement, the Pricing Disclosure Package and the Prospectus, (1) there shall not have been any change in the capital stock or long-term debt of the Company or any Subsidiary, or (2) there shall not have been any material adverse change, or any development involving a prospective material adverse change, in or affecting the general affairs, business, prospects, management, financial position, shareholders’ equity or results of operations of the Company and the Subsidiaries, considered as one enterprise, the effect of which, in any such case described in clause (i) or (ii), is in the judgment of the Representative so material and adverse as to make it impracticable or inadvisable to proceed with the public offering or the delivery of the Shares being delivered at such Closing Date or Option Closing Date, as the case may be, on the terms and in the manner contemplated in the Pricing Disclosure Package and the Prospectus.

(e) the Representative shall have received on and as of the Closing Date or the Option Closing Date, as the case may be, a certificate of two executive officers of the Company, at least one of whom has specific knowledge about the Company’s financial matters, satisfactory to the Representative, to the effect (i) set forth in Sections 8(b) (with respect to the representations, warranties, agreements and conditions of the Company) and 8(c), (ii) that none of the situations set forth in clause (i) or (ii) of Section 8(d) shall have occurred, and (iii) that no stop order suspending the effectiveness of the Registration Statement has been issued and to the knowledge of the Company, no proceedings for that purpose have been instituted or are pending or contemplated by the Commission.

(f) On the Closing Date or Option Closing Date, as the case may be, Goodwin Procter LLP, counsel for the Company, shall have furnished to the Representative their favorable written opinion and negative assurance letter, dated the Closing Date or the Option Closing Date, as the case may be, in form and substance satisfactory to counsel for the Underwriters and previously agreed upon.

(g) On the Closing Date or Option Closing Date, as the case may be, Wilson Sonsini Goodrich & Rosati LLP, intellectual property counsel for the Company, shall have furnished to the Representative their favorable written opinion, dated the Closing Date or the Option Closing Date, as the case may be, in form and substance satisfactory to counsel for the Underwriters and previously agreed upon.

(h) On the date hereof, Ernst & Young LLP shall have furnished to the Representative a letter, dated the date of delivery thereof, in form and substance satisfactory to the Representative, containing statements and information of the type customarily included in accountants' "comfort letters" to underwriters with respect to the financial statements and certain financial information contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

(i) On the Closing Date or Option Closing Date, as the case may be, the Representative shall have received from E&Y a letter, dated the Closing Date or such Option Closing Date, as the case may be, to the effect that they reaffirm the statements made in the letter or letters furnished pursuant to Section 8(g), except that the specified date referred to shall be a date not more than three business days prior to the Closing Date or such Option Closing Date, as the case may be.

(j) On the Closing Date or Option Closing Date, as the case may be, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel for the Underwriters, shall have furnished to the Representative their favorable opinion dated the Closing Date or the Option Closing Date, as the case may be, with respect to the due authorization and valid issuance of the Shares, the Registration Statement, the Prospectus and other related matters as the Representative may reasonably request, and such counsel shall have received such papers and information as they may reasonably request to enable them to pass upon such matters.

(k) The Shares to be delivered on the Closing Date or Option Closing Date, as the case may be, shall have been approved for listing on the Nasdaq Capital Market, subject to official notice of issuance, and satisfactory evidence of such approval shall have been provided to the Representative.

(l) FINRA shall have confirmed that it has not raised any objection with respect to the fairness and reasonableness of the underwriting terms and conditions.

(m) The Representative shall have received "lock-up" agreements, each substantially in the form of Exhibit A hereto, from all of the officers and directors of the Company and from Orbimed Advisors LLC, and such agreements shall be in full force and effect on the Closing Date or Option Closing Date, as the case may be.

(n) On or prior to the Closing Date or Option Closing Date, as the case may be, the Company shall have furnished to the Representative such further information, certificates and documents as the Representative shall reasonably request.

(o) On or after the Applicable Time there shall not have occurred any of the following: (i) a suspension or material limitation in trading in securities generally on the Nasdaq Capital Market; (ii) a suspension or material limitation in trading in the Company's securities on the Nasdaq Capital Market; (iii) a general moratorium on commercial banking activities declared by any of Federal or New York State authorities or a material disruption in commercial banking or securities settlement or clearance services in the United States; (iv) the outbreak or escalation



of hostilities involving the United States or the declaration by the United States of a national emergency or war, or (v) the occurrence of any other calamity or crisis or any change in financial, political or economic conditions in the United States or elsewhere, if the effect of any such event specified in clause (iv) or (v) in the judgment of the Representative makes it impracticable or inadvisable to proceed with the public offering or the delivery of the Shares being delivered at such Closing Date or Option Closing Date, as the case may be, on the terms and in the manner contemplated in the Prospectus.

If any condition specified in this Section 8 shall not have been fulfilled when and as required to be fulfilled, this Agreement may be terminated, subject to the provisions of Section 12, by the Representative by notice to the Company at any time at or prior to the Closing Date or Option Closing Date, as the case may be, and such termination shall be without liability of any party to any other party, except as provided in Section 12.

9. (a) The Company agrees to indemnify and hold harmless each Underwriter, its affiliates, directors, officers and employees and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Securities Act or Section 20(a) of the Exchange Act against any and all losses, liabilities, claims, damages and expenses whatsoever as incurred (including, without limitation, reasonable attorneys' fees and any and all reasonable expenses whatsoever incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, and any and all amounts paid in settlement of any claim or litigation), joint or several, to which they or any of them may become subject under the Securities Act, the Exchange Act or otherwise, insofar as such losses, liabilities, claims, damages or expenses (or actions in respect thereof) arise out of or are based upon any untrue statement or alleged untrue statement of a material fact contained in the Initial Registration Statement, as originally filed or any amendment thereof, the Registration Statement, or any post-effective amendment thereof, any Preliminary Prospectus, the Pricing Prospectus or the Prospectus, or in any supplement thereto or amendment thereof, any Issuer Free Writing Prospectus, any Written Testing-the-Waters Communication, or any "issuer information" filed or required to be filed pursuant to Rule 433(d) under the Securities Act, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading; provided, however, that the Company will not be liable in any such case to the extent that any such loss, liability, claim, damage or expense arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made in the Initial Registration Statement, as originally filed or any amendment thereof, the Registration Statement, or any post-effective amendment thereof, any Preliminary Prospectus, the Pricing Prospectus or the Prospectus, or in any supplement thereto or amendment thereof, any Issuer Free Writing Prospectus, or any Written Testing-the-Waters Communication in reliance upon and in strict conformity with written information furnished to the Company by or on behalf of any Underwriter through the Representative expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter is the information described as such in Section 9(b) below.

(b) Each Underwriter severally, and not jointly, agrees to indemnify and hold harmless the Company, each of the directors of the Company, each of the officers of the Company who shall have signed the Registration Statement, and each other person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20(a) of the Exchange Act, against any losses, liabilities, claims, damages and expenses whatsoever as incurred (including, without limitation, reasonable attorneys' fees and any and all reasonable expenses whatsoever incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, and any and all amounts paid in settlement of any claim or litigation), joint or several, to which they or any of them may become subject under the Act, the Exchange Act or otherwise, insofar as such losses, liabilities, claims, damages or expenses (or actions in respect thereof) arise out of or are based upon any untrue statement or alleged untrue statement of a material fact contained in the Initial Registration Statement, as originally filed or any amendment thereof, the Registration Statement, or any post-effective amendment thereof, or any Preliminary Prospectus, the Pricing Prospectus or the Prospectus, or in any supplement thereto or amendment thereof, any Issuer Free Writing Prospectus or any Written Testing-the-Waters Communication, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, in each case to the extent, but only to the extent, that any such loss, liability, claim, damage or expense arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made therein in reliance upon and in strict conformity with written information furnished to the Company by or on behalf of such Underwriter through the Representative expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the following information in the Prospectus furnished on behalf of each Underwriter: (i) the second sentence of the fifth paragraph on the cover page, (ii) the discount and commission figures appearing in the second paragraph under the caption "Underwriting – Commissions and Discounts," (iii) the first sentence under the caption "Passive Market-Making," (iv) the third sentence under the caption "Short Sales, Stabilizing Transactions, and Penalty Bids—Short Sales," (v) the first sentence under the caption "Short Sales, Stabilizing Transactions, and Penalty Bids—Stabilizing transactions" and "Short Sales, Stabilizing Transactions, and Penalty Bids—Penalty Bids" and (vi) the first sentence under the caption "Electronic Distribution"; provided, however, that in no case shall any Underwriter be liable or responsible for any amount in excess of the underwriting discount applicable to the Shares to be purchased by such Underwriter hereunder.

(c) Promptly after receipt by an indemnified party under Section 9(a) or 9(b) of notice of the commencement of any action, such indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under such Section, notify each party against whom indemnification is to be sought in writing of the commencement thereof (but the failure so to notify an indemnifying party shall not relieve it from any liability which it may have under this Section 9). In case any such action is brought against any indemnified party, and it notifies an indemnifying party of the commencement thereof, the indemnifying party will be entitled to participate therein, and jointly with any other indemnifying party similarly notified, to the extent it may elect by written notice delivered to the indemnified party promptly after receiving the aforesaid notice from such indemnified party, to assume the defense thereof with counsel reasonably satisfactory to such indemnified party (who shall not, except with the consent of the indemnified party, be counsel to the indemnified party). Notwithstanding the foregoing, the indemnified party or parties shall have the right to employ its or their own counsel in any such case, but the fees and expenses of such counsel shall be at the expense of such indemnified

party or parties unless (i) the employment of such counsel shall have been authorized in writing by one of the indemnifying parties in connection with the defense of such action, (ii) the indemnifying parties shall not have employed counsel to have charge of the defense of such action within a reasonable time after notice of commencement of the action, or (iii) such indemnified party or parties shall have reasonably concluded that there may be defenses available to it or them which are different from or additional to those available to one or all of the indemnifying parties (in which case the indemnifying parties shall not have the right to direct the defense of such action on behalf of the indemnified party or parties), in any of which events such fees and expenses shall be borne by the indemnifying parties. In no event shall the indemnifying parties be liable for fees and expenses of more than one counsel (in addition to any local counsel) separate from their own counsel for all indemnified parties in connection with any one action or separate but similar or related actions in the same jurisdiction arising out of the same general allegations or circumstances, which counsel, in the event of indemnified parties under Section 9(a), shall be selected by the Representative. No indemnifying party shall, without the written consent of the indemnified party, effect the settlement or compromise of, or consent to the entry of any judgment with respect to, any pending or threatened action or claim in respect of which indemnification or contribution may be sought hereunder (whether or not the indemnified party is an actual or potential party to such action or claim) unless such settlement, compromise or judgment (1) includes an unconditional release of the indemnified party from all liability arising out of such action or claim, and (2) does not include a statement as to or an admission of fault, culpability or a failure to act, by or on behalf of any indemnified party.

(d) If the indemnification provided for in this Section 9 is unavailable to or insufficient to hold harmless an indemnified party under Section 9(a) or 9(b) in respect of any losses, liabilities, claims, damages or expenses (or actions in respect thereof) referred to therein, then each indemnifying party shall contribute to the amount paid or payable by such indemnified party as a result of such losses, liabilities, claims, damages or expenses (or actions in respect thereof) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters, on the other hand, from the offering of the Shares. If, however, the allocation provided by the immediately preceding sentence is not permitted by applicable law, then each indemnifying party shall contribute to such amount paid or payable by such indemnified party in such proportion as is appropriate to reflect not only such relative benefits but also the relative fault of the Company, on the one hand, and the Underwriters, on the other hand, in connection with the statements or omissions which resulted in such losses, liabilities, claims, damages or expenses (or actions in respect thereof), as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other from the offering of the Shares shall be deemed to be in the same proportion as the total net proceeds from the offering (before deducting expenses) received by the Company bear to the total underwriting discounts and commissions received by the Underwriters, in each case as set forth in the table on the cover page of the Prospectus. The relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company on the one hand or the Underwriters on the other and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission.

The Company and the Underwriters agree that it would not be just and equitable if contributions pursuant to this Section 9(d) were determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation which does not take account of the equitable considerations referred to above in this Section 9(d). The amount paid or payable by an indemnified party as a result of the losses, liabilities, claims, damages or expenses (or actions in respect thereof) referred to above in this Section 9(d) shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim. Notwithstanding the provisions of this Section 9(d), no Underwriter shall be required to contribute any amount in excess of the amount by which the discounts and commissions applicable to the Shares underwritten by it and distributed to the public exceeds the amount of any damages which such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission.

No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters' obligations in this Section 9(d) to contribute are several in proportion to their respective underwriting obligations and not joint.

(e) The obligations of the parties to this Agreements contained in this Section 9 are not exclusive and shall not limit any rights or remedies which may otherwise be available to any indemnified party at law or in equity.

10. If any Underwriter or Underwriters default in its or their obligations to purchase Shares hereunder on the Closing Date or any Option Closing Date and the aggregate number of Shares that such defaulting Underwriter or Underwriters agreed but failed to purchase does not exceed 10% of the total number of Shares that the Underwriters are obligated to purchase on such Closing Date or Option Closing Date, as the case may be, the Representative may make arrangements satisfactory to the Company for the purchase of such Shares by other persons, including any of the Underwriters, but if no such arrangements are made by such Closing Date or Option Closing Date, as the case may be, the non-defaulting Underwriters shall be obligated severally, in proportion to their respective commitments hereunder, to purchase the Shares that such defaulting Underwriters agreed but failed to purchase on such Closing Date or Option Closing Date, as the case may be. If any Underwriter or Underwriters so default and the aggregate number of Shares with respect to which such default or defaults occur exceeds 10% of the total number of Shares that the Underwriters are obligated to purchase on such Closing Date or Option Closing Date, as the case may be, and arrangements satisfactory to the Representative and the Company for the purchase of such Shares by other persons are not made within 36 hours after such default, this Agreement will terminate, subject to the provisions of Section 12, without liability on the part of any non-defaulting Underwriter or the Company, except as provided in Section 12. Nothing herein will relieve a defaulting Underwriter from liability for its default.

In the event of any such default which does not result in a termination of this Agreement, either the Representative or the Company shall have the right to postpone the Closing Date or the relevant Option Closing Date, as the case may be, for a period not exceeding seven days in order to effect any required changes in the Registration Statement or Prospectus or in any other documents or arrangements. As used in this Agreement, the term "Underwriter" includes any person substituted for an Underwriter under this Section 10.

11. Notwithstanding anything herein contained, this Agreement (or the obligations of the several Underwriters with respect to any Option Shares which have yet to be purchased) may be terminated, subject to the provisions of Section 12, in the absolute discretion of the Representative, by notice given to the Company, if after the execution and delivery of this Agreement and prior to the Closing Date or the Option Closing Date, as the case may be, (a) trading generally on the New York Stock Exchange, Nasdaq Global Select Market, Nasdaq Global Market, Nasdaq Capital Market, the NYSE American or in the over-the-counter market, or trading in any securities of the Company on any exchange or in the over-the-counter market, shall have been suspended or materially limited, or minimum or maximum prices for trading have been fixed, or maximum ranges for prices have been required, by any of said exchanges or by such system or by order of the Commission, FINRA or any other governmental or regulatory authority, (b) trading of any securities of or guaranteed by the Company or any Subsidiary shall have been suspended on any exchange or in any over-the-counter market, (c) a general moratorium on commercial banking activities in New York or Maryland shall have been declared by Federal, New York State or Maryland State authorities or a new restriction materially adversely affecting the distribution of the Firm Shares or the Option Shares, as the case may be, shall have become effective, or (d) there has occurred any material adverse change in the financial markets in the United States or the international financial markets, any outbreak of hostilities or escalation thereof or other calamity or crisis or any change or development involving a prospective change in national or international political, financial or economic conditions, in each case the effect of which is such as to make it, in the judgment of the Representative, impracticable to market the Shares to be delivered on the Closing Date or Option Closing Date, as the case may be, or to enforce contracts for the sale of the Shares.

If this Agreement is terminated pursuant to this Section 11, such termination will be without liability of any party to any other party except as provided in Section 12 hereof.

12. The respective indemnities, agreements, representations, warranties and other statements of the Company or its officers and of the several Underwriters set forth in or made pursuant to this Agreement will remain in full force and effect, regardless of any investigation, or statement as to the results thereof, made by or on behalf of any Underwriter, the Company or any of their respective representatives, officers or directors or any controlling person, and will survive delivery of and payment for the Shares. If this Agreement is terminated pursuant to Section 8, 10 or 11 or if for any reason the purchase of any of the Shares by the Underwriters is not consummated, the Company shall remain responsible for the expenses to be paid or reimbursed by it pursuant to Section 7, the respective obligations of the Company and the Underwriters pursuant to Section 9 and the provisions of Sections 12, 13 and 16 shall remain in effect and, if any Shares have been purchased hereunder the representations and warranties in Section 1 and all obligations under Section 5 and Section 6 shall also remain in effect. If this Agreement shall be terminated by the Underwriters, or any of them, under Section 8 or otherwise because of any failure or refusal on the part of the Company to comply with the terms or to fulfill any of the conditions of this Agreement, or if for any reason the Company shall be unable to perform its obligations under this Agreement or any condition of the Underwriters' obligations

cannot be fulfilled, the Company agrees to reimburse the Underwriters or such Underwriters as have so terminated this Agreement with respect to themselves, severally, for all out-of-pocket expenses (including the fees and expenses of its counsel) reasonably incurred by the Underwriter in connection with this Agreement or the offering contemplated hereunder.

13 This Agreement shall inure to the benefit of and be binding upon the Company and the Underwriters, the officers and directors of the Company referred to herein, any controlling persons referred to herein and their respective successors and assigns. Nothing expressed or mentioned in this Agreement is intended or shall be construed to give any other person, firm or corporation any legal or equitable right, remedy or claim under or in respect of this Agreement or any provision herein contained. No purchaser of Shares from any Underwriter shall be deemed to be a successor or assign by reason merely of such purchase.

14. All notices and other communications hereunder shall be in writing and shall be deemed to have been duly given upon receipt thereof by the recipient if mailed or transmitted by any standard form of telecommunication. Notices to the Underwriters shall be given to the Representative, c/o Guggenheim Securities, LLC, 330 Madison Avenue, New York, New York 10017, Attention: Head of Equity Capital Markets, with a copy to the General Counsel. Notices to the Company shall be given to it at Aerpio Pharmaceuticals, Inc., 9987 Carver Road, Suite 420, Cincinnati, Ohio 45242, Fax: 513-985-0999, Attention: Michael Rogers

15. This Agreement may be signed in counterparts, each of which shall be an original and all of which together shall constitute one and the same instrument.

16. THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK, WITHOUT REGARD TO SUCH STATE'S PRINCIPLES OF CONFLICTS OF LAWS.

17. The parties hereby submit to the jurisdiction of and venue in the federal courts located in the City of New York, New York in connection with any dispute related to this Agreement, any transaction contemplated hereby, or any other matter contemplated hereby.

18. The Company acknowledges and agrees that (a) the purchase and sale of the Shares pursuant to this Agreement, including the determination of the public offering price of the Shares and any related discounts and commissions, is an arm's-length commercial transaction between the Company on the one hand, and the several Underwriters, on the other hand, (b) in connection therewith and with the process leading to such transaction each Underwriter is acting solely as a principal and not the agent or fiduciary of the Company or its respective stockholders, creditors, employees or any other party, (c) no Underwriter has assumed an advisory or fiduciary responsibility in favor of the Company with respect to the offering contemplated hereby or the process leading thereto (irrespective of whether such Underwriter has advised or is currently advising the Company on other matters) or any other obligation to the Company except the obligations expressly set forth in this Agreement, and (d) the Company has consulted its own legal and financial advisors to the extent it deemed appropriate. The Company agrees that it will not claim that the Underwriters, or any of them, has rendered advisory services of any nature or respect, or owes a fiduciary or similar duty to the Company, in connection with such transaction or the process leading thereto.

19. The Company acknowledges that the Underwriters' research analysts and research departments are required to be independent from their respective investment banking divisions and are subject to certain regulations and internal policies, and that such Underwriters' research analysts may hold views and make statements or investment recommendations and/or publish research reports with respect to the Company and/or the offering that differ from the views of their respective investment banking divisions. The Company hereby waives and releases, to the fullest extent permitted by law, any claims that the Company may have against the Underwriters with respect to any conflict of interest that may arise from the fact that the views expressed by their independent research analysts and research departments may be different from or inconsistent with the views or advice communicated to the Company by such Underwriters' investment banking divisions. The Company acknowledges that each of the Underwriters is a full service securities firm and as such from time to time, subject to applicable securities laws, may effect transaction for its own account or the account of its customers and hold long or short positions in debt or equity securities of the companies that may be the subject of the transactions contemplated by this Agreement.

20. This Agreement supersedes all prior agreements and understandings (whether written or oral) between the Company and the Underwriters, or any of them, with respect to the subject matter hereof.

21. The Company and each of the Underwriters hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Agreement or the transactions contemplated hereby.

*[Signature page follows]*

If the foregoing is in accordance with your understanding of our agreement, please sign and return to the Company a counterpart hereof, whereupon this instrument will become a binding agreement among the Company and the Underwriters.

Very truly yours,

AERPIO PHARMACEUTICALS, INC.

By: /s/ Michael W. Rogers

Name: Michael W. Rogers

Title: Chief Financial Officer

Accepted as of the date hereof:

GUGGENHEIM SECURITIES, LLC

By: Guggenheim Securities, LLC

By: /s/ Ronald Gerber

Name: Ronald Gerber

Title: Senior Managing Director

For itself and as representative of the  
other Underwriters named in Schedule I hereto



SCHEDULE I

<u>Underwriter</u>	<u>Number of Firm Shares to be Purchased</u>
Guggenheim Securities, LLC	5,844,000
Needham & Company, LLC	2,629,800
H.C. Wainwright & Co., LLC	2,045,400
National Securities Corporation	1,168,800
Total:	11,688,000

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SCHEDULE II

Free Writing Prospectuses

None.

SCHEDULE III

Orally Conveyed Pricing Information

1. Price per share to the public: \$3.85
2. Firm Stock offered: 11,688,000
3. Option Stock offered: 1,753,200

**LOCK-UP AGREEMENT**

GUGGENHEIM SECURITIES, LLC

AS REPRESENTATIVE OF THE SEVERAL  
UNDERWRITERS TO BE NAMED IN THE  
WITHIN-MENTIONED UNDERWRITING AGREEMENT

c/o Guggenheim Securities, LLC  
330 Madison Avenue  
New York, New York 10017

Ladies and Gentlemen:

The undersigned refers to the proposed Underwriting Agreement (the “Underwriting Agreement”) among Aerpio Pharmaceuticals, Inc., a Delaware corporation (the “Company”), Guggenheim Securities, LLC (“Guggenheim”) and the several underwriters named therein. As an inducement to Guggenheim to execute the Underwriting Agreement in connection with the proposed public offering (the “Public Offering”) of shares of the Company’s common stock, par value \$0.0001 per share (“Common Stock”), pursuant to a Registration Statement on Form S-3, the undersigned hereby agrees that from the date hereof and until 90 days after the public offering date set forth on the final prospectus used to sell the Common Stock (the “Public Offering Date”) pursuant to the Underwriting Agreement (such 90 day period being referred to herein as the “Lock-Up Period”), to which you are or expect to become parties, the undersigned will not (and will cause any spouse or immediate family member of the spouse or the undersigned living in the undersigned’s household, any partnership, corporation or other entity within the undersigned’s control, and any trustee of any trust that holds Common Stock or other securities of the Company for the benefit of the undersigned or such spouse or family member not to) offer, sell, contract to sell (including any short sale), pledge, hypothecate, establish an open “put equivalent position” within the meaning of Rule 16a-1(h) under the Securities Exchange Act of 1934, as amended, grant any option, right or warrant for the sale of, purchase any option or contract to sell, sell any option or contract to purchase, or otherwise encumber, dispose of or transfer, or grant any rights with respect to, directly or indirectly, any shares of Common Stock or securities convertible into or exchangeable or exercisable for any shares of Common Stock (the “Lock-Up Securities”), enter into a transaction which would have the same effect, or enter into any swap, hedge or other arrangement that transfers, in whole or in part, any of the economic consequences of ownership of the Common Stock, whether any such aforementioned transaction is to be settled by delivery of the Common Stock or such other securities, in cash or otherwise, or publicly disclose the intention to make any such offer, sale, pledge or disposition, or to enter into any such transaction, swap, hedge or other arrangement, without, in each case, the prior written consent of the Representatives.

The foregoing restrictions shall not apply to (1) *bona fide* gifts by the undersigned, provided that to the extent any interest in the Company's securities is retained by the undersigned (or such spouse or family member), such securities shall remain subject to the restrictions contained in this Agreement, (2) Common Stock acquired by the undersigned in the Public Offering or in the open market on or after the Public Offering Date, (3) transfers of Lock-Up Securities to a family member or a trust for the benefit of the undersigned or a family member of the undersigned, provided the transferee agrees in writing prior to such transfer to be bound by the terms of this Agreement as if it were a party hereto, (4) transfers of Lock-Up Securities by will, other testamentary document or intestate succession in a transaction not involving a disposition for value, (5) transfers of Lock-Up Securities pursuant to a court order in respect of, or by operation of law as a result of, a divorce, in a transaction not involving a disposition for value, (6) the transfer of Lock-Up Securities to the Company in connection with the exercise, including by and to the extent necessary to cover any "net" exercise, of any options or warrants to acquire Lock-Up Securities or the conversion of any convertible security into Lock-Up Securities in accordance with its terms, provided that any Lock-Up Securities issued to the undersigned upon such exercise or conversion shall be subject to the restrictions set forth herein and no filing or public announcement by any party under the Securities Exchange Act of 1934 (the "Exchange Act") or otherwise shall be required or shall be voluntarily made in connection with such transfer, exercise, or conversion (other than a filing on a Form 5 made after the expiration of the Lock-Up Period or, in the case of a "net" exercise, a filing on a Form 4 that reports such "net" exercise under the transaction code "F"), (7) transfers of Lock-Up Securities to a limited liability company or partnership wholly-owned and controlled by the undersigned, provided that the transfer shall not involve a disposition for value; (8) if the undersigned is a trust, transfers of Lock-Up Securities to any beneficiary of the undersigned or the estate of any such beneficiary, provided that the transfer shall not involve a disposition for value, (9) transfers or distributions of Lock-Up Securities to members, limited partners, stockholders or affiliates of, or any investment fund or other entity that controls or manages, the undersigned, provided that the transfer or distribution shall not involve a disposition for value, or (10) transfers or distributions in connection with a merger or sale of all or substantially all of the voting securities or assets of the Company, regardless of how such a transaction is structured (it being further understood that this agreement shall not restrict the undersigned from entering into any agreement or arrangement in connection therewith, including an agreement to vote in favor of, or tender Lock-Up Securities in, any such transaction or taking any other action in connection with any such transaction), provided that the restrictions set forth herein shall continue to apply should the completion of the transaction not occur; provided that, with respect to clauses (1), (3), (4), (5), (7), (8) and (9), (a) each transferee or distributee agrees to be bound in writing by the terms of this Lock-Up Agreement prior to such transfer, and (b) no filing or public announcement by any party under the Exchange Act or otherwise shall be required or shall be voluntarily made in connection with such transfer, exercise, conversion or distribution (other than a filing on a Form 5 made after the expiration of the Lock-Up Period).

In addition, the undersigned agrees that, during Lock-Up Period, without the prior written consent of Guggenheim: (a) the undersigned will not request, make any demand for or exercise any right with respect to, the registration of any Common Stock or any security convertible into or exercisable or exchangeable for Common Stock and (b) the undersigned waives any and all notice requirements and rights with respect to the registration of any such security pursuant to any agreement, understanding or otherwise to which the undersigned is a party.

For the avoidance of doubt, during the Lock-Up Period, any Common Stock received upon exercise of options granted to the undersigned will also be subject to this Agreement.

In furtherance of the foregoing, the Company and its transfer agent and registrar are hereby authorized to (a) decline to make any transfer of shares of Common Stock if such transfer would constitute a violation or breach of this Agreement and (b) place legends and stop transfer instructions on any such shares of Common Stock owned or beneficially owned by the undersigned.

This Agreement is irrevocable and shall be binding on the undersigned and the successors, heirs, personal representatives and assigns of the undersigned. This Agreement shall be governed by and construed in accordance with the laws of the State of New York, without regard to choice of law rules. This Agreement shall lapse and become null and void upon the earliest to occur, if any, of (i) if the Public Offering Date shall not have occurred on or before August 1, 2018 (subject to a three-month extension upon prior written notice from the Company to the undersigned), (ii) the date on which the Underwriting Agreement shall terminate or be terminated prior to payment for and delivery of the securities to be sold thereunder, or (iii) upon written notice from an authorized officer of the Company to Guggenheim, executed or delivered prior to the signing of the Underwriting Agreement, that the Company has determined not to proceed with the Public Offering.

Very truly yours,

\_\_\_\_\_  
Printed Name: \_\_\_\_\_

Date: \_\_\_\_\_  
\_\_\_\_\_

June 27, 2018

Aerpio Pharmaceuticals, Inc.  
9987 Carver Road  
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 (File No. 333-223113) (as amended or supplemented, the "Registration Statement") filed on February 21, 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 offer by Aerpio Pharmaceuticals, Inc., a Delaware corporation (the "Company") of up to \$150,000,000 of any combination of securities of the types specified therein. The Registration Statement was declared effective by the Commission on April 11, 2018. Reference is made to our opinion letter dated February 21, 2018 and included as Exhibit 5.1 to the Registration Statement. We are delivering this supplemental opinion letter in connection with the prospectus supplement (the "Prospectus Supplement") filed on June 26, 2018 by the Company with the Commission pursuant to Rule 424 under the Securities Act. The Prospectus Supplement relates to the offering by the Company of up to 13,441,200 shares of the Company's Common Stock, par value \$0.0001 per share (the "Shares") covered by the Registration Statement. The Shares include an over-allotment option granted to the underwriters of the offering to purchase 1,753,200 Shares. The Shares are being sold to the several underwriters named in, and pursuant to, an underwriting agreement among the Company and such underwriters (the "Underwriting Agreement").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinion set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinion 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, upon issuance and delivery against payment therefor in accordance with the terms of the Underwriting Agreement, the Shares will be validly issued, fully paid and non-assessable.

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



**Aerpio Pharmaceuticals Announces Proposed Public Offering of Common Stock and Uplisting to Nasdaq Capital Market**

CINCINNATI – Aerpio Pharmaceuticals, Inc. (OTCQB:ARPO) (“Aerpio”) today announced that it intends to sell, subject to market and other conditions, \$40 million of its common stock in an underwritten public offering. Aerpio also intends to grant the underwriters a 30-day option to purchase an additional fifteen percent (15%) of the shares of its common stock offered in the public offering. Aerpio also announced that its common stock has been approved for listing on the Nasdaq Capital Market, subject to the pricing of the public offering on the terms proposed.

Guggenheim Securities is acting as book-running manager for the offering. Needham & Company is acting as lead manager, and National Securities Corporation and H.C. Wainwright & Co. are acting as co-managers for the offering.

Aerpio intends to use the net proceeds from the offering for working capital and general corporate and administrative purposes.

The securities described above are being offered by Aerpio pursuant to a shelf registration statement on Form S-3 (No. 333-223113), including a base prospectus. The securities will be offered only by means of a prospectus. A preliminary prospectus supplement and accompanying prospectus relating to the offering will be filed with the SEC and will be available on the SEC’s website located at [www.sec.gov](http://www.sec.gov). Copies of the preliminary prospectus supplement and the accompanying prospectus may also be obtained, when available, from: Guggenheim Securities, LLC, Attention: Equity Syndicate Department, 330 Madison, 8<sup>th</sup> Floor, New York, NY 10017, or by telephone at (212) 518-9658, or by email to [GSEquityProspectusDelivery@guggenheimpartners.com](mailto:GSEquityProspectusDelivery@guggenheimpartners.com).

This press release shall not constitute an offer to sell or the solicitation of an offer to buy these securities, nor shall there be any sale of these securities in any state or jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state or jurisdiction.

**About Aerpio Pharmaceuticals**

Aerpio Pharmaceuticals, Inc. is a biopharmaceutical company focused on advancing first-in-class treatments for ocular diseases. The Company’s lead compound, AKB9778, is a small molecule activator of the Tie2 pathway and is in clinical development for the treatment of non-proliferative diabetic retinopathy.

**Forward-Looking Statement**

This press release contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995, including, but not limited to, statements regarding the completion of the proposed offering, the use of proceeds from the proposed offering and uplisting of Aerpio’s common stock to the Nasdaq Capital Market. All such forward-looking statements are based on management’s current expectations of future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. These risks and uncertainties related to fluctuations in our stock price, changes in market conditions and satisfaction of customary closing conditions related to the public offering, as well as the other factors discussed in the “Risk Factors” section in Aerpio’s most recently filed Annual Report on Form 10-K, as well as other risks detailed in Aerpio’s subsequent filings with the Securities and Exchange Commission. There can be no assurance that Aerpio will be able to complete the proposed public offering on the anticipated terms. All information in this press release is as of the date of the release, and Aerpio undertakes no duty to update this information unless required by law.

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**Contacts****Investors & Media:****Aerpio Pharmaceuticals, Inc.**

Michael Rogers  
Chief Financial Officer  
mrogers@aerpio.com

or **Burns McClellan, on behalf of Aerpio Pharmaceuticals, Inc.**

**Media:**

Justin Jackson  
jjackson@burnsmc.com

or

**Investors:**

Ami Bavishi  
abavishi@burnsmc.com

**Aerpio Pharmaceuticals Announces Uplisting to Nasdaq Capital Market and Pricing of \$45.0 Million Public Offering of Common Stock**

CINCINNATI – Aerpio Pharmaceuticals, Inc. (OTCQB:ARPO) (“Aerpio”) today announced that its common stock will begin trading on the Nasdaq Capital Market under the symbol “ARPO” at the opening of trading on June 26, 2018, following its previously announced approval to list its common stock on the Nasdaq Capital Market.

Aerpio also announced today the pricing of the previously announced underwritten public offering of 11,688,000 shares of its common stock at a price to the public of \$3.85 per share. Aerpio has also granted the underwriters a 30-day option to purchase up to an additional 1,753,200 shares of common stock to cover overallocments, if any. The offering is expected to close on or about June 28, 2018, subject to customary closing conditions.

Guggenheim Securities is acting as book-running manager for the offering. Needham & Company is acting as lead manager, and National Securities Corporation and H.C. Wainwright & Co. are acting as co-managers for the offering.

Aerpio expects to receive net proceeds of approximately \$41.8 million from the sale of common stock in the offering, after deducting the underwriting discounts and commissions and estimated offering expenses payable by it. Aerpio intends to use the net proceeds from the offering for working capital and general corporate and administrative purposes.

The securities described are being offered by Aerpio pursuant to a shelf registration statement on Form S-3 (No. 333-223113), including a base prospectus. The securities will be offered only by means of a prospectus. A preliminary prospectus supplement and accompanying prospectus related to the offering were filed with the SEC. A final prospectus supplement and accompanying prospectus describing the terms of the offering will be filed with the SEC and will be available on the SEC’s website at [www.sec.gov](http://www.sec.gov). Copies of the final prospectus supplement and accompanying prospectus, when available, may also be obtained from: Guggenheim Securities, LLC, Attention: Equity Syndicate Department, 330 Madison, 8<sup>th</sup> Floor, New York, NY 10017, or by telephone at (212) 518-9658, or by email to [GSEquityProspectusDelivery@guggenheimpartners.com](mailto:GSEquityProspectusDelivery@guggenheimpartners.com).

This press release shall not constitute an offer to sell or the solicitation of an offer to buy these securities, nor shall there be any sale of these securities in any state or jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state or jurisdiction.

**About Aerpio Pharmaceuticals**

Aerpio Pharmaceuticals, Inc. is a biopharmaceutical company focused on advancing first-in-class treatments for ocular diseases. The Company’s lead compound, AKB9778, is a small molecule activator of the Tie2 pathway and is in clinical development for the treatment of non-proliferative diabetic retinopathy.

**Forward-Looking Statement**

This press release contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995, including, but not limited to, statements regarding the completion of the proposed offering and the use of proceeds from the proposed offering. All such forward-looking statements are based on management’s current expectations of future events and are subject to a number

of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. These risks and uncertainties related to fluctuations in our stock price, changes in market conditions and satisfaction of customary closing conditions related to the public offering, as well as the other factors discussed in the “Risk Factors” section in Aerpio’s most recently filed Annual Report on Form 10-K, as well as other risks detailed in Aerpio’s subsequent filings with the Securities and Exchange Commission. There can be no assurance that Aerpio will be able to complete the proposed public offering on the anticipated terms. All information in this press release is as of the date of the release, and Aerpio undertakes no duty to update this information unless required by law.

## **Contacts**

### **Investors & Media:**

#### **Aerpio Pharmaceuticals, Inc.**

Michael Rogers  
Chief Financial Officer  
mrogers@aerpio.com

or **Burns McClellan, on behalf of Aerpio Pharmaceuticals, Inc.**

### **Media:**

Justin Jackson  
jjackson@burnsmc.com  
or

### **Investors:**

Ami Bavishi  
abavishi@burnsmc.com