

TETRAPHASE PHARMACEUTICALS INC

FORM 8-K (Current report filing)

Filed 07/28/17 for the Period Ending 07/27/17

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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 27, 2017

Tetraphase Pharmaceuticals, Inc.
(Exact name of registrant as specified in charter)

Delaware
(State or other jurisdiction
of incorporation)

**480 Arsenal Way
Watertown, Massachusetts**
(Address of principal executive offices)

001-35837
(Commission
File Number)

20-5276217
(IRS Employer
Identification No.)

02472
(Zip Code)

Registrant's telephone number, including area code: (617) 715-3600

Not Applicable
(Former name or former address, if changed since last report)

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

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

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

Emerging growth company

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

Item 1.01 Entry Into a Material Definitive Agreement.

On July 27, 2017, Tetrphase Pharmaceuticals, Inc. (the “Company”) entered into an underwriting agreement (the “Underwriting Agreement”) with Piper Jaffray & Co. and BMO Capital Markets Corp., as representatives of the several underwriters (collectively, the “Underwriters”), relating to an underwritten public offering of 10,000,000 shares (the “Shares”) of the Company’s common stock, par value \$0.001 per share (the “Common Stock”). All of the Shares are being sold by the Company. The offering price of the Shares to the public was \$6.50 per share, and the Underwriters have agreed to purchase the Shares from the Company pursuant to the Underwriting Agreement at a price of \$6.11 per share. Under the terms of the Underwriting Agreement, the Company granted the Underwriters an option, exercisable for 30 days, to purchase up to an additional 1,500,000 shares of Common Stock at the same price per share as the Shares. After underwriting discounts and commissions and estimated offering expenses, the Company expects to receive net proceeds from the offering of approximately \$60.9 million (or approximately \$70.1 million if the Underwriters exercise in full their option to purchase additional shares of common stock).

The Shares will be issued pursuant to a prospectus supplement dated July 27, 2017 and an accompanying base prospectus dated July 5, 2017 that form a part of the registration statement on Form S-3 that the Company filed with the Securities and Exchange Commission (“SEC”) on June 16, 2017 (File No. 333-218816). The closing of the offering is expected to take place on or about August 2, 2017, subject to the satisfaction of customary closing conditions.

A copy of the Underwriting Agreement is attached as Exhibit 1.1 hereto and is incorporated herein by reference. The foregoing description 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 legal opinion and consent of Wilmer Cutler Pickering Hale and Dorr LLP relating to the Shares is attached as Exhibit 5.1 hereto.

Item 2.02 Results of Operations and Financial Condition.

On July 27, 2017, in a preliminary prospectus supplement filed with the SEC, the Company disclosed that its cash and cash equivalents as of June 30, 2017 was approximately \$118.2 million.

The information contained in this Item 2.02 shall not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such a filing.

Item 8.01 Other Events.

The full text of the press release announcing the pricing of the underwritten public offering on July 27, 2017 is attached as Exhibit 99.1 hereto and is incorporated herein by reference.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits

The Exhibits to this Current Report on Form 8-K are listed in the Exhibit Index attached hereto.

SIGNATURES

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

Date: July 28, 2017

TETRAPHASE PHARMACEUTICALS, INC.

By: /s/ Maria D. Stahl

Maria D. Stahl
Senior Vice President, General Counsel

EXHIBIT INDEX

Exhibit No.	Description
1.1	Underwriting Agreement, dated July 27, 2017, by and among the Company and Piper Jaffray & Co. and BMO Capital Markets Corp., as representatives of the several Underwriters
5.1	Opinion of Wilmer Cutler Pickering Hale and Dorr LLP
23.1	Consent of Wilmer Cutler Pickering Hale and Dorr LLP (contained in Exhibit 5.1 above)
99.1	Press Release issued by Tetrphase Pharmaceuticals, Inc., dated July 27, 2017

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TETRAPHASE PHARMACEUTICALS, INC.

Common Stock

UNDERWRITING AGREEMENT

July 27, 2017

PIPER JAFFRAY & CO.
BMO CAPITAL MARKETS CORP.

As Representatives of the several

Underwriters named in Schedule I attached hereto,
c/o Piper Jaffray & Co.
800 Nicollet Mall
Minneapolis, Minnesota 55402

Ladies and Gentlemen:

Tetraphase Pharmaceuticals, Inc., a Delaware corporation (the “*Company*”), proposes to sell 10,000,000 shares (the “*Firm Stock*”) of the Company’s common stock, par value \$0.001 per share (the “*Common Stock*”). In addition, the Company proposes to grant to the underwriters (the “*Underwriters*”) named in Schedule I attached to this agreement (this “*Agreement*”) an option to purchase up to 1,500,000 additional shares of the Common Stock on the terms set forth in Section 2 (the “*Option Stock*”). The Firm Stock and the Option Stock, if purchased, are hereinafter collectively called the “*Stock*”. This Agreement is to confirm the agreement concerning the purchase of the Stock from the Company by the Underwriters.

1. Representations, Warranties and Agreements of the Company. The Company represents, warrants and agrees that:

(a) A shelf registration statement on Form S-3 (File No. 333-218816) relating to the Stock has (i) been prepared by the Company in conformity with the requirements of the Securities Act of 1933, as amended (the “*Securities Act*”), and the rules and regulations of the Securities and Exchange Commission (the “*Commission*”) thereunder; (ii) been filed with the Commission under the Securities Act; and (iii) become effective under the Securities Act. Copies of such registration statement and any amendment thereto have been delivered by the Company to you as the representatives (the “*Representatives*”) of the Underwriters. As used in this Agreement:

(i) “*Applicable Time*” means 7:15 P.M. (New York City time) on July 27, 2017;

(ii) “*Effective Date*” means the latest date as of which the Registration Statement, any part thereof or the most recent post-effective amendment thereto became, or is deemed to have become, effective in accordance with the rules and regulations of the Securities Act;

(iii) “ **Issuer Free Writing Prospectus** ” means each “issuer free writing prospectus” (as defined in Rule 433(h) under the Securities Act);

(iv) “ **Preliminary Prospectus** ” means any preliminary prospectus relating to the Stock included in the Registration Statement or filed with the Commission pursuant to Rule 424(b) under the Securities Act (which, for the avoidance of doubt, shall include any base prospectus as well as any prospectus supplement contained therein);

(v) “ **Pricing Disclosure Package** ” means, as of the Applicable Time, the most recent Preliminary Prospectus, together with the information included in Schedule III hereto and each Issuer Free Writing Prospectus filed or used by the Company on or before the Applicable Time, other than a road show that is an Issuer Free Writing Prospectus but is not required to be filed under Rule 433 under the Securities Act;

(vi) “ **Prospectus** ” means the final prospectus relating to the Stock, as filed with the Commission pursuant to Rule 424(b) under the Securities Act (which, for the avoidance of doubt, shall include any base prospectus as well as any prospectus supplement contained therein); and

(vii) “ **Registration Statement** ” means the registration statement (File No. 333-218816) relating to the Stock, as amended as of the Effective Date, including any Preliminary Prospectus or the Prospectus, all exhibits to such registration statement and including the information deemed by virtue of Rule 430B under the Securities Act to be part of such registration statement as of the Effective Date. Any registration statement filed pursuant to Rule 462(b) under the Securities Act is herein called the “Rule 462(b) Registration Statement” and, after such filing, the term “Registration Statement” shall include the Rule 462(b) Registration Statement.

Any reference to any Preliminary Prospectus or the Prospectus shall be deemed to refer to and include any documents incorporated by reference therein pursuant to Form S-3 under the Securities Act as of the date of such Preliminary Prospectus or the Prospectus, as the case may be. Any reference to the “ **most recent Preliminary Prospectus** ” shall be deemed to refer to the latest Preliminary Prospectus included in the Registration Statement or filed pursuant to Rule 424(b) under the Securities Act prior to or on the date hereof. Any reference to any amendment or supplement to any Preliminary Prospectus or the Prospectus shall be deemed to refer to and include any document filed under the Securities Exchange Act of 1934, as amended (the “ **Exchange Act** ”), after the date of such Preliminary Prospectus or the Prospectus, as the case may be, and before the date of such amendment or supplement and incorporated by reference in such Preliminary Prospectus or the Prospectus, as the case may be; and any reference to any amendment to the Registration Statement shall be deemed to include any document filed with the

Commission pursuant to Section 13(a) or 15(d) of the Exchange Act after the Effective Date and before the date of such amendment that is incorporated by reference in the Registration Statement. The Commission has not issued any order preventing or suspending the use of any Preliminary Prospectus or the Prospectus or suspending the effectiveness of the Registration Statement, and no proceeding or examination for such purpose has been instituted or, to the Company's knowledge, threatened by the Commission. The Commission has not notified the Company of any objection to the use of the form of the Registration Statement or any post-effective amendment thereto.

(b) The Company was not at the time of initial filing of the Registration Statement and at the earliest time thereafter that the Company or another offering participant made a *bona fide* offer (within the meaning of Rule 164(h)(2) under the Securities Act) of the Stock, is not on the date hereof and will not be on the applicable Delivery Date, an "ineligible issuer" (as defined in Rule 405 under the Securities Act).

(c) The Registration Statement conformed and will conform in all material respects on the Effective Date and on the applicable Delivery Date, and any amendment to the Registration Statement filed after the date hereof will conform in all material respects when filed, to the requirements of the Securities Act and the rules and regulations thereunder. The documents incorporated by reference in any Preliminary Prospectus or the Prospectus conformed, and any further documents so incorporated will conform, when filed with the Commission, in all material respects to the requirements of the Exchange Act or the Securities Act, as applicable, and the rules and regulations of the Commission thereunder. The most recent Preliminary Prospectus conformed, and the Prospectus will conform, in all material respects when filed with the Commission pursuant to Rule 424(b) under the Securities Act and on the applicable Delivery Date to the requirements of the Securities Act and the rules and regulations thereunder.

(d) The Registration Statement did not, as of the Effective Date, contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading; *provided* that no representation or warranty is made as to information contained in or omitted from the Registration Statement in reliance upon and in conformity with written information furnished to the Company through the Representatives by or on behalf of any Underwriter specifically for inclusion therein, which information is specified in Section 8(e).

(e) The Prospectus will not, as of its date or as of the applicable Delivery Date, contain an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; *provided* that no representation or warranty is made as to information contained in or omitted from the Prospectus in reliance upon and in conformity with written information furnished to the Company through the Representatives by or on behalf of any Underwriter specifically for inclusion therein, which information is specified in Section 8(e).

(f) The documents incorporated by reference in any Preliminary Prospectus or the Prospectus did not, and any further documents filed and incorporated by reference therein will not, when filed with the Commission, contain an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(g) The Pricing Disclosure Package did not, as of the Applicable Time, contain an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; *provided* that no representation or warranty is made as to information contained in or omitted from the Pricing Disclosure Package in reliance upon and in conformity with written information furnished to the Company through the Representatives by or on behalf of any Underwriter specifically for inclusion therein, which information is specified in Section 8(e).

(h) Each Issuer Free Writing Prospectus listed in Schedule IV hereto, when taken together with the Pricing Disclosure Package, did not, as of the Applicable Time, contain an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; *provided* that no representation or warranty is made as to information contained in or omitted from such Issuer Free Writing Prospectus listed in Schedule IV hereto in reliance upon and in conformity with written information furnished to the Company through the Representatives by or on behalf of any Underwriter specifically for inclusion therein, which information is specified in Section 8(e).

(i) Each Issuer Free Writing Prospectus conformed or will conform in all material respects to the requirements of the Securities Act and the rules and regulations thereunder on the date of first use, and the Company has complied with all prospectus delivery and any filing requirements applicable to such Issuer Free Writing Prospectus pursuant to the Securities Act and rules and regulations thereunder. The Company has not made any offer relating to the Stock that would constitute an Issuer Free Writing Prospectus without the prior written consent of the Representatives, except as set forth on Schedule V hereto. The Company has retained in accordance with the Securities Act and the rules and regulations thereunder all Issuer Free Writing Prospectuses that were not required to be filed pursuant to the Securities Act and the rules and regulations thereunder.

(j) The Company and each of its subsidiaries have been duly organized, is validly existing and in good standing as a corporation or other business entity under the laws of its jurisdiction of organization and is duly qualified to do business and in good standing as a foreign corporation or other business entity in each jurisdiction in which its ownership or lease of property or the conduct of its businesses requires such qualification, except where the failure to be so qualified or in good standing would not, in the aggregate, reasonably be expected to have a material adverse effect on the condition (financial or otherwise), results of operations, stockholders' equity, properties, business or prospects of the Company and its subsidiaries taken as a whole (a "**Material Adverse Effect**"). The Company and each of its subsidiaries have all power and authority necessary to own or hold its properties and to conduct the businesses in which it is engaged. The Company does not own or control, directly or indirectly, any corporation, association or other entity other than the subsidiaries listed in Exhibit 21.1 to the Company's most recent Annual Report on Form 10-K. None of the subsidiaries of the Company is a "significant subsidiary" (as defined in Rule 405 under the Securities Act).

(k) The Company has an authorized capitalization as set forth in each of the most recent Preliminary Prospectus and the Prospectus, and all of the issued shares of capital stock of the Company have been duly authorized and validly issued, are fully paid and non-assessable, conform in all material respects to the description thereof contained in the most recent Preliminary Prospectus and were issued in compliance with federal and state securities laws and not in violation of any preemptive right, resale right, right of first refusal or similar right. All of the Company's options, warrants and other rights to purchase or exchange any securities for shares of the Company's capital stock have been duly authorized and validly issued, conform in all material respects to the description thereof contained in the most recent Preliminary Prospectus and were issued in compliance with federal and state securities laws. All of the issued shares of capital stock of each subsidiary of the Company have been duly authorized and validly issued, are fully paid and non-assessable and are owned directly or indirectly by the Company, free and clear of all liens, encumbrances, equities or claims, except for such liens, encumbrances, equities or claims as are disclosed in the most recent Preliminary Prospectus or as would not, in the aggregate, reasonably be expected to have a Material Adverse Effect.

(l) The shares of the Stock to be issued and sold by the Company to the Underwriters hereunder have been duly authorized and, upon payment and delivery in accordance with this Agreement, will be validly issued, fully paid and non-assessable, will conform in all material respects to the description thereof contained in the most recent Preliminary Prospectus, will be issued in compliance with federal and state securities laws and will be free of statutory and contractual preemptive rights, rights of first refusal and similar rights.

(m) The Company has all requisite corporate power and authority to execute, deliver and perform its obligations under this Agreement. This Agreement has been duly and validly authorized, executed and delivered by the Company.

(n) The issue and sale of the Stock, the execution, delivery and performance of this Agreement by the Company, the consummation of the transactions contemplated hereby and the application of the proceeds from the sale of the Stock as described under "Use of Proceeds" in the most recent Preliminary Prospectus will not (i) conflict with or result in a breach or violation of any of the terms or provisions of, impose any lien, charge or encumbrance upon any property or assets of the Company and its subsidiaries, or constitute a default under, any indenture, mortgage, deed of trust, loan agreement, license, lease or other agreement or instrument to which the Company or any of its subsidiaries is a party or by which the Company or any of its subsidiaries is bound or to which any of the property or assets of the Company or any of its subsidiaries is subject; (ii) result in any violation of the provisions of the charter or by-laws (or similar organizational documents) of the Company or any of its subsidiaries; or (iii) result in any violation of any statute or any judgment, order, decree, rule or regulation of any court or governmental agency or body having jurisdiction over the Company or any of its subsidiaries or any of their properties or assets, except, with respect to clauses (i) and (iii), conflicts or violations that would not reasonably be expected to have a Material Adverse Effect.

(o) No consent, approval, authorization or order of, or filing, registration or qualification with, any court or governmental agency or body having jurisdiction over the Company or any of its subsidiaries or any of their properties or assets is required for the issue

and sale of the Stock, the execution, delivery and performance of this Agreement by the Company, the consummation of the transactions contemplated hereby, the application of the proceeds from the sale of the Stock as described under “Use of Proceeds” in the most recent Preliminary Prospectus, except for the registration of the Stock under the Securities Act and such consents, approvals, authorizations, orders, filings, registrations or qualifications as may be required under the Exchange Act and applicable state or foreign securities laws and/or the bylaws and rules of the Financial Industry Regulatory Authority, Inc. (“*FINRA*”) in connection with the purchase and sale of the Stock by the Underwriters.

(p) The historical financial statements (including the related notes and supporting schedules) included or incorporated by reference in the most recent Preliminary Prospectus comply as to form in all material respects with the requirements of Regulation S-X under the Securities Act and present fairly, in all material respects, the financial condition, results of operations and cash flows of the entities purported to be shown thereby at the dates and for the periods indicated (subject to year-end audit adjustments in the case of unaudited interim financial statements) and have been prepared in conformity with accounting principles generally accepted in the United States applied on a consistent basis throughout the periods involved.

(q) Ernst & Young LLP, who have certified certain financial statements of the Company and its consolidated subsidiaries, whose report appears in the most recent Preliminary Prospectus or is incorporated by reference therein and who have delivered the initial letter referred to in Section 7(g) hereof, are independent public accountants as required by the Securities Act and the rules and regulations thereunder.

(r) The Company has established a system of internal control over financial reporting (as such term is defined in Rule 13a-15(f) of the Exchange Act) that complies with the requirements of the Exchange Act and that has been designed by, or under the supervision of, the Company’s principal executive and principal financial officers, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles in the United States. The Company and each of its subsidiaries maintain internal accounting controls designed to provide reasonable assurances regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles in the United States, including, but not limited to, internal accounting controls designed to provide reasonable assurance that (i) transactions are executed in accordance with management’s general or specific authorization, (ii) transactions are recorded as necessary to permit preparation of the Company’s financial statements in conformity with accounting principles generally accepted in the United States and to maintain accountability for its assets, (iii) access to the Company’s assets is permitted only in accordance with management’s general or specific authorization, (iv) the recorded accountability for the Company’s assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences and (v) the interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Pricing Disclosure Package and the Prospectus fairly present the information called for in all material respects and are prepared in accordance with the Commission’s rules and guidelines applicable thereto. As of the date of the most recent balance sheet of the Company and its consolidated subsidiaries reviewed or audited by Ernst & Young LLP and the audit committee of the board of directors of the Company, there were no material weaknesses in the Company’s internal controls.

(s) (i) The Company maintains disclosure controls and procedures (as such term is defined in Rule 13a-15(e) under the Exchange Act), (ii) such disclosure controls and procedures are designed to ensure that information required to be disclosed by the Company and its subsidiaries in the reports they file or submit under the Exchange Act is accumulated and communicated to management of the Company and its subsidiaries, including their respective principal executive officers and principal financial officers, as appropriate, to allow timely decisions regarding required disclosure to be made and (iii) such disclosure controls and procedures are effective in all material respects to perform the functions for which they were established.

(t) Since the date of the most recent balance sheet of the Company and its consolidated subsidiaries reviewed or audited by Ernst & Young LLP and the audit committee of the board of directors of the Company, (i) the Company has not been advised of or become aware of (A) any significant deficiencies in the design or operation of internal controls that would adversely affect the ability of the Company or any of its subsidiaries to record, process, summarize and report financial data, or any material weaknesses in internal controls, or (B) any fraud, whether or not material, that involves management or other employees who have a significant role in the internal controls of the Company and each of its subsidiaries; and (ii) there have been no significant changes in internal controls or in other factors that could significantly affect internal controls, including any corrective actions with regard to significant deficiencies and material weaknesses.

(u) The section entitled “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Critical Accounting Policies and Significant Judgments and Estimates” set forth or incorporated by reference in the most recent Preliminary Prospectus accurately and fully describes in all material respects (i) the accounting policies that the Company believes are the most important in the portrayal of the Company’s financial condition and results of operations and that require management’s most difficult, subjective or complex judgments (“*Critical Accounting Policies*”); and (ii) the judgments and uncertainties affecting the application of Critical Accounting Policies.

(v) There is and has been no material failure on the part of the Company or, to the Company’s knowledge, any of the Company’s directors or officers, in their capacities as such, to comply with any applicable provision of the Sarbanes-Oxley Act of 2002 and the rules and regulations promulgated in connection therewith.

(w) Since the date of the latest audited financial statements included or incorporated by reference in the most recent Preliminary Prospectus, neither the Company nor any of its subsidiaries has (i) sustained any loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree, (ii) issued or granted any securities, (iii) incurred any material liability or obligation, direct or contingent, other than liabilities and obligations that were incurred in the ordinary course of business, (iv) entered into any material transaction not in the ordinary course of business, or (v) declared or paid any dividend on its

capital stock, and since such date, there has not been any change in the capital stock or long-term debt of the Company or any of its subsidiaries or any adverse change, or any development involving a prospective adverse change, in or affecting the condition (financial or otherwise), results of operations, stockholders' equity, properties, management, business or prospects of the Company and its subsidiaries taken as a whole, in each case except as otherwise disclosed in the most recent Preliminary Prospectus or as would not, in the aggregate, reasonably be expected to have a Material Adverse Effect.

(x) The Company and each of its subsidiaries have good and marketable title to all personal property owned by them that are material to the business of the Company and its subsidiaries taken as a whole, free and clear of all liens, encumbrances and defects, except such liens, encumbrances and defects as are described in the most recent Preliminary Prospectus or such as do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company and its subsidiaries. All assets held under lease by the Company and its subsidiaries that are material to the business of the Company and its subsidiaries taken as a whole are held by them under valid, subsisting and enforceable leases, with such exceptions as do not materially interfere with the use made and proposed to be made of such assets by the Company and its subsidiaries.

(y) The Company and, as applicable, each of its subsidiaries holds all material, and is operating in material compliance with, such permits, licenses, franchises, registrations, exemptions, approvals, authorizations and clearances of the United States Food and Drug Administration (“*FDA*”) and other governmental authorities required for the conduct of its business as currently conducted (collectively, the “*Permits*”), and all such Permits are in full force and effect. The Company and each of its subsidiaries have fulfilled and performed all of its material obligations with respect to the 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 Permit. To the Company's knowledge, all applications, notifications, submissions, information, claims, reports and statistics, and other data and conclusions derived therefrom, utilized as the basis for any and all requests for a Permit from the FDA or other governmental authority relating to the Company and its subsidiaries, their business and the products of the Company and its subsidiaries, when submitted to the FDA or other governmental authority, were true, complete and correct in all material respects as of the date of submission and any necessary or required updates, changes, corrections or modification to such applications, submissions, information and data have been submitted to the FDA or other governmental authority. The Company and its subsidiaries have operated and currently are in compliance in all material respects with applicable statutes and implementing regulations administered or enforced by the FDA, DEA, or any other federal, state, local, or foreign governmental authority. The Company has not received any notification, correspondence or any other written or oral communication, including notification of any pending or, to the Company's knowledge, threatened claim, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any governmental authority, including, without limitation, the FDA or DEA, of potential or actual non-compliance by, or liability of, the Company under any Permits. To the Company's knowledge, there are no facts or circumstances that would reasonably be expected to give rise to liability of the Company under any Permits.

(z) Except as described in the most recent Preliminary Prospectus or as would not reasonably be expected to have a Material Adverse Effect, since January 1, 2009, the Company has not had any product or manufacturing site (whether Company-owned or that of a contract manufacturer for Company products) subject to a governmental authority (including FDA) shutdown or import or export prohibition, nor received any FDA Form 483 or other governmental authority notice of inspectional observations, “warning letters,” “untitled letters,” requests to make changes to the Company products, processes or operations, or similar correspondence or notice from the FDA or other governmental authority alleging or asserting material noncompliance with any applicable laws. To the Company’s knowledge, neither the FDA nor any other governmental authority is considering such action.

(aa) The clinical and pre-clinical studies and tests conducted by the Company, and to the knowledge of the Company, the clinical and pre-clinical studies and tests conducted on behalf of or sponsored by the Company, were, and if still pending, are, being conducted in all material respects in accordance with all applicable Healthcare Laws, including, but not limited to, the Federal Food, Drug and Cosmetic Act and its applicable implementing regulations at 21 C.F.R. Parts 50, 54, 56, 58 and 312. Any descriptions of clinical, pre-clinical and other studies and tests, including any related results and regulatory status, contained in the Registration Statement, the Pricing Disclosure Package or the Prospectus are, and will be, accurate in all material respects. Except as disclosed in the Pricing Disclosure Package and the Prospectus and to the Company’s knowledge, there are no studies, tests or trials the result of which reasonably call into question in any material respect the clinical trial results described or referred to in the Registration Statement, the Pricing Disclosure Package or the Prospectus. No investigational new drug application filed by or on behalf of the Company with the FDA has been terminated or suspended by the FDA, and neither the FDA nor any applicable foreign regulatory agency has commenced, or, to the Company’s knowledge, threatened to initiate, any action to place a clinical hold order on, or otherwise terminate, delay or suspend, any proposed or ongoing clinical investigation conducted or proposed to be conducted by or on behalf of the Company.

(bb) Each of the Company and, to the Company’s knowledge, its directors, officers, employees, and agents (while acting in such capacity) is, and at all times has been, in material compliance with all health care laws applicable to the Company or by which any of its properties, businesses, products or other assets is bound or affected, including, without limitation, the federal Anti-kickback Statute (42 U.S.C. § 1320a-7b(b)), the Anti-Inducement Law (42 U.S.C. § 1320a-7a(a)(5)), the civil False Claims Act (31 U.S.C. §§ 3729 et seq.), the administrative False Claims Law (42 U.S.C. § 1320a-7b(a)), the exclusion laws (42 U.S.C. § 1320a-7), the civil monetary penalty laws (42 U.S.C. § 1320a-7a), the Health Insurance Portability and Accountability Act of 1996 (42 U.S.C. § 1320d et seq.), as amended by the Health Information, Technology for Economic and Clinical Health Act of 2009, the Food Drug and Cosmetic Act (21 U.S.C. §§ 301 et seq.) and any comparable state and local laws, the regulations promulgated pursuant to such laws, and any other similar law or guidance, each as amended from time to time (collectively, the “*Health Care Laws*”). The Company has not received any notification, correspondence or any other written or oral communication from any Governmental Entity, including, without limitation, the FDA, the Centers for Medicare and Medicaid Services, and the Department of Health and Human Services Office of Inspector General, of potential or actual material non-compliance by, or liability of, the Company under any Health Care Laws.

(cc) The Company is not a party to any corporate integrity agreements, monitoring agreements, deferred prosecution agreements, consent decrees, settlement orders, or similar agreements with or imposed by any governmental authority.

(dd) Neither the Company, nor, to the Company's knowledge, any of its directors, officers, employees and agents, is debarred or excluded, or has been convicted of any crime or engaged in any conduct that would result in a debarment or exclusion, from any federal or state government health care program under 21 U.S.C. § 335a or any similar state law, rule or regulation. As of the Effective Date, no claims, actions, proceedings or investigations that would reasonably be expected to result in such a debarment or exclusion are pending or, to the Company's knowledge, threatened against the Company, or the directors, officers, employees or agents of the Company.

(ee) The Company and each of its subsidiaries own or possess adequate rights to use all material patents, patent applications, trademarks, service marks, trade names, trademark registrations, service mark registrations, copyrights, licenses, know-how, software, systems and technology (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems or procedures) necessary for the conduct of their respective businesses and have no reason to believe that the conduct of their respective businesses will conflict with, and have not received any notice of any claim of conflict with, any such rights of others.

(ff) 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 or assets of the Company or any of its subsidiaries is the subject that would, in the aggregate, reasonably be expected to have a Material Adverse Effect or would, in the aggregate, reasonably be expected to have a material adverse effect on the performance of this Agreement or the consummation of the transactions contemplated hereby; and to the Company's knowledge, no such proceedings are threatened or contemplated by governmental authorities or others.

(gg) There are no contracts or other documents required under the Securities Act to be described in the Registration Statement or the most recent Preliminary Prospectus or filed as exhibits to the Registration Statement, that are not described and filed as required. The statements made in the most recent Preliminary Prospectus, insofar as they purport to constitute summaries of the terms of the contracts and other documents described and filed, constitute accurate summaries of the terms of such contracts and documents in all material respects. Neither the Company nor any of its subsidiaries has knowledge that any other party to any such contract or other document has any intention not to render performance in all material respects as contemplated by the terms thereof.

(hh) Except as described in the most recent Preliminary Prospectus, the Company and each of its subsidiaries carry, or are covered by, insurance from insurers of recognized financial responsibility in such amounts and covering such risks as is adequate for the conduct of their respective businesses and the value of their respective properties and as is customary for companies engaged in similar businesses in similar industries. All policies of insurance of the Company and its subsidiaries are in full force and effect; the Company and each of its subsidiaries are in compliance with the terms of such policies in all material respects; and neither

the Company nor any of its subsidiaries has received notice from any insurer or agent of such insurer that capital improvements or other expenditures are required or necessary to be made in order to continue such insurance; there are no claims by the Company or any of its subsidiaries under any such policy or instrument as to which any insurance company is denying liability or defending under a reservation of rights clause; and neither the Company nor any such subsidiary has any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not reasonably be expected to have a Material Adverse Effect.

(ii) No relationship, direct or indirect, exists between or among the Company, on the one hand, and the directors, officers, stockholders, customers or suppliers of the Company, on the other hand, that is required to be described in the most recent Preliminary Prospectus which is not so described.

(jj) No labor disturbance by or dispute with the employees of the Company or any of its subsidiaries exists or, to the knowledge of the Company, is imminent that would reasonably be expected to have a Material Adverse Effect.

(kk) Neither the Company nor any of its subsidiaries (i) is in violation of its charter or by-laws (or similar organizational documents), (ii) is in default, and no event has occurred that, with notice or lapse of time or both, would constitute such a default, in the due performance or observance of any term, covenant, condition or other obligation contained in any indenture, mortgage, deed of trust, loan agreement, license or other agreement or instrument to which it is a party or by which it is bound or to which any of its properties or assets is subject, or (iii) is in violation of any statute or any order, rule or regulation of any court or governmental agency or body having jurisdiction over it or its property or assets or has failed to obtain any license, permit, certificate, franchise or other governmental authorization or permit necessary to the ownership of its property or to the conduct of its business, except in the case of clauses (ii) and (iii), to the extent any such conflict, breach, violation or default would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(ll) The Company and each of its subsidiaries (i) are, and at all times prior hereto were, in compliance with all laws, regulations, ordinances, rules, orders, judgments, decrees, permits or other legal requirements of any governmental authority, including without limitation any international, foreign, national, state, provincial, regional, or local authority, relating to pollution, the protection of human health or safety, the environment, or natural resources, or to use, handling, storage, manufacturing, transportation, treatment, discharge, disposal or release of hazardous or toxic substances or wastes, pollutants or contaminants (“**Environmental Laws**”) applicable to such entity, which compliance includes, without limitation, obtaining, maintaining and complying with all permits and authorizations and approvals required by Environmental Laws to conduct their respective businesses, and (ii) have not received notice or otherwise have knowledge of any actual or alleged violation of Environmental Laws, or of any actual or potential liability for or other obligation concerning the presence, disposal or release of hazardous or toxic substances or wastes, pollutants or contaminants, except in the case of clause (i) or (ii) where such non-compliance, violation, liability, or other obligation would not, in the aggregate, reasonably be expected to have a Material Adverse Effect. Except as described in the

most recent Preliminary Prospectus, (x) there are no proceedings that are pending, or known to be contemplated, against the Company or any of its subsidiaries under Environmental Laws in which a governmental authority is also a party, other than such proceedings regarding which it is reasonably believed no monetary sanctions of \$100,000 or more will be imposed, (y) the Company and its subsidiaries are not aware of any issues regarding compliance with Environmental Laws, including any pending or proposed Environmental Laws, or liabilities or other obligations under Environmental Laws or concerning hazardous or toxic substances or wastes, pollutants or contaminants, that would reasonably be expected to have a material effect on the capital expenditures, earnings or competitive position of the Company and its subsidiaries, and (z) none of the Company and its subsidiaries anticipates material capital expenditures relating to Environmental Laws.

(mm) The Company and each of its subsidiaries have filed all federal, state, local and foreign tax returns required to be filed through the date hereof, subject to permitted extensions, and have paid all taxes due, and no tax deficiency has been determined adversely to the Company or any of its subsidiaries, nor does the Company have any knowledge of any tax deficiencies that have been, or would reasonably be expected to be asserted against the Company, that would, in the aggregate, reasonably be expected to have a Material Adverse Effect.

(nn) (i) Each “employee benefit plan” (within the meaning of Section 3(3) of the Employee Retirement Security Act of 1974, as amended (“**ERISA**”)) for which the Company or any member of its “Controlled Group” (defined as any organization which is a member of a controlled group of corporations within the meaning of Section 414 of the Internal Revenue Code of 1986, as amended (the “**Code**”)) would have any liability (each a “**Plan**”) has been maintained in compliance with its terms and with the requirements of all applicable statutes, rules and regulations including ERISA and the Code, except for noncompliance that would not reasonably be expected to result in material liability to the Company or its subsidiaries; (ii) no prohibited transaction, within the meaning of Section 406 of ERISA or Section 4975 of the Code, has occurred with respect to any Plan excluding transactions effected pursuant to a statutory or administrative exemption; (iii) with respect to each Plan subject to Title IV of ERISA (A) no “reportable event” (within the meaning of Section 4043(c) of ERISA) has occurred or is reasonably expected to occur, (B) no “accumulated funding deficiency” (within the meaning of Section 302 of ERISA or Section 412 of the Code), whether or not waived, has occurred or is reasonably expected to occur, (C) the fair market value of the assets under each Plan that is required to be funded exceeds the present value of all benefits accrued under such Plan (determined based on those assumptions used to fund such Plan), and (D) neither the Company or any member of its Controlled Group has incurred, or reasonably expects to incur, any liability under Title IV of ERISA (other than contributions to the Plan or premiums to the Pension Benefit Guaranty Corporation in the ordinary course and without default) in respect of a Plan (including a “multiemployer plan”, within the meaning of Section 4001(c)(3) of ERISA); and (iv) each Plan that is intended to be qualified under Section 401(a) of the Code is so qualified and nothing has occurred, whether by action or by failure to act, which would cause the loss of such qualification.

(oo) The statistical and market-related data included or incorporated by reference in the most recent Preliminary Prospectus are based on or derived from sources that the Company believes to be reliable in all material respects.

(pp) Neither the Company nor any of its subsidiaries is, and as of the applicable Delivery Date and, after giving effect to the offer and sale of the Stock and the application of the proceeds therefrom as described under “Use of Proceeds” in the most recent Preliminary Prospectus and the Prospectus, none of them will be, (i) an “investment company” or a company “controlled” by an “investment company” within the meaning of the Investment Company Act of 1940, as amended (the “*Investment Company Act*”), and the rules and regulations of the Commission thereunder, or (ii) a “business development company” (as defined in Section 2(a)(48) of the Investment Company Act).

(qq) Except as described in the most recent Preliminary Prospectus, there are no contracts, agreements or understandings between the Company and any person granting such person the right (other than rights that have been waived in writing or otherwise satisfied) to require the Company to file a registration statement under the Securities Act with respect to any securities of the Company owned or to be owned by such person or to require the Company to include such securities in the securities registered pursuant to the Registration Statement or in any securities being registered pursuant to any other registration statement filed by the Company under the Securities Act.

(rr) Neither the Company nor any of its subsidiaries is a party to any contract, agreement or understanding with any person (other than this Agreement) that would give rise to a valid claim against any of them or the Underwriters for a brokerage commission, finder’s fee or like payment in connection with the offering and sale of the Stock.

(ss) The Company has not sold or issued any securities that would be integrated with the offering of the Stock contemplated by this Agreement pursuant to the Securities Act, the rules and regulations thereunder or the interpretations thereof by the Commission.

(tt) The Company and its affiliates have not taken, directly or indirectly, without giving effect to activities by the Underwriters, any action designed to or that has constituted or that would reasonably be expected to cause or result in the stabilization or manipulation of the price of any security of the Company in connection with the offering of the shares of the Stock.

(uu) The Stock is duly listed for quotation on The NASDAQ Global Market.

(vv) The Company has not distributed and, prior to the later to occur of any Delivery Date and completion of the distribution of the Stock, will not distribute any offering material in connection with the offering and sale of the Stock other than any Preliminary Prospectus, the Prospectus, any Issuer Free Writing Prospectus to which the Representatives have consented in accordance with Section 1(i) or 5(vi) and any Issuer Free Writing Prospectus set forth on Schedule V hereto.

(ww) Neither the Company nor any subsidiary is in violation of or has received notice of any violation with respect to any federal or state law relating to discrimination in the hiring, promotion or pay of employees, nor any applicable federal or state wage and hour laws,

nor any state law precluding the denial of credit due to the neighborhood in which a property is situated, the violation of any of which would reasonably be expected to have a Material Adverse Effect.

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

(yy) The operations of the Company and its subsidiaries are and have been conducted at all times in 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, 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.

(zz) 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 is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department (“**OFAC**”); and the Company will not directly or indirectly use the proceeds of the offering, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other person or entity, for the purpose of financing the activities of any person currently subject to any U.S. sanctions administered by OFAC.

(aaa) Except as described in the Preliminary Prospectus, the Company has not issued or sold any shares of Common Stock pursuant to the Controlled Equity Offering Sales Agreement, as of dated January 17, 2017, as amended on July 7, 2017, between the Company and Cantor Fitzgerald & Co.

Any certificate signed by any officer of the Company and delivered to the Representatives or counsel for the Underwriters in connection with the offering of the Stock shall be deemed a representation and warranty by the Company, as to matters covered thereby, to each Underwriter.

2. *Purchase of the Stock by the Underwriters.* On the basis of the representations, warranties and covenants contained in, and subject to the terms and conditions of, this Agreement, the Company agrees to sell 10,000,000 shares of the Firm Stock to the several Underwriters, and each of the Underwriters, severally and not jointly, agrees to purchase the number of shares of the Firm Stock set forth opposite that Underwriter’s name in Schedule I

hereto. The respective purchase obligations of the Underwriters with respect to the Firm Stock shall be rounded among the Underwriters to avoid fractional shares, as the Representatives may determine.

In addition, the Company grants to the Underwriters an option to purchase up to 1,500,000 additional shares of Option Stock. Such option is exercisable as set forth in Section 4 hereof. Each Underwriter agrees, severally and not jointly, to purchase the number of shares of Option Stock (subject to such adjustments to eliminate fractional shares as the Representatives may determine) that bears the same proportion to the total number of shares of Option Stock to be sold on such Delivery Date as the number of shares of Firm Stock set forth in Schedule I hereto opposite the name of such Underwriter bears to the total number of shares of Firm Stock.

The purchase price payable by the Underwriters for both the Firm Stock and any Option Stock is \$6.11 per share, less, in the case of the Option Stock, an amount per share equal to any dividends or distributions declared by the Company on its Common Stock and payable on the Firm Stock but not payable on such Option Stock.

The Company is not obligated to deliver any of the Firm Stock or Option Stock to be delivered on the applicable Delivery Date, except upon payment for all such Stock to be purchased on such Delivery Date as provided herein.

3. *Offering of Stock by the Underwriters*. Upon authorization by the Representatives of the release of the Firm Stock, the several Underwriters propose to offer the Firm Stock for sale upon the terms and conditions to be set forth in the Prospectus.

4. *Delivery of and Payment for the Stock*. Delivery of and payment for the Firm Stock shall be made at 10:00 A.M., New York City time, on the fourth full business day following the date of this Agreement or at such other date or place as shall be determined by agreement between the Representatives and the Company. This date and time are sometimes referred to as the “*Initial Delivery Date*”. Delivery of the Firm Stock shall be made to the Representatives for the account of each Underwriter against payment by the several Underwriters through the Representatives and of the respective aggregate purchase prices of the Firm Stock being sold by the Company to or upon the order of the Company of the purchase price by wire transfer in immediately available funds to the accounts specified by the Company. Time shall be of the essence, and delivery at the time and place specified pursuant to this Agreement is a further condition of the obligation of each Underwriter hereunder. The Company shall deliver the Firm Stock through the facilities of The Depository Trust Company (“*DTC*”) unless the Representatives shall otherwise instruct.

The option granted in Section 2 will expire 30 days after the date of this Agreement and may be exercised in whole or from time to time in part by written notice being given to the Company by the Representatives; *provided* that if such date falls on a day that is not a business day, the option granted in Section 2 will expire on the next succeeding business day. Such notice shall set forth the aggregate number of shares of Option Stock as to which the option is being exercised, the names in which the shares of Option Stock are to be registered, the denominations in which the shares of Option Stock are to be issued and the date and time, as determined by the Representatives, when the shares of Option Stock are to be delivered;

provided, however, that this date and time shall not be earlier than the Initial Delivery Date nor earlier than the second business day after the date on which the option shall have been exercised nor later than the fifth business day after the date on which the option shall have been exercised. Each date and time that shares of Option Stock are delivered is sometimes referred to as an “**Option Stock Delivery Date**”, and the Initial Delivery Date and any Option Stock Delivery Date are sometimes each referred to as a “**Delivery Date**”.

Delivery of the Option Stock by the Company and payment for the Option Stock by the several Underwriters through the Representatives shall be made at 10:00 A.M., New York City time, on the date specified in the corresponding notice described in the preceding paragraph or at such other date or place as shall be determined by agreement between the Representatives and the Company. On each Option Stock Delivery Date, the Company shall deliver or cause to be delivered the Option Stock to the Representatives for the account of each Underwriter against payment by the several Underwriters through the Representatives and of the respective aggregate purchase prices of the Option Stock being sold by the Company to or upon the order of the Company of the purchase price by wire transfer in immediately available funds to the accounts specified by the Company. Time shall be of the essence, and delivery at the time and place specified pursuant to this Agreement is a further condition of the obligation of each Underwriter hereunder. The Company shall deliver the Option Stock through the facilities of DTC unless the Representatives shall otherwise instruct.

5. *Further Agreements of the Company and the Underwriters*. (a) The Company agrees:

(i) To prepare the Prospectus in a form approved by the Representatives and to 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; to make no further amendment or any supplement to the Registration Statement or the Prospectus prior to the last Delivery Date except as provided herein; to advise the Representatives, promptly after it receives notice thereof, of the time when any amendment or supplement to the Registration Statement or the Prospectus has been filed and to furnish the Representatives with copies thereof; to advise the Representatives, promptly after it receives notice thereof, of the issuance by the Commission of any stop order or of any order preventing or suspending the use of the Prospectus or any Issuer Free Writing Prospectus, of the suspension of the qualification of the Stock for offering or sale in any jurisdiction, of the initiation or threatening of any proceeding or examination for any such purpose or of any request by the Commission for the amending or supplementing of the Registration Statement, the Prospectus or any Issuer Free Writing Prospectus or for additional information; and, in the event of the issuance of any stop order or of any order preventing or suspending the use of the Prospectus or any Issuer Free Writing Prospectus or suspending any such qualification, to use promptly its best efforts to obtain its withdrawal.

(ii) To furnish promptly to the Representatives and to counsel for the Underwriters a signed copy of the Registration Statement as originally filed with the Commission, and each amendment thereto filed with the Commission, including all consents and exhibits filed therewith.

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- (iii) To deliver promptly to the Representatives such number of the following documents as the Representatives shall reasonably request: (A) conformed copies of the Registration Statement as originally filed with the Commission and each amendment thereto (in each case excluding exhibits other than this Agreement and the computation of per share earnings), (B) each Preliminary Prospectus, the Prospectus and any amended or supplemented Prospectus, (C) each Issuer Free Writing Prospectus, and (D) any document incorporated by reference in any Preliminary Prospectus or the Prospectus; and, if the delivery of a prospectus is required at any time after the date hereof in connection with the offering or sale of the Stock or any other securities relating thereto and if at such time any events shall have occurred as a result of which the Prospectus as then amended or supplemented would include an untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made when such Prospectus is delivered, not misleading, or, if for any other reason in the opinion of counsel for the Underwriters or for the Company it shall be necessary to amend or supplement the Prospectus in order to comply with the Securities Act, to notify the Representatives and, upon their request, to file such document and to prepare and furnish without charge to each Underwriter and to any dealer in securities as many copies as the Representatives may from time to time reasonably request of an amended or supplemented Prospectus that will correct such statement or omission or effect such compliance.
- (iv) To file promptly with the Commission any amendment or supplement to the Registration Statement or the Prospectus, that may, in the judgment of the Company or the Representatives, be required by the Securities Act or requested by the Commission.
- (v) Prior to filing with the Commission any amendment or supplement to the Registration Statement, the Prospectus, any document incorporated by reference in the Prospectus or any amendment to any document incorporated by reference in the Prospectus to furnish a copy thereof to the Representatives and counsel for the Underwriters, and not to file any such amendment or supplement to which the Representatives shall reasonably object.
- (vi) Not to make any offer relating to the Stock that would constitute an Issuer Free Writing Prospectus without the prior written consent of the Representatives.
- (vii) To comply with all applicable requirements of Rule 433 under the Securities Act with respect to any Issuer Free Writing Prospectus. If at any time after the date hereof any events shall have occurred as a result of which any Issuer Free Writing Prospectus, as then amended or supplemented, would conflict with the information in the Registration Statement, the most recent Preliminary Prospectus or the Prospectus or would include an untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading, or, if for any other reason it shall be necessary in the opinion of counsel for the Underwriters or for the Company to amend or supplement any Issuer Free Writing Prospectus, to notify the Representatives and, upon their request, to file such document and to prepare and furnish without charge to each Underwriter as many copies as the Representatives may from time to time reasonably request of an amended or supplemented Issuer Free Writing Prospectus that will correct such conflict, statement or omission or effect such compliance.

(viii) As soon as practicable after the Effective Date (it being understood that the Company shall have until at least 410 days or, if the fourth quarter following the fiscal quarter that includes the Effective Date is the last fiscal quarter of the Company's fiscal year, 455 days after the end of the Company's current fiscal quarter), to make generally available to the Company's security holders and to deliver to the Representatives an earnings statement of the Company and its subsidiaries (which need not be audited) complying with Section 11(a) of the Securities Act and the rules and regulations thereunder (including, at the option of the Company, Rule 158).

(ix) Promptly from time to time to take such action as the Representatives may reasonably request to qualify the Stock for offering and sale under the securities or Blue Sky laws of Canada and such other jurisdictions as the Representatives may reasonably request and to comply with such laws so as to permit the continuance of sales and dealings therein in such jurisdictions for as long as may be necessary to complete the distribution of the Stock; *provided* that in connection therewith the Company shall not be required to (i) qualify as a foreign corporation in any jurisdiction in which it would not otherwise be required to so qualify, (ii) file a general consent to service of process in any such jurisdiction, or (iii) subject itself to taxation in any jurisdiction in which it would not otherwise be subject.

(x) For a period commencing on the date hereof and ending on the 60th day after the date of the Prospectus (the "**Lock-Up Period**"), not to, directly or indirectly, (A) offer for sale, sell, pledge, or otherwise dispose of (or enter into any transaction or device that is designed to, or could be expected to, result in the disposition by any person at any time in the future of), including through the issuance of a Placement Notice in accordance with Section 2 the Controlled Equity Offering Sales Agreement, dated January 17, 2017, as amended on July 7, 2017, between the Company and Cantor Fitzgerald & Co., any shares of Common Stock or securities convertible into or exercisable or exchangeable for Common Stock (other than (i) the Stock, (ii) shares of Common Stock or other securities issued pursuant to employee benefit plans, qualified stock option plans or other employee compensation plans existing on the date hereof or referred to in the most recent Preliminary Prospectus ("**Existing Plans**") or pursuant to currently outstanding options, warrants or rights not issued under one of those plans and (iii) shares of Common Stock or other securities issued in connection with acquisitions, strategic partnerships or lending, leasing or other commercial transactions (including joint ventures, marketing or distribution arrangements, collaboration agreements or intellectual property license agreements) in an amount not to exceed 10% of the Company's outstanding shares of Common Stock as of the Initial Delivery Date; *provided* that, in each case, the recipient of such shares of Common Stock or other securities executes and delivers a lock-up agreement in the form of Exhibit A hereto), or sell or grant options, rights or warrants with respect to any shares of Common Stock or securities convertible into or exchangeable for Common Stock (other than the grant of options or rights pursuant to Existing Plans; *provided* that, in each case, the recipient of such options or rights executes and delivers a lock-up agreement in the form of Exhibit A hereto), (B) enter into

any swap or other derivatives transaction that transfers to another, in whole or in part, any of the economic benefits or risks of ownership of such shares of Common Stock, whether any such transaction described in clause (A) or (B) above is to be settled by delivery of Common Stock or other securities, in cash or otherwise, (C) file or cause to be filed a registration statement, including any amendments thereto, with respect to the registration of any shares of Common Stock or securities convertible, exercisable or exchangeable into Common Stock or any other securities of the Company (other than any registration statement on Form S-8), or (D) publicly disclose the intention to do any of the foregoing, in each case without the prior written consent of Piper Jaffray & Co. and BMO Capital Markets Corp. on behalf of the Underwriters, and to cause each officer and director of the Company set forth on Schedule II hereto to furnish to Piper Jaffray & Co. and BMO Capital Markets Corp. prior to the Initial Delivery Date, a letter or letters, substantially in the form of Exhibit A hereto (the “**Lock-Up Agreements**”).

(xi) To apply the net proceeds from the sale of the Stock being sold by the Company substantially in accordance with the description as set forth in the Prospectus under the caption “Use of Proceeds.”

(xii) To file with the Commission such information on Form 10-Q or Form 10-K as may be required by Rule 463 under the Securities Act.

(xiii) If the Company elects to rely upon Rule 462(b) under the Securities Act, the Company shall file a Rule 462(b) Registration Statement with the Commission in compliance with Rule 462(b) under the Securities Act by 10:00 P.M., Washington, D.C. time, on the date of this Agreement, and the Company shall at the time of filing pay the Commission the filing fee for the Rule 462(b) Registration Statement.

(xiv) The Company will not take, and will use its best efforts to cause its affiliates not to take, directly or indirectly, without giving effect to activities by the Underwriters, any action designed to or that has constituted or that reasonably would be expected to cause or result in the stabilization or manipulation of the price of any security of the Company in connection with the offering of the Stock.

(xv) The Company will do and perform all things required or necessary to be done and performed under this Agreement by it prior to each Delivery Date, and to satisfy all conditions precedent to the Underwriters’ obligations hereunder to purchase the Stock.

(b) Each Underwriter severally agrees that such Underwriter shall not include any “issuer information” (as defined in Rule 433 under the Securities Act) in any “free writing prospectus” (as defined in Rule 405 under the Securities Act) used or referred to by such Underwriter without the prior written consent of the Company (any such issuer information with respect to whose use the Company has given its consent, “**Permitted Issuer Information**”); *provided* that (i) no such consent shall be required with respect to any such issuer information contained in any document filed by the Company with the Commission prior to the use of such free writing prospectus, and (ii) “issuer information”, as used in this Section 5(b), shall not be deemed to include information prepared by or on behalf of such Underwriter on the basis of or derived from issuer information.

6. *Expenses.* The Company agrees, whether or not the transactions contemplated by this Agreement are consummated or this Agreement is terminated, to pay all expenses, costs, fees and taxes incident to and in connection with (a) the authorization, issuance, sale and delivery of the Stock and any stamp duties or other taxes payable in that connection, and the preparation and printing of certificates for the Stock; (b) the preparation, printing and filing under the Securities Act of the Registration Statement (including any exhibits thereto), any Preliminary Prospectus, the Prospectus, any Issuer Free Writing Prospectus and any amendment or supplement thereto; (c) the distribution of the Registration Statement (including any exhibits thereto), any Preliminary Prospectus, the Prospectus, any Issuer Free Writing Prospectus and any amendment or supplement thereto, or any document incorporated by reference therein, all as provided in this Agreement; (d) the production and distribution of this Agreement, any supplemental agreement among Underwriters, and any other related documents in connection with the offering, purchase, sale and delivery of the Stock; (e) any required review by the FINRA of the terms of sale of the Stock (including related reasonable and documented fees and expenses of counsel to the Underwriters); (f) the listing of the Stock on The NASDAQ Global Market and/or any other exchange; (g) the qualification of the Stock under the securities laws of the several jurisdictions as provided in Section 5(a)(ix) and the preparation, printing and distribution of a Blue Sky Memorandum (including related reasonable and documented fees and expenses of counsel to the Underwriters); (h) the preparation, printing and distribution of one or more versions of the Preliminary Prospectus and the Prospectus for distribution in Canada, including in the form of a Canadian “wrapper” (including related reasonable and documented fees and expenses of Canadian counsel to the Underwriters); (i) the investor presentations on any “road show” undertaken in connection with the marketing of the Stock, including, without limitation, expenses associated with any electronic road show, travel and lodging expenses of the representatives and officers of the Company and fifty percent (50%) of the cost of any aircraft chartered in connection with the road show; (j) all other reasonable costs and out-of-pocket expenses of the Underwriters (including reasonable fees and disbursements of counsel) incident to the performance of its obligations hereunder not otherwise specifically provided for here; and (k) all other costs and expenses incident to the performance of the obligations of the Company under this Agreement; *provided* that (i) the amount payable by Company for the fees and disbursements of counsel to the Underwriters pursuant to subsections (e) and (g) of this Section 6 shall not exceed \$30,000 in the aggregate and that (ii) the amount payable by the Company for the expenses of the Underwriters pursuant to subsection (j) of this Section 6 shall not exceed \$100,000 in the aggregate; *provided, further*, that, except as provided in this Section 6 and in Section 11, the Underwriters shall pay their own costs and expenses, including the costs and expenses of their counsel, any transfer taxes on the Stock which they may sell and the expenses of advertising any offering of the Stock made by the Underwriters.

7. *Conditions of Underwriters' Obligations.* The respective obligations of the Underwriters hereunder are subject to the accuracy, when made and on each Delivery Date, of the representations and warranties of the Company contained herein, to the performance by the Company of its obligations hereunder, and to each of the following additional terms and conditions:

(a) The Prospectus shall have been timely filed with the Commission in accordance with Section 5(a)(i). The Company shall have complied with all filing requirements applicable to any Issuer Free Writing Prospectus used or referred to after the date hereof; no stop order suspending the effectiveness of the Registration Statement or preventing or suspending the use of the Prospectus or any Issuer Free Writing Prospectus shall have been issued and no proceeding or examination for such purpose shall have been initiated or threatened by the Commission; and any request of the Commission for inclusion of additional information in the Registration Statement or the Prospectus or otherwise shall have been complied with. If the Company has elected to rely upon Rule 462(b) under the Securities Act, the Rule 462(b) Registration Statement shall have become effective by 10:00 P.M., Washington, D.C. time, on the date of this Agreement.

(b) No Underwriter shall have discovered and disclosed to the Company on or prior to such Delivery Date that the Registration Statement, the Prospectus or the Pricing Disclosure Package, or any amendment or supplement thereto, contains an untrue statement of a fact which, in the opinion of Latham & Watkins LLP, counsel for the Underwriters, is material or omits to state a fact which, in the opinion of such counsel, is material and is required to be stated therein or is necessary to make the statements therein not misleading.

(c) All corporate proceedings and other legal matters incident to the authorization, form and validity of this Agreement, the Stock, the Registration Statement, the Prospectus and any Issuer Free Writing Prospectus, and all other legal matters relating to this Agreement and the transactions contemplated hereby shall be reasonably satisfactory in all material respects to counsel for the Underwriters, and the Company shall have furnished to such counsel all documents and information that they may reasonably request to enable them to pass upon such matters.

(d) Wilmer Cutler Pickering Hale and Dorr LLP shall have furnished to the Representatives its written opinion, as counsel to the Company, addressed to the Underwriters and dated such Delivery Date, substantially in the form attached hereto as Exhibit B. Foley Hoag LLP shall have furnished to the Representatives its written opinion, as patent counsel to the Company, addressed to the Underwriters and dated such Delivery Date, in form and substance reasonably satisfactory to the Representatives.

(e) The Representatives shall have received from Latham & Watkins LLP, counsel for the Underwriters, such opinion or opinions, dated such Delivery Date, with respect to the issuance and sale of the Stock, the Registration Statement, the Prospectus and the Pricing Disclosure Package and other related matters as the Representatives may reasonably require, and the Company shall have furnished to such counsel such documents as they reasonably request for the purpose of enabling them to pass upon such matters.

(f) At the time of execution of this Agreement, the Representatives shall have received from Ernst & Young LLP a letter, in form and substance satisfactory to the Representatives, addressed to the Underwriters and dated the date hereof (i) confirming

that they are independent public accountants within the meaning of the Securities Act and are in compliance with the applicable requirements relating to the qualification of accountants under Rule 2-01 of Regulation S-X of the Commission, and (ii) stating, as of the date hereof (or, with respect to matters involving changes or developments since the respective dates as of which specified financial information is given in the most recent Preliminary Prospectus, as of a date not more than three days prior to the date hereof), the conclusions and findings of such firm with respect to the financial information and other matters ordinarily covered by accountants' "comfort letters" to underwriters in connection with registered public offerings.

(g) With respect to the letter of Ernst & Young LLP referred to in the preceding paragraph and delivered to the Representatives concurrently with the execution of this Agreement (the "**initial letter**"), Ernst & Young LLP shall have furnished to the Representatives a letter (the "**bring-down letter**") of such accountants, addressed to the Underwriters and dated such Delivery Date (i) confirming that they are independent public accountants within the meaning of the Securities Act and are in compliance with the applicable requirements relating to the qualification of accountants under Rule 2-01 of Regulation S-X of the Commission, (ii) stating, as of the date of the bring-down letter (or, with respect to matters involving changes or developments since the respective dates as of which specified financial information is given in the Prospectus, as of a date not more than three days prior to the date of the bring-down letter), the conclusions and findings of such firm with respect to the financial information and other matters covered by the initial letter, and (iii) confirming in all material respects the conclusions and findings set forth in the initial letter.

(h) The Company shall have furnished to the Representatives a certificate, dated such Delivery Date, of its Chief Executive Officer and its Chief Financial Officer as to such matters as the Representatives may reasonably request, including, without limitation, a statement:

(i) That the representations, warranties and agreements of the Company in Section 1 are true and correct on and as of such Delivery Date, and the Company has complied with all its agreements contained herein and satisfied all the conditions on its part to be performed or satisfied hereunder at or prior to such Delivery Date;

(ii) That no stop order suspending the effectiveness of the Registration Statement has been issued; and no proceedings or examination for that purpose have been instituted or, to the knowledge of such officers, threatened and the Commission shall not have notified the Company of any objection to the use of the form of the Registration Statement or any post-effective amendment thereto;

(iii) That they have examined the Registration Statement, the Prospectus and the Pricing Disclosure Package, and, in their opinion, (A) (1) the Registration Statement, as of the Effective Date, (2) the Prospectus, as of its date and on the applicable Delivery Date, and (3) the Pricing Disclosure Package, as of the Applicable Time, did not and do not contain any untrue statement of a

material fact and did not and do not omit to state a material fact required to be stated therein or necessary to make the statements therein (except in the case of the Registration Statement, in the light of the circumstances under which they were made) not misleading, and (B) since the Effective Date, no event has occurred that should have been set forth in a supplement or amendment to the Registration Statement, the Prospectus or any Issuer Free Writing Prospectus that has not been so set forth in a supplement or amendment thereto or otherwise incorporated by reference therein; and

(iv) To the effect of Section 7(i) (*provided that (A) no representation with respect to the judgment of the Representatives need be made and (B) such representation may be qualified by Material Adverse Effect*) and Section 7(j).

(i) Except as described in the most recent Preliminary Prospectus, (i) neither the Company nor any of its subsidiaries shall have sustained, since the date of the latest audited financial statements included or incorporated by reference in the most recent Preliminary Prospectus, any loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree, or (ii) since such date there shall not have been any change in the capital stock or long-term debt of the Company or any of its subsidiaries or any change, or any development involving a prospective change, in or affecting the condition (financial or otherwise), results of operations, stockholders' equity, properties, management, business or prospects of the Company and its subsidiaries taken as a whole, the effect of which, in any such case described in clause (i) or (ii), is, individually or in the aggregate, in the judgment of the Representatives, so material and adverse as to make it impracticable or inadvisable to proceed with the public offering or the delivery of the Stock being delivered on such Delivery Date on the terms and in the manner contemplated in the Prospectus.

(j) Subsequent to the execution and delivery of this Agreement (i) no downgrading shall have occurred in the rating accorded the Company's debt securities or preferred stock by any "nationally recognized statistical rating organization" (as that term is defined by the Commission for purposes of Section 3(a)(62) of the Exchange Act), and (ii) no such organization shall have publicly announced that it has under surveillance or review, with possible negative implications, its rating of any of the Company's debt securities or preferred stock.

(k) Subsequent to the execution and delivery of this Agreement there shall not have occurred any of the following: (i) (A) trading in securities generally on any securities exchange that has registered with the Commission under Section 6 of the Exchange Act (including the New York Stock Exchange, The NASDAQ Global Select Market, The NASDAQ Global Market or The NASDAQ Capital Market), or (B) trading in any securities of the Company on any exchange or in the over-the-counter market, shall have been suspended or materially limited or the settlement of such trading generally shall have been materially disrupted or minimum prices shall have been established on any such exchange or such market by the Commission, by such exchange or by any other regulatory body or governmental authority having jurisdiction, (ii) a

general moratorium on commercial banking activities shall have been declared by federal or state authorities, (iii) the United States shall have become engaged in hostilities, there shall have been an escalation in hostilities involving the United States or there shall have been a declaration of a national emergency or war by the United States, or (iv) there shall have occurred such a material adverse change in general economic, political or financial conditions, including, without limitation, as a result of terrorist activities after the date hereof (or the effect of international conditions on the financial markets in the United States shall be such), as to make it, in the judgment of the Representatives, impracticable or inadvisable to proceed with the public offering or delivery of the Stock being delivered on such Delivery Date on the terms and in the manner contemplated in the Prospectus.

(l) The Stock to be sold at the Delivery Date shall have been duly listed for quotation on The NASDAQ Global Market.

(m) The Lock-Up Agreements between the Representatives and the officers and directors of the Company set forth on Schedule II, delivered to the Representatives on or before the date of this Agreement, shall be in full force and effect on such Delivery Date.

(n) The Representatives shall have received, on the date hereof, a certificate from the senior vice president, finance of the Company, in his capacity as such, in a form reasonably agreed by the Underwriters and the Company, certifying as to certain factual statements in the Registration Statement and the Prospectus.

(o) On or prior to each Delivery Date, the Company shall have furnished to the Underwriters such further certificates and documents as the Representatives may reasonably request.

All opinions, letters, evidence and certificates mentioned above or elsewhere in this Agreement shall be deemed to be in compliance with the provisions hereof only if they are in form and substance reasonably satisfactory to counsel for the Underwriters.

8. *Indemnification and Contribution.*

(a) The Company hereby agrees to indemnify and hold harmless each Underwriter, its affiliates, directors, officers and employees and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, from and against any loss, claim, damage or liability, joint or several, or any action in respect thereof (including, but not limited to, any loss, claim, damage, liability or action relating to purchases and sales of Stock), to which that Underwriter, affiliate, director, officer, employee or controlling person may become subject, under the Securities Act or otherwise, insofar as such loss, claim, damage, liability or action arises out of, or is based upon, (i) any untrue statement or alleged untrue statement of a material fact contained in (A) any Preliminary Prospectus, the Registration Statement, the Prospectus or in any amendment or supplement thereto, (B) any Issuer Free Writing Prospectus or in any amendment or supplement thereto, (C) any Permitted Issuer Information used or referred to in any "free writing prospectus" (as

defined in Rule 405 under the Securities Act) used or referred to by any Underwriter, (D) any materials or information provided to investors by, or with the approval of, the Company in connection with the marketing of the offering of the Stock, including any “road show” (as defined in Rule 433 under the Securities Act) not constituting an Issuer Free Writing Prospectus (“**Marketing Materials**”), or (E) any Blue Sky application or other document prepared or executed by the Company (or based upon any written information furnished by the Company specifically for use therein) specifically for the purpose of qualifying any or all of the Stock under the securities laws of any state or other jurisdiction (any such application, document or information being hereinafter called a “**Blue Sky Application**”) or (ii) the omission or alleged omission to state in any Preliminary Prospectus, the Registration Statement, the Prospectus, any Issuer Free Writing Prospectus or in any amendment or supplement thereto or in any Permitted Issuer Information, any Marketing Materials or any Blue Sky Application, any material fact required to be stated therein or necessary to make the statements therein not misleading, and shall reimburse each Underwriter and each such affiliate, director, officer, employee or controlling person promptly upon demand for any legal or other expenses reasonably incurred by that Underwriter, affiliate, director, officer, employee or controlling person in connection with investigating or defending or preparing to defend against any such loss, claim, damage, liability or action as such expenses are incurred; *provided, however*, that the Company shall not be liable in any such case to the extent that any such loss, claim, damage, liability or action arises out of, or is based upon, any untrue statement or alleged untrue statement or omission or alleged omission made in any Preliminary Prospectus, the Registration Statement, the Prospectus, any Issuer Free Writing Prospectus or in any such amendment or supplement thereto or in any Permitted Issuer Information, any Marketing Materials or any Blue Sky Application, in reliance upon and in conformity with written information concerning such Underwriter furnished to the Company through the Representatives by or on behalf of any Underwriter specifically for inclusion therein, which information consists solely of the information specified in Section 8(e). The foregoing indemnity agreement is in addition to any liability which the Company may otherwise have to any Underwriter or to any affiliate, director, officer, employee or controlling person of that Underwriter.

(b) Each Underwriter, severally and not jointly, shall indemnify and hold harmless the Company, its directors, officers and employees, 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, from and against any loss, claim, damage or liability, joint or several, or any action in respect thereof, to which the Company or any such director, officer, employee or controlling person may become subject, under the Securities Act or otherwise, insofar as such loss, claim, damage, liability or action arises out of, or is based upon, (i) any untrue statement or alleged untrue statement of a material fact contained in any Preliminary Prospectus, the Registration Statement, the Prospectus, any Issuer Free Writing Prospectus or in any amendment or supplement thereto or in any Marketing Materials or Blue Sky Application, or (ii) the omission or alleged omission to state in any Preliminary Prospectus, the Registration Statement, the Prospectus, any Issuer Free Writing Prospectus or in any amendment or supplement thereto or in any Marketing Materials or Blue Sky Application, any material fact required to be stated therein or necessary to make the statements therein not misleading, but in each case only

to the extent that the untrue statement or alleged untrue statement or omission or alleged omission was made in reliance upon and in conformity with written information concerning such Underwriter furnished to the Company through the Representatives by or on behalf of that Underwriter specifically for inclusion therein, which information is limited to the information set forth in Section 8(e). The foregoing indemnity agreement is in addition to any liability that any Underwriter may otherwise have to the Company or any such director, officer, employee or controlling person.

(c) Promptly after receipt by an indemnified party under this Section 8 of notice of any claim or the commencement of any action, the indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under this Section 8, notify the indemnifying party in writing of the claim or the commencement of that action; *provided, however*, that the failure to notify the indemnifying party shall not relieve it from any liability which it may have under this Section 8 except to the extent it has been materially prejudiced (through the forfeiture of substantive rights and defenses) by such failure and, *provided, further*, that the failure to notify the indemnifying party shall not relieve it from any liability which it may have to an indemnified party otherwise than under this Section 8. If any such claim or action shall be brought against an indemnified party, and it shall notify the indemnifying party thereof, the indemnifying party shall be entitled to participate therein and, to the extent that it wishes, jointly with any other similarly notified indemnifying party, to assume the defense thereof with counsel reasonably satisfactory to the indemnified party. After notice from the indemnifying party to the indemnified party of its election to assume the defense of such claim or action, the indemnifying party shall not be liable to the indemnified party under this Section 8 for any legal or other expenses subsequently incurred by the indemnified party in connection with the defense thereof other than reasonable costs of investigation; *provided, however*, that the indemnified party shall have the right to employ counsel to represent jointly the indemnified party and those other indemnified parties and their respective directors, officers, employees and controlling persons who may be subject to liability arising out of any claim in respect of which indemnity may be sought under this Section 8 if (i) the indemnified party and the indemnifying party shall have so mutually agreed; (ii) the indemnifying party has failed within a reasonable time to retain counsel reasonably satisfactory to the indemnified party; (iii) the indemnified party and its directors, officers, employees and controlling persons shall have reasonably concluded that there may be legal defenses available to them that are different from or in addition to those available to the indemnifying party; or (iv) the named parties in any such proceeding (including any impleaded parties) include both the indemnified parties or their respective directors, officers, employees or controlling persons, on the one hand, and the indemnifying party, on the other hand, and representation of both sets of parties by the same counsel would be inappropriate due to actual or potential differing interests between them, and in any such event the fees and expenses of such separate counsel shall be paid by the indemnifying party. No indemnifying party shall (x) without the prior written consent of the indemnified parties (which consent shall not be unreasonably withheld, conditioned or delayed), settle or compromise or consent to the entry of any judgment with respect to any pending or threatened claim, action, suit or proceeding in respect of which indemnification or contribution may be sought hereunder (whether or not the indemnified parties are actual or potential parties to such claim or action) unless

such settlement, compromise or consent includes an unconditional release of each indemnified party from all liability arising out of such claim, action, suit or 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 any indemnified party, or (y) be liable for any settlement of any such action effected without its written consent (which consent shall not be unreasonably withheld, conditioned or delayed), but if settled with the consent of the indemnifying party or if there be a final judgment for the plaintiff in any such action, the indemnifying party agrees to indemnify and hold harmless any indemnified party from and against any loss or liability by reason of such settlement or judgment.

(d) If the indemnification provided for in this Section 8 shall for any reason be unavailable to or insufficient to hold harmless an indemnified party under Section 8(a) or 8(b) in respect of any loss, claim, damage or liability, or any action in respect thereof, referred to therein, then each indemnifying party shall, in lieu of indemnifying such indemnified party, contribute to the amount paid or payable by such indemnified party as a result of such loss, claim, damage or liability, or action in respect thereof, (i) in such proportion as shall be appropriate to reflect the relative benefits received by the Company, on the one hand, and the Underwriters, on the other, from the offering of the Stock, or (ii) if the allocation provided by clause (i) above is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause (i) above but also the relative fault of the Company, on the one hand, and the Underwriters, on the other, with respect to the statements or omissions that resulted in such loss, claim, damage or liability, or action in respect thereof, as well as any other relevant equitable considerations. The relative benefits received by the Company, on the one hand, and the Underwriters, on the other, with respect to such offering shall be deemed to be in the same proportion as the total net proceeds from the offering of the Stock purchased under this Agreement (before deducting expenses) received by the Company, as set forth in the table on the cover page of the Prospectus, on the one hand, and the total underwriting discounts and commissions received by the Underwriters with respect to the shares of the Stock purchased under this Agreement, as set forth in the table on the cover page of the Prospectus, on the other hand. The relative fault shall be determined by reference to whether the untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the Company or the Underwriters, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contributions pursuant to this Section 8(d) were to be determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation that does not take into account the equitable considerations referred to herein. The amount paid or payable by an indemnified party as a result of the loss, claim, damage or liability, or action in respect thereof, referred to above in this Section 8(d) shall be deemed to include, for purposes of this Section 8(d), any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim. Notwithstanding the provisions of this Section 8(d), in no event shall an Underwriter be required to contribute any amount in excess of the amount by which the total underwriting discounts and commissions received by such Underwriter with respect to the offering of the Stock

exceeds the amount of any damages that such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. Each of the Underwriters' obligations to contribute as provided in this Section 8(d) are several in proportion to their respective underwriting obligations and not joint.

(e) The Underwriters severally confirm and the Company acknowledges and agrees that the statements regarding delivery of shares by the Underwriters set forth on the cover page of, and the concession and reallowance figures and the paragraph relating to stabilization by the Underwriters appearing under the caption "Underwriting" in, the most recent Preliminary Prospectus and the Prospectus are correct and constitute the only information concerning such Underwriters furnished in writing to the Company by or on behalf of the Underwriters specifically for inclusion in any Preliminary Prospectus, the Registration Statement, the Prospectus, any Issuer Free Writing Prospectus or in any amendment or supplement thereto or in any Marketing Materials.

9. *Defaulting Underwriters* .

(a) If, on any Delivery Date, any Underwriter defaults in its obligations to purchase the Stock that it has agreed to purchase under this Agreement, the remaining non-defaulting Underwriters may in their discretion arrange for the purchase of such Stock by the non-defaulting Underwriters or other persons satisfactory to the Company on the terms contained in this Agreement. If, within 36 hours after any such default by any Underwriter, the non-defaulting Underwriters do not arrange for the purchase of such Stock, then the Company shall be entitled to a further period of 36 hours within which to procure other persons satisfactory to the non-defaulting Underwriters to purchase such Stock on such terms. In the event that within the respective prescribed periods, the non-defaulting Underwriters notify the Company that they have so arranged for the purchase of such Stock, or the Company notifies the non-defaulting Underwriters that it has so arranged for the purchase of such Stock, either the non-defaulting Underwriters or the Company may postpone such Delivery Date for up to seven full business days in order to effect any changes that in the opinion of counsel for the Company or counsel for the Underwriters may be necessary in the Registration Statement, the Prospectus or in any other document or arrangement, and the Company agrees to promptly prepare any amendment or supplement to the Registration Statement, the Prospectus or in any such other document or arrangement that effects any such changes. As used in this Agreement, the term "Underwriter" includes, for all purposes of this Agreement unless the context requires otherwise, any party not listed in Schedule I hereto that, pursuant to this Section 9, purchases Stock that a defaulting Underwriter agreed but failed to purchase.

(b) If, after giving effect to any arrangements for the purchase of the Stock of a defaulting Underwriter or Underwriters by the non-defaulting Underwriters and the Company as provided in paragraph (a) above, the total number of shares of the Stock that remains unpurchased does not exceed one-eleventh of the total number of shares of all

the Stock, then the Company shall have the right to require each non-defaulting Underwriter to purchase the total number of shares of Stock that such Underwriter agreed to purchase hereunder plus such Underwriter's pro rata share (based on the total number of shares of Stock that such Underwriter agreed to purchase hereunder) of the Stock of such defaulting Underwriter or Underwriters for which such arrangements have not been made; *provided* that the non-defaulting Underwriters shall not be obligated to purchase more than 110% of the total number of shares of Stock that it agreed to purchase on such Delivery Date pursuant to the terms of Section 2.

(c) If, after giving effect to any arrangements for the purchase of the Stock of a defaulting Underwriter or Underwriters by the non-defaulting Underwriters and the Company as provided in paragraph (a) above, the total number of shares of Stock that remains unpurchased exceeds one-eleventh of the total number of shares of all the Stock, or if the Company shall not exercise the right described in paragraph (b) above, then this Agreement shall terminate without liability on the part of the non-defaulting Underwriters. Any termination of this Agreement pursuant to this Section 9 shall be without liability on the part of the Company, except that the Company will continue to be liable for the payment of expenses as set forth in Sections 6 and 11 and except that the provisions of Section 8 shall not terminate and shall remain in effect.

(d) Nothing contained herein shall relieve a defaulting Underwriter of any liability it may have to the Company or any non-defaulting Underwriter for damages caused by its default.

10. *Termination.* The obligations of the Underwriters hereunder may be terminated by the Representatives by notice given to and received by the Company prior to delivery of and payment for the Firm Stock if, prior to that time, any of the events described in Sections 7(i), 7(j) and 7(k) shall have occurred or if the Underwriters shall decline to purchase the Stock for any reason expressly permitted under this Agreement.

11. *Reimbursement of Underwriters' Expenses.* If (a) the Company shall fail to tender the Stock for delivery to the Underwriters for any reason, or (b) the Underwriters shall decline to purchase the Stock for any reason expressly permitted under this Agreement, the Company will reimburse the Underwriters for all reasonable out-of-pocket expenses (including reasonable and documented fees and disbursements of counsel for the Underwriters) incurred by the Underwriters in connection with this Agreement and the proposed purchase of the Stock, and upon demand the Company shall pay the full amount thereof to the Representatives. If this Agreement is terminated pursuant to Section 9 by reason of the default of one or more Underwriters, the Company shall not be obligated to reimburse any defaulting Underwriter on account of those expenses.

12. *Research Analyst Independence.* The Company acknowledges that the Underwriters' research analysts and research departments are required to be independent from their respective investment banking divisions and are subject to certain regulations and internal policies, and that such Underwriters' research analysts may hold views and make statements or investment recommendations and/or publish research reports with respect to the Company and/or the offering that differ from the views of their respective investment banking divisions. The

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

13. *No Fiduciary Duty*. The Company acknowledges and agrees that in connection with this offering, sale of the Stock or any other services the Underwriters may be deemed to be providing hereunder, notwithstanding any preexisting relationship, advisory or otherwise, between the parties or any oral representations or assurances previously or subsequently made by the Underwriters: (a) no fiduciary or agency relationship between the Company and any other person, on the one hand, and the Underwriters, on the other, exists; (b) the Underwriters are not acting as advisors, expert or otherwise, to the Company, including, without limitation, with respect to the determination of the public offering price of the Stock, and such relationship between the Company, on the one hand, and the Underwriters, on the other, is entirely and solely commercial, based on arms-length negotiations; (c) any duties and obligations that the Underwriters may have to the Company shall be limited to those duties and obligations specifically stated herein; and (d) the Underwriters and their respective affiliates may have interests that differ from those of the Company. The Company hereby waives any claims that the Company may have against the Underwriters with respect to any breach of fiduciary duty in connection with this offering.

14. *Notices, etc.* All statements, requests, notices and agreements hereunder shall be in writing, and:

(a) if to the Underwriters, shall be delivered or sent by mail or facsimile transmission to Piper Jaffray & Co., 800 Nicollet Mall, Suite 800, Minneapolis MN 55402 (fax no.: (612) 303-1070); Attention: Equity Capital Markets and (fax no. (612) 303-1068); Attention: Legal Department, and BMO Capital Markets Corp., Spear Tower, One Market Plaza, Suite 1515, San Francisco, CA 94105, Attention: David Parrot, (Fax: (415) 397-1888), with a copy to: BMO Capital Markets Corp., 3 Times Square, New York, NY 10036, Attention: Legal Department (Fax: (212) 702-1205) and

(b) if to the Company, shall be delivered or sent by mail or facsimile transmission to the address of the Company set forth in the Registration Statement, Attention: Chief Executive (Fax: (617) 926-3557).

Any such statements, requests, notices or agreements shall take effect at the time of receipt thereof. The Company shall be entitled to act and rely upon any request, consent, notice or agreement given or made on behalf of the Representatives.

15. *Persons Entitled to Benefit of Agreement* . This Agreement shall inure to the benefit of and be binding upon the Underwriters, the Company, and their respective successors. This Agreement and the terms and provisions hereof are for the sole benefit of only those persons, except that (a) the representations, warranties, indemnities and agreements of the Company contained in this Agreement shall also be deemed to be for the benefit of the directors, officers and employees of the Underwriters and each person or persons, if any, who control any Underwriter within the meaning of Section 15 of the Securities Act, and (b) the indemnity agreement of the Underwriters contained in Section 8(b) of this Agreement shall be deemed to be for the benefit of the directors of the Company, the officers of the Company who have signed the Registration Statement and any person controlling the Company within the meaning of Section 15 of the Securities Act. Nothing in this Agreement is intended or shall be construed to give any person, other than the persons referred to in this Section 15, any legal or equitable right, remedy or claim under or in respect of this Agreement or any provision contained herein.

16. *Survival*. The respective indemnities, representations, warranties and agreements of the Company and the Underwriters contained in this Agreement or made by or on behalf of them, respectively, pursuant to this Agreement, shall survive the delivery of and payment for the Stock and shall remain in full force and effect, regardless of any investigation made by or on behalf of any of them or any person controlling any of them.

17. *Definition of the Terms "Business Day", "Affiliate" and "Subsidiary"* . For purposes of this Agreement, (a) "**business day**" means each Monday, Tuesday, Wednesday, Thursday or Friday that is not a day on which banking institutions in New York are generally authorized or obligated by law or executive order to close, and (b) "**affiliate**" and "**subsidiary**" have the meanings set forth in Rule 405 under the Securities Act.

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

19. *Waiver of Jury Trial* . The Company and the Underwriters hereby irrevocably waive, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Agreement or the transactions contemplated hereby.

20. *Counterparts*. This Agreement may be executed in one or more counterparts and, if executed in more than one counterpart, the executed counterparts shall each be deemed to be an original but all such counterparts shall together constitute one and the same instrument.

21. *Headings*. The headings herein are inserted for convenience of reference only and are not intended to be part of, or to affect the meaning or interpretation of, this Agreement.

If the foregoing correctly sets forth the agreement between the Company and the Underwriters, please indicate your acceptance in the space provided for that purpose below.

Very truly yours,

TETRAPHASE PHARMACEUTICALS, INC.

By: /s/ Guy Macdonald

Name: Guy Macdonald

Title: CEO

Accepted:

For themselves and as Representatives
of the several Underwriters named
in Schedule I hereto

By P I P E R J A F F R A Y & C O .

By: /s/ Christio L. Christina
Authorized Representative

By B M O C A P I T A L M A R K E T S C O R P .

By: /s/ Mihir Mantri
Authorized Representative

SCHEDULE I

<u>Underwriters</u>	<u>Number of Shares of Firm Stock</u>
Piper Jaffray & Co.	3,500,000
BMO Capital Markets Corp.	2,500,000
Stifel, Nicolaus & Company, Incorporated	2,300,000
SunTrust Robinson Humphrey, Inc.	1,200,000
H.C. Wainwright & Co. LLC	500,000
Total	<u>10,000,000</u>

SCHEDULE II

PERSONS DELIVERING LOCK-UP AGREEMENTS

Directors

L. Patrick Gage
Garen Bohlin
Jeffrey A. Chodakewitz
John G. Freund
Gerri Henwood
Nancy Wysenski

Officers

Guy Macdonald
Jacques Dumas
Patrick T. Horn
Maria Stahl
Christopher Watt

SCHEDULE III

ORALLY CONVEYED PRICING INFORMATION

1. \$6.50 per share
2. 10,000,000 shares of Firm Stock and 1,500,000 shares of Option Stock.

SCHEDULE IV

ISSUER FREE WRITING PROSPECTUSES – ROAD SHOW MATERIALS

Electronic Road Show.

SCHEDULE V

ISSUER FREE WRITING PROSPECTUS

None.

WILMERHALE

July 28, 2017

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Tetraphase Pharmaceuticals, Inc.
480 Arsenal Way
Watertown, MA 02472

Re: Registration Statement on Form S-3

Ladies and Gentlemen:

This opinion is being furnished to you in connection with (i) the Registration Statement on Form S-3 (File No. 333-218816) (the "Registration Statement") filed by Tetraphase Pharmaceuticals, Inc., a Delaware corporation (the "Company"), with the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Securities Act"), for the registration of, among other things, shares of Common Stock, par value \$0.001 per share, of the Company, which may be issued from time to time on a delayed or continuous basis pursuant to Rule 415 under the Securities Act for an aggregate initial offering price not to exceed \$100,000,000, as set forth in the Registration Statement and the prospectus contained therein (the "Base Prospectus") and (ii) the prospectus supplement, dated July 27, 2017 (the "Prospectus Supplement" and, together with the Base Prospectus, the "Prospectus") relating to the issuance and sale pursuant to the Registration Statement of up to 11,500,000 shares of Common Stock (the "Shares"), including Shares issuable upon exercise of an option to purchase additional shares granted by the Company.

The Shares are to be offered and sold by the Company pursuant to an underwriting agreement dated July 27, 2017 (the "Underwriting Agreement"), among the Company and Piper Jaffray & Co. and BMO Capital Markets Corp., as representatives of the several underwriters listed on Schedule I to the Underwriting Agreement, the form of which is being filed with the Commission as Exhibit 1.1 to the Company's Current Report on Form 8-K, filed on the date hereof.

We are acting as counsel for the Company in connection with the issue and sale by the Company of the Shares. We have examined copies of the Registration Statement and the Prospectus as filed with the Commission. We have also examined and relied upon the Underwriting Agreement, minutes of meetings of the stockholders and the Board of Directors of the Company as provided to us by the Company, the Certificate of Incorporation and By-Laws of the Company, each as restated and/or amended to date, and such other documents as we have deemed necessary for purposes of rendering the opinions hereinafter set forth.

In our examination of the foregoing documents, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as copies, the authenticity of the originals of such latter documents and the legal competence of all signatories to such documents.

We express no opinion herein as to the laws of any state or jurisdiction other than the state laws of the Commonwealth of Massachusetts, the General Corporation Law of the State of Delaware and the federal laws of the United States of America.

Based upon and subject to the foregoing, we are of the opinion that the Shares have been duly authorized for issuance and, when the Shares are issued and paid for in accordance with the terms and conditions of the Underwriting Agreement, the Shares will be validly issued, fully paid and nonassessable.

Wilmer Cutler Pickering Hale and Dorr LLP, 60 State Street, Boston, Massachusetts 02109
Beijing Berlin Boston Brussels Denver Frankfurt London Los Angeles New York Palo Alto Washington

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Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

We hereby consent to the filing of this opinion with the Commission, in accordance with the requirements of Item 601(b)(5) of Regulation S-K under the Securities Act, as an exhibit to the Current Report on Form 8-K to be filed by the Company on the date hereof in connection with the issuance and sale of the Shares and to the use of our name therein and in the related Prospectus Supplement under the caption "Legal Matters." In giving such consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Sincerely,

WILMER CUTLER PICKERING HALE
AND DORR LLP

By: /s/ Stuart M. Falber

Stuart M. Falber, a Partner



Tetraphase Announces Pricing of Public Offering of Common Stock

WATERTOWN, Mass., July 27, 2017 – Tetraphase Pharmaceuticals, Inc. (NASDAQ:TPPH), a clinical stage biopharmaceutical company developing novel antibiotics to treat life-threatening multidrug-resistant (MDR) infections, today announced the pricing of an underwritten public offering of 10,000,000 shares of its common stock for a public offering price of \$6.50 per share. The gross proceeds to Tetraphase from this offering are expected to be \$65.0 million, before deducting underwriting discounts and commissions and offering expenses payable by Tetraphase. Tetraphase has granted to the underwriters participating in the offering a 30-day option to purchase up to an additional 1,500,000 shares of common stock on the same terms and conditions as the offering. All of the shares of common stock being sold in the offering are to be sold by Tetraphase. The offering is expected to close on or about August 2, 2017, subject to customary closing conditions.

Piper Jaffray, BMO Capital Markets and Stifel are acting as joint bookrunning managers for the offering. SunTrust Robinson Humphrey is acting as lead manager and H.C. Wainwright & Co. is acting as manager for the offering.

A shelf registration statement relating to the shares of common stock offered in the public offering described above was filed with the Securities and Exchange Commission (SEC) on June 16, 2017 and declared effective by the SEC on July 5, 2017. The offering will be made only by means of the written prospectus and prospectus supplement that form a part of the registration statement. A preliminary prospectus supplement related to the offering has been filed with the SEC and may be obtained for free by visiting EDGAR on the SEC website at www.sec.gov. A final prospectus supplement related to the offering will be filed with the SEC. When available, copies of the final prospectus supplement and the accompanying prospectus relating to the securities being offered may also be obtained by contacting Piper Jaffray & Co., Attention: Prospectus Department, 800 Nicollet Mall, J12S03, Minneapolis, MN 55402, telephone: (800) 747-3924, email: prospectus@pjc.com, by contacting BMO Capital Markets Corp. at 3 Times Square, New York, NY 10036, Attention: Equity Syndicate Department, by telephone at (800) 414-3627 or by email to bmo_prospectus@bmo.com or by contacting Stifel, Nicolaus & Company, Incorporated, Attention: Syndicate, One Montgomery Street, Suite 3700, San Francisco, California 94104, by telephone at (415) 364-2720 or by email to syndprospectus@stifel.com.

This press release shall not constitute an offer to sell or the solicitation of an offer to buy the securities being offered, nor shall there be any sale of the securities being offered 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 Tetraphase Pharmaceuticals, Inc.

Tetraphase is a clinical-stage biopharmaceutical company using its proprietary chemistry technology to create novel antibiotics for serious and life-threatening bacterial infections, including those caused by many of the multidrug-resistant (MDR) bacteria highlighted as urgent public health threats by the CDC. Tetraphase has created more than 3,000 novel tetracycline analogs using its proprietary technology platform. Tetraphase's pipeline includes three antibiotic clinical candidates: eravacycline, which is in Phase 3 clinical trials, and TP-271 and TP-6076, which are in Phase 1 clinical trials.

Forward-Looking Statements

Statements contained in this press release about Tetraphase that are not purely historical, and all other statements that are not purely historical, may be deemed to be forward-looking statements for purposes of the safe harbor provisions under The Private Securities Litigation Reform Act of 1995. The words "anticipates," "believes," "estimates," "expects," "intends," "may," "plans," "projects," "will," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements involve known and unknown risks and uncertainties that may cause Tetraphase's actual results, performance or achievements to be materially different from those expressed or implied by the forward-looking statements Tetraphase makes. Important factors that may cause or contribute to such differences include whether or not Tetraphase will consummate the offering, Tetraphase's ability to satisfy customary closing conditions related to the proposed offering, and such other factors as are set forth in the risk factors detailed from time to time in Tetraphase's periodic reports and registration statements filed with the SEC including, without limitation, the risk factors detailed in Tetraphase's Quarterly Report on Form 10-Q filed with the SEC on May 8, 2017 and the preliminary prospectus supplement filed with the SEC on July 27, 2017 under the heading "Risk Factors." You should not place undue reliance on these forward-looking statements. In addition, any forward-looking statements represent Tetraphase's views only as of today and should not be relied upon as representing Tetraphase's views as of any subsequent date. Tetraphase disclaims any obligation to update any forward-looking statements.

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