
**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): January 4, 2019

Alder BioPharmaceuticals, Inc.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction
of incorporation)

001-36431
(Commission
File Number)

90-0134860
(IRS Employer
Identification No.)

11804 North Creek Parkway South
Bothell, WA
(Address of principal executive offices)

98011
(Zip Code)

(425) 205-2900
Registrant's telephone number, including area code:

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

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

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 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 January 4, 2019, Alder BioPharmaceuticals, Inc. entered into a Distribution Agreement (the “*Distribution Agreement*”) with J.P. Morgan Securities LLC, as our sales agent (the “*Sales Agent*”), pursuant to which we may offer and sell from time to time through the Sales Agent up to \$100,000,000 maximum aggregate offering price of our common stock, par value \$0.0001 per share (“*Common Stock*”), in such amounts as we may specify by notice to the Sales Agent, in accordance with the terms and conditions set forth in the Distribution Agreement.

Sales, if any, of the Common Stock pursuant to the Distribution Agreement may be made in negotiated transactions or transactions that are deemed to be “at-the-market” offerings as defined in Rule 415 under the Securities Act, including sales made directly on the Nasdaq Stock Market, or sales made to or through a market maker other than on an exchange. Under the Distribution Agreement, we will set the parameters for the sale of shares, including the number of shares to be issued, the time period during which sales are requested to be made, limitation on the number of shares that may be sold in any one trading day and any minimum price below which sales may not be made. We are not obligated to sell any Common Stock under the Distribution Agreement. The Common Stock will be offered and sold pursuant to our shelf registration statement on Form S-3 (File No. 333-216199) which was automatically effective upon filing with the Securities and Exchange Commission on February 23, 2017. We may terminate the Distribution Agreement upon written notice to the Sales Agent for any reason or by the Sales Agent upon written notice to us for any reason or at any time under certain circumstances, including but not limited to the occurrence of a material adverse change in our company.

The Distribution Agreement contains customary representations, warranties and agreements by us, and indemnification rights and obligations of the parties. The Distribution Agreement provides that the Sales Agent will be entitled to compensation for its services equal up to 3.0% of the gross sales price per share of all shares sold through the Sales Agent under the Distribution Agreement. Under the terms of the Distribution Agreement, we have agreed to indemnify the Sales Agent against certain specified types of liabilities, including liabilities under the Securities Act of 1933, as amended, to contribute to payments the Sales Agent may be required to make in respect of these liabilities, and to reimburse the Sales Agent for certain expenses. In the ordinary course of business, the Sales Agent or their respective affiliates from time to time have provided and may in the future provide various investment banking, commercial banking and financial advisory services to the company and/or its affiliates, for which they have received or may receive customary compensation.

We intend to use the net proceeds from the sale, if any, of the securities offered in the offering for the commercialization of eptinezumab up to and through launch and the manufacture of commercial supply for eptinezumab, and may also use net proceeds for future eptinezumab clinical trials, the development of ALD1910 and for working capital and general corporate purposes.

The above summary of the Distribution Agreement does not purport to be complete and is qualified in its entirety by reference to the Distribution Agreement, a copy which is attached as Exhibit 1.1 to this Current Report on Form 8-K and incorporated herein by reference. The legal opinion of Cooley LLP relating to the shares of Common Stock being offered pursuant to the Distribution Agreement is filed as Exhibit 5.1 to this Current Report on Form 8-K.

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

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

| <u>Exhibit No.</u> | <u>Description</u> |
|--------------------|---|
| 5.1 | Opinion of Cooley LLP |
| 10.1 | Distribution Agreement, dated January 4, 2019, by and between Alder BioPharmaceuticals, Inc. and J.P. Morgan Securities LLC |
| 23.1 | Consent of Cooley LLP (contained in Exhibit 5.1) |

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.

Dated: January 4, 2019

Alder BioPharmaceuticals, Inc.

By: /s/ James B. Bucher

James B. Bucher

Senior Vice President and General Counsel



John T. McKenna
+1 650 843 5059
jmckenna@cooley.com

January 4, 2019

Alder BioPharmaceuticals, Inc.
11804 North Creek Parkway South
Bothell, WA 98011

Ladies and Gentlemen:

You have requested our opinion, as counsel to Alder BioPharmaceuticals, Inc., a Delaware corporation (the "**Company**"), with respect to certain matters in connection with the offering by the Company of \$100,000,000 of the Company's common stock, par value \$0.0001 per share (the "**Shares**"), pursuant to a Registration Statement on Form S-3 (No. 333-216199) (the "**Registration Statement**"), filed with the Securities and Exchange Commission (the "**Commission**") under the Securities Act of 1933, as amended (the "**Act**"), the prospectus included within the Registration Statement (the "**Base Prospectus**"), and the prospectus supplement dated January 4, 2019, filed with the Commission pursuant to Rule 424(b) of the Rules and Regulations of the Act (together with the Base Prospectus, the "**Prospectus**"). The Shares are to be sold by the Company in accordance with a Distribution Agreement, dated January 4, 2019, between the Company and J.P. Morgan Securities LLC (the "**Agreement**"), as described in the Prospectus.

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

We have assumed (i) that each sale of Shares will be duly authorized by the Board of Directors of the Company, a duly authorized committee thereof or a person or body pursuant to an authorization granted in accordance with Section 152 of the General Corporation Law of the State of Delaware (the "**DGCL**"), (ii) that no more than 20,000,000 Shares will be sold under the Agreement and (iii) that the price at which the Shares are sold will equal or exceed the par value of the Shares. We express no opinion to the extent that future issuances of securities of the Company and/or anti-dilution adjustments to outstanding securities of the Company cause the number of shares of the Company's common stock outstanding or issuable upon conversion or exercise of outstanding securities of the Company to exceed the number of Shares then issuable under the Agreement.

COOLEY LLP 3175 HANOVER STREET PALO ALTO, CA 94304-1130
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Alder BioPharmaceuticals, Inc.
January 4, 2019
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Our opinion herein is expressed solely with respect to the General Corporation Law of the State of Delaware. Our opinion is based on these laws as in effect on the date hereof. We express no opinion to the extent that any other laws are applicable to the subject matter hereof and express no opinion and provide no assurance as to compliance with any federal or state securities law, rule or regulation.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold and issued against payment therefor in accordance with the Agreement, the Registration Statement and the Prospectus, will be validly issued, fully paid and non-assessable.

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

Very truly yours,

Cooley LLP

By: /s/ John T. McKenna
John T. McKenna

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DISTRIBUTION AGREEMENT

January 4, 2019

J.P. Morgan Securities LLC
383 Madison Avenue
New York, New York 10179

Ladies and Gentlemen:

Alder BioPharmaceuticals, Inc., a Delaware corporation (the “**Company**”), confirms its agreement with J.P. Morgan Securities LLC, as agent and/or principal under any Terms Agreement (as defined in Section 1(a) below) (“**you**” or the “**Agent**”), with respect to the issuance and sale from time to time by the Company, in the manner and subject to the terms and conditions described below in this Distribution Agreement (this “**Agreement**”), of Common Stock, \$0.0001 par value per share (the “**Common Stock**”), of the Company having an aggregate Gross Sales Price (as defined in Section 2(b) below) of up to \$100,000,000 (the “**Maximum Amount**”) on the terms set forth in Section 1 of this Agreement. Such shares are hereinafter collectively referred to as the “**Shares**” and are described in the Prospectus referred to below.

The Company has filed with the Securities and Exchange Commission (the “**Commission**”) a registration statement on Form S-3 (No. 333-216199) (the “**registration statement**”) for the registration of the Shares and other securities of the Company under the Securities Act of 1933, as amended, and the rules and regulations of the Commission promulgated thereunder (collectively, the “**Act**”); and such registration statement sets forth the terms of the offering, sale and plan of distribution of the Shares and contains additional information concerning the Company and its business. Except where the context otherwise requires, “**Registration Statement**,” as used herein, means the registration statement, as amended at the time of such registration statement’s effectiveness for purposes of Section 11 of the Act, as such section applies to the Agent, including (1) all documents filed as a part thereof or incorporated or deemed to be incorporated by reference therein and (2) any information contained or incorporated by reference in a prospectus filed with the Commission pursuant to Rule 424(b) under the Act, to the extent such information is deemed, pursuant to Rule 430B or Rule 430C under the Act, to be part of the registration statement at the effective time. “**Basic Prospectus**” means the prospectus dated February 23, 2017 filed as part of the Registration Statement, including the documents incorporated by reference therein as of the date of such prospectus; “**Prospectus Supplement**” means the most recent prospectus supplement relating to the Shares, to be filed by the Company with the Commission pursuant to Rule 424(b) under the Act on or before the second business day after the date of its first use in connection with a public offering or sale of Shares pursuant hereto (or such earlier time as may be required under the Act), in the form furnished by the Company to the Agent in connection with the offering of the Shares; “**Prospectus**” means the Prospectus Supplement (and any additional prospectus supplement prepared in accordance with the provision of Section 4(h) of this Agreement and filed in accordance with the provisions of Rule 424(b)) together with the Basic Prospectus attached to or used with the Prospectus Supplement; and “**Permitted Free Writing Prospectus**” has the meaning set forth in Section 3(b). Any reference herein to the Registration Statement, the Basic

Prospectus, the Prospectus Supplement, the Prospectus or any Permitted Free Writing Prospectus shall, unless otherwise stated, be deemed to refer to and include the documents, if any, incorporated by reference, or deemed to be incorporated by reference, therein (the **"Incorporated Documents"**), including, unless the context otherwise requires, the documents, if any, filed as exhibits to such Incorporated Documents. Any reference herein to the terms "amend," "amendment" or "supplement" with respect to the Registration Statement, the Basic Prospectus, the Prospectus Supplement, the Prospectus or any Permitted Free Writing Prospectus shall, unless stated otherwise, be deemed to refer to and include the filing of any document under the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder (collectively, the **"Exchange Act"**) on or after the initial effective date of the Registration Statement, or the date of the Basic Prospectus, the Prospectus Supplement, the Prospectus or such Permitted Free Writing Prospectus, as the case may be, and deemed to be incorporated therein by reference. References in this Agreement to financial statements or other information that is "contained," "included," "described," "set forth" or "provided" in the Registration Statement, the Basic Prospectus, the Prospectus Supplement, the Prospectus or any Permitted Free Writing Prospectus and any similar references shall, unless stated otherwise, include any information incorporated or deemed to be incorporated by reference therein.

The Company and the Agent agree as follows:

1. Issuance and Sale.

(a) Upon the basis of the representations, warranties and agreements and subject to the terms and conditions set forth herein and provided the Company provides the Agent with any due diligence materials and information reasonably requested by the Agent necessary for the Agent to satisfy its due diligence obligations, on any Exchange Business Day (as defined below) selected by the Company, the Company and the Agent shall enter into an agreement in accordance with Section 2 hereof regarding the number of Shares to be placed by the Agent, as agent, and the manner in which and other terms upon which such placement is to occur (each such transaction being referred to as an **"Agency Transaction"**). The Company may also offer to sell the Shares directly to the Agent, as principal, in which event such parties shall enter into a separate agreement (each, a **"Terms Agreement"**) in substantially the form of Exhibit A hereto (with such changes thereto as may be agreed upon by the Company and the Agent to accommodate a transaction involving more than one agent), relating to such sale in accordance with Section 2(h) of this Agreement (each such transaction being referred to as a **"Principal Transaction"**). As used herein, (i) the **"Term"** shall be the period commencing on the date hereof and ending on the earlier of (x) the date on which the aggregate Gross Sales Price of Shares issued and sold pursuant to this Agreement and any Terms Agreements equal the Maximum Amount and (y) any termination of this Agreement pursuant to Section 8, (ii) an **"Exchange Business Day"** means any day during the Term that is a trading day for the Exchange other than a day on which trading on the Exchange is scheduled to close prior to its regular weekday closing time, and (iii) **"Exchange"** means the Nasdaq Global Market.

(b) Subject to the terms and conditions set forth below, the Company appoints the Agent as agent in connection with the offer and sale of Shares in any Agency Transactions entered into hereunder. The Agent will use commercially reasonable efforts, consistent with its normal trading and sales practices, to sell such Shares in accordance with the terms and subject

to the conditions hereof and of the applicable Transaction Acceptance (as defined below). Neither the Company nor the Agent shall have any obligation to enter into an Agency Transaction. The Company shall be obligated to issue and sell through the Agent, and the Agent shall be obligated to use commercially reasonable efforts, consistent with its normal trading and sales practices and as provided herein and in the applicable Transaction Acceptance, to place Shares only if and when the Company makes a Transaction Proposal (as defined below) to the Agent related to such an Agency Transaction and a Transaction Acceptance related to such Agency Transaction has been delivered to the Company by the Agent as provided in Section 2 below.

(c) The Agent, as agent in any Agency Transaction, hereby covenants and agrees not to make any sales of the Shares on behalf of the Company pursuant to this Agreement other than (A) by means of ordinary brokers' transactions between members of the Exchange that qualify for delivery of a Prospectus in accordance with Rule 153 under the Act and meet the definition of an "at the market offering" under Rule 415(a)(4) under the Act or by any other method permitted by law deemed to be an "at the market offering" as defined in Rule 415(a)(4) under the Act (such transactions are hereinafter referred to as "**At the Market Offerings**") and (B) such other sales of the Shares on behalf of the Company in its capacity as agent of the Company as shall be agreed by the Company and the Agent in writing.

(d) If Shares are to be sold in an Agency Transaction in an At the Market Offering, the Agent will confirm in writing to the Company the number of Shares sold in such Agency Transaction on any Exchange Business Day and the related Gross Sales Price and Net Sales Price (as each of such terms is defined in Section 2(b) below) for all Shares sold in such Agency Transaction no later than the opening of trading on the immediately following Exchange Business Day.

(e) If the Company shall default on its obligation to deliver Shares to the Agent pursuant to the terms of any Agency Transaction or Terms Agreement, the Company shall (i) indemnify and hold harmless the Agent and its successors and assigns from and against any and all losses, claims, damages, liabilities and expenses arising from or as a result of such default by the Company and (ii) notwithstanding any such default, pay to the Agent the commission to which it would otherwise be entitled in connection with such sale in accordance with Section 2(b) below.

(f) The Company acknowledges and agrees that (i) there can be no assurance that the Agent will be successful in selling the Shares, (ii) the Agent shall incur no liability or obligation to the Company or any other person or entity if it does not sell Shares for any reason other than a failure by the Agent to use its commercially reasonable efforts consistent with its normal trading and sales practices and applicable law and regulations to sell such Shares in accordance with the terms of this Agreement, and (iii) the Agent shall be under no obligation to purchase Shares on a principal basis pursuant to this Agreement, except as may otherwise be specifically agreed by the Agent and the Company in a Terms Agreement.

2. Transaction Acceptances and Terms Agreements.

(a) The Company may, from time to time during the Term, propose to the Agent that they enter into an Agency Transaction to be executed on a specified Exchange Business Day or over a specified period of Exchange Business Days, which proposal shall be made to the Agent by telephone or by email from any of the individuals listed as an authorized representative of the Company on Schedule A hereto to make such sales and shall set forth the information specified below (each, a “**Transaction Proposal**”). If the Agent agrees to the terms of such proposed Agency Transaction or if the Company and the Agent mutually agree to modified terms for such proposed Agency Transaction, then the Agent shall promptly deliver to the Company by email a notice (each, a “**Transaction Acceptance**”) confirming the terms of such proposed Agency Transaction as set forth in such Transaction Proposal or setting forth the modified terms for such proposed Agency Transaction as agreed by the Company and the Agent, as the case may be, whereupon such Agency Transaction shall become a binding agreement between the Company and the Agent. Each Transaction Proposal shall specify:

- (i) the Exchange Business Day(s) on which the Shares subject to such Agency Transaction are intended to be sold (each, a “**Purchase Date**”);
- (ii) the maximum number of Shares to be sold by the Agent (the “**Specified Number of Shares**”) on, or over the course of, such Purchase Date(s), or as otherwise agreed between the Company and Agent and documented in the relevant Transaction Acceptance; and
- (iii) the lowest price, if any, at which the Company is willing to sell Shares on each such Purchase Date or a formula pursuant to which such lowest price shall be determined (each, a “**Floor Price**”); and
- (iv) if other than 3.0% of the Gross Sales Price or, when the Agent acts as principal, the Agent’s discount or commission.

A Transaction Proposal shall not set forth a Specified Number of Shares that, when added to the aggregate number or aggregate Gross Sales Price of Shares previously purchased and to be purchased pursuant to pending Transaction Acceptances (if any) hereunder and any Terms Agreements, results or could result in a total Gross Sales Price that exceeds the Maximum Amount nor shall it set forth a Floor Price which is lower than the minimum price authorized from time to time by the Company’s board of directors or, if permitted by applicable law and the Company’s Organizational Documents, a duly authorized committee thereof. The Company shall have responsibility for maintaining records with respect to the aggregate number and aggregate Gross Sales Price of Shares sold and for otherwise monitoring the availability of Shares for sale under the Registration Statement and for ensuring that the aggregate number and aggregate Gross Sales Price of Shares offered and sold does not exceed, and the price at which any Shares are offered or sold is not lower than, the aggregate number and aggregate Gross Sales Price of Shares and the minimum price authorized from time to time by the Company’s board of directors or, if permitted by applicable

law and the Company's Organizational Documents, a duly authorized committee thereof. In the event that more than one Transaction Acceptance with respect to any Purchase Date(s) is delivered by the Agent to the Company, the latest Transaction Acceptance shall govern any sales of Shares for the relevant Purchase Date(s), except to the extent of any action occurring pursuant to a prior Transaction Acceptance and prior to the delivery to the Company of the latest Transaction Acceptance. The Company or the Agent may, upon notice to the other such party by telephone (confirmed promptly by e-mail), suspend or terminate the offering of the Shares pursuant to Agency Transactions for any reason; *provided, however*, that such suspension or termination shall not affect or impair the parties' respective obligations with respect to the Shares sold hereunder prior to the giving of such notice or their respective obligations under any Terms Agreement. Notwithstanding the foregoing, if the terms of any Agency Transaction contemplate that Shares shall be sold on more than one Purchase Date, then the Company and the Agent shall mutually agree to such additional terms and conditions as they deem reasonably necessary in respect of such multiple Purchase Dates, and such additional terms and conditions shall be set forth in or confirmed by, as the case may be, the relevant Transaction Acceptance and be binding to the same extent as any other terms contained therein. As used herein, the term "**Organizational Documents**" means, (i) with respect to a corporation, its charter and by-laws, (ii) with respect to a limited or general partnership, its partnership agreement and certificate of partnership (or similar document), (iii) with respect to a limited liability company, its limited liability company agreement and certificate of limited liability company (or similar document), and (iv) with respect to any other entity, its similar organizational documents.

(b) The Purchase Date(s) in respect of the Shares deliverable pursuant to any Transaction Acceptance shall be set forth in or confirmed by, as the case may be, the applicable Transaction Acceptance. Except as otherwise agreed between the Company and the Agent, the Agent's commission for any Shares sold through the Agent pursuant to this Agreement shall be a percentage not to exceed 3.0% of the actual sales price of such Shares (the "**Gross Sales Price**"), which commission shall be as set forth in or confirmed by, as the case may be, the applicable Transaction Acceptance; *provided, however*, that such commission shall not apply when the Agent acts as principal, in which case such commission or a discount shall be set forth in the applicable Terms Agreement. Notwithstanding the foregoing, in the event the Company engages the Agent for a sale of Shares in an Agency Transaction that would constitute a "distribution," within the meaning of Rule 100 of Regulation M under the Exchange Act or a "block" within the meaning of Rule 10b-18(a)(5) under the Exchange Act, the Company will provide the Agent, at the Agent's request and upon reasonable advance notice to the Company, on or prior to the Settlement Date the opinions of counsel, accountants' letters and officers' certificates pursuant to Section 5(a)(i) through 5(a)(iv) hereof, each dated the Settlement Date, and such other documents and information as the Agent shall reasonably request, and the Company and the Agent will agree to compensation that is customary for the Agent with respect to such transaction. The Gross Sales Price less the Agent's commission and after deduction for any transaction fees, transfer taxes or similar taxes or fees imposed by any governmental, regulatory or self-regulatory organization in respect of the sale of the applicable Shares is referred to herein at the "**Net Sales Price**."

(c) Payment of the Net Sales Price for Shares sold by the Company on any Purchase Date pursuant to a Transaction Acceptance shall be made to the Company by wire transfer of immediately available funds to the account of the Company (which the Company shall provide to the Agent at least one Exchange Business Day prior to the applicable Agency Settlement Date (as defined below)) against delivery of such Shares to the Agent's account, or an account of the Agent's designee, at The Depository Trust Company through its Deposit and Withdrawal at Custodian System ("**DWAC**") or by such other means of delivery as may be agreed to by the Company and the Agent. Such payment and delivery shall be made at or about 10:00 a.m. (New York City time) on the second Exchange Business Day (or such other day as may, from time to time, become standard industry practice for settlement of such a securities issuance or as agreed to by the Company and the Agent) following each Purchase Date (each, an "**Agency Settlement Date**").

(d) If, as set forth in or confirmed by, as the case may be, the related Transaction Acceptance, a Floor Price has been agreed to by the parties with respect to a Purchase Date, and the Agent thereafter determines and notifies the Company that the Gross Sales Price for such Agency Transaction would not be at least equal to such Floor Price, then the Company shall not be obligated to issue and sell through the Agent, and the Agent shall not be obligated to place, the Shares proposed to be sold pursuant to such Agency Transaction on such Purchase Date, unless the Company and the Agent otherwise agree in writing.

(e) If either party has reason to believe that the exemptive provisions set forth in Rule 101(c)(1) of Regulation M under the Exchange Act are not satisfied with respect to the Shares, it shall promptly notify the other party and sales of the Shares under this Agreement, any Transaction Acceptance or any Terms Agreement shall be suspended until that or other exemptive provisions have been satisfied in the judgment of each party. On or prior to the delivery of a prospectus that is required (whether physically or through compliance with Rule 172 under the Act or any similar rule) in connection with the offering or sale of the Shares, the Company shall calculate the average daily trading volume (as defined under "**ADTV**" by Rule 100 of Regulation M under the Exchange Act) of the Common Stock based on market data provided by Bloomberg L.P. or such other sources as agreed upon by the Company and the Agent.

(f) Notwithstanding any other provision of this Agreement, during any period in which the Registration Statement is no longer effective under the Act, the Company shall promptly notify the Agent, the Company shall not request the sale of any Shares, and the Agent shall not be obligated to sell or offer to sell any Shares.

(g) (i) If the Company wishes to issue and sell the Shares pursuant to this Agreement but other than as set forth in Section 2(a) of this Agreement, it will notify the Agent of the proposed terms of the Principal Transaction. If the Agent, acting as principal, wishes to accept such proposed terms (which it may decline to do for any reason in its sole discretion) or, following discussions with the Company, wishes to accept amended terms, the Company and the Agent shall enter into a Terms Agreement setting forth the terms of such Principal Transaction.

(ii) The terms set forth in a Terms Agreement shall not be binding on the Company or the Agent unless and until the Company and the Agent have each executed and delivered such Terms Agreement accepting all of the terms of such Terms Agreement. In the event of a conflict between the terms of this Agreement and the terms of a Terms Agreement, the terms of such Terms Agreement shall control.

(h) Each sale of the Shares to the Agent in a Principal Transaction shall be made in accordance with the terms of this Agreement and a Terms Agreement, which shall provide for the sale of such Shares to, and the purchase thereof by, the Agent. A Terms Agreement may also specify certain provisions relating to the reoffering of such Shares by the Agent. The commitment of the Agent to purchase the Shares pursuant to any Terms Agreement shall be deemed to have been made on the basis of the representations, warranties and agreements of the Company contained, and shall be subject to the terms and conditions set forth, in this Agreement and such Terms Agreement. Any such Terms Agreement shall specify the number of the Shares to be purchased by the Agent pursuant thereto, the price to be paid to the Company for such Shares, any provisions relating to rights of, and default by, underwriters, if any, acting together with the Agent in the reoffering of the Shares, and the time and date (each such time and date being referred to herein as a "**Principal Settlement Date**"; and, together with any Agency Settlement Date, a "**Settlement Date**") and place of delivery of and payment for such Shares.

(i) Notwithstanding any other provision of this Agreement, the Company shall not offer, sell or deliver, or request the offer or sale, of any Shares pursuant to this Agreement (whether in an Agency Transaction or a Principal Transaction) and, by notice to the Agent given by telephone (confirmed promptly by email), shall cancel any instructions for the offer or sale of any Shares, and the Agent shall not be obligated to offer or sell any Shares, (i) during any period in which the Company's insider trading policy, as it exists on the date of this Agreement, would prohibit the purchases or sales of the Company's Common Stock by any of its officers or directors, (ii) during any period in which the Company is, or could be deemed to be, in possession of material non-public information or (iii) at any time from and including the date on which the Company shall issue a press release containing, or shall otherwise publicly announce, its earnings, revenues or other results of operations (an "**Earnings Announcement**") through and including the time that is 24 hours after the time that the Company files a Quarterly Report on Form 10-Q or an Annual Report on Form 10-K that includes consolidated financial statements as of and for the same period or periods, as the case may be, covered by such Earnings Announcement.

(j) The Company agrees that any offer to sell, any solicitation of an offer to buy, or any sales of Shares by the Company shall be effected only by or through the Agent on any Exchange Business Day.

(k) Anything in this Agreement to the contrary notwithstanding, the Company shall not authorize the issuance and sale of, and the Agent, as sales agent, shall not be obligated to use its commercially reasonable efforts, consistent with its normal trading and sales practices, to sell, any Shares at a price lower than the minimum price, or in a number or with an aggregate gross or net sales price in excess of the number or aggregate gross or net sales price, as the case may be, authorized from time to time to be issued and sold under this Agreement and any Terms Agreement, in each case by the Company's board of directors or, if permitted by applicable law

and the Company's Organizational Documents, a duly authorized committee thereof, or in a number in excess of the number of Shares approved for listing on the Exchange, or in excess of the number or amount of Shares available for issuance on the Registration Statement or as to which the Company has paid the applicable registration fee, it being understood and agreed by the parties hereto that compliance with any such limitations shall be the sole responsibility of the Company.

3. **Representations, Warranties and Agreements of the Company.** The Company represents and warrants to, and agrees with, the Agent, on and as of (i) the date hereof, (ii) each date on which the Company receives a Transaction Acceptance (the "**Time of Acceptance**"), (iii) each date on which the Company executes and delivers a Terms Agreement, (iv) each Time of Sale (as defined in Section 3(a)), (v) each Settlement Date and (vi) each Bring-Down Delivery Date (as defined in Section 6(b)) (each such date listed in (i) through (vi), a "**Representation Date**"), as follows:

(a) The Registration Statement is an "automatic shelf registration statement" as defined under Rule 405 of the Act that has been filed with the Commission not earlier than three years prior to the date hereof; there is no order preventing or suspending the use of the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus, and, to the knowledge of the Company, no proceeding for that purpose or pursuant to Section 8A of the Act against the Company or related to the offering has been initiated or threatened by the Commission; no notice of objection of the Commission to the use of such Registration Statement pursuant to Rule 401(g)(2) under the Act has been received by the Company; the Registration Statement complied when it initially became effective, complies as of the date hereof and, as then amended or supplemented, as of each other Representation Date will comply, in all material respects, with the requirements of the Act; the conditions to the use of Form S-3 in connection with the offering and sale of the Shares as contemplated hereby have been satisfied; the Registration Statement meets, and the offering and sale of the Shares as contemplated hereby complies with, the requirements of Rule 415 under the Act (including, without limitation, Rule 415(a)(5)); the Prospectus complied or will comply, at the time it was or will be filed with the Commission, and will comply, as then amended or supplemented, as of each Representation Date, in all material respects, with the requirements of the Act; the Registration Statement did not, as of the time of its initial effectiveness, and does not or will not, as then amended or supplemented, as of each Representation Date, contain any 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; as of each Representation Date, the Prospectus, as then amended or supplemented, together with all of the then issued Permitted Free Writing Prospectuses, if any, will not contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; *provided, however*, that the Company makes no representation or warranty with respect to any statement in or omission from the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus made in reliance upon and in conformity with information concerning the Agent and furnished in writing by or on behalf of the Agent expressly for use in the Registration Statement, the Prospectus or such Permitted Free Writing Prospectus (it being understood that such information consists solely of the information specified in Section 9(b)). As used herein, "**Time of Sale**" means (i) with respect to each offering of Shares pursuant to this Agreement, the time of the Agent's initial entry into contracts with investors for the sale of such Shares and (ii) with respect to each offering of Shares pursuant to any relevant Terms Agreement, the time of sale of such Shares.

(b) Prior to the execution of this Agreement, the Company has not, directly or indirectly, offered or sold any of the Shares by means of any “prospectus” (within the meaning of the Act) or used any “prospectus” (within the meaning of the Act) in connection with the offer or sale of the Shares, in each case other than the Basic Prospectus. The Company represents and agrees that, unless it obtains the prior consent of the Agent, until the termination of this Agreement, it has not made and will not make any offer relating to the Shares that would constitute an “issuer free writing prospectus” (as defined in Rule 433 under the Act) or that would otherwise constitute a “free writing prospectus” (as defined in Rule 405 under the Act) other than any Permitted Free Writing Prospectus. Any such free writing prospectus relating to the Shares consented to by the Agent (including any Free Writing Prospectus prepared by the Company solely for use in connection with the offering contemplated by a particular Terms Agreement) is hereinafter referred to as a “**Permitted Free Writing Prospectus**”. The Company has complied and will comply in all material respects with the requirements of Rule 433 under the Act applicable to any Permitted Free Writing Prospectus, including timely filing with the Commission where required, legending and record keeping. The conditions set forth in one or more of subclauses (i) through (iv), inclusive, of Rule 433(b)(1) under the Act are satisfied, and the registration statement relating to the offering of the Shares contemplated hereby, as initially filed with the Commission, includes a prospectus that, other than by reason of Rule 433 under the Act, satisfies the requirements of Section 10 of the Act; the Company is not disqualified, by reason of Rule 164(f) or (g) under the Act, from using, in connection with the offer and sale of the Shares, “free writing prospectuses” (as defined in Rule 405 under the Act) pursuant to Rules 164 and 433 under the Act; the Company was not as of each eligibility determination date for purposes of Rules 164 and 433 under the Act with respect to the offering of the Shares contemplated by the Registration Statement and this Agreement and is not an “ineligible issuer” and was as of each such eligibility date and as of the date of this Agreement is a “well-known seasoned issuer” (each as defined in Rule 405 under the Act). The Company has paid or, no later than the business day after the date of this Agreement, will pay the registration fee for the offering of the Maximum Amount of Shares pursuant to Rule 457 under the Act.

(c) The Incorporated Documents, when they were filed with the Commission (or, if any amendment with respect to any such document was filed, when such amendment was filed), conformed in all material respects to the requirements of the Act or the Exchange Act, as applicable, and none of such documents contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading; and any further documents so filed during the Term and incorporated by reference in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus, when such documents become effective or are filed with the Commission, as the case may be, will conform in all material respects to the requirements of the Act or the Exchange Act, as applicable, and will not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading.

(d) Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, since the end of the period covered by the latest audited financial statements included or incorporated by reference in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus: (i) there has been no change, nor any development or event involving a prospective change, in the condition (financial or otherwise), results of operations, business, properties or prospects of the Company and its subsidiaries, taken as a whole, that is material and adverse; (ii) there has been no dividend or distribution of any kind declared, paid or made by the Company on any class of its capital stock; (iii) there has been no material adverse change in the capital stock, short-term indebtedness, long-term indebtedness, net current assets or net assets of the Company and its subsidiaries; (iv) neither the Company nor any of its subsidiaries has entered into any transaction or agreement (whether or not in the ordinary course of business) that is material to the Company and its subsidiaries taken as a whole or incurred any liability or obligation, direct or contingent, that is material to the Company and its subsidiaries taken as a whole; and (v) neither the Company nor any of its subsidiaries has sustained any loss or interference with its business that is material to the Company and its subsidiaries taken as a whole and that is either from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor disturbance or dispute or any action, order or decree of any court or arbitrator or governmental or regulatory authority.

(e) The Company has been duly incorporated and is existing and in good standing under the laws of the State of Delaware, with power and authority (corporate and other) to own its properties and conduct its business as described in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus; and the Company is duly qualified to do business as a foreign corporation in good standing in all other jurisdictions in which its ownership or lease of property or the conduct of its business requires such qualification, except where the failure to be so qualified in good standing would not, individually or in the aggregate, result in a material adverse effect on the condition (financial or otherwise), results of operations, business, properties or prospects of the Company and its subsidiaries taken as a whole (a “**Material Adverse Effect**”).

(f) Each subsidiary of the Company has been duly incorporated, organized or formed and is existing and in good standing under the laws of the jurisdiction of its incorporation, organization or formation with power and authority (corporate and other power) to own its properties and conduct its business as described in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus; and each subsidiary of the Company is duly qualified to do business as a foreign corporation in good standing in all other jurisdictions in which its ownership or lease of property or the conduct of its business requires such qualification in each case, except where the failure to be so qualified in good standing would not individually or in the aggregate have a Material Adverse Effect; all of the issued and outstanding capital stock of each subsidiary of the Company has been duly authorized and validly issued and is fully paid and nonassessable; and the capital stock of each subsidiary owned by the Company, directly or through subsidiaries, is owned free from liens, encumbrances and defects. The subsidiaries of the Company set forth on Exhibit 21.1 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2017 are the only subsidiaries, direct or indirect, of the Company and each subsidiary of the Company is a direct wholly-owned subsidiary of the Company.

(g) All outstanding shares of capital stock of the Company have been duly authorized; the authorized equity capitalization of the Company is as set forth in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus as of the date set forth therein; all outstanding shares of capital stock of the Company are validly issued, fully paid and nonassessable, and conform to the information in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus; the stockholders of the Company have no preemptive rights with respect to the Shares; and none of the outstanding shares of capital stock of the Company have been issued in violation of any preemptive or similar rights of any security holder. Except as disclosed in or contemplated by the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus, as of the dates indicated therein, there are no outstanding (A) securities or obligations of the Company convertible into or exchangeable for any capital stock of the Company, (B) warrants, rights or options to subscribe for or purchase from the Company any such capital stock or any such convertible or exchangeable securities or obligations or (C) obligations of the Company to issue or sell any shares of capital stock, any such convertible or exchangeable securities or obligations or any such warrants, rights or options. The Company has not, directly or indirectly, offered or sold any of the Shares by means of any “prospectus” (within the meaning of the Act) or used any “prospectus” or made any offer (within the meaning of the Act) in connection with the offer or sale of the Shares, in each case other than the Prospectus.

(h) This Agreement has been duly authorized, executed and delivered by the Company and any Terms Agreement will have been duly authorized, executed and delivered by the Company.

(i) The Shares to be issued and sold by the Company hereunder or under any Terms Agreement have been duly authorized by the Company and, when issued and delivered and paid for as provided herein or in any Terms Agreement, as the case may be, will be duly and validly issued, will be fully paid and nonassessable and will conform to the description thereof in the Registration Statement, the Prospectus, and any Permitted Free Writing Prospectus; and the issuance and sale of the Shares are not and will not be subject to any preemptive or similar rights.

(j) Neither the Company nor any of its subsidiaries is (i) in violation of its respective Organizational Documents, (ii) in default (or with the giving of notice or lapse of time would be in default) under any existing obligation, agreement, covenant or condition contained in any indenture, loan agreement, mortgage, lease or other agreement or instrument to which any of them is a party or by which any of them is bound or to which any of the properties of any of them is subject or (iii) in violation of any law or statute or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority, except, in the case of clauses (ii) and (iii) above, for any, such defaults or violations that would not, individually or in the aggregate, reasonably be expected to result in a Material Adverse Effect on the Company and its subsidiaries taken as a whole.

(k) The execution, delivery and performance by the Company of this Agreement and any Terms Agreement, the issuance and sale of the Shares, the compliance by the Company with the terms hereof and of any Terms Agreement and the consummation of the transactions contemplated hereby or by any Terms Agreement will not (i) conflict with or result in a breach or violation of any of the terms or provisions of, or constitute a default under, or result in the imposition of any lien, charge or encumbrance upon any property or assets of the Company or any of its subsidiaries pursuant to, any indenture, mortgage, deed of trust, loan agreement 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 other Organizational Documents of the Company or any of its subsidiaries or (iii) result in the violation of any law or statute or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority, except, in the case of clauses (i) and (iii) above, for any such conflicts, breaches, violations or defaults that would not, individually or in the aggregate, have a Material Adverse Effect.

(l) Except as disclosed in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus, the Company has not sold, issued or distributed any of its Common Stock during the six-month period preceding the date hereof, including any sales pursuant to Rule 144A under, or Regulation D or Regulation S of, the Act, other than Common Stock issued pursuant to (i) the Company's employee benefit plans, qualified stock option plans or other employee compensation plans, or (ii) pursuant to outstanding options or rights.

(m) Except as disclosed in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus, there are no contracts, agreements or understandings between the Company and any person that would give rise to a valid claim against the Company or any underwriter or agent for a brokerage commission, finder's fee or other like payment in connection with this offering.

(n) Except as disclosed in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus, there are no contracts, agreements or understandings between the Company and any person granting such person the right to require the Company to file a registration statement under the 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 a Registration Statement or in any securities being registered pursuant to any other registration statement filed by the Company under the Act.

(o) No consent, approval, authorization, order, license, registration or qualification of or with any court or arbitrator or governmental or regulatory authority is required for the execution, delivery and performance by the Company of this Agreement or any Terms Agreement, the issuance and sale of the Shares, compliance by the Company with the terms of this Agreement or of any Terms Agreement and the consummation of the transactions contemplated by this Agreement or any Terms Agreement, except as have been made or obtained, except as may be required by and made in accordance with or obtained under state securities laws or regulations, and except for such filings of Permitted Free Writing Prospectuses and any amendments or supplements to the Registration Statement or the Prospectus or any documents incorporated or deemed to be incorporated by reference therein as may be required by the Act or the Exchange Act from time to time, and except for such filings as the Exchange may require from time to time.

(p) Except as disclosed in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus or as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, the Company and its subsidiaries have good and marketable title to all personal assets owned by them, in each case free from liens, charges, encumbrances and defects and, the Company and its subsidiaries hold any leased real or personal property under valid and enforceable leases with no terms or provisions that would materially interfere with the use made or to be made thereof by them. Neither the Company nor any subsidiary owns any real property.

(q) Except as disclosed in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus, the Company and its subsidiaries possess, and are in compliance with the terms of, all adequate certificates, authorizations, franchises, licenses, approvals, consents, permits and other authorizations (“**Licenses**”) issued by the appropriate federal, state, local or foreign regulatory agencies or bodies necessary or material to the conduct of the business as now conducted and as described in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, including, without limitation, all such certificates, approvals, authorizations, licenses and permits required by the United States Food and Drug Administration (the “**FDA**”) or any other federal, state or foreign agencies or bodies engaged in the regulation of pharmaceuticals or biohazardous materials, except where the failure so to possess would not, singly or in the aggregate, reasonably be expected to result in a Material Adverse Effect; the Company is in compliance with the terms and conditions of all such Licenses, except where the failure so to comply would not, singly or in the aggregate, reasonably be expected to result in a Material Adverse Effect; all of the Licenses are valid and in full force and effect, except when the invalidity of such Licenses or the failure of such Licenses to be in full force and effect would not, singly or in the aggregate, reasonably be expected to result in a Material Adverse Effect; and neither the Company nor any of its subsidiaries has received any notice of proceedings relating to the revocation or modification of any such Licenses which, singly or in the aggregate, if the subject of an unfavorable decision, ruling or finding, would reasonably be expected to result in a Material Adverse Effect.

(r) Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, the Company has operated and currently is in compliance with all applicable rules and regulations of the FDA, except where the failure to so operate or be in compliance would not reasonably be expected to have a Material Adverse Effect. Any human studies or tests and preclinical and clinical trials conducted by or, to the Company’s knowledge, on behalf of or otherwise relied upon by the Company that are described in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, were and, if still pending, are being, conducted in all material respects in accordance with the protocols submitted to the FDA and all applicable laws and regulations. Any descriptions of the results of such studies, tests and trials contained in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus are accurate and complete in all material respects; and except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, the Company has not received any notices or correspondence from the FDA or any foreign, state or local governmental body exercising comparable authority requiring the termination, suspension,

or clinical hold of any pending studies, tests or preclinical or clinical trials, or such written notice or correspondence from any Institutional Review Board or comparable authority requiring the termination or suspension of a clinical study, conducted by or on behalf of the Company, which termination, suspension or clinical hold would reasonably be expected to have a Material Adverse Effect. Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, the Company is not aware of any other trials, studies or tests, the results of which reasonably call into question the results described or referred to in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus when viewed in the context in which such results are described and the clinical stage of development.

(s) Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, no labor dispute with the employees of the Company or any of its subsidiaries exists or, to the knowledge of the Company, is imminent that could have a Material Adverse Effect.

(t) Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, to the knowledge of the Company, the Company and its subsidiaries own, possess, license or can acquire on reasonable terms sufficient trademarks, trade names, inventions, patents, patent rights, copyrights, domain names, licenses, approvals, know-how (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems, or procedures) and other intellectual property and similar rights, including registrations and applications for registration thereof (collectively, “**Intellectual Property Rights**”) necessary or material to the conduct of the business as now conducted and as described in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, except where the failure to so own, possess, license or otherwise acquire would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus (i) to the Company’s knowledge, there are no rights of third parties to any of the Intellectual Property Rights owned by the Company or its subsidiaries; (ii) to the Company’s knowledge, there is no material infringement, misappropriation breach, default or other violation, or the occurrence of any event that with notice or the passage of time would constitute any of the foregoing, by third parties of any of the Intellectual Property Rights of the Company or its subsidiaries; (iii) there is no pending or, to the Company’s knowledge, threatened action, suit, proceeding or claim by others challenging the Company’s or any subsidiary’s rights in or to, or the violation of any of the terms of, any of their Intellectual Property Rights, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (iv) there is no pending, or to the Company’s knowledge, threatened action, suit, proceeding or claim by others challenging the validity, enforceability or scope of any such Intellectual Property Rights, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (v) there is no pending or, to the Company’s knowledge, threatened action, suit, proceeding or claim by others that the Company or any subsidiary infringes, misappropriates or otherwise violates or conflicts with any Intellectual Property Rights or other proprietary rights of others and the Company is unaware of any other fact which would form a reasonable basis for any such claim; (vi) there is no court-issued order, judgment, decree or injunction restricting the operation of the Company’s business on the basis of a conflict with or infringement of the patent rights of any third party; and (vii) none of the Intellectual Property Rights used by the Company or its subsidiaries in their businesses has been obtained or is being used by the Company or its subsidiaries in violation of

any contractual obligation binding on the Company or any of its subsidiaries in violation of the rights of any persons, except in each case covered by clauses (i)–(vii) such as would not, if determined adversely to the Company or any of its subsidiaries, individually or in the aggregate, have a Material Adverse Effect.

(u) Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, the Company (i) has duly and properly filed or caused to be filed with the United States Patent and Trademark Office (the “PTO”) and applicable foreign and international patent authorities all material patent applications owned by the Company (the “**Company Patent Applications**”); (ii) has complied with the PTO’s duty of candor and disclosure for the Company Patent Applications and has made no material misrepresentation in the Company Patent Applications; and (iii) has complied with the duty of candor and disclosure for the Company Patent Applications pending in countries outside the United States. To the Company’s knowledge and except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, (i) any information material to a determination of patentability regarding the Company Patent Applications has been called to the attention of the PTO or similar foreign authority; (ii) there is no information that has not been called to the attention of the PTO or similar foreign authority that would preclude the grant of a patent for the Company Patent Applications; (iii) there is no information which would preclude the Company from having clear title to the Company Patent Applications; (iv) there is no information suggesting that the Company does not currently hold clear title to the Company Patent Applications; and (v) there is no information suggesting that the Company’s ownership interest in the Company Patent Applications has not properly been recorded with the PTO or other comparable office.

(v) Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, (i)(A) neither the Company nor any of its subsidiaries is in violation of, or has any liability under, any federal, state, local or non-U.S. statute, law, rule, regulation, ordinance, code, other requirement or rule of law (including common law), or decision or order of any domestic or foreign governmental agency, governmental body or court, relating to pollution, to the use, handling, transportation, treatment, storage, discharge, disposal or release of Hazardous Substances, to the protection or restoration of the environment or natural resources (including biota), to health and safety including as such relates to exposure to Hazardous Substances, and to natural resource damages (collectively, “**Environmental Laws**”), (B) neither the Company nor any of its subsidiaries owns, occupies, operates or uses any real property contaminated with Hazardous Substances, (C) neither the Company nor any of its subsidiaries is conducting or funding any investigation, remediation, remedial action or monitoring of actual or suspected Hazardous Substances in the environment, (D) neither the Company nor any of its subsidiaries is liable or allegedly liable for any release or threatened release of Hazardous Substances, including at any off-site treatment, storage or disposal site, (E) neither the Company nor any of its subsidiaries is subject to any claim by any governmental agency or governmental body or person relating to Environmental Laws or Hazardous Substances, and (F) the Company and its subsidiaries have received and are in compliance with all, and have no liability under any, permits, licenses, authorizations, identification numbers or other approvals required under applicable Environmental Laws to conduct their respective businesses, except in each case covered by clauses (A)–(F) such as would not individually or in the aggregate have a Material Adverse Effect; (ii) to the knowledge of the Company there are no

facts or circumstances that would reasonably be expected to result in a violation of, liability under, or claim pursuant to any Environmental Law that would have a Material Adverse Effect; (iii) to the knowledge of the Company there are no requirements proposed for adoption or implementation under any Environmental Law that would reasonably be expected to have a Material Adverse Effect; and (iv) in the ordinary course of its business, the Company periodically evaluates the effect, including associated costs and liabilities, of Environmental Laws on the business, properties, results of operations and financial condition of it and its subsidiaries, and, on the basis of such evaluation, the Company has reasonably concluded that such Environmental Laws will not, singly or in the aggregate, have a Material Adverse Effect. For purposes of this subsection “**Hazardous Substances**” means (y) petroleum and petroleum products, by-products or breakdown products, radioactive materials, asbestos-containing materials, polychlorinated biphenyls and mold, and (z) any other chemical, material or substance defined or regulated as toxic or hazardous or as a pollutant, contaminant or waste under Environmental Laws.

(w) The statements in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus under the headings “Description of Capital Stock” insofar as such statements summarize legal matters, agreements, documents or proceedings discussed therein, are accurate and fair summaries of such legal matters, agreements, documents or proceedings and present the information required to be shown.

(x) The Company has not taken, directly or indirectly, any action that is 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 to facilitate the sale or resale of the Shares; however, the Company makes no representation with respect to any actions taken by the Agent.

(y) Any third-party statistical and market-related data included or incorporated by reference in a Registration Statement, the Prospectus and any Permitted Free Writing Prospectus is based on or derived from sources that the Company believes to be reliable and accurate, and, to the extent required, the Company has obtained the written consent to the use of such data from such sources.

(z) Except as set forth in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, the Company, its subsidiaries and the Company’s Board of Directors (the “**Board**”) are in compliance in all material respects with the applicable provisions of the Sarbanes-Oxley Act of 2002, as amended (“**Sarbanes Oxley**”) and all applicable rules of The Nasdaq Stock Market (the “**Exchange Rules**”, and together with the Act, the Exchange Act, and Sarbanes Oxley, the “**Securities Laws**”). The Company maintains a system of internal controls, including, but not limited to, disclosure controls and procedures, internal controls over accounting matters and financial reporting and legal and regulatory compliance controls (collectively, “**Internal Controls**”) that comply with applicable Securities Laws and have been designed by, or under the supervision of, their respective principal executive and principal financial officers, or persons performing similar functions, 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, including, but not limited to, internal accounting controls sufficient to provide reasonable assurance that (i)

transactions are executed in accordance with management's general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with U.S. generally accepted accounting principles ("**U.S. GAAP**") and to maintain accountability for assets, (iii) access to assets is permitted only in accordance with management's general or specific authorization, and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences, and the interactive data in eXtensible Business Reporting Language (the "**XBRL**") incorporated by reference in the Registration Statement is accurate. The Internal Controls are overseen by the Audit Committee of the Board (the "**Audit Committee**") in accordance with Exchange Rules. Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, the Company has not publicly disclosed or reported to the Audit Committee or the Board, and within the next 90 days the Company does not reasonably expect to publicly disclose or report to the Audit Committee or the Board, a significant deficiency, material weakness, adverse change in Internal Controls or fraud involving management or other employees who have a significant role in Internal Controls, any violation of, or failure to comply with, the Securities Laws, or any matter which, if determined adversely, would have a Material Adverse Effect.

(aa) Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, there are no pending actions, suits or proceedings (including any inquiries or investigations by any court or governmental agency or body, domestic or foreign) against or affecting the Company, any of its subsidiaries or any of their respective properties that, if determined adversely to the Company or any of its subsidiaries, would individually or in the aggregate have a Material Adverse Effect, or would materially and adversely affect the ability of the Company to perform its obligations under this Agreement or any Terms Agreement, or which are otherwise material in the context of the sale of the Shares; and no such actions, suits or proceedings (including any inquiries or investigations by any court or governmental agency or body, domestic or foreign), to the Company's knowledge are threatened or contemplated.

(bb) The financial statements included or incorporated by reference in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus comply in all material respects with applicable requirements of the Act and the Exchange Act, as applicable, and present fairly in all material respects the financial position of the Company and its consolidated subsidiaries as of the dates shown and their results of operations and cash flows for the periods shown, and such financial statements have been prepared in conformity with U.S. GAAP applied on a consistent basis, except as otherwise noted therein and except in the case of unaudited, interim financial statements, which do not contain certain footnotes as permitted by the rules of the Commission. PricewaterhouseCoopers LLP, which has audited the financial statements of the Company included in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, has advised the Company that it is an independent registered public accounting firm with respect to the Company and its subsidiaries within the applicable rules and regulations adopted by the Commission and the Public Company Accounting Oversight Board ("**PCAOB**") and as required by the Act. Each other independent registered public accounting firm, if any, that has certified or reported on any other financial statements included or incorporated by reference in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus has advised the Company that it is an independent registered public accounting firm with respect

to the Company and its subsidiaries or other appropriate entity, as applicable, within the applicable rules and regulations adopted by the Commission and the PCAOB and as required by the Act. The selected consolidated financial data incorporated by reference in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus presents fairly in all material respects the information shown therein and such data has been compiled on a basis consistent with the financial statements presented therein and the books and records of the Company. The Company does not have any material liabilities or obligations, direct or contingent (including any off-balance sheet obligations), not disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus. There are no financial statements that are required to be included in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus that are not included as required.

(cc) The financial statements of any other business or entity and its consolidated subsidiaries (if any) and the related notes thereto included or incorporated by reference in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus comply in all material respects with the applicable requirements of the Act or the Exchange Act, as applicable, and present fairly in all material respects the consolidated (if applicable) financial position of such entity or business, as the case may be, and its subsidiaries (if any) as of the dates indicated and the results of its or their, as the case may be, operations and the changes in its or their, as the case may be, cash flows for the periods specified; and all such financial statements have been prepared in conformity with U.S. GAAP applied on a consistent basis, except as otherwise noted therein and except in the case of unaudited, interim financial statements, which do not contain certain footnotes as permitted by the rules of the Commission, and all supporting schedules to such financial statements included or incorporated by reference in the Registration Statement fairly present in all material respects the information required to be stated therein. Any pro forma financial statements and related notes included or incorporated by reference in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus comply in all material respects with the applicable requirements of the Act and the Exchange Act, as applicable, present fairly in all material respects the information shown therein, have been prepared in accordance with the Commission's rules and guidelines with respect to pro forma financial statements and have been properly compiled on the bases described therein, and the assumptions used in the preparation thereof are reasonable and the adjustments used therein are appropriate to give effect to the transactions and circumstances referred to therein.

(dd) The Company is not and, after giving effect to the offering and sale of the Shares and the application of the proceeds thereof as described in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, will not be an "investment company" as defined in the Investment Company Act of 1940, as amended.

(ee) No "nationally recognized statistical rating organization" as such term is defined in Section 3(a)(62) of the Exchange Act has imposed (or has informed the Company that it is considering imposing) any condition (financial or otherwise) on the Company's retaining any rating assigned to the Company or any securities of the Company or (ii) has indicated to the Company that it is considering any of the actions described in Section 7(a)(v) hereof.

(ff) Neither the Company nor any of its subsidiaries or affiliates, nor any director, officer, or employee, nor, to the Company's knowledge, any agent or representative of the Company or of any of its subsidiaries or affiliates, has (i) taken or will take any action in furtherance of an offer, payment, promise to pay, or authorization or approval of the payment or giving of money, property, gifts or anything else of value, directly or indirectly, to any "government official" (including any officer or employee of a government or government-owned or controlled entity or of a public international organization, or any person acting in an official capacity for or on behalf of any of the foregoing, or any political party or party official or candidate for political office) to influence official action or secure an improper advantage; (ii) violated or is in violation of any provision of the Foreign Corrupt Practices Act of 1977, as amended, or any applicable law or regulation implementing the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, or committed an offence under the Bribery Act 2010 of the United Kingdom or any other applicable anti-bribery or anti-corruption law; or (iii) made, offered, agreed, requested or taken an act in furtherance of any unlawful bribe or other unlawful benefit, including, without limitation, any rebate, payoff, influence payment, kickback or other unlawful or improper payment or benefit. The Company and its subsidiaries and affiliates have conducted their businesses in compliance with applicable anti-corruption laws and have instituted and maintain and will continue to maintain policies and procedures designed to promote and achieve compliance with such laws and with the representation and warranty contained herein.

(gg) The operations of the Company and its subsidiaries are and have been conducted at all times in compliance with all applicable financial recordkeeping and reporting requirements, including those of the Bank Secrecy Act, as amended by Title III of the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001 ("**USA Patriot Act**"), and the applicable anti-money laundering statutes of jurisdictions where the Company and its subsidiaries conduct business, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any governmental agency (collectively, the "**Anti-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 Anti-Money Laundering Laws is pending or, to the best knowledge of the Company, threatened.

(hh) (i) Neither the Company nor any of its subsidiaries, nor any director, officer, or employee thereof, nor, to the Company's knowledge, any agent, affiliate or representative of the Company or any of its subsidiaries, is an individual or entity ("**Person**") that is, or is owned or controlled by a Person that is: (A) the subject of any sanctions administered or enforced by the U.S. Department of Treasury's Office of Foreign Assets Control, the United Nations Security Council, the European Union, Her Majesty's Treasury, or other relevant sanctions authority (collectively, "**Sanctions**"), nor (B) located, organized or resident in a country or territory that is the subject of Sanctions (including, without limitation, Crimea Region of Ukraine, Cuba, Iran, North Korea and Syria), (ii) 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: (A) to fund or facilitate any activities or business of or with any Person or in any country or territory that, at the time of such funding or facilitation, is the subject of Sanctions; or (B) in any other manner that will result in a violation of Sanctions by any Person (including any Person participating in the offering, whether as agent, underwriter, advisor, investor or otherwise) and (iii) for the past five years, the Company and its subsidiaries have not knowingly engaged in, are not now knowingly engaged in, and will not engage in, any dealings or transactions with any Person, or in any country or territory, that at the time of the dealing or transaction is or was the subject of Sanctions.

(ii) No subsidiary of the Company is currently prohibited, directly or indirectly, under any agreement or other instrument to which it is a party or is subject, (i) from paying any dividends to the Company, (ii) from making any other distribution on such subsidiary's capital stock, (iii) from repaying to the Company any loans or advances to such subsidiary from the Company or (iv) from transferring any of such subsidiary's material properties or assets to the Company or any other subsidiary of the Company.

(jj) The Company and its subsidiaries have filed all federal, state, local and non-U.S. tax returns that are required to be filed or have requested extensions thereof (except in any case in which the failure so to file would not have a Material Adverse Effect); and, except as set forth in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, the Company and its subsidiaries have paid all taxes (including any assessments, fines or penalties) required to be paid by them except for any such taxes, assessments, fines or penalties currently being contested in good faith or as would not, individually or in the aggregate, have a Material Adverse Effect.

(kk) Except as disclosed in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, the Company and its subsidiaries are insured by insurers with appropriately rated claims paying abilities against such losses and risks and in such amounts as are prudent and customary for similarly situated companies in the business in which they are engaged; all material policies of insurance and fidelity or surety bonds insuring the Company or any of its subsidiaries or their respective businesses, assets, employees, officers and directors are in full force and effect; the Company and its subsidiaries are in compliance with the terms of such policies and instruments in all material respects; and there are no material 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; neither the Company nor any such subsidiary has been refused any insurance coverage sought or applied for; 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 have a Material Adverse Effect; and the Company has obtained directors' and officer's insurance in reasonable and customary coverage amounts.

(ll) Except as disclosed in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus, the Company and its subsidiaries' information technology assets and equipment, computers, systems, networks, hardware, software, websites, applications, and databases (collectively, "**IT Systems**") are adequate for, and operate and perform in all material respects as required in connection with the operation of the business of the Company and its subsidiaries as currently conducted, free and clear of all material bugs, errors, defects, Trojan horses, time bombs, malware and other corruptants. Except as disclosed in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus, the Company and its subsidiaries have implemented and maintained commercially reasonable controls, policies, procedures, and safeguards to maintain and protect their material confidential information and

the integrity, continuous operation, redundancy and security of all IT Systems and data (including all personal, personally identifiable, sensitive, confidential or regulated data (“**Personal Data**”)) used in connection with their businesses, and there have been no breaches, violations, outages or unauthorized uses of or accesses to same, except for those that have been remedied without material cost or liability or the duty to notify any other person, nor any incidents under internal review or investigations relating to the same. The Company and its subsidiaries are presently in compliance with all applicable laws or statutes and all judgments, orders, rules and regulations of any court or arbitrator or governmental or regulatory authority, internal policies and contractual obligations relating to the privacy and security of IT Systems and Personal Data and to the protection of such IT Systems and Personal Data from unauthorized use, access, misappropriation or modification, except where the failure to so be in compliance would not have a Material Adverse Effect.

(mm) The Company has timely made all filings required to be made by it under the Exchange Act.

(nn) The interactive data in XBRL incorporated by reference in the Registration Statement is accurate and has been prepared in accordance with the Commission’s rules and guidelines applicable thereto.

(oo) No forward-looking statement (within the meaning of Section 27A of the Act and Section 21E of the Exchange Act) contained or incorporated by reference in the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith.

(pp) All of the Shares that have been or may be sold under this Agreement and any Terms Agreement have been approved for listing, subject only to official notice of issuance, on the Exchange.

(qq) The Common Stock is an “actively-traded security” excepted from the requirements of Rule 101 of Regulation M under the Exchange Act by Rule 101 (c)(1) thereunder.

(rr) The offering of the Shares is exempt from filing with and review by the Financial Industry Regulatory Authority (“**FINRA**”) pursuant to FINRA Rule 5110(b)(7)(C)(i).

(ss) Any certificate signed by any officer, general partner, managing member or other authorized representative of the Company or any subsidiary of the Company and delivered to the Agent or to counsel to the Agent pursuant to or in connection with this Agreement or any Terms Agreement shall be deemed a representation and warranty by the Company to the Agent as to the matters covered thereby.

4. Certain Covenants of the Company. The Company hereby agrees with the Agent:

(a) For so long as the delivery of a prospectus is required (whether physically or through compliance with Rule 172 under the Act or any similar rule) in connection with the offering or sale of Shares, before using or filing any Permitted Free Writing Prospectus and before using or filing any amendment or supplement to the Registration Statement, the

Prospectus or any Permitted Free Writing Prospectus (in each case, other than due to the filing of an Incorporated Document), to furnish to the Agent a copy of each such proposed Permitted Free Writing Prospectus, amendment or supplement within a reasonable period of time before filing with the Commission or using any such Permitted Free Writing Prospectus, amendment or supplement and the Company will not use or file any such Permitted Free Writing Prospectus or any such proposed amendment or supplement to which the Agent reasonably objects, unless the Company's legal counsel has advised the Company that use or filing of such document is required by law.

(b) To file the Prospectus, each Prospectus Supplement and any other amendments or supplements to the Prospectus pursuant to, and within the time period required by, Rule 424(b) under the Act (without reference to Rule 424(b)(8)) and to file any Permitted Free Writing Prospectus to the extent required by Rule 433 under the Act and to provide copies of the Prospectus, each Prospectus Supplement, any other amendments or supplements to the Prospectus and each Permitted Free Writing Prospectus (to the extent not previously delivered or filed on the Commission's Electronic Data Gathering, Analysis and Retrieval system or any successor system thereto (collectively, "EDGAR")) to the Agent via e-mail in ".pdf" format on such filing date to an e-mail account designated by the Agent and, at the Agent's request, to also furnish copies of the Prospectus, each Prospectus Supplement, any other amendments or supplements to the Prospectus and each Permitted Free Writing Prospectus to each exchange or market on which sales were effected as may be required by the rules or regulations of such exchange or market.

(c) To file timely all reports and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act for so long as the delivery of a prospectus is required (whether physically or through compliance with Rule 172 under the Act or any similar rule) in connection with the offering or sale of the Shares, and during such same period to advise the Agent, promptly after the Company receives notice thereof, (i) of the time when any amendment to the Registration Statement has been filed or has become effective or any supplement to the Prospectus or any Permitted Free Writing Prospectus or any amended Prospectus has been filed with the Commission; (ii) of the issuance by the Commission of any stop order or any order preventing or suspending the use of any prospectus relating to the Shares or the initiation or threatening of any proceeding for that purpose, pursuant to Section 8A of the Act; (iii) of any objection by the Commission to the use of Form S-3ASR by the Company pursuant to Rule 401(g)(2) under the Act; (iv) of the suspension of the qualification of the Shares for offering or sale in any jurisdiction or of the initiation or threatening of any proceeding for any such purpose; (v) of any request by the Commission for the amendment of the Registration Statement or the amendment or supplementation of the Prospectus (in each case including any documents incorporated by reference therein) or for additional information; (vi) of the occurrence of any event as a result of which the Prospectus or any Permitted Free Writing Prospectus as then amended or supplemented includes any untrue statement of a material fact or omits to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances existing when the Prospectus or any such Permitted Free Writing Prospectus is delivered to a purchaser, not misleading; and (vii) of the receipt by the Company of any notice of objection of the Commission to the use of the Registration Statement or any post-effective amendment thereto.

(d) In the event of the issuance of any such stop order or of any such order preventing or suspending the use of any such prospectus or suspending any such qualification, or of any notice of objection pursuant to Rule 401(g)(2) under the Act, to use promptly its commercially reasonable efforts to obtain its withdrawal.

(e) To furnish such information as may be required and otherwise cooperate in qualifying the Shares for offering and sale under the securities or blue sky laws of such states or other jurisdictions as the Agent may reasonably designate and to maintain such qualifications in effect so long as required for the distribution of the Shares; provided that the Company shall not be required to qualify as a foreign corporation, become a dealer of securities, or become subject to taxation in, or to consent to the service of process under the laws of, any such state or other jurisdictions (except service of process with respect to the offering and sale of the Shares); and to promptly advise the Agent of the receipt by the Company of any notification with respect to the suspension of the qualification of the Shares for sale in any jurisdiction or the initiation of any proceeding for such purpose.

(f) To make available to the Agent at its offices in New York City, without charge, as soon as reasonably practicable after the Registration Statement becomes effective, and thereafter from time to time to furnish to the Agent, as many copies of the Prospectus and the Prospectus Supplement (or of the Prospectus or Prospectus Supplement as amended or supplemented if the Company shall have made any amendments or supplements thereto and documents incorporated by reference therein after the effective date of the Registration Statement) and each Permitted Free Writing Prospectus as the Agent may reasonably request for so long as the delivery of a prospectus is required (whether physically or through compliance with Rule 172 under the Act or any similar rule); and for so long as this Agreement is in effect, the Company will prepare and file promptly such amendment or amendments to the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus as may be necessary to comply with the requirements of Section 10(a)(3) of the Act.

(g) To furnish or make available to the Agent during the Term (i) copies of any reports or other communications which the Company shall send to its stockholders or shall from time to time publish or publicly disseminate and (ii) copies of all annual, quarterly and current reports filed with the Commission on Forms 10-K, 10-Q and 8-K, or such other similar form as may be designated by the Commission, and to furnish to the Agent from time to time during the Term such other information as the Agent may reasonably request regarding the Company or its subsidiaries, in each case as soon as such reports, communications, documents or information becomes available or promptly upon the request of the Agent, as applicable; provided, however, that the Company shall have no obligation to provide the Agent with any document filed on EDGAR or included on the Company's Internet website.

(h) If, at any time during the Term, any event shall occur or condition shall exist as a result of which it is necessary in the reasonable opinion of counsel for the Agent or counsel for the Company, to further amend or supplement the Prospectus or any Permitted Free Writing Prospectus as then amended or supplemented in order that the Prospectus or any such Permitted Free Writing Prospectus will not include an untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading, in light of the circumstances existing at the time the Prospectus or any

such Permitted Free Writing Prospectus is delivered to a purchaser, or if it shall be necessary, in the reasonable opinion of either such counsel, to amend or supplement the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus in order to comply with the requirements of the Act, in the case of such a determination by counsel to the Company, immediate notice shall be given, and confirmed in writing, to the Agent to cease the solicitation of offers to purchase the Shares in the Agent's capacity as agent, and, in either case, the Company will, subject to Section 4(a) above, promptly prepare and file with the Commission such amendment or supplement, whether by filing documents pursuant to the Act, the Exchange Act or otherwise, as may be necessary to correct such untrue statement or omission or to make the Registration Statement, the Prospectus or any such Permitted Free Writing Prospectus comply with such requirements.

(i) To generally make available to its security holders as soon as reasonably practicable, but not later than 16 months after the first day of each fiscal quarter referred to below, an earnings statement (in form complying with the provisions of Section 11(a) under the Act and Rule 158 of the Commission promulgated thereunder) covering each twelve-month period beginning, in each case, not later than the first day of the Company's fiscal quarter next following each "effective date" (as defined in such Rule 158) of the Registration Statement with respect to each sale of Shares.

(j) To apply the net proceeds from the sale of the Shares in the manner described in the Prospectus Supplement under the caption "Use of Proceeds."

(k) Not to, and to cause its subsidiaries not to, take, directly or indirectly, any action designed to cause or result in, or that constitutes or might reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares; *provided* that nothing herein shall prevent the Company from filing or submitting reports under the Exchange Act or issuing press releases in the ordinary course of business.

(l) Except as otherwise agreed between the Company and the Agent, to pay all costs, expenses, fees and taxes in connection with (i) the preparation and filing of the Registration Statement, the Prospectus, any Permitted Free Writing Prospectus, and any amendments or supplements thereto, and the printing and furnishing of copies of each thereof to the Agent and to dealers (including costs of mailing and shipment), (ii) the registration, issue and delivery of the Shares, (iii) the qualification of the Shares for offering and sale under the securities or blue sky laws of such states or other jurisdictions as the Agent may reasonably designate as aforesaid (including filing fees and the reasonable legal fees and disbursements of counsel to the Agent in connection therewith) and the printing and furnishing of copies of any blue sky surveys to the Agent, (iv) the listing of the Shares on the Exchange and any registration thereof under the Exchange Act, (v) any filing for review, and any review, of the public offering of the Shares by FINRA (as defined below) (including filing fees and the reasonable legal fees and disbursements of counsel to the Agent in connection therewith), (vi) the fees and disbursements of counsel to the Company and of the Company's independent registered public accounting firm, (vii) the performance of the Company's other obligations hereunder and under any Terms Agreement and (viii) the documented out-of-pocket expenses of the Agent, including the reasonable fees and disbursements of counsel to the Agent in connection with this Agreement and ongoing services in connection with the transactions contemplated hereunder.

(m) With respect to the offering(s) contemplated by this Agreement or any Terms Agreement, the Company will not offer shares of Common Stock or any securities convertible into or exchangeable or exercisable for shares of the Common Stock in a manner in violation of the Act or the Exchange Act; and the Company will not distribute any offering material in connection with the offer and sale of the Shares, other than the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus and any amendments or supplements thereto.

(n) Unless the Company has given written notice to the Agent that the Company has suspended activity under this Agreement and there are no pending Agency Transactions or Principal Transactions, the Company will not, without (A) giving the Agent at least three Exchange Business Days' prior written notice specifying the nature of the proposed sale and the date of such proposed sale and (B) the Agent suspending activity under this program for such period of time as requested by the Company or deemed appropriate by the Agent in light of the proposed sale, (i) offer, pledge, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or other equity securities of the Company or any securities convertible into or exercisable, redeemable or exchangeable for Common Stock or other equity securities of the Company, or file any registration statement under the Act with respect to any of the foregoing (other than a registration statement on Form S-8 or post-effective amendment to the Registration Statement) or (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of Common Stock or other equity securities of the Company, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of shares of Common Stock or other securities, in cash or otherwise. The foregoing sentence shall not apply to (A) Shares offered and sold under this Agreement or any Terms Agreement, (B) securities issued pursuant to any of the Company's equity incentive plans or employee stock purchase plans or similar plans and benefits described in the Registration Statement and the Prospectus or upon the exercise of options, restricted stock units or other rights to purchase Common Stock granted thereunder, (C) shares of Common Stock issuable upon conversion of the Company's Class A-1 Convertible Preferred Stock, or (D) or shares of Common Stock issuable upon conversion of the Company's 2.50% convertible senior notes due 2025. Any lock-up provisions relating to a Principal Transaction shall be set forth in the applicable Terms Agreement.

(o) The Company will, pursuant to reasonable procedures developed in good faith, retain copies of each Permitted Free Writing Prospectus that is not filed with the Commission in accordance with Rule 433 under the Act.

(p) The Company will use commercially reasonable efforts to cause the Shares to be listed on the Exchange.

(q) The Company consents to the Agent trading in the Common Stock for the Agent's own account and for the account of its clients at the same time as sales of the Shares occur pursuant to this Agreement or any Terms Agreement.

(r) If immediately prior to the third anniversary (the "**Renewal Deadline**") of the initial effective date of the Registration Statement, the aggregate Gross Sales Price of Shares sold by the Company is less than the Maximum Amount and this Agreement has not expired or been terminated, the Company will, prior to the Renewal Deadline, file, if it has not already done so and is eligible to do so, a new automatic shelf registration statement relating to the Shares, in a form satisfactory to the Agent. If the Company is no longer eligible to file an automatic shelf registration statement, the Company will, prior to the Renewal Deadline, if it has not already done so, file a new shelf registration statement relating to the Shares, in a form satisfactory to the Agent, and will use its commercially reasonable efforts to cause such registration statement to be declared effective within 90 days after the Renewal Deadline. The Company will take all other action necessary or appropriate to permit the issuance and sale of the Shares to continue as contemplated in the expired registration statement relating to the Shares. References herein to the Registration Statement shall include such new automatic shelf registration statement or such new shelf registration statement, as the case may be.

5. Execution of Agreement. The Agent's obligations under this Agreement shall be subject to the satisfaction of the following conditions in connection with and on the date of the execution of this Agreement:

(a) the Company shall have delivered to the Agent:

- (i) an officers' certificate signed by two officers of the Company (one of whom shall be the Chief Financial Officer or other senior financial officer) certifying as to the matters set forth in Exhibit B hereto;
- (ii) (1) an opinion and a negative assurance letter of Cooley LLP, counsel for the Company, addressed to the Agent and dated the date of this Agreement, in form and substance reasonably acceptable to the Agent; and
(2) an opinion of LeClairRyan, Professional Corporation, special intellectual property counsel for the Company, addressed to the Agent and dated the date of this Agreement, in form and substance reasonably acceptable to the Agent;
- (iii) a "comfort" letter from PricewaterhouseCoopers LLP, addressed to the Agent and dated the date of this Agreement, addressing such matters as the Agent may reasonably request;
- (iv) a certificate signed by the Company's Chief Financial Officer, in form and substance reasonably acceptable to the Agent, certifying as to certain financial, numerical and statistical data not covered by the "comfort" letter referred to in Section 5(a) (iii) hereof;

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- (v) evidence reasonably satisfactory to the Agent and its counsel that the Shares have been approved for listing on the Exchange, subject only to notice of issuance on or before the date hereof;
 - (vi) resolutions duly adopted by the Company's board of directors, and certified by an officer of the Company, authorizing the Company's execution of this Agreement and the consummation by the Company of the transactions contemplated hereby, including the issuance and sale of the Shares; and
 - (vii) such other documents as the Agent shall reasonably request; and

(b) The Agent shall have received a letter or letters, which shall include legal opinions and negative assurance statements, of Wilson Sonsini Goodrich & Rosati, P.C., counsel to the Agent, addressed to the Agent and dated the date of this Agreement, addressing such matters as the Agent may reasonably request.

6. Additional Covenants of the Company. The Company further covenants and agrees with the Agent as follows:

(a) Each Transaction Proposal made by the Company that is accepted by the Agent by means of a Transaction Acceptance and each execution and delivery by the Company of a Terms Agreement shall be deemed to be (i) an affirmation that the representations, warranties and agreements of the Company herein contained and contained in any certificate delivered to the Agent pursuant hereto are true and correct at such Time of Acceptance or the date of such Terms Agreement, as the case may be, and (ii) an undertaking that such representations, warranties and agreements will be true and correct on any applicable Time of Sale and Settlement Date, as though made at and as of each such time (it being understood that such representations, warranties and agreements shall relate to the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus as amended and supplemented to the time of such Transaction Acceptance or Terms Agreement, as the case may be).

(b) Each time that (i) the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus shall be amended or supplemented (including, except as noted in the proviso at the end of this Section 6(b), by the filing of any Incorporated Document), (ii) there is a Principal Settlement Date pursuant to a Terms Agreement, or (iii) the Agent shall reasonably request (each date referred to clauses (i), (ii) and (iii) above, a "**Bring-Down Delivery Date**"), the Company shall, unless the Agent agrees otherwise, furnish or cause to be furnished to the Agent certificates, dated as of such Bring-Down Delivery Date and delivered within one Exchange Business Day after the applicable Bring-Down Delivery Date or, in the case of a Bring-Down Delivery Date resulting from a Principal Settlement Date, delivered on such Principal Settlement Date, of the same tenor as the certificates referred to in Sections 5(a)(i) and 5(a)(iv) hereof, modified as necessary to relate to the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus as amended and supplemented to the time of delivery of such certificates and, in the case of the Chief Financial Officer's certificate, covering such other financial, numerical and statistical data that is not covered by the accountants' "comfort" letter dated as of such Bring-Down Delivery Date as the Agent may reasonably request, or, in lieu of

such certificates, certificates to the effect that the statements contained in the certificates referred to in Sections 5(a)(i) and, unless the Agent shall have requested that the Chief Financial Officer's certificate cover different or additional data as aforesaid, 5(a)(iv) hereof furnished to Agent are true and correct as of such Bring-Down Delivery Date as though made at and as of such date (except that such statements shall be deemed to relate to the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus as amended and supplemented to the time of delivery of such certificate); *provided, however*, that the filing of a Current Report on Form 8-K will not constitute a Bring-Down Delivery Date under clause (i) above unless either (A) (x) such Current Report on Form 8-K is filed at any time during which either a Transaction Acceptance is binding and the Company has not suspended the use thereof (and prior to the settlement of the Shares specified therein) or a prospectus relating to the Shares is required to be delivered under the Act (whether physically or through compliance with Rule 172 under the Act or any similar rule) or such Current Report on Form 8-K is filed at any time from and including the date of a Terms Agreement through and including the related Settlement Date and (y) the Agent has reasonably requested that such date be deemed to be a Bring-Down Delivery Date based upon the event or events reported in such Current Report on Form 8-K or (B) such Current Report on Form 8-K contains capsule financial information, historical or pro forma financial statements, supporting schedules or other financial data, including any Current Report on Form 8-K or part thereof under Item 2.02 of Regulation S-K of the Commission that is considered "filed" under the Exchange Act; and *provided, further*, that an amendment or supplement to the Registration Statement or the Prospectus relating to the offering of other securities pursuant to the Registration Statement will not constitute a Bring-Down Delivery Date.

(c) Each Bring-Down Delivery Date, the Company shall, unless the Agent agrees otherwise, cause to be furnished to Agent (A) (i) the written opinion and negative assurance letter of Cooley LLP, counsel to the Company, (ii) the written opinion of LeClairRyan, Professional Corporation, special intellectual property counsel to the Company, and (iii) the written opinion and negative assurance letter of Wilson Sonsini Goodrich & Rosati, P.C., counsel to the Agent, each dated as of the applicable Bring-Down Delivery Date and delivered within one Exchange Business Day after the applicable Bring-Down Delivery Date or, in the case of a Bring-Down Delivery Date resulting from a Principal Settlement Date, dated and delivered on such Principal Settlement Date, of the same tenor as the opinions and letters referred to in Section 5(a)(ii) or Section 5(b) hereof, as applicable, but modified as necessary to relate to the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus as amended and supplemented to the time of delivery of such opinions and letters, or, in lieu of such opinions and letters, each such counsel shall furnish the Agent with a letter substantially to the effect that the Agent may rely on the opinion and letter of such counsel referred to in Section 5(a)(ii) or Section 5(b), as applicable, furnished to the Agent, to the same extent as though they were dated the date of such letter authorizing reliance (except that statements in such last opinion and letter of such counsel shall be deemed to relate to the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus as amended and supplemented to the time of delivery of such letters authorizing reliance).

(d) Each Bring-Down Delivery Date, the Company shall, unless the Agent agrees otherwise, cause PricewaterhouseCoopers LLP to furnish to the Agent a "comfort" letter, dated as of the applicable Bring-Down Delivery Date and delivered within one Exchange Business Day after the applicable Bring-Down Delivery Date or, in the case of a Bring-Down Delivery

Date resulting from a Principal Settlement Date, delivered on such Principal Settlement Date, of the same tenor as the letter referred to in Section 5(a) (iii) hereof, but modified to relate to the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus as amended and supplemented to the date of such letter, and, if the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus shall include or incorporate by reference the financial statements of any entity or business (other than the consolidated financial statements of the Company and its subsidiaries), the Company shall, if requested by the Agent, cause a firm of independent public accountants to furnish to the Agent a “comfort” letter, dated as of the applicable Bring-Down Delivery Date and delivered within one Exchange Business Day after the applicable Bring-Down Delivery Date or, in the case of a Bring-Down Delivery Date resulting from a Principal Settlement Date, delivered on such Principal Settlement Date, addressing such matters as the Agent may reasonably request.

(e) (i) No order suspending the effectiveness of the Registration Statement shall be in effect, and no proceeding for such purpose or pursuant to Section 8A under the Act shall be pending before or threatened by the Commission; the Prospectus and each Permitted Free Writing Prospectus shall have been timely filed with the Commission under the Act (in the case of a Permitted Free Writing Prospectus, to the extent required by Rule 433 under the Act); and all requests by the Commission for additional information shall have been complied with to the satisfaction of the Agent and no suspension of the qualification of the Shares for offering or sale in any jurisdiction, or of the initiation or threatening of any proceedings for any of such purposes, shall have occurred and be in effect at the time the Company delivers a Transaction Proposal to the Agent or the time the Agent delivers a Transaction Acceptance to the Company; and (ii) the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus shall not contain an untrue statement of material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading at the time the Company delivers a Transaction Proposal to the Agent or the time the Agent delivers a Transaction Acceptance to the Company.

(f) The Company shall reasonably cooperate with any reasonable due diligence review requested by the Agent or its counsel from time to time in connection with the transactions contemplated hereby or any Terms Agreement, including, without limitation, (i) at the commencement of each intended Purchase Date and any Time of Sale or Settlement Date, providing information and making available appropriate documents and appropriate corporate officers of the Company and, upon reasonable request, representatives of PricewaterhouseCoopers LLP (and, if the Registration Statement, the Prospectus or any Permitted Free-Writing Prospectus shall include or incorporate by reference the financial statements of any entity or business (other than the consolidated financial statements of the Company and its subsidiaries), representatives of the independent public accountants that audited or reviewed such financial statements) for an update on diligence matters with representatives of the Agent and (ii) at each Bring-Down Delivery Date and otherwise as the Agent may reasonably request, providing information and making available documents and appropriate corporate officers of the Company and representatives of PricewaterhouseCoopers LLP (and, if the Registration Statement, the Prospectus or any Permitted Free-Writing Prospectus shall include or incorporate by reference the financial statements of any entity or business (other than the consolidated financial statements of the Company and its subsidiaries), representatives of the independent public accountants that audited or reviewed such financial statements) for one or more due diligence sessions with representatives of the Agent and its counsel.

(g) The Company shall disclose, in its quarterly reports on Form 10-Q and in its annual report on Form 10-K and, if requested by the Agent, in supplements to the Prospectus to be filed by the Company with the Commission from time to time, the number of the Shares sold through the Agent under this Agreement and any Terms Agreement, and the gross and net proceeds to the Company from the sale of the Shares and the compensation paid by the Company with respect to sales of the Shares pursuant to this Agreement during the relevant quarter or, in the case of any such prospectus supplement, such shorter period as the Agent may reasonably request or, in the case of an Annual Report on Form 10-K, during the fiscal year covered by such Annual Report and the fourth quarter of such fiscal year.

All opinions, letters and other documents referred to in Sections 6(b) through (d) above shall be reasonably satisfactory in form and substance to the Agent. The Agent will provide the Company with such notice (which may be oral, and in such case, will be confirmed via e-mail as soon as reasonably practicable thereafter) as is reasonably practicable under the circumstances when requesting an opinion, letter or other document referred to in Sections 6(b) through (d) above.

7. Conditions of the Agent's Obligation. The Agent's obligation to solicit purchases on an agency basis for the Shares or otherwise take any action pursuant to a Transaction Acceptance and to purchase the Shares pursuant to any Terms Agreement shall be subject to the satisfaction of the following conditions:

(a) At the Time of Acceptance, at the time of the commencement of trading on the Exchange on the Purchase Date(s) and at the relevant Time of Sale and Agency Settlement Date, or with respect to a Principal Transaction pursuant to a Terms Agreement, at the time of execution and delivery of the Terms Agreement by the Company and at the relevant Time of Sale and Principal Settlement Date:

- (i) The representations, warranties and agreements on the part of the Company herein contained or contained in any certificate of an officer or officers or other authorized representative of the Company or any subsidiary of the Company delivered pursuant to the provisions hereof shall be true and correct in all respects.
- (ii) The Company shall have performed and observed its covenants and other obligations hereunder and/or under any Terms Agreement, as the case may be, in all material respects.
- (iii) In the case of an Agency Transaction, from the Time of Acceptance until the Agency Settlement Date, or, in the case of a Principal Transaction pursuant to a Terms Agreement, from the time of execution and delivery of the Terms Agreement by the Company until the Principal Settlement Date, trading in the Common Stock on the Exchange shall not have been suspended.

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- (iv) From the date of this Agreement, no event or condition of a type described in Section 3(d) hereof shall have occurred or shall exist, which event or condition is not described in a Permitted Free Writing Prospectus (excluding any amendment or supplement thereto) or the Prospectus (excluding any amendment or supplement thereto) and the effect of which in the judgment of the Agent makes it impracticable or inadvisable to proceed with the offering, sale or delivery of the Shares on the applicable Settlement Date on the terms and in the manner contemplated by this Agreement, any Terms Agreement, any Permitted Free Writing Prospectus and the Prospectus.
 - (v) Subsequent to the relevant Time of Acceptance or, in the case of a Principal Transaction, subsequent to execution of the applicable Terms Agreement, (A) no downgrading shall have occurred in the rating accorded any debt securities or preferred equity securities of or guaranteed by the Company or any of its subsidiaries by any “nationally recognized statistical rating organization”, as such term is defined by the Commission for purposes of Section 3(a)(62) of the Exchange Act and (B) no such organization shall have publicly announced that it has under surveillance or review, or has changed its outlook with respect to, its rating of any debt securities or preferred equity securities of or guaranteed by the Company or any of its subsidiaries (other than an announcement with positive implications of a possible upgrading) in each case that has not been described in any Permitted Free Writing Prospectus issued prior to any related Time of Sale.
 - (vi) The Shares to be issued pursuant to the Transaction Acceptance or pursuant to a Terms Agreement, as applicable, shall have been approved for listing on the Exchange, subject only to notice of issuance.
 - (vii) (A) No action shall have been taken and no statute, rule, regulation or order shall have been enacted, adopted or issued by any federal, state or foreign governmental or regulatory authority that would, as of the relevant Settlement Date, prevent the issuance or sale of the Shares and (B) no injunction or order of any federal, state or foreign court shall have been issued that would, as of the relevant Settlement Date, prevent the issuance or sale of the Shares.
 - (viii) (A) No order suspending the effectiveness of the Registration Statement shall be in effect, no proceeding for such purpose or pursuant to Section 8A of the Act shall be pending before or threatened by the Commission and no notice of objection of the Commission to the use of the Registration Statement pursuant to Rule 401(g)(2) under the Act shall have been received by the Company; (B) the Prospectus and each Permitted Free Writing Prospectus shall have been timely filed with the Commission under the Act (in the case of any Permitted Free Writing Prospectus, to the extent required by Rule 433 under the Act); (C) all

requests by the Commission for additional information shall have been complied with to the satisfaction of the Agent; and (D) no suspension of the qualification of the Shares for offering or sale in any jurisdiction, and no initiation or threatening of any proceedings for any of such purposes, shall have occurred and be in effect. The Registration Statement, the Prospectus or any Permitted Free Writing Prospectus shall not contain an untrue statement of material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading at the time the Agent delivers a Transaction Acceptance to the Company or the Company and the Agent execute a Terms Agreement, as the case may be.

- (ix) No amendment or supplement to the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus shall have been filed to which the Agent shall have reasonably objected in writing.

(b) At every Bring-Down Delivery Date, the Agent shall have received the officers' certificates, opinions and negative assurance letters of counsel and "comfort" letters and other documents provided for under Sections 6(b) through (d), inclusive. For purposes of clarity and without limitation to any other provision of this Section 7 or elsewhere in this Agreement, the parties hereto agree that the Agent's obligations, if any, to solicit purchases of Shares on an agency basis or otherwise take any action pursuant to a Transaction Acceptance shall, unless otherwise agreed in writing by the Agent, be suspended during the period from and including a Bring-Down Delivery Date through and including the time that the Agent shall have received the documents described in the preceding sentence.

8. Termination.

- (a) (i) The Company may terminate this Agreement in its sole discretion at any time upon prior written notice to the Agent. Any such termination shall be without liability of any party to any other party, except that (A) with respect to any pending sale, the obligations of the Company, including in respect of compensation of the Agent, shall remain in full force and effect notwithstanding such termination; and (B) the provisions of Sections 3, 4 (except that if no Shares have been previously sold hereunder or under any Terms Agreement, only Section 4(l)), 9, 13, 14 and 16 of this Agreement shall remain in full force and effect notwithstanding such termination.
- (ii) In the case of any sale by the Company pursuant to a Terms Agreement, the obligations of the Company pursuant to such Terms Agreement and this Agreement may not be terminated by the Company without the prior written consent of the Agent.
- (b) (i) The Agent may terminate this Agreement in its sole discretion at any time upon giving prior written notice to the Company. Any such termination shall be without liability of any party to any other party, except that the provisions of Sections 3, 4 (except that if no Shares have been previously sold hereunder or under any Terms Agreement, only Section 4(l)), 9, 13, 14 and 16 of this Agreement shall remain in full force and effect notwithstanding such termination.

(ii) In the case of any purchase by the Agent pursuant to a Terms Agreement, the obligations of the Agent pursuant to such Terms Agreement shall be subject to termination by the Agent at any time prior to or at the Principal Settlement Date if (A) since the time of execution of the Terms Agreement or the respective dates as of which information is given in the Registration Statement, the Prospectus and any Permitted Free Writing Prospectus, (i) trading generally shall have been suspended or materially limited on or by any of the New York Stock Exchange, the Nasdaq Stock Market, the Chicago Board Options Exchange, the Chicago Mercantile Exchange or the Chicago Board of Trade; (ii) trading of any securities issued or guaranteed by the Company or any of its subsidiaries shall have been suspended on any exchange or in any over-the counter market, (iii) a general moratorium on commercial banking activities shall have been declared by federal or New York state authorities, (iv) there shall have occurred any outbreak or escalation of hostilities or any change in financial markets or any calamity or crisis, either within or outside the United States, that, solely in the case of events and conditions described in this clause (iv), in the Agent's judgment, is material and adverse and makes it impracticable or inadvisable to proceed with the offering, sale or delivery of the Shares on the terms and in the manner contemplated in the Prospectus or such Terms Agreement. If the Agent elects to terminate its obligations pursuant to this Section 8(b)(ii), the Company shall be notified promptly in writing.

(c) This Agreement shall remain in full force and effect until the earliest of (A) termination of the Agreement pursuant to Section 8(a) or 8(b) above or otherwise by mutual written agreement of the parties and (B) such date that the Maximum Amount of Shares has been sold in accordance with the terms of this Agreement and any Terms Agreements, in each case except that the provisions of Section 3, 4 (except that if no Shares have been previously sold hereunder or under any Terms Agreement, only Section 4(l)), 9, 13, 14 and 16 of this Agreement shall remain in full force and effect notwithstanding such termination.

(d) Any termination of this Agreement shall be effective on the date specified in such notice of termination; *provided that*, notwithstanding the foregoing, such termination shall not be effective until the close of business on the date of receipt of such notice by the Agent or the Company, as the case may be, or such later date as may be required pursuant to Section 8(a) or (b). If such termination shall occur prior to the Settlement Date for any sale of Shares, such sale shall settle in accordance with the provisions of Section 2 hereof.

9. Indemnity and Contribution.

(a) The Company agrees to indemnify and hold harmless the Agent, its affiliates, directors and officers and each person, if any, who controls the Agent within the meaning of Section 15 of the Act or Section 20 of the Exchange Act, from and against any and all losses,

claims, damages and liabilities (including, without limitation, reasonable legal fees and other expenses incurred in connection with any suit, action or proceeding or any claim asserted, as such fees and expenses are incurred), that arise out of, or are based upon, (i) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement (or any amendment thereto) or caused by any omission or alleged omission to state therein a material fact required to be stated therein or necessary in order to make the statements therein, not misleading or (ii) any untrue statement or alleged untrue statement of a material fact contained in the Prospectus (or any amendment or supplement thereto), any Permitted Free Writing Prospectus (or any amendment or supplement thereto), any “issuer information” filed or required to be filed pursuant to Rule 433(d) under the Act or any road show as defined in Rule 433(h) under the Act (a “road show”), or caused by any omission or alleged omission to state therein a material fact necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading, in each case except insofar as such losses, claims, damages or liabilities arise out of, or are based upon, any untrue statement or omission or alleged untrue statement or omission made in reliance upon and in conformity with any information relating to the Agent furnished to the Company in writing by the Agent expressly for use therein, it being understood and agreed that the only such information furnished by the Agent consists of the information described as such in subsection (b) below.

(b) The Agent agrees to indemnify and hold harmless the Company, its directors, its officers who signed the Registration Statement and each person, if any, who controls the Company within the meaning of Section 15 of the Act or Section 20 of the Exchange Act to the same extent as the indemnity set forth in paragraph (a) above, but only with respect to any losses, claims, damages or liabilities that arise out of, or are based upon, any untrue statement or omission or alleged untrue statement or omission made in reliance upon and in conformity with any information relating to the Agent furnished to the Company in writing by the Agent expressly for use in the Registration Statement (or any amendment thereto), the Prospectus (or any amendment or supplement thereto), any Permitted Free Writing Prospectus (or any amendment or supplement thereto) or any road show, it being understood and agreed upon that such information shall consist solely of the following: the information appearing in the fourth paragraph under the caption “Plan of Distribution” in the Prospectus Supplement.

(c) If any suit, action, proceeding (including any governmental or regulatory investigation), claim or demand shall be brought or asserted against any person in respect of which indemnification may be sought pursuant to either Section 9(a) or 9(b) above, such person (the “**Indemnified Person**”) shall promptly notify the person against whom such indemnification may be sought (the “**Indemnifying Person**”) in writing; provided that the failure to notify the Indemnifying Person shall not relieve it from any liability that it may have under this Section 9 except to the extent that it has been materially prejudiced (through the forfeiture of substantive rights or defenses) by such failure; and provided, further, that the failure to notify the Indemnifying Person shall not relieve it from any liability that it may have to an Indemnified Person otherwise than under this Section 9. If any such proceeding shall be brought or asserted against an Indemnified Person and it shall have notified the Indemnifying Person thereof, the Indemnifying Person shall retain counsel reasonably satisfactory to the Indemnified Person (who shall not, without the consent of the Indemnified Person, be counsel to the Indemnifying Person) to represent the Indemnified Person and any others entitled to indemnification pursuant to this

Section 9 that the Indemnifying Person may designate in such proceeding and shall pay the fees and expenses of such counsel related to such proceeding, as incurred. In any such proceeding, any Indemnified Person shall have the right to retain its own counsel, but the fees and expenses of such counsel shall be at the expense of such Indemnified Person unless (i) the Indemnifying Person and the Indemnified Person shall have mutually agreed in writing to the contrary; (ii) the Indemnifying Person has failed within a reasonable time to retain counsel reasonably satisfactory to the Indemnified Person; (iii) the Indemnified Person shall have reasonably concluded that there may be legal defenses available to it that are different from or in addition to those available to the Indemnifying Person that would make separate representation advisable in the light of the circumstances; or (iv) the named parties in any such proceeding (including any impleaded parties) included both the Indemnifying Person and the Indemnified Person and representation of both parties by the same counsel would be inappropriate due to actual or potential differing interests between them. It is understood and agreed that the Indemnifying Person shall not, in connection with any proceeding or related proceeding in the same jurisdiction, be liable for the reasonable fees and expenses of more than one separate firm (in addition to any local counsel) for (A) the Agent and its affiliates, directors and officers and its control persons, if any, or (B) the Company, its directors, its officers who signed the Registration Statement and its control persons, if any, as the case may be, and that all such reasonable fees and expenses shall be paid or reimbursed as they are incurred. Any such separate firm for the Agent and its affiliates, directors and officers and its control persons, if any, shall be designated in writing by the Agent, and any such separate firm for the Company, its directors, its officers who signed the Registration Statement and its control persons, if any, shall be designated in writing by the Company. The Indemnifying Person shall not be liable for any settlement of any proceeding effected without its written consent, but if settled with such consent or if there be a final judgment for the plaintiff for which the Indemnified Person is entitled to indemnification pursuant to this Section 9, the Indemnifying Person agrees to indemnify each Indemnified Person from and against any loss or liability by reason of such settlement or judgment. No Indemnifying Person shall, without the written consent of the Indemnified Person, effect any settlement of any pending or threatened proceeding in respect of which any Indemnified Person is or could have been a party and indemnification is or could have been sought hereunder by such Indemnified Person, unless such settlement (x) includes an unconditional release of such Indemnified Person, in form and substance reasonably satisfactory to such Indemnified Person, from all liability on claims that are the subject matter of such proceeding and (y) does not include any statement as to or any admission of fault, culpability or a failure to act by or on behalf of any Indemnified Person.

(d) If the indemnification provided for in Sections 9(a) and 9(b) above is unavailable to an Indemnified Person or insufficient in respect of any losses, claims, damages or liabilities referred to therein, then each Indemnifying Person under such Sections, in lieu of indemnifying such Indemnified Person thereunder, shall contribute to the amount paid or payable by such Indemnified Person as a result of such losses, claims, damages or liabilities (i) in such proportion as is appropriate to reflect the relative benefits received by the Company, on the one hand, and the Agent, on the other, from the offering of the Shares pursuant to this Agreement and any Terms Agreements or (ii) if the allocation provided by clause (i) is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause (i) but also the relative fault of the Company, on the one hand, and the Agent, on the other, in connection with the statements or omissions that resulted in such losses, claims,

damages or liabilities, as well as any other relevant equitable considerations. The relative benefits received by the Company, on the one hand, and the Agent, on the other, shall be deemed to be in the same respective proportions as the net proceeds (after deducting sales commissions but before deducting expenses) received by the Company from the sale of the Shares pursuant to this Agreement and any Terms Agreements and the total discounts and commissions received by the Agent in connection therewith bear to the aggregate Gross Sales Price of such Shares. The relative fault of the Company, on the one hand, and Agent, on the other, shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company, on the one hand, or by Agent, on the other hand, and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission.

(e) The Company and the Agent agree that it would not be just and equitable if contribution pursuant to this Section 9 were determined by pro rata allocation or by any other method of allocation that does not take account of the equitable considerations referred to in Section 9(d) above. The amount paid or payable by an Indemnified Person as a result of the losses, claims, damages and liabilities referred to in Section 9(d) above shall be deemed to include, subject to the limitations set forth above, any legal or other expenses incurred by such Indemnified Person in connection with any such action or claim. Notwithstanding the provisions of this Section 9, in no event shall the Agent be required to contribute any amount in excess of the amount by which the total discounts and commissions received by the Agent with respect to the offering of the Shares pursuant to this Agreement and any Terms Agreements exceeds the amount of any damages that the Agent 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 Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation.

(f) The remedies provided for in this Section 9 are not exclusive and shall not limit any rights or remedies which may otherwise be available to any Indemnified Person at law or in equity.

10. Notices. All notices and other communications under this Agreement and any Terms Agreement shall be in writing and shall be deemed to have been duly given if mailed or transmitted and confirmed by any standard form of communication, and, if to the Agent, shall be sufficient in all respects if delivered or sent to J.P. Morgan Securities LLC, 383 Madison Avenue, 7th Floor, New York, New York 10179, to the attention of Special Equities Group, Stephanie Little (email stephanie.y.little@jpmorgan.com) and Brett Chalmers (email brett.chalmers@jpmorgan.com), and, if to the Company, shall be sufficient in all respects if delivered or sent to it at Alder BioPharmaceuticals, Inc., 11804 North Creek Parkway South, Bothell, WA 98011, Attention: Chief Executive Officer, with copies to Alder BioPharmaceuticals, Inc., 11804 North Creek Parkway South, Bothell, WA 98011, Attention: General Counsel and to Cooley LLP, 1700 Seventh Avenue, Suite 1900, Seattle, WA 98199; Attention: Sonya F. Erickson (fax: (206) 452-8800). Notwithstanding the foregoing, Transaction Proposals shall be delivered by the Company to the Agent by email to Stephanie Little (email stephanie.y.little@jpmorgan.com@jpmorgan.com); and Transaction Acceptances shall be delivered by the Agent to the Company by email to Carlos Campoy (ccampoy@alderbio.com), with a copy to James B. Bucher (jbucher@alderbio.com).

11. No Fiduciary Relationship. The Company acknowledges and agrees that the Agent is acting solely in the capacity of an arm's length contractual counterparty to the Company with respect to the offering of Shares contemplated hereby and any Terms Agreements (including in connection with determining the terms of the offering) and not as a financial advisor or a fiduciary to, or an agent of, the Company or any other person. Additionally, the Agent is not advising the Company or any other person as to any legal, tax, investment, accounting or regulatory matters in any jurisdiction. The Company shall consult with its own advisors concerning such matters and shall be responsible for making its own independent investigation and appraisal of the transactions contemplated hereby, and the Agent shall have no responsibility or liability to the Company with respect thereto. Any review by the Agent of the Company, the transactions contemplated hereby or other matters relating to such transactions will be performed solely for the benefit of the Agent and shall not be on behalf of the Company.

12. Adjustments for Stock Splits. The parties acknowledge and agree that all share related numbers contained in this Agreement, any Transaction Proposal and any Transaction Acceptance shall be adjusted to take into account any stock split effected with respect to the Shares.

13. Governing Law: Jurisdiction.

(a) This Agreement, any Terms Agreement and any claim, counterclaim or dispute of any kind or nature whatsoever arising out of or in any way relating to this Agreement or any Terms Agreement (each a "**Claim**"), directly or indirectly, shall be governed by, and construed in accordance with, the laws of the State of New York.

(b) The Company hereby submits to the exclusive jurisdiction of the U.S. federal and New York state courts in the Borough of Manhattan in The City of New York in any suit or proceeding arising out of or relating to this Agreement or the transactions contemplated hereby. The Company waives any objection which it may now or hereafter have to the laying of venue of any such suit or proceeding in such courts. The Company agrees that final judgment in any such suit, action or proceeding brought in such court shall be conclusive and binding upon the Company and may be enforced in any court to the jurisdiction of which Company is subject by a suit upon such judgment.

14. Persons Entitled to Benefit of Agreement. This Agreement and any Terms Agreement shall inure to the benefit of and be binding upon the parties hereto and thereto, respectively, and their respective successors and the officers, directors, affiliates and controlling persons referred to in Section 9 hereof. Nothing in this Agreement or any Terms Agreement is intended or shall be construed to give any other person any legal or equitable right, remedy or claim under or in respect of this Agreement or any such Terms Agreement or any provision contained herein or therein. No purchaser of Shares from or through the Agent shall be deemed to be a successor merely by reason of purchase.

15. Counterparts. This Agreement and any Terms Agreement may be signed in counterparts (which may include counterparts delivered by any standard form of telecommunication), each of which shall be an original and all of which together shall constitute one and the same instrument.

16. Survival. The respective indemnities, rights of contribution, representations, warranties and agreements of the Company and the Agent contained in this Agreement or any Terms Agreement or made by or on behalf of the Company or the Agent pursuant to this Agreement or any Terms Agreement or any certificate delivered pursuant hereto or thereto shall survive the delivery of and payment for the Shares and shall remain in full force and effect, regardless of any termination of this Agreement or any Terms Agreement or any investigation made by or on behalf of the Company or the Agent.

17. Certain Defined Terms. For purposes of this Agreement, except where otherwise expressly provided, the term “affiliate” has the meaning set forth in Rule 405 under Act; the term “business day” means any day other than a day on which banks are permitted or required to be closed in New York City; and the term “subsidiary” has the meaning set forth in Rule 405 under the Act.

18. Recognition of the U.S. Special Resolution Regimes.

(a) In the event that the Agent is a Covered Entity and becomes subject to a proceeding under a U.S. Special Resolution Regime, the transfer from the Agent of this Agreement or any Terms Agreement, and any interest and obligation in or under this Agreement or any Terms Agreement, will be effective to the same extent as the transfer would be effective under the U.S. Special Resolution Regime if this Agreement or any Terms Agreement, and any such interest and obligation, were governed by the laws of the United States or a state of the United States.

(b) In the event that the Agent is a Covered Entity and becomes, or a BHC Act Affiliate of the Agent becomes, subject to a proceeding under a U.S. Special Resolution Regime, Default Rights under this Agreement or any Terms Agreement that may be exercised against the Agent is permitted to be exercised to no greater extent than such Default Rights could be exercised under the U.S. Special Resolution Regime if this Agreement or any Terms Agreement were governed by the laws of the United States or a state of the United States.

As used in this Section 18:

“BHC Act Affiliate” has the meaning assigned to the term “affiliate” in, and shall be interpreted in accordance with, 12 U.S.C. § 1841(k).

“Covered Entity” means any of the following:

- (i) a “covered entity” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 252.82(b);
- (ii) a “covered bank” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 47.3(b); or
- (iii) a “covered FSI” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 382.2(b).

“Default Right” has the meaning assigned to that term in, and shall be interpreted in accordance with, 12 C.F.R. §§ 252.81, 47.2 or 382.1, as applicable.

“U.S. Special Resolution Regime” means each of (i) the Federal Deposit Insurance Act and the regulations promulgated thereunder and (ii) Title II of the Dodd-Frank Wall Street Reform and Consumer Protection Act and the regulations promulgated thereunder.

19. Amendments or Waivers. No amendment or waiver of any provision of this Agreement or any Terms Agreement, nor any consent or approval to any departure therefrom, shall in any event be effective unless the same shall be in writing and signed by the parties hereto or thereto as the case may be.

20. Headings. The headings in this Agreement and any Terms Agreement have been inserted as a matter of convenience of reference and are not intended to be a part of, or to affect the meaning or interpretation of, this Agreement or any Terms Agreement.

21. Waiver of Jury Trial. The parties hereto 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.

22. Compliance with USA Patriot Act. In accordance with the requirements of the USA Patriot Act (Title III of Pub. L. 107-56 (signed into law October 26, 2001)), the Agent is required to obtain, verify and record information that identifies its clients, including the Company, which information may include the name and address of its clients, as well as other information that will allow the Agent to properly identify its clients.

[Signature Page Follows]

If the foregoing correctly sets forth the understanding between the Company and the Agent, please so indicate in the space provided below for that purpose, whereupon this letter and your acceptance shall constitute a binding agreement among the Company and the Agent.

Very truly yours,

ALDER BIOPHARMACEUTICALS, INC.

By: /s/ Carlos E. Campoy

Name: Carlos E. Campoy

Title: Chief Financial Officer

Accepted and agreed to as of the date first above written:

J.P. MORGAN SECURITIES LLC

By: /s/ Michael Connor

Name: Michael Connor

Title: Vice President

Authorized Company Representatives

Robert W. Azelby
Carlos E. Campoy
James B. Bucher
Erin Lavelle

Alder BioPharmaceuticals, Inc. Common Stock

TERMS AGREEMENT

_____, 20__

J.P. Morgan Securities LLC
383 Madison Avenue
New York, New York 10179

Dear Sirs:

Alder BioPharmaceuticals, Inc., a Delaware corporation (the “**Company**”), proposes, subject to the terms and conditions stated herein and in the Distribution Agreement dated January 4, 2019 (the “**Distribution Agreement**”) between the Company and J.P. Morgan Securities LLC (the “**Agent**”), to issue and sell to the Agent the securities specified in the Schedule hereto (the “**Purchased Securities**”). Unless otherwise defined below, terms defined in the Distribution Agreement shall have the same meanings when used herein.

Each of the provisions of the Distribution Agreement not specifically related to the solicitation by the Agent, as agent of the Company, of offers to purchase securities is incorporated herein by reference in its entirety, and shall be deemed to be part of this Terms Agreement to the same extent as if such provisions had been set forth in full herein. Each of the representations, warranties and agreements set forth therein shall be deemed to have been made as of the date of this Terms Agreement and the Settlement Date set forth in the Schedule hereto.

An amendment to the Registration Statement or a supplement to the Prospectus, as the case may be, relating to the Purchased Securities, in the form heretofore delivered to the Agent, is now proposed to be filed with the Securities and Exchange Commission.

Subject to the terms and conditions set forth herein and in the Distribution Agreement which are incorporated herein by reference, the Company agrees to issue and sell to the Agent, and the latter agrees to purchase from the Company, the Purchased Securities at the time and place and at the purchase price set forth in the Schedule hereto.

Notwithstanding any provision of the Distribution Agreement or this Terms Agreement to the contrary, the Company consents to the Agent trading in the Common Stock for Agent’s own account and for the account of its clients at the same time as sales of the Purchased Securities occur pursuant to this Terms Agreement.

[Signature Page Follows]

If the foregoing is in accordance with your understanding, please sign and return to us a counterpart hereof, whereupon this Terms Agreement, including those provisions of the Distribution Agreement incorporated herein by reference, shall constitute a binding agreement between the Agent and the Company.

ALDER BIOPHARMACEUTICALS, INC.

By: _____
Name:
Title:

Accepted and agreed as of the date first above written:

J.P. MORGAN SECURITIES LLC

By: _____
Name:
Title:

Schedule to Terms Agreement

Title of Purchased Securities:

Common Stock, par value \$0.0001 per share

Number of Shares of Purchased Securities:

[●] shares

Initial Price to Public:

\$(●) per share

Purchase Price Payable by the Agent:

\$(●) per share

Method of and Specified Funds for Payment of Purchase Price:

[By wire transfer to a bank account specified by the Company in same day funds.]

Method of Delivery:

[To the Agent's account, or the account of the Agent's designee, at The Depository Trust Company via DWAC in return for payment of the purchase price.]

Settlement Date:

[●], 20[●]

Closing Location:

[●]

Documents to be Delivered:

The following documents referred to in the Distribution Agreement shall be delivered on the Settlement Date as a condition to the closing for the Purchased Securities (which documents shall be dated on or as of the Settlement Date and shall be appropriately updated to cover any Permitted Free Writing Prospectuses and any amendments or supplements to the Registration Statement, the Prospectus, any Permitted Free Writing Prospectuses and any documents incorporated by reference therein):

- (1) the officer's certificate referred to in Section 5(a)(i);
- (2) the opinions and negative assurance letters referred to in Section 5(a)(ii);
- (3) the "comfort" letter referred to in Section 5(a)(iii);
- (4) the chief financial officer certificate referred to in Section 5(a)(iv);
- (5) the opinion and negative assurance letter referred to in Section 5(b); and
- (6) such other documents as the Agent shall reasonably request.

[●]

Time of sale: [●] [a.m./p.m.] (New York City time) on [●], [●]

Time of sale information:

- The number of shares of Purchased Securities set forth above
- The initial price to public set forth above
- **[Other]**

OFFICERS' CERTIFICATE

Dated _____, 20__

We, Robert W. Azelby, President and Chief Executive Officer, and Carlos E. Campoy, Chief Financial Officer of Alder BioPharmaceuticals, Inc., a Delaware corporation (the "**Company**"), do hereby certify that this certificate is signed by us pursuant to the Distribution Agreement dated January 4, 2019 between the Company and J.P. Morgan Securities LLC (the "**Agreement**"), and do hereby further certify on behalf of the Company, as follows:

1. The representations and warranties of the Company in the Agreement are true and correct on and as of the date hereof as though made on and as of this date;

2. The Company has performed all obligations and satisfied all conditions on its part to be performed or satisfied pursuant to the Agreement on or prior to the date hereof; and

3. The Company's Registration Statement (File No. 333-216199) and any post-effective amendments thereto have become effective under the Act; no stop order suspending the effectiveness of such Registration Statement has been issued and no proceeding for that purpose or pursuant to Section 8A of the Act has been initiated or, to the knowledge of the undersigned, threatened by the Commission; no notice of objection of the Commission to the use of such Registration Statement pursuant to Rule 401(g)(2) under the Act has been received by the Company; and all requests for additional information on the part of the Commission have been complied with.

All capitalized terms used herein and not otherwise defined shall have the respective meanings assigned to them in the Agreement.

[Signature Page Follows]

Name: Robert W. Azelby
Title: President and Chief Executive Officer

Name: Carlos E. Campoy
Title: Chief Financial Officer