

ARENA PHARMACEUTICALS INC

FORM 8-K (Current report filing)

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

FORM 8-K

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

Date of Report (Date of earliest event reported): July 12, 2017

Arena Pharmaceuticals, Inc.

(Exact name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

000-31161
(Commission
File Number)

23-2908305
(IRS Employer
Identification No.)

**6154 Nancy Ridge Drive,
San Diego, CA**
(Address of Principal Executive Offices)

92121
(Zip Code)

Registrant's Telephone Number, Including Area Code: (858) 453-7200

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

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

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

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

Emerging growth company

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

In this report, “Arena Pharmaceuticals,” “Arena,” “we,” “us” and “our” refer to Arena Pharmaceuticals, Inc., and and/or one or more of our wholly owned subsidiaries, unless the context otherwise provides.

Item 8.01 Other Events.

On July 12, 2017, we entered into an underwriting agreement (the “Underwriting Agreement”) with Citigroup Global Markets Inc. and Leerink Partners LLC, as representatives of the several underwriters named therein (collectively, the “Underwriters”), relating to the issuance and sale in a public offering of 6,250,000 shares of our common stock, par value \$0.0001 per share. The price to the public in the offering is \$24.00 per share and the Underwriters have agreed to purchase the shares from us pursuant to the Underwriting Agreement at a price of \$22.56 per share. The net proceeds to us from the offering are expected to be approximately \$140.8 million, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us. The closing of the offering is expected to occur on July 18, 2017, subject to customary closing conditions. In addition, we granted the Underwriters a 30-day option to purchase up to 937,500 additional shares of our common stock at the public offering price, less the underwriting discounts and commissions. We anticipate using the net proceeds from the offering for clinical and preclinical development of drug candidates, including our planned Phase 3 clinical trial of ralinepag for the treatment of pulmonary arterial hypertension, for general corporate purposes, including working capital and costs associated with manufacturing services, and for capital expenditures.

The Underwriting Agreement contains customary representations, warranties and agreements by us, customary conditions to closing, indemnification obligations of Arena and the Underwriters, including for liabilities under the Securities Act of 1933, as amended, other obligations of the parties and termination provisions. 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 such parties.

The offering is being made pursuant to our registration statement on Form S-3 (Registration Statement No. 333-219237), which became automatically effective upon filing with the Securities and Exchange Commission (“SEC”) on July 11, 2017, and a prospectus supplement thereunder. A copy of the Underwriting Agreement is filed as Exhibit 1.1 to this report, and the foregoing description of the terms of the Underwriting Agreement does not purport to be complete and is qualified in its entirety by reference to such exhibit. A copy of the opinion of Cooley LLP relating to the legality of the issuance and sale of the shares in the offering is attached as Exhibit 5.1 hereto.

On July 11, 2017, we issued a press release announcing the offering, and on July 12, 2017, we issued a press release announcing that we had priced the offering. Copies of these press releases are attached as Exhibits 99.1 and 99.2 hereto, respectively.

Forward-Looking Statements

Certain statements contained in this report are forward-looking statements that involve a number of risks and uncertainties. Such forward-looking statements include, without limitation, statements about our expectations with respect to the completion, timing and size of the public offering; the expected net proceeds from the offering; and our anticipated use of the net proceeds from the offering. Words such as “will,” “expect,” “may,” “goal,” “potential” and similar expressions are intended to identify forward-looking statements, though not all forward-looking statements necessarily contain these identifying words. For such statements, we claim the protection of the Private Securities Litigation Reform Act of 1995. Actual events or results may differ materially from our expectations. Factors that could cause actual results to differ materially from the forward-looking statements include, but are not limited to, risks and uncertainties associated with market conditions and the satisfaction of customary closing conditions related to the public offering. Additional factors that could cause actual results to differ materially from those stated or implied by our forward-looking statements are disclosed in our filings with the SEC, including our Quarterly Report on Form 10-Q for the quarter ended March 31, 2017. These forward-looking statements represent our judgment as of the time of this report. We disclaim any intent or obligation to update these forward-looking statements, other than as may be required under applicable law.

Item 9.01 Financial Statements and Exhibits.**(d) Exhibits.**

<u>Exhibit No.</u>	<u>Description</u>
1.1	Underwriting Agreement, dated July 12, 2017, by and among Arena Pharmaceuticals and Citigroup Global Markets Inc. and Leerink Partners LLC, as representatives of the several underwriters named therein
5.1	Opinion of Cooley LLP
23.1	Consent of Cooley LLP (included in Exhibit 5.1)
99.1	Press Release, dated July 11, 2017, titled "Arena Pharmaceuticals Announces Proposed Public Offering of Common Stock"
99.2	Press Release, dated July 12, 2017, titled "Arena Pharmaceuticals Announces Pricing of Public Offering of Common Stock"

SIGNATURE

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: July 13, 2017

Arena Pharmaceuticals, Inc.

By: /s/ Amit D. Munshi

Amit D. Munshi

President and Chief Executive Officer

Exhibit Index

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6,250,000 Shares

ARENA PHARMACEUTICALS, INC.

Common Stock

UNDERWRITING AGREEMENT

July 12, 2017

Citigroup Global Markets Inc.
Leerink Partners LLC
As Representatives of the several Underwriters named in Schedule I hereto

c/o Citigroup Global Markets Inc.
388 Greenwich Street
New York, New York 10013

c/o Leerink Partners LLC
One Federal Street, 37th Floor
Boston, Massachusetts 02110

Ladies and Gentlemen:

Arena Pharmaceuticals, Inc., a Delaware corporation (the “Company”), proposes, subject to the terms and conditions contained herein, to sell to you (the “Representatives”), as Representatives of the underwriters named on Schedule I to this Agreement (the “Underwriters”), an aggregate of 6,250,000 shares (the “Firm Shares”) of the Company’s common stock, \$0.0001 par value per share (the “Common Stock”). The respective amounts of the Firm Shares to be purchased by each of the several Underwriters are set forth opposite their names on Schedule I hereto. In addition, the Company proposes to grant to the Underwriters an option to purchase up to an additional 937,500 shares (the “Option Shares”) of Common Stock from the Company. The Firm Shares and the Option Shares are collectively called the “Shares.”

The Company has prepared and filed in conformity with the requirements of the Securities Act of 1933, as amended (the “Securities Act”), and the published rules and regulations thereunder (the “Rules”) adopted by the Securities and Exchange Commission (the “Commission”) a registration statement on Form S-3ASR (No. 333-219237), including a related prospectus dated July 11, 2017 (the “Base Prospectus”) relating to Common Stock that may be sold from time to time by the Company in accordance with Rule 415 of the Securities Act, and such amendments thereof as may have been required to the date of this Agreement. Copies of such Registration Statement (including all amendments thereof and all documents deemed incorporated by reference therein) and of the related Base Prospectus have heretofore been made available to you by the Company. The term “Registration Statement” as used in this Agreement means the initial registration statement (including all exhibits, financial schedules and all

documents and information deemed to be a part of the Registration Statement by incorporation by reference or otherwise, including pursuant to Rule 430B of the Rules), as amended at the time it became effective and as supplemented or amended prior to the execution of this Agreement, including the information (if any) contained in the form of final prospectus filed with the Commission pursuant to Rule 424(b) of the Rules and pursuant to Rule 430B of the Rules. If the Company has filed an abbreviated registration statement to register additional Shares pursuant to Rule 462(b) under the Rules (the "462(b) Registration Statement"), then any reference herein to the Registration Statement shall also be deemed to include such 462(b) Registration Statement. The term "Preliminary Prospectus" means the Base Prospectus and any preliminary prospectus supplement used or filed with the Commission pursuant to Rule 424 of the Rules, in the form provided to the Underwriters by the Company for use in connection with the offering of the Shares. The term "Prospectus" means the Base Prospectus, any Preliminary Prospectus and any amendments or further supplements to such prospectus, and including, without limitation, the final prospectus supplement (the "Prospectus Supplement"), filed pursuant to and within the time limits described in Rule 424(b) with the Commission in connection with the proposed sale of the Shares contemplated by this Agreement. The term "Effective Date" shall mean each date that the Registration Statement and any post-effective amendment or amendments thereto became or become effective. Unless otherwise stated herein, any reference herein to the Registration Statement, the Statutory Prospectus (as hereinafter defined), the Preliminary Prospectus and 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, which were filed under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), on or before the date hereof or are so filed hereafter. Any reference herein to the terms "amend," "amendment" or "supplement" with respect to the Registration Statement, the Statutory Prospectus, the Preliminary Prospectus or the Prospectus shall be deemed to refer to and include any such document filed or to be filed under the Exchange Act after the date of the Registration Statement, the Statutory Prospectus, the Preliminary Prospectus or Prospectus, as the case may be, and deemed to be incorporated therein by reference.

The Company understands that the Underwriters propose to make a public offering of the Shares, as set forth in and pursuant to the Statutory Prospectus (as hereinafter defined) and the Prospectus, as soon after the Effective Date and the date of this Agreement as the Representatives deem advisable. The Company hereby confirms that the Underwriters and dealers have been authorized to distribute or cause to be distributed the Preliminary Prospectus and each Issuer Free Writing Prospectus (as hereinafter defined) in connection with the offering of the Shares and are authorized to distribute the Prospectus (as from time to time amended or supplemented if the Company furnishes amendments or supplements thereto to the Underwriters) in connection with the sale of the Shares.

1. Sale, Purchase, Delivery and Payment for the Shares. On the basis of the representations, warranties and agreements contained in, and subject to the terms and conditions of, this Agreement:

(a) The Company agrees to issue and 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 of \$22.56 per share (the "Initial Price"), the number of Firm Shares set forth opposite the name of such Underwriter under the column "Number of Firm Shares to be

Purchased” on Schedule I to this Agreement, subject to adjustment in accordance with Section 9 hereof.

(b) The Company hereby grants to the several Underwriters an option to purchase, severally and not jointly, all or any part of the Option Shares at the Initial Price. The number of Option Shares to be purchased by each Underwriter shall be the same percentage (adjusted by the Representatives to eliminate fractions) of the total number of Option Shares to be purchased by the Underwriters as such Underwriter is purchasing of the Firm Shares. Such option may be exercised in whole or in part at any time on or before 12:00 noon, New York City time, on the business day before the Firm Shares Closing Date (as defined below), and from time to time thereafter within 30 days after the date of this Agreement, in each case upon written, facsimile or telegraphic notice, or verbal or telephonic notice confirmed by written, facsimile or telegraphic notice, by the Representatives to the Company no later than 12:00 noon, New York City time, on the business day before the Firm Shares Closing Date or at least three business days before the Option Shares Closing Date (as defined below), as the case may be, setting forth the number of Option Shares to be purchased and the time and date (if other than the Firm Shares Closing Date) of such purchase.

(c) Payment of the purchase price for, and delivery of certificates for, the Firm Shares shall be made at the offices of Citigroup Global Markets Inc., 388 Greenwich Street, New York, New York, 10013, or such other location as may be mutually acceptable, at 10:00 a.m., New York City time, on the third (or if the Firm Shares are priced, as contemplated by Rule 15c6-1(c) under the Exchange Act, after 4:30 p.m. New York City time, the fourth) business day following the date of this Agreement or at such time on such other date, not later than ten (10) business days after the date of this Agreement, as shall be agreed upon by the Company and the Representatives (such time and date of delivery and payment are called the “Firm Shares Closing Date”). In addition, in the event that any or all of the Option Shares are purchased by the Underwriters, payment of the purchase price, and delivery of the certificates, for such Option Shares shall be made at the above-mentioned offices, or at such other place as shall be agreed upon by the Representatives and the Company, on each date of delivery as specified in the notice from the Representatives to the Company (such time and date of delivery and payment are called the “Option Shares Closing Date”). The Firm Shares Closing Date and any Option Shares Closing Date are called, individually, a “Closing Date” and, together, the “Closing Dates.”

(d) Payment shall be made to the Company by wire transfer of immediately available funds, against delivery of the respective certificates to the Representatives for the respective accounts of the Underwriters of certificates for the Shares to be purchased by them.

(e) Certificates evidencing the Shares shall be registered in such names and shall be in such denominations as the Representatives shall request at least two full business days before the Firm Shares Closing Date or, in the case of Option Shares, on the day of notice of exercise of the option as described in Section 1(b) and shall be delivered by or on behalf of the Company to the Representatives through the facilities of the Depository Trust Company (“DTC”) for the account of the Underwriter. The Company will cause the certificates representing the Shares to be made available for checking and packaging, at such place as is designated by the Representatives, on the full business day before the Firm Shares Closing Date

(or the Option Shares Closing Date in the case of the Option Shares). Alternatively, if the Representatives so elect, delivery of the Shares may be made by credit to the accounts designated by the Representatives through DTC's full fast transfer or DWAC program.

2. Representations and Warranties of the Company. The Company represents and warrants to each Underwriter as of the date hereof, as of the Firm Shares Closing Date and as of each Option Shares Closing Date (if any), as follows:

(a) The Company meets the requirements for use of Form S-3 under the Securities Act and has filed with the Commission the Registration Statement on such Form, including a Base Prospectus, for registration under the Securities Act of the offering and sale of the Shares. When the Registration Statement or any amendment thereof or supplement thereto was or is declared effective by the Commission, it (i) complied or will comply, in all material respects, with the requirements of the Securities Act and the Rules and the Exchange Act and the rules and regulations of the Commission thereunder and (ii) did not or will not, contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading. When any Preliminary Prospectus or Prospectus was first filed with the Commission and as of each Closing Date (whether filed as part of the Registration Statement or any amendment thereto or pursuant to Rule 424 of the Rules) and when any amendment thereof or supplement thereto was first filed with the Commission and as of each Closing Date, such Preliminary Prospectus or Prospectus as amended or supplemented complied in all material respects with the applicable provisions of the Securities Act and the Rules. The Preliminary Prospectus, the Prospectus and the Statutory Prospectus, each as of its date and each Closing Date, did not or will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. If applicable, each Preliminary 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. Notwithstanding the foregoing, none of the representations and warranties in this paragraph 2(a) shall apply to statements in, or omissions from, the Registration Statement or the Prospectus or any amendment thereof or supplement thereto made in reliance upon, and in conformity with, information herein or otherwise furnished in writing by the Representatives on behalf of the several Underwriters expressly for use in the Registration Statement or the Prospectus. With respect to the preceding sentence, the Company acknowledges that the only information furnished in writing by the Representatives expressly for use in the Registration Statement or the Prospectus or any amendment thereof or supplement thereto is the statements contained in the second and third sentences of the third paragraph, the first and second sentences of the ninth paragraph and the third and fourth sentences of the tenth paragraph, each under the caption "Underwriting" in the Company's preliminary prospectus supplement dated July 11, 2017 relating to the offering of the Shares (collectively, the "Underwriter Information").

(b) As of the Applicable Time (as hereinafter defined below), neither (i) the Issuer Free Writing Prospectus(es) (as defined below) issued at or prior to the Applicable Time, the Statutory Prospectus (as defined below) and the Preliminary Prospectus, considered together with the pricing information set forth in Schedule III hereto (collectively, the "General

Disclosure Package”), nor (ii) any individual Issuer Free Writing Prospectus when considered together with the General Disclosure Package, included any untrue statement of a material fact or omitted to state any material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided, however, that this representation and warranty shall not apply to statements in or omissions from any prospectus included in the General Disclosure Package made in reliance upon and in conformity with the Underwriter Information.

Each Issuer Free Writing Prospectus, including (i) any road show (as defined in Rule 433(h)(4) of the Rules), including any “bona fide electronic roadshow” (as defined in Rule 433(h)(5) of the Rules), that is a written communication transmitted by graphic means (each, a “Road Show”) and (ii) any “issuer information” (as defined in Rule 433 of the Rules) that is the subject of Rule 433(f) (each, an “Other Free Writing Prospectus”), (A) is identified in Schedule IV hereto (the “Designated FWPs”), (B) that the Company is required to file pursuant to Rule 433(d) of the Rules has been, or will be, filed with the Commission in accordance with the requirements of the Securities Act and the applicable Rules and (C) complied when issued, and complies, in all material respects with Rule 433(c) of the Rules.

As used in this Section and elsewhere in this Agreement:

“Applicable Time” means 6:00 p.m. (New York City time) on the date of this Underwriting Agreement.

“Statutory Prospectus” as of any time means the Base Prospectus that is included in the Registration Statement immediately prior to the Applicable Time, including any document incorporated by reference therein and any prospectus supplement deemed to be a part thereof.

“Issuer Free Writing Prospectus” means each “free writing prospectus” (as defined in Rule 405 of the Rules) prepared by or on behalf of, the Company or used or referred to by the Company in connection with the offering of the Shares, including, without limitation, each Road Show, Designated FWP and each Other Free Writing Prospectus.

(c) The Registration Statement is effective under the Securities Act and no stop order preventing or suspending the effectiveness of the Registration Statement or suspending or preventing the use of any Preliminary Prospectus or any “free writing prospectus,” as defined in Rule 405 under the Rules, has been issued by the Commission and, to the Company’s knowledge, no proceedings for that purpose have been instituted or are threatened under the Securities Act. Any required filing of the Base Prospectus and/or the Prospectus and any supplement thereto pursuant to Rule 424(b) of the Rules has been or will be made in the manner and within the time period required by such Rule 424(b). Any material required to be filed by the Company pursuant to Rule 433 has been or will be made in the manner and within the time period required by such Rules.

(d) The documents incorporated by reference in the Registration Statement, the Base Prospectus and the Prospectus, at the time they became effective or were

filed with the Commission, as the case may be, complied in all material respects with the requirements of the Securities Act or the Exchange Act, as applicable, and the rules and regulations of the Commission thereunder, and none of such documents contained an untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading, and any further documents so filed and incorporated by reference in the Registration Statement, the Base Prospectus and the Prospectus, when such documents become effective or are filed with the Commission, as the case may be, will conform in all material respects to the requirements of the Securities Act or the Exchange Act, as applicable, and the rules and regulations of the Commission thereunder 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, in light of the circumstances under which they are made, not misleading.

(e) Each Issuer Free Writing Prospectus, as of its issue date and at all subsequent times through the Firm Shares Closing Date or until any earlier date that the Company notified or notifies the Representatives as described in the next sentence, did not, does not and will not include any information that conflicted, conflicts or will conflict with the information contained in the Registration Statement, including any document incorporated by reference therein and any prospectus supplement deemed to be a part thereof that has not been superseded or modified.

If at any time following issuance of an Issuer Free Writing Prospectus through the Firm Shares Closing Date there occurred or occurs an event or development as a result of which such Issuer Free Writing Prospectus conflicted or would conflict with the information contained in the Registration Statement, including any document incorporated by reference therein and any prospectus supplement deemed to be a part thereof that has not been superseded or modified, or included in the Statutory Prospectus, the Preliminary Prospectus or the Prospectus or included or would include an untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances prevailing at the subsequent time, not misleading, the Company has promptly notified or will promptly notify the Representatives and has promptly amended or supplemented or will promptly amend or supplement, at its own expense, such Issuer Free Writing Prospectus to eliminate or correct such conflict, untrue statement or omission.

(f) The Registration Statement became effective when it was filed on July 11, 2017.

(g) (i) At the earliest time after the filing of the Registration Statement that the Company or another offering participant made a bona fide offer (within the meaning of Rule 164(h)(2) under the Rules) of the Shares and (ii) at the date hereof, the Company was not and is not an Ineligible Issuer (as defined in Rule 405 under the Rules), including the Company or any subsidiary in the preceding three years not having been convicted of a felony or misdemeanor or having been made the subject of a judicial or administrative decree or order as described in Rule 405, nor an Excluded Issuer (as defined in Rule 164 under the Rules), without taking account of any determination by the Commission pursuant to Rule 405 that it is not necessary that the Company be considered an Ineligible Issuer.

(h) The Registration Statement is not the subject of a pending proceeding or examination under Section 8(d) or 8(e) of the Act, and the Company is not the subject of a pending proceeding under Section 8A of the Act in connection with the offering of the Shares.

(i) The Common Stock is an “actively-traded security” exempted from the requirements of Rule 101 of Regulation M under the Exchange Act by subsection (c)(1) of such rule.

(j) The interactive data in the eXtensible Business Reporting Language included as an exhibit to the Registration Statement or the documents incorporated by reference therein 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.

(k) The financial statements of the Company (including all notes and schedules thereto) included or incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus, including after giving effect to the issuance of Company Stock Options (as defined below), present fairly, in all material respects, the financial position of the Company and its consolidated subsidiaries at the dates indicated and the statement of operations, stockholders’ equity and cash flows of the Company and its consolidated subsidiaries for the periods specified; and such financial statements and related schedules and notes thereto, and the unaudited financial information filed with the Commission as part of the Registration Statement, have been prepared in conformity with generally accepted accounting principles, consistently applied throughout the periods involved (provided that non-year-end financial statements are subject to normal recurring year-end audit adjustments that are not expected to be material in the aggregate and do not contain all footnotes required by generally accepted accounting principles); and the supporting schedules included or incorporated by reference in the Registration Statement present fairly the information required to be stated therein. The selected financial data included in the General Disclosure Package and the Prospectus present fairly, in all material respects, the information shown therein as at the respective dates and for the respective periods specified and have been presented on a basis consistent with the consolidated financial statements set forth in the Prospectus and other financial information.

(l) There has not occurred any material adverse change in the condition, financial or otherwise, or in the earnings, business or operations or prospects of the Company, from that set forth in the General Disclosure Package and the Prospectus (exclusive of any amendments or supplements thereto subsequent to the date of this Agreement).

(m) KPMG LLP, whose reports are filed with the Commission as a part of the Registration Statement, is and, during the periods covered by its reports, was an independent registered public accounting firm as required by the Securities Act and the Rules.

(n) The Company and each of its subsidiaries is duly organized, validly existing and in good standing under the laws of their respective jurisdictions of incorporation or organization. The Company and each of its subsidiaries is duly qualified to do business and is in good standing as a foreign corporation in each jurisdiction in which the nature of the business conducted by it or location of the assets or properties owned, leased or licensed

by it requires such qualification, except for such jurisdictions where the failure to so qualify or be in good standing, individually or in the aggregate, would not reasonably be expected to have a material adverse effect on the assets, properties, condition, financial or otherwise, or in the results of operations or business affairs or business prospects of the Company and its subsidiaries considered as a whole (a “Material Adverse Effect”); and to the Company’s knowledge, no proceeding has been instituted in any such jurisdiction revoking, limiting or curtailing, or seeking to revoke, limit or curtail, such power and authority or qualification.

(o) Except as set forth in the General Disclosure Package and the Prospectus, the Company and each of its subsidiaries has all requisite corporate power and authority, and all necessary authorizations, exemptions, approvals, consents, orders, licenses, registrations, certificates and permits of and from all governmental or regulatory bodies or any other person or entity (collectively, the “Permits”), to own, lease and license its assets and properties and conduct its business, all of which are valid and in full force and effect, except where the lack of such Permits, individually or in the aggregate, would not reasonably be expected to have a Material Adverse Effect. The Company and each of its subsidiaries has fulfilled and performed in all material respects all of its material obligations with respect to such Permits and, to the Company’s knowledge, no event has occurred that allows, or after notice or lapse of time would allow, revocation or termination thereof or results in any other material impairment of the rights of the Company thereunder. Except as may be required under the Securities Act and state and foreign Blue Sky laws, no other Permits are required to enter into, deliver and perform this Agreement and to issue and sell the Shares. All of the descriptions in the Registration Statement, the General Disclosure Package and the Prospectus of the legal and governmental procedures and requirements of the United States Food and Drug Administration (the “FDA”) or any foreign, state or local governmental body exercising comparable authority are accurate in all material respects.

(p) Except as set forth in the General Disclosure Package and the Prospectus, the Company and each of its subsidiaries owns or possesses rights to use all material patents, patent rights, inventions, trademarks, trademark applications, trade names, service marks, copyrights, copyright applications, licenses, know-how and other similar rights and proprietary knowledge (collectively, “Intangibles”) necessary for the conduct of its business as conducted on the date hereof. To the Company’s knowledge, neither the Company nor any of its subsidiaries has received any written notice of any infringement of or conflict with asserted rights of others with respect to any Intangibles, except as referenced in the General Disclosure Package and the Prospectus or except as would not have a Material Adverse Effect. To the Company’s knowledge, no action, suit, arbitration or legal, administrative or other proceeding or investigation to which the Company is a party is pending or threatened which involves any Intangibles, except as set forth in the General Disclosure Package and the Prospectus or except as would not have a Material Adverse Effect, and the Company does not believe, based on facts of which it is currently aware, that any such action, if brought, would be successful on the merits and result in a Material Adverse Effect. Except as disclosed in the General Disclosure Package and the Prospectus or except as would not have a Material Adverse Effect, and to the Company’s knowledge, the Intangibles of the Company referred to in the General Disclosure Package and the Prospectus do not materially infringe or conflict with any right or valid and enforceable patent of any third party, or any discovery, invention, product or process which is the subject of a patent application filed by any third party, known to the Company. To the Company’s

knowledge, it is not subject to any judgment, order, writ, injunction or decree of any court or any U.S. federal, state, local, foreign or other governmental department, commission, board, bureau, agency or instrumentality, domestic or foreign, or any arbitrator which restricts or impairs the use of any Intangibles, except for such orders, writs, injunctions or decrees that, individually or in the aggregate, would not reasonably be expected to have a Material Adverse Effect, nor, except as referenced in the General Disclosure Package and the Prospectus, has it entered into or is a party to any contract which restricts or impairs the use of any Intangible in a manner which would reasonably be expected to have a Material Adverse Effect on the use of any of the Intangibles. The Company has complied with its respective contractual obligations relating to the protection of the Intangibles used pursuant to licenses, except for any such noncompliance that, individually or in the aggregate, would not reasonably be expected to have a Material Adverse Effect. The Company is not a party to or bound by any options, licenses or agreements with respect to the Intangibles of any other person or entity that are required to be set forth in the General Disclosure Package and the Prospectus and that are not set forth therein. To the Company's knowledge, none of the Intangibles employed by it has been obtained or is being used by it in violation of any contractual obligation binding on the Company or any of its officers, directors or employees in violation of the contractual rights of any persons. Except as set forth in the Registration Statement, the General Disclosure Package and the Prospectus, the Company is not obligated to pay a royalty, grant a license or provide other consideration to any third party in connection with its patents, patent rights, licenses, inventions, trademarks, service marks, trade names, copyrights and know-how which would, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect; and, except as set forth in the Registration Statement, the General Disclosure Package and the Prospectus, no third party, including any academic or governmental organization, possess rights to the Intangibles which, if exercised, would reasonably be expected to have a Material Adverse Effect.

(q) The Company and each of its subsidiaries has good and marketable title in fee simple to all real property owned by it, and good and marketable title to all personal property owned by it, in each case free and clear of all liens, encumbrances and defects, except as are described in the General Disclosure Package and the Prospectus or such as do not materially affect the value of such property and do not materially interfere with the use made or proposed to be made of such property by the Company and its subsidiaries. All property held under lease by the Company and its subsidiaries is held by them under valid, existing and enforceable leases, with only such exceptions as are not material and do not materially interfere with the use made or proposed to be made of such property by the Company and its subsidiaries. Subsequent to the respective dates as of which information is given in the Registration Statement, the General Disclosure Package and the Prospectus, (i) there has not been any Material Adverse Effect; (ii) neither the Company nor any of its subsidiaries has sustained any loss or interference with its assets, businesses or properties (whether owned or leased) from fire, explosion, earthquake, flood or other calamity, whether or not covered by insurance, or from any labor dispute or any court or legislative or other governmental action, order or decree which would reasonably be expected to have a Material Adverse Effect; and (iii) since the date of the latest balance sheet included or incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus, except as otherwise disclosed in the General Disclosure Package and the Prospectus, neither the Company nor its subsidiaries has (A) incurred any liability or obligation, direct or contingent, for borrowed money, except such liabilities or obligations incurred in the ordinary course of business, (B) entered into any

transaction not in the ordinary course of business or (C) declared or paid any dividend or made any distribution on any shares of its stock or redeemed, purchased or otherwise acquired or agreed to redeem, purchase or otherwise acquire any shares of its capital stock.

(r) There is no document, contract or other agreement required to be described in the Registration Statement, the General Disclosure Package or the Prospectus or to be filed as an exhibit to the Registration Statement which is not described or filed as required by the Securities Act or the Rules or incorporated therein by reference as permitted by the Securities Act or the Rules. Each description of a contract, document or other agreement in the Registration Statement, the General Disclosure Package and the Prospectus accurately reflects in all material respects the terms of the underlying contract, document or other agreement. Each contract, document or other agreement described in the Registration Statement, the General Disclosure Package or the Prospectus or listed in the exhibits to the Registration Statement or incorporated by reference is, except as otherwise disclosed in the General Disclosure Package and the Prospectus, in full force and effect and is valid and enforceable by and against the Company or any of its subsidiaries, as the case may be, in accordance with its terms. Neither the Company nor any of its subsidiaries, if a subsidiary is a party, nor to the Company's knowledge, any other party is in default in the observance or performance of any term or obligation to be performed by it under any such agreement, and no event has occurred which with notice or lapse of time or both would constitute such a default, in any such case which default or event, individually or in the aggregate, would reasonably be expected to have a Material Adverse Effect. No default exists, and no event has occurred which with notice or lapse of time or both would constitute a default, in the due performance and observance of any term, covenant or condition, by the Company or its subsidiary, if a subsidiary is a party thereto, of any other agreement or instrument to which the Company or any of its subsidiaries is a party or by which the Company or its properties or business of a subsidiary or its properties or business may be bound or affected which default or event, individually or in the aggregate, would reasonably be expected to have a Material Adverse Effect.

(s) The scientific (other than the Company's clinical trial results), statistical and market related data included in the Registration Statement, the General Disclosure Package and the Prospectus are based on or derived from sources that are credible and which the Company believes to be reliable and accurate.

(t) Neither the Company nor any of its subsidiaries is in violation of any term or provision of (i) its Certificate of Incorporation or by-laws or (ii) of any franchise, license, permit, judgment, decree, order, statute, rule or regulation, except, with respect to subsection (ii), where the consequences of such violation, individually or in the aggregate, would not reasonably be expected to have a Material Adverse Effect.

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

(v) Neither the execution, delivery and performance of this Agreement by the Company nor the consummation of any of the transactions contemplated hereby by the Company (including, without limitation, the issuance and sale by the Company of the Shares) will give rise to a right to terminate or accelerate the due date of any payment due under, or

conflict with or result in the breach of any term or provision of, or constitute a default (or an event which with notice or lapse of time or both would constitute a default) under, or require any consent or waiver under, or result in the execution or imposition of any lien, charge or encumbrance upon any properties or assets of the Company or its subsidiaries pursuant to the terms of, any indenture, mortgage, deed of trust or other agreement or instrument to which the Company or any of its subsidiaries is a party or by which either the Company or its subsidiaries or any of their properties or businesses is bound, or any franchise, license, permit, judgment, decree, order, statute, rule or regulation applicable to the Company or any of its subsidiaries, except as disclosed in the General Disclosure Package and the Prospectus or where it would not reasonably be expected to have a Material Adverse Effect, or violate any provisions of the charter or by-laws of the Company of any of its subsidiaries, except for such consents or waivers which have already been obtained and are in full force and effect.

(w) The Company had the authorized and outstanding capital stock as set forth in the Registration Statement, the General Disclosure Package and the Prospectus (and any similar sections or information, if any, contained in any Issuer Free Writing Prospectus) as of the dates for which such information is given therein. The certificates evidencing the Shares are in due and proper legal form and have been duly authorized for issuance by the Company. All of the issued and outstanding shares of Common Stock have been duly and validly issued and are fully paid and nonassessable. There are no statutory preemptive or other similar rights granted by the Company to subscribe for or to purchase or acquire any shares of Common Stock of the Company or any of its subsidiaries or any such rights pursuant to its Certificate of Incorporation or by-laws or any agreement or instrument to or by which the Company or any of its subsidiaries is a party or bound. All grants of options to acquire Common Stock (each, a “Company Stock Option”) were validly issued and approved by the Board of Directors of the Company (the “Board”), a committee thereof or an individual with authority duly delegated by the Board or a committee thereof. Grants of Company Stock Options were (i) made in material compliance with all applicable laws and (ii) as a whole, made in material compliance with the terms of the plans under which such Company Stock Options were issued. There is no and has been no policy or practice of the Company to coordinate the grant of Company Stock Options with the release or other public announcement of material information regarding the Company or its results of operations or prospects to minimize the exercise price of such Company Stock Options. The Shares, when issued and sold pursuant to this Agreement, will be duly and validly issued, fully paid and nonassessable and none of them will be issued in violation of any preemptive or other similar right granted by the Company. Except as disclosed in the Registration Statement, the General Disclosure Package and the Prospectus, there is no outstanding option, warrant or other right calling for the issuance by the Company of, and there is no commitment, plan or arrangement by the Company to issue, any share of stock of the Company or any security convertible into, or exercisable or exchangeable for, such stock. The Common Stock and the Shares conform in all material respects to all statements in relation thereto contained in the Registration Statement, the General Disclosure Package and the Prospectus. All outstanding shares of capital stock of each of the Company’s subsidiaries have been duly authorized and validly issued and are fully paid and nonassessable and are owned directly by the Company or by another wholly owned subsidiary of the Company free and clear of any security interests, liens, encumbrances, equities or claims, other than those described in the General Disclosure Package and the Prospectus.

(x) No holder of any security of the Company has any right granted by the Company, which has not been waived or previously satisfied, to have any security owned by such holder included in the Registration Statement or, except as described in the General Disclosure Package and the Prospectus, to demand registration of the sale of any security owned by such holder. Each director and executive officer of the Company listed on Schedule II hereto has delivered to the Representatives his or her written lock-up agreement in the form attached to this Agreement as Exhibit A hereto or in such form as may be approved by the Representatives (“Lock-Up Agreement”).

(y) To the knowledge of the Company and except as described in the General Disclosure Package and the Prospectus, there are no legal or governmental proceedings pending to which the Company or any of its subsidiaries is a party or of which any property of the Company or any of its subsidiaries is the subject which, if determined adversely to the Company or any of its subsidiaries would reasonably be expected to individually or in the aggregate have a Material Adverse Effect; and, to the knowledge of the Company, no such proceedings are threatened by governmental authorities or threatened by others that, if determined adversely to the Company or any of its subsidiaries, would reasonably be expected to have a Material Adverse Effect.

(z) All necessary corporate action has been duly and validly taken by the Company to authorize the execution, delivery and performance of this Agreement and the issuance and sale of the Shares by the Company. This Agreement has been duly and validly authorized, executed and delivered by the Company and constitutes and will constitute the legal, valid and binding obligation of the Company enforceable against the Company in accordance with its respective terms, except as the enforceability thereof may be limited by bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the enforcement of creditors’ rights generally and by general equitable principles.

(aa) Neither the Company nor any of its subsidiaries is involved in any labor dispute nor, to the knowledge of the Company, is any such dispute threatened, which dispute would reasonably be expected to have a Material Adverse Effect. The Company is not aware of any existing or imminent labor disturbance by the employees of any of its principal suppliers or contractors which would reasonably be expected to have a Material Adverse Effect. The Company is not aware of any threatened or pending litigation between the Company or its subsidiaries and any of its executive officers which, if adversely determined, would reasonably be expected to have a Material Adverse Effect.

(bb) No transaction has occurred between or among the Company and any of its officers or directors, stockholders or any affiliate or affiliates of any such officer or director or stockholder that is required to be described in and is not described in the Registration Statement, the General Disclosure Package and the Prospectus.

(cc) The Company has not taken, nor will it take, directly or indirectly, any action designed to or which would reasonably be expected to cause or result in, or which has constituted or which might reasonably be expected to constitute, the stabilization or manipulation of the price of the Common Stock to facilitate the sale or resale of any of the Shares, in each case contrary to applicable law.

(dd) Except as any failure to comply with the following would not reasonably be expected to have a Material Adverse Effect, the Company and each of its subsidiaries has accurately prepared and filed all Federal, state, local and foreign tax returns which are required to be filed through the date hereof, or has received timely extensions thereof, and has paid all taxes shown on such returns and all assessments received by it to the extent that the same are material and have become due. Except as would not reasonably be expected to have a Material Adverse Effect, to the Company's knowledge, there are no tax audits or investigations pending; nor to the Company's knowledge are there any material proposed additional tax assessments against the Company or any of its subsidiaries.

(ee) The Common Stock is registered pursuant to Section 12(b) of the Exchange Act and the Shares have been duly authorized for listing on the NASDAQ Stock Market LLC's Global Select Market ("Nasdaq").

(ff) The Company has taken no action designed to, or to the Company's knowledge is likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or the listing of the Common Stock on Nasdaq, nor has the Company received any notification that the Commission or Nasdaq is contemplating terminating such registration or listing. The Company has complied in all material respects with the applicable requirements of Nasdaq for maintenance of inclusion of the Common Stock thereon.

(gg) The Company and its subsidiaries make and keep accurate books, records and accounts. The Company and its subsidiaries maintain a system of internal accounting controls sufficient to provide reasonable assurances that (i) transactions are executed in accordance with management's general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles and to maintain asset accountability, (iii) access to assets is permitted only in accordance with management's general or specific authorization and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences; the principal executive officer and the principal financial officer of the Company have made all certifications required by the Sarbanes-Oxley Act of 2002 (the "Sarbanes-Oxley Act") and any related rules and regulations promulgated by the Commission, and the statements contained in any such certification were complete and correct as of the dates on which they were made; the Company and each of its subsidiaries is otherwise in compliance in all material respects with all applicable effective provisions of the Sarbanes-Oxley Act.

(hh) The Company and its subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as are customary in the businesses in which they are engaged or propose to engage immediately after giving effect to the offering of the Shares as described in the General Disclosure Package and the Prospectus; all policies of insurance insuring the Company or its subsidiaries are in full force and effect. The Company and each of its subsidiaries are in compliance with the terms of such policies and instruments in all material respects.

(ii) Each approval, consent, order, authorization, designation, declaration or filing of, by or with any regulatory, administrative or other governmental body

necessary in connection with the execution and delivery by the Company of this Agreement and the consummation of the transactions herein contemplated required to be obtained or performed by the Company (except such additional steps as may be required by the Financial Industry Regulatory Authority (“FINRA”) or may be necessary to qualify the Shares for public offering by the Underwriters under the state securities or Blue Sky laws) has been obtained or made and is in full force and effect.

(jj) (i) At the time of filing the Registration Statement, (ii) at the time of the most recent amendment thereto for the purposes of complying with Section 10(a)(3) of the Securities Act (whether such amendment was by post-effective amendment, incorporated report filed pursuant to Sections 13 or 15(d) of the Exchange Act or form of prospectus), (iii) at the time the Company or any person acting on its behalf (within the meaning, for this clause only, of Rule 163(c)) made any offer relating to the Shares in reliance on the exemption in Rule 163, and (iv) at the Applicable Time (with such date being used as the determination date for purposes of this clause (iv)), the Company was or is (as the case may be) a “well-known seasoned issuer” as defined in Rule 405. The Company agrees to pay the fees required by the Commission relating to the Shares within the time required by Rule 456(b)(1) without regard to the proviso therein and otherwise in accordance with Rules 456(b) and 457(r).

(kk) (i) Neither the Company nor any of its subsidiaries are in violation of any applicable rules, laws and regulation relating to the use, treatment, storage and disposal of toxic substances and protection of health or the environment (“Environmental Law”) which are applicable to its business, except for any violation which would not reasonably be expected to have a Material Adverse Effect; (ii) neither the Company nor its subsidiaries has received any notice from any governmental authority or third party of a material asserted claim under Environmental Laws; (iii) each of the Company and each of its subsidiaries has received all permits, licenses or other approvals required of it under applicable Environmental Laws material to the conduct its business and is in compliance with all terms and conditions of any such permit, license or approval, except for where non-compliance would not reasonably be expected to have a Material Adverse Effect; (iv) to the Company’s knowledge, no facts currently exist that will require the Company or any of its subsidiaries to make future material capital expenditures to comply with Environmental Laws; and (v) no property which is or has been owned, or to the Company’s knowledge, leased or occupied by the Company or its subsidiaries has been designated as a Superfund site pursuant to the Comprehensive Environmental Response, Compensation of Liability Act of 1980, as amended (42 U.S.C. Section 9601, et. seq.) (“CERCLA”) or otherwise designated as a contaminated site under applicable state or local law. To the Company’s knowledge, neither the Company nor any of its subsidiaries has been named as a “potentially responsible party” under CERCLA.

(ll) In the ordinary course of its business, the Company periodically reviews the effect of Environmental Laws on the business, operations and properties of the Company and its subsidiaries, in the course of which the Company identifies and evaluates associated costs and liabilities (including, without limitation, any capital or operating expenditures required for clean-up, closure of properties or compliance with Environmental Laws, or any permit, license or approval, any related constraints on operating activities and any potential liabilities to third parties). On the basis of such review, the Company has reasonably

concluded that such associated costs and liabilities would not, singly or in the aggregate, have a Material Adverse Effect.

(mm) The Company is not and, after giving effect to the offering and sale of the Shares and the application of the net proceeds therefrom as described in the General Disclosure Package and the Prospectus, will not be subject to registration as an “investment company” within the meaning of the Investment Company Act of 1940, as amended.

(nn) Neither the Company nor any other person associated with or acting on behalf of the Company including, without limitation, any director, officer, agent or employee of the Company or its subsidiaries, has, while acting on behalf of the Company or its subsidiaries (i) used any corporate funds for unlawful contributions, gifts, entertainment or other unlawful expenses relating to political activity; (ii) made any unlawful payment to foreign or domestic government officials or employees or to foreign or domestic political parties or campaigns from corporate funds; (iii) violated any provision of the Foreign Corrupt Practices Act of 1977 or the U.K. Bribery Act 2010, each as amended, or similar law of any relevant jurisdiction, or the rules or regulations thereunder; or (iv) made any other unlawful payment.

(oo) The operations of the Company and its subsidiaries are and have been conducted at all times in material compliance with applicable financial recordkeeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, the money laundering statutes of all jurisdictions applicable to the Company, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any governmental agency (collectively, the “Money Laundering Laws”) and no action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any of its subsidiaries with respect to the Money Laundering Laws is pending, or to the knowledge of the Company, threatened.

(pp) Neither the Company nor any of its subsidiaries nor, to the knowledge of the Company, any director, officer, agent, employee or affiliate of the Company or any of its subsidiaries (i) is, or is controlled or 50% or more owned in the aggregate by or is acting on behalf of, one or more individuals or entities that are currently the subject of any sanctions administered or enforced by the United States (including any administered or enforced by the Office of Foreign Assets Control of the U.S. Department of the Treasury, the U.S. Department of State or the Bureau of Industry and Security of the U.S. Department of Commerce), the United Nations Security Council, the European Union, a member state of the European Union (including sanctions administered or enforced by Her Majesty’s Treasury of the United Kingdom) or other relevant sanctions authority (collectively, “Sanctions” and such persons, “Sanctioned Persons” and each such person, a “Sanctioned Person”), (ii) is located, organized or resident in a country or territory that is, or whose government is, the subject of Sanctions that broadly prohibit dealings with that country or territory (collectively, “Sanctioned Countries” and each, a “Sanctioned Country”) or (iii) will, directly or indirectly, use the proceeds of the offering of the Shares, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other individual or entity in any manner that would result in a violation of any Sanctions by, or would result in the imposition of Sanctions against, any individual or entity (including any individual or entity participating in the offering, whether as underwriter, advisor, investor or otherwise). Neither the Company nor any of its subsidiaries has

engaged in any dealings or transactions with or for the benefit of a Sanctioned Person, or with or in a Sanctioned Country, in the preceding 3 years, nor does the Company or any of its subsidiaries have any plans to engage in dealings or transactions with or for the benefit of a Sanctioned Person, or with or in a Sanctioned Country.

(qq) Except as described in the General Disclosure Package and the Prospectus, the Company has not sold or issued any shares of Common Stock during the six-month period preceding the date of the Prospectus, including any sales pursuant to Rule 144A under, or Regulations D or S of, the Securities Act, other than shares issued pursuant to equity incentive plans or other employee compensation plans or pursuant to outstanding options, rights or warrants.

(rr) The Company has fulfilled its obligations, if any, in all material respects under the minimum funding standards of Section 302 of the U.S. Employee Retirement Income Security Act of 1974 (“ERISA”) and the regulations and published interpretations thereunder with respect to each “plan” as defined in Section 3(3) of ERISA and such regulations and published interpretations in which its employees are eligible to participate and each such plan is in compliance in all material respects with the presently applicable provisions of ERISA and such regulations and published interpretations. No “Reportable Event” (as defined in 12 ERISA) has occurred with respect to any “Pension Plan” (as defined in ERISA) for which the Company would have any material liability.

(ss) Neither the Company nor, to the Company’s knowledge, any of its directors or officers have distributed nor will distribute, prior to the later of (i) the Firm Shares Closing Date, or the Option Shares Closing Date, and (ii) completion of the distribution of the Shares, any offering material in connection with the offering and sale of the Shares other than any Preliminary Prospectus, the Prospectus, the Registration Statement and other materials, if any, permitted by the Securities Act and consistent with Section 5(d) below.

(tt) The Company has established and maintains disclosure controls and procedures (as such term is defined in Rule 13a-15 under the Exchange Act), which (i) are designed to ensure that material information relating to the Company is made known to the Company’s principal executive officer and its principal financial officer by others within the Company, particularly during the periods in which the periodic reports required under the Exchange Act are being prepared; (ii) provide for the periodic evaluation of the effectiveness of such disclosure controls and procedures as required by the Exchange Act; and (iii) are effective in all material respects to perform the functions for which they were established. Based on the evaluation of its disclosure controls and procedures, the Company is not aware of (i) any significant deficiency in design or operation of internal controls that would adversely affect the Company’s ability to record, process, summarize and report financial data or any material weaknesses to internal controls; or (ii) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company’s internal controls. Since the date of the most recent evaluation of such disclosure controls and procedures, there have been no changes that have materially affected, or are reasonably likely to materially affect, the Company’s internal control over financial reporting, including any corrective actions with regard to significant deficiencies and material weaknesses.

(uu) There are no material off-balance sheet arrangements (as defined in Item 303 of Regulation S-K) that have or are reasonably likely to have a material current or future effect on the Company's financial condition, revenues or expenses, changes in financial condition, results of operations, liquidity, capital expenditures or capital resources that are required to be disclosed in the Prospectus and have not been so disclosed.

(vv) The Board has validly appointed an audit committee whose composition satisfies the requirements of Rule 5605(c)(2) of the NASDAQ Stock Market Rules and the Board and/or the audit committee has adopted a charter that satisfied the requirements of Rule 5605(c)(1) of the NASDAQ Stock Market Rules. The audit committee has reviewed the adequacy of its charters within the past twelve months.

(ww) (i) All audit and non-audit services performed by KPMG LLP have been preapproved in accordance with the requirements set forth in Section 10A of the Exchange Act and (ii) KPMG LLP has not engaged and as of the date hereof is not engaging in any "prohibited activities" (as defined in Section 10A of the Exchange Act) on behalf of the Company.

(xx) The clinical, pre-clinical and other studies and tests conducted by or on behalf of or sponsored by the Company or in which the Company or its products or product candidates have participated that are described in the Registration Statement, the General Disclosure Package and the Prospectus or the results of which are referred to in the Registration Statement, the General Disclosure Package or the Prospectus were and, if still pending, are being conducted in all material respects in accordance with standard medical and scientific research procedures and, to the Company's knowledge, the protocols established by the Company for such studies and tests. The descriptions in the Registration Statement, the General Disclosure Package and the Prospectus of the results of such studies and tests are accurate and complete in all material respects and fairly present the data derived from such studies and tests, and the Company has no knowledge of any other studies or tests the results of which are materially inconsistent with or otherwise materially call into question the results described or referred to in the Registration Statement, the General Disclosure Package and the Prospectus. Except to the extent disclosed in the Registration Statement, the General Disclosure Package and the Prospectus, the Company has operated and currently is in compliance in all material respects with all applicable FDA laws, regulations and policies. Except to the extent disclosed in the Registration Statement, the General Disclosure Package and the Prospectus, the Company has not received any notices or other correspondence from the FDA or any other governmental agency requiring the termination, suspension or modification of any clinical or pre-clinical studies or tests that are described in the Registration Statement, the General Disclosure Package or the Prospectus or the results of which are referred to in the Registration Statement, the General Disclosure Package or the Prospectus.

(yy) The Company holds and is operating in material compliance with such exceptions, permits, approvals, registrations, licenses, franchises, authorizations and clearances of the FDA and/or any committee thereof required, for the conduct of its business as currently conducted (collectively, the "FDA Permits"), and all such FDA Permits are in full force and effect, subject in each case to such exceptions and qualifications as may be set forth in the General Disclosure Package and the Prospectus. The Company has fulfilled and performed all of

its material obligations with respect to the FDA Permits, and, to the Company's knowledge, no event has occurred which allows, or after notice or lapse of time would allow, revocation or termination thereof or results in any other material impairment of the rights of the holder of any FDA Permit, subject in each case to such exceptions and qualifications as may be set forth in the General Disclosure Package and the Prospectus.

(zz) No person has the right to require the Company to register any securities for offering and sale under the Securities Act by reason of the filing of the Registration Statement with the Commission or by reason of the issuance and sale of the Shares, except for rights which have been waived.

(aaa) The Company has not, directly or indirectly, extended or maintained credit, or arranged for the extension of credit, or renewed an extension of credit, in the form of a personal loan to or for any of its directors or executive officers in violation of applicable laws, including Section 402 of the Sarbanes-Oxley Act.

(bbb) Other than as contemplated by this Agreement, the Company has not incurred any liability for any brokerage commission, finder's fee or like payment in connection with the execution and delivery of this Agreement or the consummation of the transactions contemplated hereby.

(ccc) Except as disclosed in the Registration Statement, the General Disclosure Package and the Prospectus, the Company (i) does not have any material lending or other relationship with any bank or lending affiliate of Citigroup Global Markets Holdings Inc. and (ii) does not intend to use any of the proceeds from the sale of the Shares hereunder to repay any outstanding debt owed to any affiliate of Citigroup Global Markets Holdings Inc.

(ddd) Subject to any restrictions under applicable law, no subsidiary of the Company is currently prohibited, directly or indirectly, from paying any dividends to the Company, from making any other distribution on such subsidiary's capital stock, from repaying to the Company any loans or advances to such subsidiary from the Company or from transferring any of such subsidiary's property or assets to the Company or any other subsidiary of the Company, except as described in or contemplated by the General Disclosure Package and the Prospectus (exclusive of any supplement thereto) or except as would not reasonably be expected to have a Material Adverse Effect.

(eee) No forward-looking statement (within the meaning of Section 27A of the Act and Section 21E of the Exchange Act) contained in the Registration Statement, the General Disclosure Package or the Prospectus has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith.

3. [Reserved]

4. Conditions of the Underwriters' Obligations. The obligation of the Underwriters under this Agreement are several and not joint. The respective obligations of the Underwriters to purchase the Shares are subject to each of the following terms and conditions:

(a) Verbal notification from the Company that the Registration Statement became effective on the Effective Date shall have been received by the Representatives and the Prospectus shall have been timely filed with the Commission in accordance with Section 5(a) of this Agreement and any material required to be filed by the Company pursuant to Rule 433(d) of the Rules shall have been timely filed with the Commission in accordance with such rule.

(b) No order preventing or suspending the use of any Preliminary Prospectus, the Prospectus or any "free writing prospectus," as defined in Rule 405 of the Rules, shall have been or shall be in effect and no order suspending the effectiveness of the Registration Statement shall be in effect and no proceedings for such purpose shall be pending before or threatened by the Commission, and any requests for additional information on the part of the Commission to be included in the Registration Statement or the Prospectus shall have been complied with to the satisfaction of the Commission and the Underwriter. If the Company has elected to rely upon Rule 430B, Rule 430B information previously omitted from the effective Registration Statement pursuant to Rule 430B shall have been transmitted to the Commission for filing pursuant to Rule 424(b) within the prescribed time period and the Company shall have provided evidence reasonably satisfactory to the Underwriters of such timely filing, or a post-effective amendment providing such information shall have been filed and declared effective in accordance with the requirements of Rule 430B.

(c) The representations and warranties of the Company contained in this Agreement and in the certificates delivered pursuant to Section 4(d) shall be true and correct when made and on and as of each Closing Date as if made on such Closing Date. The Company shall have performed all covenants and agreements and satisfied all the conditions contained in this Agreement required to be performed or satisfied by them at or before each Closing Date.

(d) The Representatives shall have received on each Closing Date a certificate, addressed to the Representatives and dated such Closing Date, of the chief executive or chief operating officer and the chief financial officer or chief accounting officer of the Company, certifying solely in their capacities as officers of the Company on behalf of the Company, that: (i) the representations, warranties and agreements of the Company in this Agreement were true and correct when made and are true and correct as of such Closing Date; (ii) the Company has performed all covenants and agreements and satisfied all conditions contained herein; (iii) they have examined the Registration Statement, the Prospectus, the General Disclosure Package, and any individual Issuer Free Writing Prospectuses and, in their opinion (A) as of the date of this Agreement, which is the most recent Effective Date of the Registration Statement, the Registration Statement did not and as of its date, the Prospectus did not include, and as of the Applicable Time, neither (i) the General Disclosure Package, nor (ii) any individual Issuer Free Writing Prospectus, when considered together with the General Disclosure Package, included any untrue statement of a material fact and did not omit to state a

material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, and (B) since the Applicable Time no event has occurred which should have been set forth in a supplement or an amendment to the Registration Statement, the General Disclosure Package or the Prospectus that has not been so disclosed; and (iv) to their knowledge, no stop order suspending the effectiveness of the Registration Statement has been issued and no proceedings for that purpose have been instituted or are pending under the Securities Act.

(e) The Representatives shall have received, (i) simultaneously with the execution of this Agreement a signed letter from KPMG LLP addressed to the Representatives and dated the date of this Agreement, in form and substance reasonably satisfactory to the Representatives, containing statements and information of the type ordinarily included in accountants' "comfort letters" to underwriters with respect to the financial statements and certain financial information contained in the Statutory Prospectus, and (ii) on each Closing Date, a signed letter from KPMG LLP addressed to the Representatives and dated the date of such Closing Date(s), in form and substance reasonably satisfactory to the Representatives containing statements and information of the type ordinarily included in accountants' "comfort letters" to underwriters with respect to the financial statements and certain financial information contained in the Registration Statement and the Prospectus.

(f) The Representatives shall have received on each Closing Date from Cooley LLP, counsel for the Company, an opinion and a negative assurance letter, each addressed to the Representatives and dated such Closing Date (with appropriate modifications for any opinion or negative assurance letter delivered on any subsequent Closing Date), in substantially the forms attached hereto as Exhibit B-1 and Exhibit B-2, respectively.

(g) The Representatives shall have received on each Closing Date from Fish & Richardson P.C., special intellectual property counsel for the Company, an opinion, addressed to the Representatives and dated such Closing Date, in substantially the forms attached hereto as Exhibit C.

(h) The Representatives shall have received from Latham & Watkins LLP, counsel for the Underwriters, an opinion addressed to the Representatives and dated such Closing Date, covering such matters as are customarily covered in transactions of this type, provided that the Representatives have requested such opinion, and the Company shall have furnished to Latham & Watkins LLP such documents as they may reasonably request for the purpose of enabling them to pass upon such matters, with such documents being limited to those that are similar in substance to the documents delivered to Latham & Watkins LLP in connection with prior securities offerings by the Company where Latham & Watkins LLP was underwriters' counsel.

(i) The Representatives shall have received copies of the Lock-up Agreements executed by each person listed on Schedule II hereto.

(j) The Shares shall have been approved for listing on Nasdaq, subject only to official notice of issuance, and the Company shall not have received any notice that it is not in compliance with the listing or maintenance requirements of Nasdaq.

(k) The Representatives shall have received as of the date of this Agreement and on each Closing Date a certificate, addressed to the Representatives and dated such Closing Date, of the chief financial officer of the Company, in substantially the form attached hereto as Exhibit D.

(l) The Company shall have furnished or caused to be furnished to the Representatives such further certificates or documents as the Representatives shall have reasonably requested, with such requested certificates and documents being limited to those that are similar in substance to the certificates and documents delivered in connection with prior underwritten public offerings by the Company.

5. Certain Covenants of the Company and the Underwriters.

(a) The Company covenants and agrees as follows:

(i) The Company will use its reasonable efforts to cause the Registration Statement, if not effective at the time of execution of this Agreement, and any amendments thereto, to promptly become effective. The Company shall prepare the Prospectus in a form reasonably approved by the Representatives and file such Prospectus pursuant to Rule 424(b) under the Securities Act not later than the Commission's close of business on the second business day following the execution and delivery of this Agreement, or, if applicable, such earlier time as may be required by the Rules. The Company will file with the Commission all Issuer Free Writing Prospectuses in the time and manner required under Rule 433 or 163 of the Rules, as the case may be.

(ii) The Company shall promptly advise the Representatives in writing after it receives notice thereof, (A) when any post-effective amendment to the Registration Statement shall have become effective or any supplement to the Prospectus shall have been filed, (B) of any request by the Commission for any amendment of the Registration Statement or the Prospectus or for any additional information related to the offering of the Shares, (C) 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 the Base Prospectus, any Preliminary Prospectus or any "free writing prospectus," as defined in Rule 405 of the Rules, or the institution or threatening of any proceeding for that purpose and (D) of the suspension of the qualification of the Shares for sale in any jurisdiction or the initiation or threatening of any proceeding for such purpose. The Company shall not file any amendment of the Registration Statement or supplement to the Prospectus or any document incorporated by reference in the Registration Statement or any Issuer Free Writing Prospectus prior to the date that is 30 days after the date of this Agreement, unless the Company has furnished the Representatives a copy for its review prior to filing and shall not file any such proposed amendment or supplement to which the Representatives reasonably object. The Company shall use its best efforts to prevent the issuance of any such stop order and, if issued, to promptly obtain the withdrawal thereof.

(iii) If, at any time when a prospectus relating to the Shares (or, in lieu thereof, the notice referred to in Rule 173(a) of the Rules) is required to be delivered under the Securities Act and the Rules, any event occurs as a result of which the Prospectus as

then amended or supplemented would include any untrue statement of a material fact or omit to state any material fact necessary to make the statements therein in the light of the circumstances under which they were made not misleading, or if it shall be necessary, in the reasonable judgment of the Company, to amend or supplement the Prospectus to comply with the Securities Act or the Rules, the Company promptly shall prepare and file with the Commission, subject to the second sentence of paragraph (ii) of this Section 5(a), an amendment or supplement which shall correct such statement or omission or an amendment which shall effect such compliance.

(iv) If at any time following issuance of an Issuer Free Writing Prospectus through the Firm Shares Closing Date there occurs an event or development as a result of which such Issuer Free Writing Prospectus would conflict with the information contained in the Registration Statement, including any document incorporated by reference therein and any prospectus supplement deemed to be a part thereof that has not been superseded or modified, or would include an untrue statement of a material fact or would omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances prevailing at the subsequent time, not misleading, the Company will promptly notify the Representatives and will promptly, at its own expense, correct such conflict, untrue statement or omission by amending or supplementing such Issuer Free Writing Prospectus or, after consultation with the Representatives, as otherwise may be permitted under the Rules.

(v) The Company agrees with each of the Underwriters to make generally available to its securityholders as soon as practicable, but in any event not later than 16 months after the date hereof, an earnings statement covering a period of at least 12 months beginning after the date hereof and otherwise satisfying Section 11(a) of the Securities Act or Rule 158 of the Rules.

(vi) The Company shall furnish to the Representatives and counsel for the Representatives, without charge, such number of the following documents as the Representatives shall reasonably request: conformed copies of the Registration Statement (including all exhibits thereto) and all amendments thereof and, so long as delivery of a prospectus by an Underwriter or dealer may be required by the Securities Act or the Rules, copies of any Preliminary Prospectus, any Issuer Free Writing Prospectus and the Prospectus and any amendments thereof and supplements thereto. If applicable, the copies of the Registration Statement, the Base Prospectus, any Preliminary Prospectus, any Issuer Free Writing Prospectus and Prospectus and each amendment and supplement thereto furnished to the Representatives 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.

(vii) The Company shall cooperate with the Representatives and their counsel in endeavoring to qualify the Shares for offer and sale in connection with the offering under the laws of such jurisdictions as the Representatives may reasonably request and shall maintain such qualifications in effect so long as required for the distribution of the Shares; provided, however, that the Company shall not be required in connection therewith, or as a condition thereof, to qualify as a foreign corporation or to execute a general consent to service of process in any jurisdiction or subject itself to taxation as doing business in any jurisdiction.

(viii) The Company, during the period when the Prospectus (or in lieu thereof, the notice referred to in Rule 173(a) of the Rules) is required to be delivered under the Securities Act and the Rules or the Exchange Act, will file all reports and other documents required to be filed with the Commission pursuant to Section 13, 14 or 15 of the Exchange Act within the time periods required by the Exchange Act and the regulations promulgated thereunder.

(ix) Without the prior written consent of the Representatives, for a period of 60 days after the date of this Agreement, the Company shall not issue, sell or register with the Commission (other than on Form S-8 or on any successor form), or otherwise dispose of, directly or indirectly, any equity securities of the Company (or any securities convertible into, exercisable for or exchangeable for equity securities of the Company), except for (a) the issuance of the Shares as contemplated by this Agreement, (b) the issuance of shares pursuant to the Company's existing stock option plan or bonus plan, (c) the issuance of shares pursuant to currently outstanding options, warrants or other rights, or (d) shares issued in connection with a strategic partnership, joint venture, collaboration, lending or other similar arrangement, or in connection with the acquisition or license by the Company of any business, products, facilities or technologies; provided that, with respect to this subsection (d), (1) the recipient of such shares shall agree to execute a Lock-Up Agreement in the form attached as Exhibit A hereto for the remainder of the term of such Lock-Up Agreement and (2) the sum of the aggregate number of shares so issued shall not exceed 5% of the total outstanding shares immediately following the completion of this offering of Shares.

(x) On or before completion of this offering, the Company shall make all filings required to be made by the Company under applicable securities laws and by FINRA and Nasdaq (including any required registration under the Exchange Act).

(xi) The Company will apply the net proceeds from the offering of the Shares in the manner set forth under "Use of Proceeds" in the Prospectus.

(xii) The Company will comply in all material respects, with all effective applicable provisions of the Sarbanes-Oxley Act.

(xiii) The Company will not take, directly or indirectly, any action designed to or which might reasonably be expected to cause or result in, or which has constituted, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares, in each case contrary to applicable law.

(xiv) Other than as contemplated by this Agreement, the Company will not incur any liability for any brokerage commission, finder's fee or like payment in connection with the execution and delivery of this Agreement or the consummation of the transactions contemplated hereby.

(b) The Company agrees to pay, or reimburse if paid by the Representatives, whether or not the transactions contemplated hereby are consummated or this Agreement is terminated, all costs and expenses incident to the performance of the obligations of the Company under this Agreement including those relating to: (i) the preparation, printing,

reproduction, filing and distribution of the Registration Statement including all exhibits thereto, the Preliminary Prospectus, any Issuer Free Writing Prospectus, the Prospectus, all amendments and supplements thereto and any document incorporated by reference therein, and the printing, filing and distribution of this Agreement; (ii) the preparation and delivery of certificates for the Shares to the Underwriters; (iii) the registration or qualification of the Shares for offer and sale under the securities or Blue Sky laws of the various jurisdictions referred to in Section 5(a)(vii), including the reasonable fees and disbursements of counsel for the Underwriters in connection with such registration and qualification and the preparation, printing, distribution and shipment of preliminary and supplementary Blue Sky memoranda, provided such fees and disbursements do not exceed \$10,000 in the aggregate; (iv) the furnishing (including costs of shipping and mailing) to the Representatives and to the Underwriters of copies of the Base Prospectus, the Preliminary Prospectus, any Issuer Free Writing Prospectus, the Prospectus and all amendments or supplements to thereto, and of the several documents required by this Section to be so furnished, as may be reasonably requested for use in connection with the offering and sale of the Shares by the Underwriters or by dealers to whom Shares may be sold; (v) if applicable, the filing fees of FINRA in connection with its review of the terms of the public offering and reasonable fees and disbursements of counsel for the Underwriters in connection with such review, provided such filing fees and fees and disbursements do not exceed \$10,000 in the aggregate; (vi) inclusion of the Shares for listing on Nasdaq; (vii) the costs and expenses of the Company relating to investor presentations on any "road show" undertaken in connection with the marketing of the offering of the Shares, including without limitation, expenses associated with the production of road show slides and graphics, fees and expenses of any consultants engaged by or at the written request of the Company in connection with the road show presentations, travel and lodging expenses of officers of the Company and any such consultants, and one-half of the cost of any aircraft chartered in connection with the road show with the prior approval of the Company (with the other half of the cost of such aircraft to be paid by the Underwriters); (viii) all transfer taxes, if any, with respect to the sale and delivery of the Shares by the Company to the Underwriters; and (ix) all fees and expenses of the Company's counsel, independent public or certified public accountants and other advisors or other fees and expenses. Subject to the provisions of Section 8, the Underwriters agrees to pay, whether or not the transactions contemplated hereby are consummated or this Agreement is terminated, all costs and expenses incident to the performance of the obligations of the Underwriters under this Agreement not payable by the Company pursuant to the preceding sentence, including, without limitation, the fees and disbursements of counsel for the Underwriters.

(c) The Company acknowledges and agrees that: (i) each of the Underwriters has been retained solely to act as a purchaser and an underwriter in connection with the sale of the Shares and that no fiduciary, advisory or agency relationship between the Company and any of the Underwriters has been created in respect of any of the transactions contemplated by this Agreement, irrespective of whether such Underwriter has advised or is advising the Company on other matters; (ii) the price and other terms of the Shares set forth in this Agreement were established by the Company following discussions and arms-length negotiations with the Underwriters and the Company; (iii) it has been advised that the Underwriters and their affiliates are engaged in a broad range of transactions which may involve interests that differ from those of the Company and that the Underwriters have no obligation to disclose such interest and transactions to the Company by virtue of any fiduciary, advisory or agency relationship; (iv) it has been advised that the Underwriters are acting, in respect of the

transactions contemplated by this Agreement, solely for its benefit, and not on behalf of the Company; and (v) it waives to the fullest extent permitted by law, any claims it may have against any of the Underwriters for breach of fiduciary duty or alleged breach of fiduciary duty in respect of any of the transactions contemplated by this Agreement.

(d) The Company represents and agrees that, unless it obtains the prior consent of the Representatives, and each Underwriter represents and agrees that, unless it obtains the prior consent of the Company and the Representatives, it has not made and will not make any offer relating to the Shares that would constitute an “issuer free writing prospectus” or contain “issuer information,” each as defined in Rule 433, or that would otherwise constitute a “free writing prospectus,” as defined in Rule 405, in each case required to be filed with the Commission. The Company has complied and will comply with the requirements of Rule 433 under the Act applicable to any Issuer Free Writing Prospectus, including timely filing with the Commission where required, legending and record keeping. The Company represents that it has satisfied and agrees that it will satisfy the conditions in Rule 433 of the Rules to avoid a requirement to file with the Commission any Road Show.

6. Indemnification.

(a) The Company agrees to indemnify and hold harmless each Underwriter, its affiliates (as such term is defined in Rule 501(b) under the Securities Act), directors and officers, agents, and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act against any and all losses, claims, damages and liabilities, joint or several (including any reasonable investigation, legal and other expenses incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claim asserted, if such settlement is effected with the written consent of the Company), to which they, or any of them, become subject under the Securities Act, the Exchange Act or other Federal or state law or regulation, at common law or otherwise, insofar as such losses, claims, damages or liabilities arise out of or are based upon (i) any untrue statement or alleged untrue statement of a material fact contained in any Preliminary Prospectus, the Registration Statement (including all information deemed to be a part of the Registration Statement by incorporation by reference or otherwise, including pursuant to Rule 430B of the Rules) and any other information deemed to be part of the Registration Statement at the time of effectiveness and at any subsequent time pursuant to the Rules, the Statutory Prospectus, the Preliminary Prospectus, the Prospectus, any Issuer Free Writing Prospectus, any “issuer information” filed or required to be filed pursuant to Rule 433 of the Rules, any amendment thereof or supplement thereto, or in any Blue Sky application or other information or other documents executed by the Company filed in any state or other jurisdiction to qualify any or all of the Shares under the securities laws thereof (any such application, document or information being hereinafter referred to as a “Blue Sky Application”) or arise out of or are based upon any omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading and (ii) any failure to file material required to be filed by the Company pursuant to Rule 433 of the Rules; provided, however, that such indemnity shall not inure to the benefit of any Underwriter (or any person controlling such Underwriter) on account of any losses, claims, damages or liabilities, if such untrue statement or omission or alleged untrue statement or omission was made in the Registration Statement, the Preliminary Prospectus, the Prospectus, the Statutory Prospectus, any

Issuer Free Writing Prospectus, or such amendment or supplement thereto, or in any Blue Sky Application, in reliance upon and in conformity with the Underwriter Information. This indemnity agreement will be in addition to any liability which the Company may otherwise have.

(b) Each Underwriter agrees, severally and not jointly, to indemnify and hold harmless the Company, its affiliates (as such term is defined in Rule 501(b) under the Securities Act), directors and officers, and each person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, each director of the Company, and each officer of the Company who signs the Registration Statement, against any losses, claims, damages or liabilities (including any reasonable investigation, legal and other expenses incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claim asserted, if such settlement is effected with the written consent of the Underwriter) to which such party may become subject, under the Securities Act or otherwise, insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon an untrue statement or alleged untrue statement of a material fact contained in any Preliminary Prospectus, the Registration Statement or the Prospectus, or any amendment or supplement thereto, 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 such untrue statement or alleged untrue statement or omission or alleged omission was made in any Preliminary Prospectus, the Registration Statement, the Statutory Prospectus or the Prospectus or any such amendment or supplement in reliance upon and in conformity with the Underwriter Information; provided, however, that the obligation of each Underwriter to indemnify the Company (including any controlling person, director or officer thereof) shall be limited to the net proceeds received by the Company from such Underwriter. This indemnity agreement will be in addition to any liability which any Underwriter may otherwise have.

(c) Any party that proposes to assert the right to be indemnified under this Section will, promptly after receipt of notice of commencement of any action, suit or proceeding against such party in respect of which a claim is to be made against an indemnifying party or parties under this Section, notify each such indemnifying party of the commencement of such action, suit or proceeding, enclosing a copy of all papers served. No indemnification provided for in Section 6(a) or 6(b) shall be available to any party who shall fail to give notice as provided in this Section 6(c) if the party to whom notice was not given was unaware of the proceeding to which such notice would have related and was prejudiced by the failure to give such notice but the omission so to notify such indemnifying party of any such action, suit or proceeding shall not relieve it from any liability that it may have to any indemnified party for contribution or otherwise than under this Section. In case any such action, suit or proceeding shall be brought against any indemnified party and it shall notify the indemnifying party of the commencement thereof, the indemnifying party shall be entitled to participate in, and, to the extent that it shall wish, jointly with any other indemnifying party similarly notified, to assume the defense thereof, with counsel reasonably satisfactory to such indemnified party, and after notice from the indemnifying party to such indemnified party of its election so to assume the defense thereof and the approval by the indemnified party of such counsel (not to be unreasonably withheld or delayed), the indemnifying party shall not be liable to such indemnified party for any legal or other expenses, except as provided below and except for the reasonable costs of investigation subsequently incurred by such indemnified party in connection

with the defense thereof. The indemnified party shall have the right to employ its counsel in any such action, but the fees and expenses of such counsel shall be at the expense of such indemnified party unless (i) the employment of counsel by such indemnified party has been authorized in writing by the indemnifying parties, (ii) the indemnified party shall have been advised by counsel that there may be one or more legal defenses available to it which are different from or in addition to those available to the indemnifying party (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 (iii) the indemnifying parties shall not have employed counsel to assume the defense of such action within a reasonable time after notice of the commencement thereof, in each of which cases the fees and expenses of counsel to the indemnified party shall be at the expense of the indemnifying parties. An indemnifying party shall not be obligated under any settlement agreement relating to any action under this Section 6 to which it has not agreed in writing. In addition, no indemnifying party shall, without the prior written consent of the indemnified party (which consent shall not be unreasonably withheld or delayed), effect any settlement of any pending or threatened proceeding unless such settlement includes an unconditional release of such indemnified party for all liability on claims that are the subject matter of such proceeding and does not include a statement as to, or an admission of, fault, culpability or a failure to act by or on behalf of an indemnified party.

7. Contribution. In order to provide for just and equitable contribution in circumstances in which the indemnification provided for in Section 6(a) or 6(b) is due in accordance with its terms but for any reason is unavailable to or insufficient to hold harmless an indemnified party in respect to any losses, liabilities, claims, damages or expenses referred to therein, then each indemnifying party shall contribute to the aggregate losses, liabilities, claims, damages and expenses (including any investigation, legal and other expenses reasonably incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claims asserted, but after deducting any contribution received by any person entitled hereunder to contribution from any person who may be liable for contribution) incurred by such indemnified party, as incurred, 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 pursuant to this Agreement or, if such allocation is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to above 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, 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 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 or the Underwriters and the parties' relevant intent, knowledge, access to information and opportunity to correct or prevent such untrue statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contribution pursuant to this Section 7 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. The aggregate amount of losses, liabilities, claims, damages and expenses incurred by an indemnified party and referred to above shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in investigating, preparing or defending against any litigation, or any investigation or proceeding by any governmental agency or body, commenced or threatened, or any claim whatsoever based upon any such untrue or alleged untrue statement or omission or alleged omission. Notwithstanding the provisions of this Section 7, no Underwriter shall be required to contribute any amount in excess of the underwriting discounts and commissions received by such Underwriter in connection with the Shares underwritten by it and distributed to the public. 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. For purposes of this Section 7, each person, if any, who controls an Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act shall have the same rights to contribution as such Underwriter, and each director of the Company, each officer of the Company who signed the Registration Statement, and each person, if any, who controls the Company within the meaning of the Section 15 of the Securities Act or Section 20 of the Exchange Act, shall have the same rights to contribution as the Company. Any party entitled to contribution will, promptly after receipt of notice of commencement of any action, suit or proceeding against such party in respect of which a claim for contribution may be made against another party or parties under this Section 7, notify such party or parties from whom contribution may be sought, but the omission so to notify such party or parties from whom contribution may be sought shall not relieve the party or parties from whom contribution may be sought from any other obligation it or they may have hereunder or otherwise than under this Section 7. No party shall be liable for contribution with respect to any action, suit, proceeding or claim settled without its written consent. The Underwriters' obligations to contribute pursuant to this Section 7 are several in proportion to their respective underwriting commitments and not joint.

8. Termination .

(a) This Agreement may be terminated with respect to the Shares to be purchased on a Closing Date by the Representatives by notifying the Company at any time at or before a Closing Date in the absolute discretion of the Representatives if: (i) the Company shall have failed, refused or been unable, at or prior to a Closing Date, to perform any agreement on its part to be performed hereunder, (ii) any condition of the Underwriters' obligations hereunder is not fulfilled, (iii) there has occurred any material adverse change in the United States securities markets or any event, act or occurrence that has materially disrupted, or in the opinion of the Representatives, will in the future materially disrupt, the United States securities markets or there shall be such a material adverse change in general financial, political or economic conditions in the United States or the effect of international conditions on the financial markets in the United States is such as to make it, in each of the foregoing instances, in the judgment of the Representatives, inadvisable or impracticable to market the Shares or enforce contracts for the sale of the Shares; (iv) there shall have occurred any attack on, outbreak or material escalation of hostilities or act of terrorism involving the United States, any declaration by the United States of a national emergency or war, or any other calamity or crisis the effect of which on the financial markets of the United States is such as to make it, in the judgment of the Underwriter, inadvisable or impracticable to proceed with the completion of the sale of and payment for the Shares; (v) trading in the Shares or any securities of

the Company has been suspended or materially limited by the Commission or trading generally on the New York Stock Exchange, Inc., the American Stock Exchange, Inc. or Nasdaq has been suspended or materially limited, or minimum or maximum ranges for prices for securities shall have been fixed, or maximum ranges for prices for securities have been required, by any of said exchanges or by such system or by order of the Commission, the National Association of Securities Dealers, Inc., or any other governmental or regulatory authority; or (vi) a banking moratorium has been declared by any state or Federal authority; or (vii) in the judgment of the Representatives, there has been, since the time of execution of this Agreement or since the respective dates as of which information is given in the Prospectus, any material adverse change in the assets, properties, condition, financial or otherwise, or in the results of operations, business affairs or business prospects of the Company and its subsidiaries considered as a whole, whether or not arising in the ordinary course of business.

(b) If this Agreement is terminated pursuant to any of its provisions, the Company shall not be under any liability to any Underwriter, and no Underwriter shall be under any liability to the Company, except that (y) if this Agreement is terminated by the Representatives of the Underwriters because of any intentional failure, refusal or inability on the part of the Company to comply with the terms or to fulfill any of the conditions of this Agreement, the Company will reimburse the Underwriters for all out-of-pocket expenses (including the reasonable fees and disbursements of their counsel) incurred by them in connection with the proposed purchase and sale of the Shares or in contemplation of performing their obligations hereunder (provided that, should such intentional failure, refusal or inability to comply or fulfill occur after the Firm Shares Closing Date, the Company shall only be required to reimburse for such out-of-pocket expenses that are incurred after the Firm Shares Closing Date in connection with a purchase of Option Shares) and (z) no Underwriter who shall have failed or refused to purchase the Shares agreed to be purchased by it under this Agreement, without some reason sufficient hereunder to justify cancellation or termination of its obligations under this Agreement, shall be relieved of liability to the Company, or to the other Underwriters for damages occasioned by its failure or refusal.

9. Substitution of Underwriters. If any Underwriter shall default in its obligation to purchase on any Closing Date the Shares agreed to be purchased hereunder on such Closing Date, the Representatives shall have the right, within 36 hours thereafter, to make arrangements for one or more of the non-defaulting Underwriters, or any other underwriters, to purchase such Shares on the terms contained herein. If, however, the Representatives shall not have completed such arrangements within such 36-hour period, then the Company shall be entitled to a further period of 36 hours within which to procure another party or other parties satisfactory to the Underwriters to purchase such Shares on such terms. If, after giving effect to any arrangements for the purchase of the Shares of a defaulting Underwriter or Underwriters by the Representatives and the Company as provided above, the aggregate number of Shares which remains unpurchased on such Closing Date does not exceed one-eleventh of the aggregate number of all the Shares that all the Underwriters are obligated to purchase on such date, then the Company shall have the right to require each non-defaulting Underwriter to purchase the number of Shares which such Underwriter agreed to purchase hereunder at such date and, in addition, to require each non-defaulting Underwriter to purchase its pro rata share (based on the number of Shares which such Underwriter agreed to purchase hereunder) of the Shares of such defaulting Underwriter or Underwriters for which such arrangements have not been made; but nothing herein shall relieve a defaulting Underwriter from liability for its default. In any such case, either the Representatives or the Company shall have the right to postpone the applicable Closing Date for a period of not more than seven days in order to effect any necessary changes and arrangements (including any necessary amendments or supplements to the Registration Statement or Prospectus or any other documents), and the Company agrees to file promptly any amendments to the Registration Statement or the Prospectus which in the opinion of the Company and the Underwriters and their counsel may thereby be made necessary.

If, after giving effect to any arrangements for the purchase of the Shares of a defaulting Underwriter or Underwriters by the Representatives and the Company as provided above, the aggregate number of such Shares which remains unpurchased exceeds 10% of the aggregate number of all the Shares to be purchased at such date, then this Agreement, or, with respect to a Closing Date which occurs after the First Closing Date, the obligations of the Underwriters to purchase and of the Company, as the case may be, to sell the Option Shares to be purchased and sold on such date, shall terminate, without liability on the part of any non-defaulting Underwriter to the Company, and without liability on the part of the Company, except as provided in Sections 5(b), 6, 7 and 8. The provisions of this Section 9 shall not in any way affect the liability of any defaulting Underwriter to the Company or the nondefaulting Underwriters arising out of such default. The term "Underwriter" as used in this Agreement shall include any person substituted under this Section 9 with like effect as if such person had originally been a party to this Agreement with respect to such Shares.

10. Miscellaneous. The respective agreements, representations, warranties, indemnities and other statements of the Company and the several Underwriters, as set forth in this Agreement or made by or on behalf of them pursuant to this Agreement, shall remain in full force and effect, regardless of any investigation (or any statement as to the results thereof) made by or on behalf of any Underwriter or the Company or any of their respective officers, directors or controlling persons referred to in Sections 6 and 7 hereof, and shall survive delivery of and payment for the Shares. In addition, the provisions of Sections 5(b), 6, 7 and 8 shall survive the termination or cancellation of this Agreement.

This Agreement has been and is made for the benefit of the Underwriters, the Company and the and their respective successors and assigns, and, to the extent expressed herein, for the benefit of persons controlling any of the Underwriters, or the Company, and directors and officers of the Company, and their respective successors and assigns, and no other person shall acquire or have any right under or by virtue of this Agreement. The term “successors and assigns” shall not include any purchaser of Shares from any Underwriter merely because of such purchase.

All notices and communications hereunder shall be in writing and mailed or delivered or by telephone or telegraph if subsequently confirmed in writing, (a) if to the Representatives: Citigroup Global Markets Inc., 388 Greenwich Street, New York, New York, 10013, Attention: General Counsel, facsimile number 1-646-291-1469, and Leerink Partners LLC, One Federal Street, 37th Floor, Boston, Massachusetts 02110, Attention: General Counsel, facsimile number 1-617-918-4664, with a copy to Latham & Watkins LLP, 12670 High Bluff Drive, San Diego, CA 92130, Attention: Matthew T. Bush, Esq., and (b) if to the Company, to its agent for service as such agent’s address appears on the cover page of the Registration Statement with a copy to Cooley LLP, 4401 Eastgate Mall, San Diego, California 92121, Attention: Charles S. Kim, Esq.

This Agreement shall be governed by and construed in accordance with the laws of the State of New York.

This Agreement may be signed in any number of counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument.

This Agreement constitutes the entire agreement of the parties to this Agreement and supersedes all prior written or oral and all contemporaneous oral agreements, understandings and negotiations with respect to the subject matter hereof. This Agreement may not be amended or modified unless in writing by all of the parties hereto, and no condition herein (express or implied) may be waived unless waived in writing by each party whom the condition is meant to benefit. The Section headings herein are for the convenience of the parties only and shall not affect the construction or interpretation of this Agreement.

[signature page follows]

Please confirm that the foregoing correctly sets forth the agreement among us.

Very truly yours,

ARENA PHARMACEUTICALS, INC.

By /s/ Kevin R. Lind

Name: Kevin R. Lind

Title: Executive Vice President and Chief Financial
Officer

Confirmed as of the date first
above mentioned:

CITIGROUP GLOBAL MARKETS INC.

By: /s/ Bradley Wolff

Name: Bradley Wolff

Title: Managing Director

LEERINK PARTNERS LLC

By: /s/ Daniel Dubin

Name: Daniel Dubin

Title: Vice Chairman

SCHEDULE I

Name	Number of Firm Shares to be Purchased
Citigroup Global Markets Inc.	2,000,000
Leerink Partners LLC	1,937,500
Cantor Fitzgerald & Co.	1,000,000
UBS Securities LLC	1,000,000
JMP Securities LLC	312,500
Total	6,250,000

SCHEDULE II

LOCK-UP SIGNATORIES

Amit D. Munshi
Kevin R. Lind
Vincent Aurentz
Steven W. Spector, J.D.
Preston Klassen, M.D.
Scott H. Bice, J.D.
Tina S. Nova, Ph.D.
Phillip M. Schneider
Christine A. White, M.D.
Randall E. Woods
Jayson Dallas, M.D.
Oliver Fetzter, Ph.D.
Garry Neil, M.D.
Jennifer Jarrett

SCHEDULE III

PRICING INFORMATION INCLUDED IN THE GENERAL DISCLOSURE PACKAGE

Price per share to the public: \$24.00

Number of shares being sold: 6,250,000

Number of shares potentially issuable pursuant to the option to purchase additional shares: 937,500

SCHEDULE IV

ISSUER FREE WRITING PROSPECTUS

None.

Arena Pharmaceuticals, Inc.
Public Offering of Common Stock

, 2017

Citigroup Global Markets Inc.
Leerink Partners LLC
As Representatives of the several Underwriters,

c/o Citigroup Global Markets Inc.
388 Greenwich Street
New York, New York 10013

c/o Leerink Partners LLC
One Federal Street, 37th Floor
Boston, Massachusetts 02110

Ladies and Gentlemen:

The undersigned, a holder of common stock, \$0.0001 per share par value (“Common Stock”), or rights to acquire Common Stock, of Arena Pharmaceuticals, Inc. (the “Company”) understands that the Company intends to file a Prospectus Supplement pursuant to and in accordance with Rule 424(b) under the Securities Act of 1933, as amended (the “Securities Act”), with the Securities and Exchange Commission for the public offering of Common Stock (the “Offering”). The undersigned further understands that you, as Representatives of the Underwriters, are contemplating entering into an underwriting agreement with the Company in connection with the Offering (the “Underwriting Agreement”). Capitalized terms used herein and not otherwise defined shall have the meanings set forth in the Underwriting Agreement.

In consideration of the Underwriters’ agreement to enter into the Underwriting Agreement and to proceed with the Offering, and for other good and valuable consideration receipt of which is hereby acknowledged, the undersigned hereby agrees for the benefit of the Company, you and any other Underwriter that, without prior written consent of the Representatives, on behalf of the Underwriters (which consent may be withheld in their sole discretion), the undersigned will not (and will cause any spouse or immediate family member of the spouse of the undersigned living in the undersigned’s household not to), during the period beginning on the date hereof and ending 60 days after the date of the Underwriting Agreement (the “Lock-Up Period”), directly or indirectly (1) offer, pledge, assign, encumber, announce the intention to sell, 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, or otherwise transfer or dispose of, any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock owned either of record or beneficially (as defined in the Securities Exchange Act of 1934, as amended (the “Exchange Act”)) by the undersigned (or such

spouse or family member) on the date hereof or hereafter acquired or (2) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the Common Stock, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of Common Stock or such other securities, in cash or otherwise, or publicly announce an intention to do any of the foregoing. In addition, the undersigned agrees that, without prior written consent of the Representatives, on behalf of the Underwriters, it will not, during the Lock-Up Period, make any demand for or exercise any right with respect to, the registration of any shares of Common Stock or any security convertible into or exercisable or exchangeable for Common Stock.

The lock-up restrictions described in the previous paragraph shall not apply to: (1) bona fide gifts to an immediate family member of the undersigned, (2) bona fide gifts to a charity or educational institution, (3) transfers to a trust for the direct or indirect benefit of the undersigned or the immediate family of the undersigned, (4) distributions to partners, members or stockholders of the undersigned, (5) transfers by will or intestate succession upon the death of the undersigned, (6) transfers pursuant to a court or regulatory agency order, a qualified domestic order or in connection with a divorce settlement, or (7) transfers to the Company in satisfaction of any tax withholding obligations through cashless surrender or otherwise; provided that in each of the transactions described in clauses (1), (3) and (4) above, such donee, transferee or distributee agrees to be bound by the terms of this letter agreement and prior to the expiration of the Lock-Up Period, no public disclosure or filing under the Exchange Act by any party to the transfer (donor, donee, transferor or transferee) shall be required, or made voluntarily, reporting a reduction in beneficial ownership of shares of Common Stock in connection with such transfer; provided further that in each of the transactions described in clauses (5) and (6) above, such transferee agrees to be bound by the terms of this letter agreement; provided further that in each of the transactions described in clauses (5), (6) and (7) above, that any filing under the Exchange Act made during the Lock-Up Period shall clearly indicate in the footnotes thereto that the filing relates to the circumstances described in such clause. For purposes of this letter agreement, "immediate family" shall mean any relationship by blood, marriage or adoption, not more remote than first cousin. In addition, notwithstanding the lock-up restrictions described in the previous paragraph, the undersigned may (i) at any time enter into a written plan meeting the requirements of Rule 10b5-1(c) under the Exchange Act relating to the sale of shares of Common Stock, if then permitted by the Company and applicable law, provided that the shares subject to such plan may not be sold during the Lock-Up Period and the entry into such plan is not publicly disclosed, (ii) sell shares of Common Stock pursuant to a written plan, existing as of the date hereof, meeting the requirements of Rule 10b5-1(c) under the Exchange Act, if then permitted by the Company and applicable law, provided that any filing under the Exchange Act made during the Lock-Up Period shall clearly indicate in the footnotes thereto that the filing relates to the circumstances described in this clause (ii), (iii) transfer securities to the Company in connection with the termination of the undersigned's employment or other service with the Company, provided that any filing under the Exchange Act made during the Lock-Up Period shall clearly indicate in the footnotes thereto that the filing relates to the circumstances described in this clause (iii), and (iv) transfer securities pursuant to a bona fide third-party tender offer, merger, consolidation or other similar transaction made to all holders of the Company's securities involving a change of control of the Company, in each case that is approved by the independent members of the Board of Directors of the Company, provided that in the event that such tender

offer, merger, consolidation or other such transaction is not completed, such securities held by the undersigned shall remain subject to the restrictions on transfer set forth in this letter agreement (for purposes hereof, "change of control" shall mean the transfer (whether by tender offer, merger, consolidation or other similar transaction), in one transaction or a series of related transactions, to a person or group of affiliated persons, of shares of capital stock if, after such transfer, such person or group of affiliated persons would hold more than 50% of the outstanding voting securities of the Company (or the surviving entity)).

In furtherance of the foregoing, the Company, and any duly appointed transfer agent for the registration or transfer of the securities described herein, are hereby authorized to decline to make any transfer of securities if such transfer would constitute a violation or breach of this letter agreement.

The undersigned hereby represents and warrants that the undersigned has full power and authority to enter into this letter agreement. All authority herein conferred or agreed to be conferred and any obligations of the undersigned shall be binding upon the successors, assigns, heirs or personal representatives of the undersigned.

It is understood that, if the Company notifies the Representatives that it does not intend to proceed with the Offering, or if the Underwriting Agreement is not executed by August 11, 2017, or if the Underwriting Agreement (other than the provisions thereof which survive termination) shall terminate or be terminated prior to payment for and delivery of the Common Stock to be sold thereunder, the undersigned will be released from all of his or her obligations under this letter agreement.

The undersigned, whether or not participating in the Offering, understands that the Underwriters and the Company are entering into the Underwriting Agreement and proceeding with the Offering in reliance upon this letter agreement. This letter agreement shall be governed by and construed in accordance with the laws of the State of New York, without regard to the conflict of laws principles thereof.

[signature page follows]

Very truly yours,

Signature

Printed Name and Title (if applicable)



Steven M. Przesmicki
+1 858 550 6070
przes@cooley.com

July 12, 2017

Arena Pharmaceuticals, Inc.
6154 Nancy Ridge Drive
San Diego, California 92121

Ladies and Gentlemen:

You have requested our opinion, as counsel to Arena Pharmaceuticals, Inc., a Delaware corporation (the “*Company*”), with respect to certain matters in connection with the offering by the Company of up to 7,187,500 shares of the Company’s common stock, par value \$0.0001 (the “*Shares*”), including up to 937,500 Shares that may be sold pursuant to the exercise of an option to purchase additional shares, pursuant to a Registration Statement on Form S-3 (Registration Statement No. 333-219237) (the “*Registration Statement*”), filed with the Securities and Exchange Commission (the “*Commission*”) under the Securities Act of 1933, as amended (the “*Act*”), the prospectus included within the Registration Statement (the “*Base Prospectus*”), and the prospectus supplement relating to the Shares dated July 12, 2017, filed with the Commission pursuant to Rule 424(b) of the Rules and Regulations of the Act (the “*Prospectus Supplement*”). (The Base Prospectus and the Prospectus Supplement are collectively referred to as the “*Prospectus*.”) All of the Shares are to be sold by the Company as described in the Registration Statement and the Prospectus.

In connection with this opinion, we have examined and relied upon the Registration Statement, the Prospectus, the Company’s Certificate of Incorporation and Bylaws, as currently in effect, and the originals or copies certified to our satisfaction of such records, documents, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below. In rendering this opinion, we have assumed the genuineness and authenticity of all signatures on original documents; the genuineness and authenticity of all documents submitted to us as originals; the conformity to originals of all documents submitted to us as copies; and the accuracy, completeness and authenticity of certificates of public officials.

Our opinion herein is expressed solely with respect to the federal laws of the United States and the General Corporation Law of the State of Delaware. Our opinion is based on these laws as in effect on the date hereof. We express no opinion as to whether the laws of any particular jurisdiction are applicable to the subject matter hereof. We are not rendering any opinion as to compliance with any federal or state antifraud law, rule or regulation relating to securities, or to the sale or issuance thereof.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold in accordance with the Registration Statement and the Prospectus, will be validly issued, fully paid and nonassessable.

Cooley LLP 4401 Eastgate Mall San Diego, CA 92121
t: (858) 550-6000 f: (858) 550-6420 cooley.com



Arena Pharmaceuticals, Inc.
July 12, 2017
Page Two

We consent to the reference to our firm under the caption "Legal Matters" in the Prospectus and to the filing of this opinion as an exhibit to a Current Report on Form 8-K to be filed with the Commission for incorporation by reference in the Registration Statement.

Very truly yours,

Cooley LLP

By: /s/ Steven M. Przesmicki
Steven M. Przesmicki

Cooley LLP 4401 Eastgate Mall San Diego, CA 92121
t: (858) 550-6000 f: (858) 550-6420 cooley.com



July 11, 2017

Arena Pharmaceuticals Announces Proposed Public Offering of Common Stock

SAN DIEGO, July 11, 2017 /PRNewswire/—Arena Pharmaceuticals, Inc. (NASDAQ: ARNA) today announced that it intends to offer and sell, subject to market and other conditions, \$150.0 million of shares of its common stock in an underwritten public offering. Arena expects to grant the underwriters an option to purchase up to an additional \$22.5 million of shares of its common stock at the public offering price, less the underwriting discounts and commissions. All of the shares are being offered by Arena. There can be no assurance as to whether or when the offering may be completed, or as to the actual size or terms of the offering.

Citigroup, Leerink Partners, Cantor Fitzgerald & Co. and UBS Investment Bank are acting as joint book-running managers for the offering. JMP Securities is acting as a co-manager for the offering.

The shares of common stock described above are being offered by Arena pursuant to a shelf registration statement filed by Arena with the Securities and Exchange Commission (SEC) that became automatically effective on July 11, 2017. 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 <http://www.sec.gov>. Copies of the preliminary prospectus supplement and the accompanying prospectus relating to the offering, when available, may be obtained from Citigroup Global Markets Inc., c/o Broadridge Financial Solutions, 1155 Long Island Avenue, Edgewood, NY 11717, or by telephone at (800) 831-9146; or from Leerink Partners LLC, Attention: Syndicate Department, One Federal Street, 37th Floor, Boston, MA 02110, or by telephone at (800) 808-7525 ext. 6132, or by email at syndicate@leerink.com; or from Cantor Fitzgerald & Co., Attention: Capital Markets, 499 Park Ave., 6th Floor, New York, New York 10022, or by telephone at (212) 829-7122, or by email at prospectus@cantor.com; or from UBS Securities LLC, Attention: Prospectus Department, 1285 Avenue of the Americas, New York, NY 10019, or by telephone at (888) 827-7275.

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 other jurisdiction in which such offer, solicitation or sale would be unlawful prior to the registration or qualification under the securities laws of any such state or other jurisdiction.

About Arena Pharmaceuticals

Arena Pharmaceuticals is a biopharmaceutical company focused on developing novel, small molecule drugs with optimized receptor pharmacology designed to deliver broad clinical utility across multiple therapeutic areas. Our proprietary pipeline includes potentially first- or best-in-class programs for which we own global commercial rights. Our three most advanced investigational clinical programs are ralinepag (APD811) which has completed Phase 2 evaluation for pulmonary arterial hypertension (PAH), etrasimod (APD334) in Phase 2 evaluation for multiple autoimmune indications including ulcerative colitis (UC), and APD371 in Phase 2 evaluation for the treatment of pain associated with Crohn's disease. In addition, Arena has collaborations with the following pharmaceutical companies: Eisai Co., Ltd. and Eisai Inc. (commercial stage), Axovant Sciences (Phase 2 candidate), and Boehringer Ingelheim International GmbH (preclinical candidate).

Forward-Looking Statements

Certain statements in this press release are forward-looking statements that involve a number of risks and uncertainties. These statements may be identified by introductory words such as "may," "expects," "plan," "believe," "will," "achieve," "anticipate," "would," "should," "subject to" or words of similar meaning, or by the fact that they do not relate strictly to historical or current facts. Such forward-looking statements include statements regarding Arena's expectations with respect to its proposed public offering. For such statements, Arena claims the protection of the Private Securities Litigation Reform Act of 1995. Actual events or results may differ materially from Arena's expectations. Factors that could cause actual results to differ materially from the forward-looking statements include, but are not limited to, risks and uncertainties associated with market conditions and the satisfaction of customary closing conditions related to the proposed offering; and those factors disclosed in Arena's filings with the SEC, including our Form 10-Q for the quarter ended March 31, 2017. These forward-looking statements represent Arena's judgment as of the time of this release. Arena disclaims any intent or obligation to update these forward-looking statements, other than as may be required under applicable law.

Corporate Contact:

Kevin R. Lind
Arena Pharmaceuticals, Inc.
Executive Vice President and
Chief Financial Officer
klind@arenapharm.com
858.210.3636

Media Contact:

Matt Middleman, M.D.

LifeSci Public Relations

matt.middleman@lifescipublicrelations.com

646.627.8384



July 12, 2017

Arena Pharmaceuticals Announces Pricing of Public Offering of Common Stock

SAN DIEGO, July 12, 2017 /PRNewswire/—Arena Pharmaceuticals, Inc. (NASDAQ: ARNA) today announced the pricing of an underwritten public offering of 6,250,000 shares of its common stock at a price to the public of \$24.00 per share. All of the shares are being sold by Arena. The gross proceeds from the offering are expected to be \$150.0 million, before deducting the underwriting discounts and commissions and offering expenses. The offering is expected to close on July 18, 2017, subject to customary closing conditions. In addition, Arena has granted the underwriters a 30-day option to purchase up to 937,500 additional shares of its common stock at the public offering price, less the underwriting discounts and commissions.

Arena anticipates using the net proceeds from the offering for the clinical and preclinical development of drug candidates, including its planned Phase 3 clinical trial of ralinepag for the treatment of pulmonary arterial hypertension (PAH), for general corporate purposes, including working capital and costs associated with manufacturing services, and for capital expenditures.

Citigroup, Leerink Partners, Cantor Fitzgerald & Co. and UBS Investment Bank are acting as joint book-running managers for the offering. JMP Securities is acting as a co-manager for the offering.

The shares of common stock described above are being offered by Arena pursuant to a shelf registration statement filed by Arena with the Securities and Exchange Commission (SEC) that became automatically effective on July 11, 2017. A final 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 <http://www.sec.gov>. Copies of the final prospectus supplement and the accompanying prospectus relating to the offering, when available, may be obtained from Citigroup Global Markets Inc., c/o Broadridge Financial Solutions, 1155 Long Island Avenue, Edgewood, NY 11717, or by telephone at (800) 831-9146; or from Leerink Partners LLC, Attention: Syndicate Department, One Federal Street, 37th Floor, Boston, MA 02110, or by telephone at (800) 808-7525 ext. 6132, or by email at syndicate@leerink.com; or from Cantor Fitzgerald & Co., Attention: Capital Markets, 499 Park Ave., 6th Floor, New York, New York 10022, or by telephone at (212) 829-7122, or by email at prospectus@cantor.com; or from UBS Securities LLC, Attention: Prospectus Department, 1285 Avenue of the Americas, New York, NY 10019, or by telephone at (888) 827-7275.

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 other jurisdiction in which such offer, solicitation or sale would be unlawful prior to the registration or qualification under the securities laws of any such state or other jurisdiction.

About Arena Pharmaceuticals

Arena Pharmaceuticals is a biopharmaceutical company focused on developing novel, small molecule drugs with optimized receptor pharmacology designed to deliver broad clinical utility across multiple therapeutic areas. Our proprietary pipeline includes potentially first- or best-in-class programs for which we own global commercial rights. Our three most advanced investigational clinical programs are ralinepag (APD811) which has completed Phase 2 evaluation for pulmonary arterial hypertension (PAH), etrasimod (APD334) in Phase 2 evaluation for multiple autoimmune indications including ulcerative colitis (UC), and APD371 in Phase 2 evaluation for the treatment of pain associated with Crohn's disease. In addition, Arena has collaborations with the following pharmaceutical companies: Eisai Co., Ltd. and Eisai Inc. (commercial stage), Axovant Sciences (Phase 2 candidate), and Boehringer Ingelheim International GmbH (preclinical candidate).

Forward-Looking Statements

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Corporate Contact:

Kevin R. Lind
Arena Pharmaceuticals, Inc.
Executive Vice President and
Chief Financial Officer
klind@arenapharm.com
858.210.3636

Media Contact:

Matt Middleman, M.D.
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