
**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): **December 6, 2018**

Momenta Pharmaceuticals, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

000-50797
(Commission
File Number)

04-3561634
(IRS Employer
Identification No.)

301 Binney Street, Cambridge, MA
(Address of Principal Executive Offices)

02142
(Zip Code)

(617) 491-9700
(Registrant's telephone number, including area code)

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

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

- 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 8.01. Other Events.

On December 6, 2018, Momenta Pharmaceuticals, Inc. (the “Company”) entered into an underwriting agreement (the “Underwriting Agreement”) with Goldman Sachs & Co. LLC (the “Underwriter”), in connection with the public offering, issuance and sale by the Company of 17,391,305 shares of the Company’s common stock, par value \$0.0001 per share, at a public offering price of \$11.50 per share, less underwriting discounts and commissions, pursuant to an effective registration statement on Form S-3 (File No. 333-209813) and a related prospectus supplement filed with the Securities and Exchange Commission. Under the terms of the Underwriting Agreement, the Company has also granted the Underwriter an option exercisable for 30 days to purchase up to an additional 2,608,695 shares of its common stock at the public offering price, less underwriting discounts and commissions.

The Company expects to receive net proceeds from the offering of approximately \$189.1 million, or approximately \$217.5 million if the Underwriter exercises its option to purchase additional shares in full, after deducting underwriting discounts and commissions and estimated offering expenses payable by the Company. The Company intends to use the net proceeds of the offering for the development of its pipeline of product candidates and for general corporate purposes, including working capital.

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

The above description of the Underwriting Agreement is qualified in its entirety by reference to the full text of the Underwriting Agreement, a copy of which is filed as Exhibit 1.1 hereto and is incorporated herein by reference.

Latham & Watkins LLP, counsel to the Company, has issued an opinion to the Company, dated December 7, 2018, regarding the validity of the shares of common stock to be issued and sold in the offering. A copy of the opinion is filed as Exhibit 5.1 to this Current Report on Form 8-K.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit No.	Description
1.1	<u>Underwriting Agreement, dated December 6, 2018, between the Company and Goldman Sachs & Co. LLC.</u>
5.1	<u>Opinion of Latham & Watkins LLP.</u>
23.1	<u>Consent of Latham & Watkins LLP (included in Exhibit 5.1).</u>

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.

MOMENTA PHARMACEUTICALS, INC.

Date: December 7, 2018

By: /s/ Michelle Robertson
Michelle Robertson
Chief Financial Officer

Momenta Pharmaceuticals, Inc.
Common Stock, \$0.0001 par value

Underwriting Agreement

December 6, 2018

Goldman Sachs & Co. LLC
As representative (the "Representative") of the several Underwriters
named in Schedule I hereto

c/o Goldman Sachs & Co. LLC
200 West Street
New York, New York 10282

Ladies and Gentlemen:

Momenta Pharmaceuticals, Inc., a Delaware corporation (the "Company"), proposes, subject to the terms and conditions stated in this agreement (this "Agreement"), to issue and sell to the Underwriters named in Schedule I hereto (the "Underwriters") an aggregate of 17,391,305 shares (the "Firm Shares") and, at the election of the Underwriters, up to 2,608,695 additional shares (the "Optional Shares") of Common Stock, par value \$0.0001 ("Stock") of the Company (the Firm Shares and the Optional Shares that the Underwriters elect to purchase pursuant to Section 2 hereof being collectively called the "Shares").

1. The Company represents and warrants to, and agrees with, each of the Underwriters that:

(a) An "automatic shelf registration statement" as defined under Rule 405 under the Securities Act of 1933, as amended (the "Act"), on Form S-3 (File No. 333-209813) in respect of the Shares has been filed with the Securities and Exchange Commission (the "Commission") not earlier than three years prior to the date hereof; such registration statement, and any post-effective amendment thereto, became effective on filing; and no stop order suspending the effectiveness of such registration statement or any part thereof 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 Company, threatened by the Commission, and no notice of objection of the

Commission to the use of such registration statement or any post-effective amendment thereto pursuant to Rule 401(g)(2) under the Act has been received by the Company (the base prospectus filed as part of such registration statement, in the form in which it has most recently been filed with the Commission on or prior to the date of this Agreement, is hereinafter called the “Basic Prospectus”; any preliminary prospectus (including any preliminary prospectus supplement) relating to the Shares filed with the Commission pursuant to Rule 424(b) under the Act is hereinafter called a “Preliminary Prospectus”; the various parts of such registration statement, including all exhibits thereto but excluding Form T-1 and including any prospectus supplement relating to the Shares that is filed with the Commission and deemed by virtue of Rule 430B under the Act to be part of such registration statement, each as amended at the time such part of the registration statement became effective, are hereinafter collectively called the “Registration Statement”; the Basic Prospectus, as amended and supplemented immediately prior to the Applicable Time (as defined in Section 1(c) hereof), is hereinafter called the “Pricing Prospectus”; the form of the final prospectus relating to the Shares filed with the Commission pursuant to Rule 424(b) under the Act in accordance with Section 5(a) hereof is hereinafter called the “Prospectus”; any reference herein to the Registration Statement, the Basic Prospectus, the Pricing Prospectus, any Preliminary Prospectus or the Prospectus shall be deemed to refer to and include the documents incorporated by reference therein pursuant to Item 12 of Form S-3 under the Act, as of the date of such prospectus; any reference to any amendment or supplement to the Basic Prospectus, any Preliminary Prospectus or the Prospectus shall be deemed to refer to and include any post-effective amendment to the Registration Statement, any prospectus supplement relating to the Shares filed with the Commission pursuant to Rule 424(b) under the Act and any documents filed under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and incorporated therein, in each case after the date of the Basic Prospectus, such Preliminary Prospectus, or the Prospectus, as the case may be; any reference to any amendment to the Registration Statement shall be deemed to refer to and include any annual report of the Company filed pursuant to Section 13(a) or 15(d) of the Exchange Act after the effective date of the Registration Statement that is incorporated by reference in the Registration Statement; and any “issuer free writing prospectus” as defined in Rule 433 under the Act relating to the Shares is hereinafter called an “Issuer Free Writing Prospectus”);

(b) (A) No order preventing or suspending the use of any Preliminary Prospectus or any Issuer Free Writing Prospectus has been issued by the Commission, and (B) each Preliminary Prospectus, at the time of filing thereof, conformed in all material respects to the requirements of the Act and the rules and regulations of the Commission thereunder, and did not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided, however, that this representation and warranty shall not apply to any statements or omissions made in reliance upon and in conformity with the information furnished in writing to the Company by an Underwriter through the Representatives expressly for use therein;

(c) For the purposes of this Agreement, the “Applicable Time” is 6:15 p.m. (Eastern time) on the date of this Agreement; the Pricing Prospectus, as supplemented by the information listed on Schedule II(c) hereto, including each Issuer Free Writing Prospectus filed by the Company pursuant to Rule 433 under the Act that is listed on Schedule II(c), taken together (collectively, the “Pricing Disclosure Package”), as of the Applicable Time, did not, and as of each Time of Delivery (as defined in Section 4(a) of this Agreement) will not, include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; and each Issuer Free Writing Prospectus listed on Schedule II(a) or Schedule II(c) hereto does not conflict with the information contained in the Registration Statement, the Pricing Disclosure Package or the Prospectus and each such Issuer Free Writing Prospectus, as supplemented by and taken together with the Pricing Disclosure Package as of the Applicable Time, did not, and as of each Time of Delivery will not, include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided, however, that this representation and warranty shall not apply to any statements or omissions made in reliance upon and in conformity with the information furnished in writing to the Company by an Underwriter through the Representatives expressly for use therein;

(d) The documents incorporated by reference in the Registration Statement, the Pricing Prospectus and the Prospectus, when they became effective or were filed with the Commission, as the case may be, conformed in all material respects to the requirements

of the Act or the Exchange Act, as applicable, and the rules and regulations of the Commission thereunder, and none of such documents contained an untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary to make the statements therein not misleading; any further documents so filed and incorporated by reference in the Pricing Prospectus and the Prospectus or any further amendment or supplement thereto, 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 the rules and regulations of the Commission thereunder and will not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading; and no such documents were filed with the Commission since the Commission's close of business on the business day immediately prior to the date of this Agreement and prior to the execution of this Agreement, except as set forth on Schedule II(b) hereto;

(e) The Registration Statement conforms, and the Prospectus and any further amendments or supplements to the Registration Statement and the Prospectus will conform, in all material respects to the requirements of the Act and the rules and regulations of the Commission thereunder and do not and will not, as of the applicable effective date as to each part of the Registration Statement and as of the applicable filing date as to the Prospectus and any amendment or supplement thereto, and as of each Time of Delivery, contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading; provided, however, that this representation and warranty shall not apply to any statements or omissions made in reliance upon and in conformity with the information furnished in writing to the Company by an Underwriter through the Representatives expressly for use therein;

(f) Neither the Company nor any of its subsidiaries has, since the date of the latest audited financial statements included or incorporated by reference in the Pricing Prospectus, sustained any material loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree, otherwise than as set forth or contemplated in the Pricing Prospectus; and, since the respective dates as of which information is given in the Registration Statement and the Pricing Prospectus, there has not been

any change in the capital stock (excluding stock option grants or awards of restricted stock in the ordinary course of business pursuant to the Company's equity incentive plans described in the Pricing Prospectus and the Prospectus and the issuance of stock pursuant to the Company's employee stock purchase plan and the exercise of any outstanding stock options or the vesting of restricted stock pursuant to the Company's equity incentive plans described in the Pricing Prospectus and the Prospectus) or long term debt of the Company or any of its subsidiaries any material adverse change or effect, or any development involving a prospective material adverse change or effect, in or affecting the business, general affairs, management, financial position, stockholders' equity or results of operations of the Company and its subsidiaries, taken as a whole, otherwise than as set forth or contemplated in the Pricing Prospectus(a "Material Adverse Effect");

(g) The Company and its subsidiaries do not own any real property and have good and marketable title to all personal property (other than to Intellectual Property, which is addressed in Section 1(cc) hereof) owned by them, free and clear of all liens, encumbrances and defects except such as are described in the Pricing Prospectus or such as do not materially affect the value of such property and do not interfere with the use made and proposed to be made of such property by the Company and its subsidiaries; and any real property and buildings held under lease by the Company and its subsidiaries are held by them under valid, subsisting and enforceable leases (subject, as to enforcement, to bankruptcy, insolvency, reorganization and other laws of general applicability relating to or affecting creditors' rights and to general equity principles, and except as enforcement of indemnification and contribution provisions thereof may be limited by applicable law) with such exceptions as are not material and do not materially interfere with the use made and proposed to be made of such property and buildings by the Company and its subsidiaries;

(h) Each of the Company and its subsidiaries has been duly organized and is validly existing and in good standing under the laws of its jurisdiction of organization, with power and authority (corporate and other) to own its properties and conduct its business as described in the Pricing Prospectus, and has been duly qualified as a foreign corporation for the transaction of business and is in good standing under the laws of each other jurisdiction in which it owns or leases properties or conducts any business so as to require such qualification, or is subject to no material liability or disability by reason of the failure to be so qualified in any such jurisdiction;

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

(j) The Company has an authorized capitalization as set forth in the Pricing Prospectus and all of the issued shares of capital stock of the Company have been duly and validly authorized and issued and are fully paid and non-assessable and conform to the description of the Stock contained in the Pricing Disclosure Package and the Prospectus; and all of the issued shares of capital stock of each subsidiary of the Company have been duly and validly authorized and issued, are fully paid and non-assessable and (except, in the case of any foreign subsidiary, for directors' qualifying shares and except as otherwise set forth in the Pricing Prospectus) are owned directly or indirectly by the Company, free and clear of all liens, encumbrances, equities or claims;

(k) The Shares to be issued and sold by the Company to the Underwriters hereunder have been duly authorized and, when issued and delivered against payment therefor in accordance with the terms of this Agreement, will be validly issued and fully paid and non-assessable and will conform to the description of the Stock contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus; and the issuance of the Shares is not subject to any preemptive or similar rights that have not been waived or complied with;

(l) The issue and sale of the Shares and the execution and delivery of, and compliance by the Company with, this Agreement and the consummation of the transactions herein contemplated will not conflict with or result in a breach or violation of any of the terms or provisions of, or constitute a default under, any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of 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, other than any conflict, breach, violation or default that would not, individually or in the aggregate, have a Material Adverse Effect, nor will such action result in any violation of the provisions of the certificate of incorporation or by-laws of the Company or any statute or any order, rule or regulation of any court or governmental agency or body having jurisdiction over the Company or any of its subsidiaries or any of their properties; and no consent, approval, authorization, order, registration or qualification of or with any such court or governmental agency or body is required for the issue and sale of the Shares or the consummation by the Company of the transactions contemplated by

this Agreement, except such as have been obtained under the Act and such consents, approvals, authorizations, registrations or qualifications as may be required under state securities or Blue Sky laws and the rules and regulations of the Financial Industry Regulatory Authority (“FINRA”) in connection with the purchase and distribution of the Shares by the Underwriters;

(m) Neither the Company nor any of its subsidiaries is in violation of (i) its certificate of incorporation or by-laws (or other applicable organizational document), (ii) in violation of any statute or any judgment, order, rule or regulation of any court or governmental agency or body having jurisdiction over the Company or any of its subsidiaries or any of their properties, or (iii) in default in the performance or observance of any material obligation, agreement, covenant or condition contained in any indenture, mortgage, deed of trust, loan agreement, lease or other agreement or instrument to which it is a party or by which it or any of its properties may be bound, except, in the foregoing clauses (ii) and (iii), as would not, individually or in the aggregate, have a Material Adverse Effect;

(n) The statements set forth in the Pricing Prospectus and Prospectus under the caption “Description of Capital Stock,” insofar as they purport to constitute a summary of the terms of the Stock, and under the caption “Underwriting,” insofar as they purport to describe the provisions of the laws and the provisions of this Agreement, including the form of Lock-Up Agreement, referred to therein, are accurate, complete and fair in all material respects;

(o) Other than as set forth in the Pricing Prospectus, there are no legal or governmental proceedings pending to which the Company or any of its subsidiaries is a party or of which any property of the Company or any of its subsidiaries is the subject which, if determined adversely to the Company or any of its subsidiaries, would individually or in the aggregate have a Material Adverse Effect; and, to the Company’s knowledge, no such proceedings are threatened or contemplated by governmental authorities or threatened by others;

(p) The Company is not and, after giving effect to the offering and sale of the Shares and the application of the proceeds thereof, will not be an “investment company,” as such term is defined in the Investment Company Act of 1940, as amended (the “Investment Company Act”);

(q) The Company and its subsidiaries have filed all material Federal, state, local and foreign tax returns which are required

to be filed through the date hereof, which returns are true and correct in all material respects or have received timely extensions thereof, and have paid or withheld (as appropriate) all taxes due or required to be withheld whether or not shown on such returns and all assessments received by it to the extent that the same are material and have become due (and are not being contested). There are no material tax audits or investigations pending; nor are there any material proposed additional tax assessments against the Company;

(r) (A) (i) At the time of filing the Registration Statement, (ii) at the time of the most recent amendment thereto for the purposes of complying with Section 10(a)(3) of the Act (whether such amendment was by post-effective amendment, incorporated report filed pursuant to Section 13 or 15(d) of the Exchange Act or form of prospectus), and (iii) at the time the Company or any person acting on its behalf (within the meaning, for this clause only, of Rule 163(c) under the Act) made any offer relating to the Shares in reliance on the exemption of Rule 163 under the Act, the Company was a “well-known seasoned issuer” as defined in Rule 405 under the Act; and (B) at the time of filing of the Registration Statement, at the earliest time thereafter that the Company or another offering participant made a bona fide offer (within the meaning of Rule 164(h)(2) under the Act) of the Shares, and at the date hereof, the Company was not and is not an “ineligible issuer” as defined in Rule 405 under the Act;

(s) Ernst & Young LLP, who have certified certain financial statements of the Company and its subsidiaries, and have audited the Company’s internal control over financial reporting and management’s assessment thereof, are independent public accountants as required by the Act and the rules and regulations of the Commission thereunder;

(t) The consolidated financial statements of the Company and its subsidiaries included in the Registration Statement, the Pricing Disclosure Package and the Prospectus, together with the related schedules and notes, present fairly in all material respects the financial position of the Company and its subsidiaries as of the dates indicated, and for the periods indicated therein, subject in the case of unaudited financial statements, to normal year-end audit adjustments; said financial statements have been prepared in conformity with U.S. generally accepted accounting principles (“GAAP”) applied on a consistent basis throughout the periods involved, except as otherwise stated in the Pricing Prospectus. The supporting schedules, if any, present fairly in all material respects in accordance with GAAP the information required to be stated therein. The selected financial data

and the summary financial information included in the Registration Statement, the Pricing Disclosure Package and the Prospectus present fairly in all material respects the information shown therein and have been compiled on a basis consistent with that of the financial statements included therein. Except as included therein, no historical or pro forma financial statements or supporting schedules are required to be included in the Registration Statement, the Pricing Disclosure Package or the Prospectus under the Act or the rules and regulations promulgated thereunder; the interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus fairly presents in all material respects the information called for and has been prepared in accordance with the Commission's rules and guidelines applicable thereto.

(u) The Company maintains a system of internal control over financial reporting (as such term is defined in Rule 13a-15(f) under the Exchange Act) that (i) complies with the requirements of the Exchange Act, (ii) has been designed by the Company's principal executive officer and principal financial officer, or under their supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP and (iii) is sufficient to provide reasonable assurance that interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement fairly presents the information called for in all material respects and is prepared in accordance with the Commission's rules and guidelines applicable thereto; the Company's internal control over financial reporting is effective and the Company is not aware of any material weaknesses in its internal control over financial reporting, it being understood that the management of the Company has not conducted an evaluation of the effectiveness of the Company's internal control over financial reporting for any period after December 31, 2017;

(v) Since the date of the latest audited financial statements included or incorporated by reference in the Pricing Prospectus, there has been no change in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting;

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

such disclosure controls and procedures have been designed to ensure that material information relating to the Company and its subsidiaries is made known to the Company's principal executive officer and principal financial officer by others within those entities; and such disclosure controls and procedures are effective at the reasonable assurance level, it being understood that the management of the Company has not conducted an evaluation of the effectiveness of the Company's internal control over financial reporting for any period after December 31, 2017;

(x) The Company possesses such permits, licenses, approvals, consents and other authorizations (collectively, "Governmental Licenses") issued by the appropriate federal, state, local or foreign regulatory agencies or bodies necessary to conduct the business of the Company as currently being conducted as described in the Pricing Prospectus, including without limitation, all registrations, licenses, approvals, certificates, authorizations and permits required by the United States Food and Drug Administration (the "FDA"), the United States Drug Enforcement Administration, and/or other federal, state, local or foreign agencies or bodies engaged in the regulation of clinical trials, pharmaceuticals, biologics, controlled substances, or biohazardous substances or materials, except where the failure so to possess would not, individually 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 Governmental Licenses, except where the failure so to comply would not, individually or in the aggregate, reasonably be expected to result in a Material Adverse Effect; all of the Governmental Licenses are valid and in full force and effect, except when the invalidity of such Governmental Licenses or the failure of such Governmental Licenses to be in full force and effect would not, individually 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 Governmental Licenses which, individually 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; and, to the Company's knowledge, no event has occurred which allows, or after notice or lapse of time would allow, revocation or termination of such Governmental Licenses, except when the revocation or termination of such Governmental Licenses would not, individually or in the aggregate, reasonably be expected to result in a Material Adverse Effect. Where required by applicable laws and regulations of the FDA, the Company has submitted to the FDA an Investigational

New Drug Application or amendment or supplement thereto for each clinical trial it has conducted or sponsored or is conducting or sponsoring, except where such failure would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. All submissions made by the Company to the FDA were truthful, complete, and in material compliance with applicable laws and rules and regulations when submitted and no deficiencies have been asserted by the FDA with respect to any such submissions, except any deficiencies which could not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect;

(y) The Company has operated and currently is in compliance with the United States Federal Food, Drug, and Cosmetic Act, all applicable rules and regulations of the FDA and other federal, state, local or foreign governmental bodies exercising comparable authority, including those relating to registration, investigational drugs, premarket approval, good manufacturing practices, good laboratory practices, good clinical practices, labeling, advertising, record-keeping, and filing of reports, except where the failure to so operate or be in compliance would not reasonably be expected to have a Material Adverse Effect. There is no pending, completed, or to the Company's knowledge, threatened, action (including any lawsuit, arbitration, or legal or administrative or regulatory proceeding, charge, complaint, or investigation) against the Company or any of its subsidiaries by the FDA or any other federal, state, local, or foreign governmental bodies exercising comparable authority, and neither the Company nor any of its subsidiaries has received any FDA Form 483, notice of adverse finding, warning letter, untitled letter, or other written communication from the FDA or such other governmental body which (i) alleges noncompliance with any applicable law or requirement concerning the licensure, registration, or approval of, the distribution of, the manufacturing or packaging of, the testing of, the sale of, or the labeling and promotion of any of the Company's products or product candidates, (ii) withdraws its approval of, or requests the recall, suspension, or seizure of, any of the Company's products, (iii) enjoins production at any facility of the Company, (iv) enters or proposes to enter into a consent decree of permanent injunction with the Company, or (v) otherwise alleges any violation of any laws, rules or regulations by the Company or any of its subsidiaries, and, with respect to each of (i) through (v), which, either individually or in the aggregate, would have or reasonably be expected to result in a Material Adverse Effect;

(z) The preclinical and clinical studies conducted by or, to the Company's knowledge, on behalf of the Company that are

described in the Registration Statement, the Pricing Prospectus and the Prospectus were, and, if still pending, are being, conducted in all material respects in accordance with experimental protocols, procedures and controls pursuant to all applicable laws, including without limitation 21 C.F.R. Parts 50, 54, 56, 58, and 312; the descriptions of the tests and preclinical and clinical studies, and results thereof, conducted by or, to the Company's knowledge, on behalf of the Company contained in the Registration Statement, the Pricing Prospectus and the Prospectus are accurate and complete in all material respects and fairly present in all material respects the data derived from such preclinical and clinical studies; the Company is not in receipt of any notices or correspondence from the FDA or any foreign, state or local governmental body exercising comparable authority that reasonably call into question the results of the trials or studies described or referred to in the Registration Statement, the Pricing Prospectus and Prospectus; and neither the Company nor any of its subsidiaries has received any notice 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 tests or preclinical or clinical studies, or such 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;

(aa) Except as described in the Registration Statement, the Pricing Prospectus or the Prospectus, and except as would not, individually or in the aggregate, have or may reasonably be expected to have a Material Adverse Effect: (i) there have been no recalls, field notifications, field corrections, market withdrawals or replacements, warnings, "dear doctor" letters, investigator notices, safety alerts or other notice of action relating to an alleged lack of safety, efficacy, or regulatory compliance of the Company's products (collectively, "Safety Notices"); (ii) such Safety Notices, if any, were resolved or closed; and (iii) to the Company's knowledge, there are no material complaints with respect to the Company's products that are currently unresolved. To the Company's knowledge, there are no facts that would be reasonably likely to result in (1) a material Safety Notice with respect to the Company's products, (2) a material change in labeling of any of the Company's products, or (3) a termination or suspension of marketing or testing of any of the Company's products;

(bb) Neither the Company or, to the Company's knowledge, any of its subsidiaries, nor, to the Company's knowledge, any of its or their respective directors or officers, or, to the Company's knowledge, employees or agents, is or has been debarred, suspended or excluded, or has been convicted of any crime or engaged in any conduct that would result in a debarment, suspension or exclusion by FDA or from any federal or state government health care program. Neither the Company nor any of its subsidiaries is a party to nor has any ongoing reporting obligations pursuant to any corporate integrity agreement, deferred prosecution agreement, monitoring agreement, consent decree, settlement order, plan of correction or similar agreement imposed by any governmental authority;

(cc) Except as described in the Pricing Prospectus, or as would not reasonably be expected to have a Material Adverse Effect, (i) the Company owns, has valid and enforceable licenses to or has adequate rights to use the Company Intellectual Property (as defined below), (ii) neither the Company nor any of its subsidiaries has received any written notice, nor to the Company's knowledge, any non-written notice, of any infringement or misappropriation of any valid and enforceable Intellectual Property (as defined below) of any third party, (iii) no third party, including any academic or governmental organization, possesses or could obtain rights to the Company Intellectual Property which, if exercised, could enable such party to develop, market or sell products competitive with those of the Company or to license a third party to so develop, market or sell products competitive with those of the Company, and (iv) the Company is not obligated to pay a royalty, obtain a license or provide other consideration to any third party in connection with the Company Intellectual Property. Except as described in the Pricing Prospectus or as would not reasonably be expected to have a Material Adverse Effect, (1) the Company is not aware of any facts or circumstances that constitute an infringement by the Company of any valid and enforceable claim of a third-party patent, (2) the Company is not aware of any facts or circumstances that constitute an infringement by the Company of any non-patented Intellectual Property right of any third party, and (3) the Company Intellectual Property is subsisting and Company is not aware of any facts or circumstances that would render any Company Intellectual Property invalid or unenforceable. Except as described in the Pricing Prospectus (excluding the exhibits thereto), (a) the Company Intellectual Property owned or purported to be owned by the Company is free and clear of all material liens or encumbrances; (b) no action, suit, claim or other proceeding is pending, or to the knowledge of the Company, is threatened, challenging the validity,

enforceability, scope, registration, inventorship, ownership or use of any of the material Company Intellectual Property; (c) to the knowledge of the Company, neither the development nor sale nor any currently proposed use of any of the products, proposed products or processes of the Company referred to in the Pricing Prospectus, in the current or proposed conduct of the business of the Company, do currently, or will upon commercialization, to the knowledge of the Company, infringe any right or valid and enforceable patent claim of any third party; (d) the Company has taken reasonable measures to protect its confidential information and trade secrets and to maintain and safeguard the Company Intellectual Property, including the execution of appropriate nondisclosure and confidentiality agreements; (e) to the knowledge of the Company, none of the material Company Intellectual Property has been obtained or is being used by the Company in material violation of any contractual obligation binding on the Company or any of its subsidiaries or, to the knowledge of the Company, upon any of its or their officers, consultants, directors or employees; and (f) all patents and patent applications owned by or licensed to the Company and included within the Company Intellectual Property, to the knowledge of the Company, have been duly and properly filed, prosecuted and maintained. For purposes of this Agreement, "Intellectual Property" means patents, patent rights, trademarks, servicemarks, trade dress rights, copyrights, trade names and domain names, and all registrations and applications for each of the foregoing, trade secrets, know-how (including other unpatented and/or unpatentable proprietary or confidential information, systems or procedures), inventions and technology, and "Company Intellectual Property" means Intellectual Property that is necessary to carry on or used in the business now operated and as planned to be operated by the Company as described in the Pricing Prospectus;

(dd) The statistical and market-related data included in the Registration Statement, the Preliminary Prospectus and the Pricing Prospectus, are based on or derived from sources that the Company believes to be reliable and accurate;

(ee) The Company's board of directors meets the independence requirements of, and has established an audit committee that meets the independence requirements of, the rules and regulations of the Commission and The Nasdaq Stock Market LLC;

(ff) No material labor or employment dispute with the employees of the Company or any of its subsidiaries exists or, to the knowledge of the Company, is imminent; and the Company is not aware of any existing, threatened or imminent labor disturbance by the

employees of any of its principal suppliers, manufacturers or contractors that, if it occurred, would have a Material Adverse Effect and no employees of the Company are subject to a collective bargaining agreement;

(gg) The Company and its subsidiaries maintain insurance against such losses and risks as is, in the Company's reasonable judgment, prudent and customary in the businesses in which they are engaged; neither the Company nor any of its subsidiaries has been refused any insurance coverage sought or applied for; and neither the Company nor any of its subsidiaries 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 reasonably necessary to continue its business at a cost that would not have a Material Adverse Effect;

(hh) None of the Company or any of its subsidiaries nor, to the knowledge of the Company, any director, officer, agent, employee, affiliate or other person associated with or acting on behalf of the Company or any of its subsidiaries has (i) made, offered, promised or authorized any unlawful contribution, gift, entertainment or other unlawful expense; (ii) made, offered, promised or authorized any direct or indirect bribe, rebate, payoff, influence payment, kickback or other unlawful payment; or (iii) violated or is in violation of any provision of the Foreign Corrupt Practices Act of 1977, as amended, the Bribery Act 2010 of the United Kingdom or any other applicable anti-bribery or anti-corruption law. The Company and its subsidiaries have instituted, maintain and enforce, and will continue to maintain and enforce policies and procedures designed to promote and ensure compliance with anti-bribery and anti-corruption laws applicable to the Company;

(ii) The operations of the Company and its subsidiaries are and have been conducted at all times in compliance with the requirements of applicable anti-money laundering laws, including, but not limited to, the Bank Secrecy Act of 1970, as amended by the USA PATRIOT Act of 2001, and the rules and regulations promulgated thereunder, and the anti-money laundering laws of the various jurisdictions in which the Company and its subsidiaries conduct business (collectively, the "Money Laundering Laws") and no action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any of its subsidiaries with respect to the Money Laundering Laws is pending or, to the knowledge of the Company, threatened;

(jj) None of the Company or any of its subsidiaries nor, to the knowledge of the Company, any director, officer, agent, employee or affiliate of the Company or any of its subsidiaries is currently the subject or the target of any sanctions administered or enforced by the U.S. Government, including, without limitation, the Office of Foreign Assets Control of the U.S. Department of the Treasury ("OFAC"), or the U.S. Department of State and including, without limitation, the designation as a "specially designated national" or "blocked person," the European Union, Her Majesty's Treasury, the United Nations Security Council, or other relevant sanctions authority (collectively, "Sanctions"), nor is the Company or any of its subsidiaries located, organized or resident in any country or territory that is the subject of Sanctions, and the Company will not directly or indirectly use the proceeds of the offering of the Shares hereunder, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other person or entity (i) to fund or facilitate any activities of or business with any person, or in any country or territory, that, at the time of such funding, is the subject or the target of Sanctions or (ii) in any other manner that will result in a violation by any person (including any person participating in the transaction, whether as underwriter, advisor, investor or otherwise) of Sanctions;

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

(ll) The Company and its subsidiaries are not subject to any court or governmental orders, writs, judgments or decrees that affect the ability of the Company to execute and deliver this Agreement or issue and sell the Shares pursuant to this Agreement.

2. Subject to the terms and conditions herein set forth, (a) the Company agrees to issue and sell to each of the Underwriters, and each of the Underwriters agrees, severally and not jointly, to purchase from the Company, at a purchase price per share of \$10.89625, the number of Firm Shares set forth opposite the name of such Underwriter in Schedule I hereto and (b) in the event and to the extent that the Underwriters shall exercise the election to purchase Optional Shares as provided below, the Company agrees to issue and sell to each of the Underwriters, and each of the Underwriters agrees, severally and not jointly, to purchase from the Company, at the purchase price per share set forth in clause (a) of this Section 2 provided that the purchase price per Optional Share shall be reduced by an amount per share equal to any dividends or distributions declared by the Company

and payable on the Firm Shares but not payable on the Optional Shares), that portion of the number of Optional Shares as to which such election shall have been exercised (to be adjusted by you so as to eliminate fractional shares) determined by multiplying such number of Optional Shares by a fraction, the numerator of which is the maximum number of Optional Shares which such Underwriter is entitled to purchase as set forth opposite the name of such Underwriter in Schedule I hereto and the denominator of which is the maximum number of Optional Shares that all of the Underwriters are entitled to purchase hereunder.

The Company hereby grants to the Underwriters the right to purchase at their election up to 2,608,695 Optional Shares, at the purchase price per share set forth in clause (a) of the first paragraph of this Section 2, provided that the purchase price per Optional Share shall be reduced by an amount per share equal to any dividends or distributions declared by the Company and payable on the Firm Shares but not payable on the Optional Shares. Any such election to purchase Optional Shares may be exercised only by written notice from you to the Company, given within a period of 30 calendar days after the date of this Agreement, setting forth the aggregate number of Optional Shares to be purchased and the date on which such Optional Shares are to be delivered, as determined by you but in no event earlier than the First Time of Delivery (as defined in Section 4 hereof) or, unless you and the Company otherwise agree in writing, earlier than two or later than ten business days after the date of such notice.

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

4. (a) The Shares to be purchased by each Underwriter hereunder, in definitive or book-entry form, and in such authorized denominations and registered in such names as the Representative may request upon at least forty-eight hours' prior notice to the Company, shall be delivered by or on behalf of the Company to the Representative, through the facilities of the Depository Trust Company ("DTC"), for the account of such Underwriter, against payment by or on behalf of such Underwriter of the purchase price therefor by wire transfer of Federal (same-day) funds to the account specified by the Company to the Representative at least forty-eight hours in advance. The time and date of such delivery and payment shall be, with respect to the Firm Shares, 9:30 a.m., New York City time, on December 11, 2018 or such other time and date as the Representative and the Company may agree upon in writing, and, with respect to the Optional Shares, 9:30 a.m., New York time, on the date specified by the Representative in the written notice given by the Representative of the Underwriters' election to purchase such Optional Shares, or such other time and date as the Representative and the Company may agree upon in writing. Such time and date for delivery of the Firm Shares is herein called the "First Time of Delivery," such time and date for delivery of the Optional Shares, if not the First Time of Delivery, is herein called the "Second Time of

Delivery,” and each such time and date for delivery is herein called a “Time of Delivery.”

(b) The documents to be delivered at each Time of Delivery by or on behalf of the parties hereto pursuant to Section 8 hereof, including the cross-receipt for the Shares and any additional documents requested by the Underwriters pursuant to Section 8(k) hereof, will be delivered at the offices of Ropes & Gray LLP, 800 Boylston Street, Boston, MA 02199 (the “Closing Location”), and the Shares will be delivered at the office of DTC or its designated custodian, all at such Time of Delivery. A meeting will be held at the Closing Location at 5:00 p.m., New York City time, on the New York Business Day next preceding such Time of Delivery, at which meeting the final drafts of the documents to be delivered pursuant to the preceding sentence will be available for review by the parties hereto. For the purposes of this Section 4, “New York Business Day” shall mean each Monday, Tuesday, Wednesday, Thursday and Friday which is not a day on which banking institutions in New York City are generally authorized or obligated by law or executive order to close.

5. The Company agrees with each of the Underwriters:

(a) To prepare the Prospectus in a form approved by you and to file such Prospectus pursuant to Rule 424(b) under the Act not later than the Commission’s close of business on the second business day following the execution and delivery of this Agreement; to make no further amendment or any supplement to the Registration Statement or the Prospectus prior to the last Time of Delivery which shall be disapproved by you promptly after reasonable notice thereof; to advise you, promptly after it receives notice thereof, of the time when any amendment to the Registration Statement has been filed or becomes effective or any amendment or supplement to the Prospectus has been filed and to furnish you with copies thereof; to file promptly all other material required to be filed by the Company with the Commission pursuant to Rule 433(d) under the Act, within the time required by such rule; to file promptly all reports and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act subsequent to the date of the Prospectus and for so long as the delivery of a prospectus (or in lieu thereof, the notice referred to in Rule 173(a) under the Act) is required in connection with the offering or sale of the Shares; to advise you, promptly after it receives notice thereof, of the issuance by the Commission of any stop order or of any order preventing or suspending the use of any Preliminary Prospectus or other prospectus in respect of the Shares, of any notice of objection of the Commission to the use of the Registration Statement or any post-effective amendment thereto pursuant to Rule 401(g)(2) under the Act, of the suspension of the qualification of the Shares for offering or sale in any jurisdiction, of the initiation or threatening of any proceeding for any such purpose or pursuant to Section 8A of the Act, or of any request by the Commission for the amending or supplementing of the Registration Statement or the Prospectus or for

additional information; and, in the event of the issuance of any stop order or of any order preventing or suspending the use of any Preliminary Prospectus or other prospectus or suspending any such qualification, to promptly use its best efforts to obtain the withdrawal of such order; and in the event of any such issuance of a notice of objection, promptly to take such steps including, without limitation, amending the Registration Statement or filing a new registration statement, at its own expense, as may be necessary to permit offers and sales of the Shares by the Underwriters (references herein to the Registration Statement shall include any such amendment or new registration statement);

(b) If required by Rule 430B(h) under the Act, to prepare a form of prospectus in a form approved by you and to file such form of prospectus pursuant to Rule 424(b) under the Act not later than may be required by Rule 424(b) under the Act; and to make no further amendment or supplement to such form of prospectus which shall be disapproved by you promptly after reasonable notice thereof;

(c) If by the third anniversary (the "Renewal Deadline") of the initial effective date of the Registration Statement, any of the Shares remain unsold by the Underwriters, the Company will 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 you. If at the Renewal Deadline the Company is no longer eligible to file an automatic shelf registration statement, the Company will, if it has not already done so, file a new shelf registration statement relating to the Shares, in a form satisfactory to you and will use its best efforts to cause such registration statement to be declared effective within 180 days after the Renewal Deadline. The Company will take all other action necessary or appropriate to permit the public offering 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;

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

(e) Prior to 10:00 a.m., New York City time, on the second New York Business Day next succeeding the date of this Agreement and from time to time, to

furnish the Underwriters with written and electronic copies of the Prospectus in New York City in such quantities as you may reasonably request, and, if the delivery of a prospectus (or in lieu thereof, the notice referred to in Rule 173(a) under the Act) is required at any time prior to the expiration of nine months after the time of issue of the Prospectus in connection with the offering or sale of the Shares and if at such time any event shall have occurred as a result of which the Prospectus as then amended or supplemented would include an untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made when such Prospectus (or in lieu thereof, the notice referred to in Rule 173(a) under the Act) is delivered, not misleading, or, if for any other reason it shall be necessary during such same period to amend or supplement the Prospectus or to file under the Exchange Act any document incorporated by reference in the Prospectus in order to comply with the Act or the Exchange Act, to notify you and upon your request to file such document and to prepare and furnish without charge to each Underwriter and to any dealer in securities as many written and electronic copies as you may from time to time reasonably request of an amended Prospectus or a supplement to the Prospectus which will correct such statement or omission or effect such compliance; and in case any Underwriter is required to deliver a prospectus (or in lieu thereof, the notice referred to in Rule 173(a) under the Act) in connection with sales of any of the Shares at any time nine months or more after the time of issue of the Prospectus, upon your request but at the expense of such Underwriter, to prepare and deliver to such Underwriter as many written and electronic copies as you may request of an amended or supplemented Prospectus complying with Section 10(a)(3) of the Act;

(f) To make generally available to its securityholders as soon as practicable, but in any event not later than sixteen months after the effective date of the Registration Statement (as defined in Rule 158(c) under the Act), an earnings statement of the Company and its subsidiaries (which need not be audited) complying with Section 11(a) of the Act and the rules and regulations of the Commission thereunder (including, at the option of the Company, Rule 158);

(g) During the period beginning from the date hereof and continuing to and including the date 90 days after the date of the Prospectus (the "Lock-Up Period"), not to (i) offer, sell, contract to sell, pledge, grant any option to purchase, make any short sale or otherwise transfer or dispose of, directly or indirectly, or file with the Commission a registration statement under the Act relating to, any securities of the Company that are substantially similar to the Shares, including but not limited to any options or warrants to purchase shares of Stock or any securities that are convertible into or exchangeable for, or that represent the right to receive, Stock or any such substantially similar securities (other than registration statements on Form S-8 relating to securities granted or to be granted pursuant to the terms of the Company's equity incentive plans or employee stock purchase plans disclosed

in the Pricing Prospectus and the Prospectus), or publicly disclose the intention to make any offer, sale, pledge, disposition or filing or (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the Stock or any such other securities, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of Stock or such other securities, in cash or otherwise (other than (A) the Shares to be sold hereunder, (B) the grant of stock options or other equity-based awards not exercisable during the Lock-Up Period pursuant to equity incentive plans disclosed in the Pricing Prospectus and the Prospectus, (C) the issuance of securities pursuant to the exercise or vesting of such options or other equity-based awards pursuant to equity incentive plans disclosed in the Pricing Prospectus and the Prospectus, (D) the issuance of securities pursuant to employee stock purchase plans, (E) the issuance of securities upon the conversion or exchange of convertible or exchangeable securities or the vesting of restricted stock outstanding as of the date of this Agreement, or (F) issuances of Stock or securities exercisable for, convertible into or exchangeable for Stock in connection with any acquisition, collaboration, licensing, partnership or other joint venture or strategic transaction involving the Company; provided that in the case of clause (F), that such issuances shall not be greater than 5% of the total outstanding shares of Stock of the Company immediately following the completion of the offering contemplated by this Agreement and the Company shall cause recipients of such securities to execute and deliver to you, on or prior to the issuance of such securities, a lockup letter in the form executed by directors and executive officers pursuant to Section 8(j) hereof, without your prior written consent; or (G) issuances of Stock or securities exercisable for, convertible into or exchangeable for Stock in connection with a commercial debt financing; provided, however, that after the date that is 60 days after the date of the Prospectus, the Company shall be permitted to issue, contract to issue, sell or contract to sell Stock or securities exercisable for, convertible into or exchangeable for Stock in connection with any acquisition, collaboration, licensing, partnership or other joint venture or strategic transaction involving the Company.

(h) To pay the required Commission filing fees relating to the Shares within the time required by Rule 456(b)(1) under the Act without regard to the proviso therein and otherwise in accordance with Rules 456(b) and 457(r) under the Act;

(i) To use the net proceeds received by it from the sale of the Shares pursuant to this Agreement in the manner specified in the Pricing Prospectus under the caption "Use of Proceeds";

(j) To use its commercially reasonable efforts to list, subject to notice of issuance, the Shares on the Nasdaq Global Select Market ("Nasdaq");
and

(k) Upon request of any Underwriter, to furnish, or cause to be furnished, to such Underwriter an electronic version of the Company's trademarks, servicemarks and corporate logo for use on the website, if any, operated by such Underwriter for the purpose of facilitating the on-line offering of the Shares (the "License"); provided, however, that the License shall be used solely for the purpose described above, is granted without any fee and may not be assigned or transferred.

6.

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

(b) The Company has complied and will comply with the requirements of Rule 433 under the Act applicable to any Issuer Free Writing Prospectus, including timely filing with the Commission or retention where required and legending; and

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

7. The Company covenants and agrees with the several Underwriters that the Company will pay or cause to be paid the following: (i) the fees, disbursements and expenses of the Company's counsel and accountants in connection with the registration of the Shares under the Act and all other expenses in connection with the preparation, printing, reproduction and filing of the

Registration Statement, the Basic Prospectus, any Preliminary Prospectus, any Issuer Free Writing Prospectus and the Prospectus and amendments and supplements thereto and the mailing and delivering of copies thereof to the Underwriters and dealers; (ii) the cost of printing or producing any Agreement among Underwriters, this Agreement, the Blue Sky Memorandum, closing documents (including any compilations thereof) and any other documents in connection with the offering, purchase, sale and delivery of the Shares; (iii) all expenses in connection with the qualification of the Shares for offering and sale under state securities laws as provided in Section 5(d) hereof, including the fees and disbursements of counsel for the Underwriters in connection with such qualification and in connection with the Blue Sky survey (not to exceed \$15,000, not including applicable filing fees); (iv) all fees and expenses in connection with listing the Shares on Nasdaq; (v) if applicable, the filing fees incident to, and the fees and disbursements of counsel for the Underwriters in connection with, any required review by FINRA of the terms of the sale of the Shares; (vi) the costs incidental to the issuance of the Shares, including the costs of preparing stock certificates representing the Shares; (vii) the cost and charges of any transfer agent or registrar; (viii) the costs incurred by the Company and its employees associated with any "roadshow" undertaken in connection with the marketing of the offering of the Shares and (ix) all other costs and expenses incident to the performance of its obligations hereunder which are not otherwise specifically provided for in this Section. It is understood, however, that, except as provided in this Section, and Sections 9 and 12 hereof, the Underwriters will pay all of their own costs and expenses, including the fees of their counsel, stock transfer taxes on resale of any of the Shares by them, and any advertising expenses connected with any offers they may make.

8. The obligations of the Underwriters hereunder, as to the Shares to be delivered at each Time of Delivery shall be subject, in their discretion, to the condition that all representations and warranties and other statements of the Company herein are, at the Applicable Time and as of such Time of Delivery, true and correct, the condition that the Company shall have performed all of its obligations hereunder theretofore to be performed, and the following additional conditions:

(a) The Prospectus shall have been filed with the Commission pursuant to Rule 424(b) under the Act within the applicable time period prescribed for such filing by the rules and regulations under the Act and in accordance with Section 5(a) hereof; all material required to be filed by the Company pursuant to Rule 433(d) under the Act shall have been filed with the Commission within the applicable time period prescribed for such filings by Rule 433; no stop order suspending the effectiveness of the Registration Statement or any part thereof shall have been issued and no proceeding for that purpose or pursuant to Section 8A of the Act shall have been initiated or threatened by the Commission and no notice of objection of

the Commission to the use of the Registration Statement or any post-effective amendment thereto pursuant to Rule 401(g)(2) under the Act shall have been received; no stop order suspending or preventing the use of the Prospectus or any Issuer Free Writing Prospectus shall have been initiated or threatened by the Commission; and all requests for additional information on the part of the Commission shall have been complied with to your reasonable satisfaction;

(b) Ropes & Gray LLP, counsel for the Underwriters, shall have furnished to you an opinion and negative assurance letter, dated such Time of Delivery, in form and substance reasonably satisfactory to you, with respect to such matters as you may reasonably request, and such counsel shall have received such papers and information as they may reasonably request to enable them to pass upon such matters;

(c) Latham & Watkins LLP, corporate counsel for the Company, shall have furnished to you an opinion and negative assurance letter, dated such Time of Delivery, in form and substance reasonably satisfactory to you;

(d) Fish & Richardson P.C., intellectual property counsel for the Company, shall have furnished to you an opinion, dated such Time of Delivery, in form and substance reasonably satisfactory to you;

(e) Morrison & Foerster LLP, litigation counsel for the Company, shall have furnished to you an opinion, dated such Time of Delivery, in form and substance reasonably satisfactory to you;

(f) the General Counsel of the Company, shall have furnished to you an opinion, dated such Time of Delivery, in form and substance reasonably satisfactory to you;

(g) On the date of the Prospectus at a time prior to the execution of this Agreement, at 9:30 a.m., New York City time, on the effective date of any post effective amendment to the Registration Statement filed subsequent to the date of this Agreement and also at each Time of Delivery, Ernst & Young LLP shall have furnished to you a letter or letters, dated the respective dates of delivery thereof, in form and substance reasonably satisfactory to you;

(h) (i) Neither the Company nor any of its subsidiaries shall have sustained since the date of the latest audited financial statements included or incorporated by reference in the Pricing Prospectus any loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree, otherwise than as set forth or contemplated in the Pricing Prospectus, and (ii) since the respective dates as of which information is given in the Pricing Prospectus there shall not have been any change in the capital stock (excluding

stock option grants or awards of restricted stock in the ordinary course of business pursuant to the Company's equity incentive plans described in the Pricing Prospectus and the Prospectus and the issuance of stock pursuant to the Company's employee stock purchase plan and the exercise of any outstanding stock options or the vesting of restricted stock or restricted stock units pursuant to the Company's equity incentive plans described in the Pricing Prospectus and the Prospectus) or long term debt of the Company or any of its subsidiaries or any change, or any development involving a prospective change, in or affecting the business, general affairs, management, financial position, stockholders' equity or results of operations of the Company and its subsidiaries, taken as a whole, otherwise than as set forth or contemplated in the Pricing Prospectus and the Prospectus, the effect of which, in any such case described in clause (i) or (ii), is in your judgment so material and adverse as to make it impracticable or inadvisable to proceed with the public offering or the delivery of the Shares being delivered at such Time of Delivery on the terms and in the manner contemplated in the Pricing Prospectus and the Prospectus;

(i) On or after the Applicable Time there shall not have occurred any of the following: (i) a suspension or material limitation in trading in securities generally on the New York Stock Exchange or on Nasdaq; (ii) a suspension or material limitation in trading in the Company's securities on Nasdaq; (iii) a general moratorium on commercial banking activities declared by either Federal or New York or Massachusetts State authorities or a material disruption in commercial banking or securities settlement or clearance services in the United States; (iv) the outbreak or escalation of hostilities involving the United States or the declaration by the United States of a national emergency or war; or (v) the occurrence of any other calamity or crisis or any change in financial, political or economic conditions in the United States or elsewhere, if the effect of any such event specified in clause (iv) or (v) in your judgment makes it impracticable or inadvisable to proceed with the public offering or the delivery of the Shares being delivered at such Time of Delivery on the terms and in the manner contemplated in the Pricing Prospectus and the Prospectus;

(j) The Company shall have complied with the provisions of Section 5(e) hereof with respect to the furnishing of prospectuses on the second New York Business Day next succeeding the date of this Agreement;

(k) The Company shall have (i) submitted a Listing of Additional Shares Notification Form to Nasdaq with respect to the Shares, and (ii) received a confirmation from Nasdaq that its review has been completed, and Nasdaq shall not have disapproved of the listing of the Shares on Nasdaq;

(l) The Company has obtained and delivered to the Underwriters executed copies of an agreement (the "Lock-Up Agreement") from each

stockholder listed on Schedule III hereto, substantially to the effect set forth in Annex I hereof, in form and substance reasonably satisfactory to you; and

(m) The Company shall have furnished or caused to be furnished to you at such Time of Delivery certificates of officers of the Company reasonably satisfactory to you as to the accuracy of the representations and warranties of the Company herein at and as of such Time of Delivery, as to the performance by the Company of all of its obligations hereunder to be performed at or prior to such Time of Delivery, as to the matters set forth in subsections (a) and (h) of this Section 8 and as to such other matters as you may reasonably request.

9. (a) The Company will indemnify and hold harmless each Underwriter against any losses, claims, damages or liabilities, joint or several, to which such Underwriter may become subject, under the Act or otherwise, insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, the Basic Prospectus, any Preliminary Prospectus, the Pricing Prospectus or the Prospectus, or any amendment or supplement thereto, any Issuer Free Writing Prospectus, or any "issuer information" filed or required to be filed pursuant to Rule 433(d) under the Act, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, and will reimburse each Underwriter for any legal or other expenses reasonably incurred by such Underwriter in connection with investigating or defending any such action or claim as such expenses are incurred; provided, however, that the Company shall not be liable in any such case to the extent that any such loss, claim, damage or liability arises out of or is based upon an untrue statement or alleged untrue statement or omission or alleged omission made in the Registration Statement, the Basic Prospectus, any Preliminary Prospectus, the Pricing Prospectus or the Prospectus, or any amendment or supplement thereto, or any Issuer Free Writing Prospectus, in reliance upon and in conformity with the written information furnished to the Company by any Underwriter through the Representatives expressly for use therein.

(b) Each Underwriter, severally and not jointly, will indemnify and hold harmless the Company against any losses, claims, damages or liabilities to which the Company may become subject, under the Act or otherwise, insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, the Basic Prospectus, any Preliminary Prospectus, the Pricing Prospectus or the Prospectus, or any amendment or supplement thereto, or any Issuer Free Writing Prospectus, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not

misleading, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue statement or omission or alleged omission was made in the Registration Statement, the Basic Prospectus, any Preliminary Prospectus, the Pricing Prospectus or the Prospectus or any such amendment or supplement thereto, or any Issuer Free Writing Prospectus, in reliance upon and in conformity with the written information furnished to the Company by such Underwriter through the Representatives expressly for use therein; and will reimburse the Company for any legal or other expenses reasonably incurred by the Company in connection with investigating or defending any such action or claim as such expenses are incurred.

(c) Promptly after receipt by an indemnified party under subsection (a) or (b) of this Section 9 of notice of the commencement of any action, such indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under such subsection, notify the indemnifying party in writing of the commencement thereof; but the omission so to notify the indemnifying party shall not relieve it from (i) any liability which it may have to any indemnified party under such subsection unless and to the extent that it has been materially prejudiced (through the forfeiture of substantive rights or defenses) by such omission or (ii) any liability which it may have to any indemnified party otherwise than under such subsection. In case any such action shall be brought against any indemnified party and it shall notify the indemnifying party of the commencement thereof, the indemnifying party shall be entitled to participate therein and, to the extent that it shall wish, jointly with any other indemnifying party similarly notified, to assume the defense thereof, with counsel satisfactory to such indemnified party (who shall not, except with the consent of the indemnified party, be counsel to the indemnifying party), and, after notice from the indemnifying party to such indemnified party of its election so to assume the defense thereof, the indemnifying party shall not be liable to such indemnified party under such subsection for any legal expenses of other counsel or any other expenses, in each case subsequently incurred by such indemnified party, in connection with the defense thereof other than reasonable costs of investigation. No indemnifying party shall, without the written consent of the indemnified party, effect the settlement or compromise of, or consent to the entry of any judgment with respect to, any pending or threatened action or claim in respect of which indemnification or contribution may be sought hereunder (whether or not the indemnified party is an actual or potential party to such action or claim) unless such settlement, compromise or judgment (i) includes an unconditional release of the indemnified party from all liability arising out of such action or claim and (ii) does not include a statement as to or an admission of fault, culpability or a failure to act, by or on behalf of any indemnified party.

(d) If the indemnification provided for in this Section 9 is unavailable to or insufficient to hold harmless an indemnified party under subsection (a) or (b) above in respect of any losses, claims, damages or liabilities (or actions in respect

thereof) referred to therein, then each indemnifying party shall contribute to the amount paid or payable by such indemnified party as a result of such losses, claims, damages or liabilities (or actions in respect thereof) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters on the other from the offering of the Shares. If, however, the allocation provided by the immediately preceding sentence is not permitted by applicable law, then each indemnifying party shall contribute to such amount paid or payable by such indemnified party in such proportion as is appropriate to reflect not only such relative benefits but also the relative fault of the Company on the one hand and the Underwriters on the other in connection with the statements or omissions which resulted in such losses, claims, damages or liabilities (or actions in respect thereof), as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other shall be deemed to be in the same proportion as the total net proceeds from the offering (before deducting expenses) received by the Company bear to the total underwriting discounts and commissions received by the Underwriters, in each case as set forth in the table on the cover page of the Prospectus. The relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company on the one hand or the Underwriters on the other and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contribution pursuant to this subsection (d) were determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation which does not take account of the equitable considerations referred to above in this subsection (d). The amount paid or payable by an indemnified party as a result of the losses, claims, damages or liabilities (or actions in respect thereof) referred to above in this subsection (d) shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim. Notwithstanding the provisions of this subsection (d), no Underwriter shall be required to contribute any amount in excess of the amount by which the total price at which the Shares underwritten by it and distributed to the public were offered to the public exceeds the amount of any damages which such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters' obligations in this subsection (d) to contribute are several in proportion to their respective underwriting obligations and not joint.

(e) The obligations of the Company under this Section 9 shall be in addition to any liability which the Company may otherwise have and shall extend,

upon the same terms and conditions, to each person, if any, who controls any Underwriter within the meaning of the Act and each employee, director, officer and each broker-dealer or other affiliate of any Underwriter; and the obligations of the Underwriters under this Section 9 shall be in addition to any liability which the respective Underwriters may otherwise have and shall extend, upon the same terms and conditions, to each officer and director of the Company and to each person, if any, who controls the Company within the meaning of the Act.

10. (a) If any Underwriter shall default in its obligation to purchase the Shares which it has agreed to purchase hereunder at a Time of Delivery, you may in your discretion arrange for you or another party or other parties to purchase such Shares on the terms contained herein. If within thirty-six hours after such default by any Underwriter you do not arrange for the purchase of such Shares, then the Company shall be entitled to a further period of thirty-six hours within which to procure another party or other parties satisfactory to you to purchase such Shares on such terms. In the event that, within the respective prescribed periods, you notify the Company that you have so arranged for the purchase of such Shares, or the Company notifies you that it has so arranged for the purchase of such Shares, you or the Company shall have the right to postpone such Time of Delivery for a period of not more than seven days, in order to effect whatever changes may thereby be made necessary in the Registration Statement or the Prospectus, or in any other documents or arrangements, and the Company agrees to file promptly any amendments or supplements to the Registration Statement or the Prospectus which in your opinion may thereby be made necessary. The term "Underwriter" as used in this Agreement shall include any person substituted under this Section with like effect as if such person had originally been a party to this Agreement with respect to such Shares.

(b) If, after giving effect to any arrangements for the purchase of the Shares of a defaulting Underwriter or Underwriters by you and the Company as provided in subsection (a) above, the aggregate number of such Shares which remains unpurchased does not exceed one eleventh of the aggregate number of all the Shares to be purchased at such Time of Delivery, then the Company shall have the right to require each non-defaulting Underwriter to purchase the number of shares which such Underwriter agreed to purchase hereunder at such Time of Delivery and, in addition, to require each non-defaulting Underwriter to purchase its pro rata share (based on the number of Shares which such Underwriter agreed to purchase hereunder) of the Shares of such defaulting Underwriter or Underwriters for which such arrangements have not been made; but nothing herein shall relieve a defaulting Underwriter from liability for its default.

(c) If, after giving effect to any arrangements for the purchase of the Shares of a defaulting Underwriter or Underwriters by you and the Company as provided in subsection (a) above, the aggregate number of such Shares which remains unpurchased exceeds one eleventh of the aggregate number of all the

Shares to be purchased at such Time of Delivery, or if the Company shall not exercise the right described in subsection (b) above to require non-defaulting Underwriters to purchase Shares of a defaulting Underwriter or Underwriters, then this Agreement (or, with respect to the Second Time of Delivery, the obligations of the Underwriters to purchase and of the Company to sell the Optional Shares) shall thereupon terminate, without liability on the part of any non-defaulting Underwriter or the Company, except for the expenses to be borne by the Company and the Underwriters as provided in Section 7 hereof and the indemnity and contribution agreements in Section 9 hereof (provided that if such default occurs with respect to Optional Shares after the First Time of Delivery, this Agreement will not terminate as to the Firm Shares or any Optional Shares purchased prior to such termination); but nothing herein shall relieve a defaulting Underwriter from liability for its default.

11. The respective indemnities, agreements, representations, warranties and other statements of the Company and the several Underwriters, as set forth in this Agreement or made by or on behalf of them, respectively, pursuant to this Agreement, shall remain in full force and effect, regardless of any investigation (or any statement as to the results thereof) made by or on behalf of any Underwriter or any controlling person, broker-dealer affiliate, director or officer of any Underwriter, or the Company, or any officer or director or controlling person of the Company, and shall survive delivery of and payment for the Shares.

12. If this Agreement shall be terminated pursuant to Section 10 hereof (subject to the last sentence of this Section 12), the Company shall not then be under any liability to any Underwriter except as provided in Sections 7 and 9 hereof; but, if for any other reason, any Shares are not delivered by or on behalf of the Company as provided herein, the Company will reimburse the Underwriters through you for all out of pocket expenses approved in writing by you, including fees and disbursements of counsel, reasonably incurred by the Underwriters in making preparations for the purchase, sale and delivery of the Shares not so delivered, but the Company shall then be under no further liability to any Underwriter except as provided in Sections 7 and 9 hereof. If this Agreement is terminated pursuant to Section 10 by reason of the default of one or more Underwriters, the Company shall not be obligated to reimburse any defaulting Underwriters on account of those out of pocket expenses, but the Company's obligation to reimburse non-defaulting Underwriters shall continue unabated.

13. In all dealings hereunder, you shall act on behalf of each of the Underwriters, and the parties hereto shall be entitled to act and rely upon any statement, request, notice or agreement on behalf of any Underwriter made or given by the Representative.

All statements, requests, notices and agreements hereunder shall be in writing, and if to the Underwriters shall be delivered or sent by mail, telex or facsimile transmission to you as the Representative in care of Goldman Sachs & Co. LLC, 200 West Street, New York, New York 10282-2198, Attention: Registration Department; with a copy to Ropes & Gray LLP, 800 Boylston Street, Boston, MA 02199, Attention: Patrick O'Brien; and if to the Company shall be delivered or sent by mail, telex or facsimile transmission to the address of the Company set forth in the Registration Statement, Attention: Secretary with a copy to Latham & Watkins LLP, 200 Clarendon Street, 27th Floor, Boston, MA 02116, Attention: Peter N. Handrinos; provided, however, that any notice to an Underwriter pursuant to Section 9(c) hereof shall be delivered or sent by mail, telex or facsimile transmission to such Underwriter at its address set forth in its Underwriter's questionnaire, or telex constituting such Questionnaire, which address will be supplied to the Company by you upon request. Any such statements, requests, notices or agreements shall take effect upon receipt thereof.

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

14. This Agreement shall be binding upon, and inure solely to the benefit of, the Underwriters, the Company and, to the extent provided in Sections 9 and 11 hereof, the officers and directors of the Company and each person who controls the Company or any Underwriter (or any officer, director, broker-dealer affiliate of any Underwriter), and their respective heirs, executors, administrators, successors and assigns, and no other person shall acquire or have any right under or by virtue of this Agreement. No purchaser of any of the Shares from any Underwriter shall be deemed a successor or assign by reason merely of such purchase.

15. Time shall be of the essence of this Agreement. As used herein, the term "business day" shall mean any day when the Commission's office in Washington, D.C. is open for business.

16. The Company acknowledges and agrees that (i) the purchase and sale of the Shares pursuant to this Agreement is an arm's-length commercial transaction between the Company, on the one hand, and the several Underwriters, on the other, (ii) in connection therewith and with the process leading to such transaction each Underwriter is acting solely as a principal and not the agent or fiduciary of the Company, (iii) no Underwriter has assumed an advisory or fiduciary responsibility in favor of the Company with respect to the offering contemplated hereby or the process leading thereto (irrespective of whether such Underwriter has advised or is currently advising the Company on other matters) or any other

obligation to the Company except the obligations expressly set forth in this Agreement and (iv) the Company has consulted its own legal and financial advisors to the extent it deemed appropriate. The Company agrees that it will not claim that the Underwriters, or any of them, has rendered advisory services of any nature or respect, or owes a fiduciary or similar duty to the Company, in connection with such transaction or the process leading thereto.

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

18. THIS AGREEMENT AND ANY MATTERS RELATED TO THE TRANSACTIONS CONTEMPLATED BY THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO PRINCIPLES OF CONFLICT OF LAWS THAT WOULD RESULT IN THE APPLICATION OF ANY LAW OTHER THAN THE LAWS OF THE STATE OF NEW YORK. The Company agrees that any suit or proceeding arising in respect of this Agreement or our engagement will be tried exclusively in the U.S. District Court for the Southern District of New York or, if that court does not have subject matter jurisdiction, in any state court located in The City and County of New York and the Company agrees to submit to the jurisdiction of, and to venue in, such courts.

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

20. This Agreement may be executed by any one or more of the parties hereto in any number of counterparts, each of which shall be deemed to be an original, but all such respective counterparts shall together constitute one and the same instrument.

21. Notwithstanding anything herein to the contrary, the Company is authorized to disclose to any persons the U.S. federal and state income tax treatment and tax structure of the potential transaction and all materials of any kind (including tax opinions and other tax analyses) provided to the Company relating to that treatment and structure, without the Underwriters' imposing any limitation of any kind. However, any information relating to the tax treatment and tax structure shall remain confidential (and the foregoing sentence shall not apply) to the extent necessary to enable any person to comply with securities laws. For this purpose, "tax structure" is limited to any facts that may be relevant to that treatment.

If the foregoing is in accordance with your understanding, please sign and return this Agreement to us, and upon the acceptance hereof by you, on behalf of each of the Underwriters, this letter and such acceptance hereof shall constitute a binding agreement between each of the Underwriters and the Company. It is understood that your acceptance of this letter on behalf of each of the Underwriters is pursuant to the authority set forth in a form of Agreement among Underwriters, the form of which shall be submitted to the Company for examination upon request, but without warranty on your part as to the authority of the signers thereof.

Very truly yours,

Momenta Pharmaceuticals, Inc.

By: /s/ Michelle Robertson
Name: Michelle Robertson
Title: CFO

[Signature Page to Underwriting Agreement]

Accepted as of the date hereof:

Goldman Sachs & Co. LLC

By: /s/ Elizabeth Wood

Name: Elizabeth Wood

Title: Managing Director

On behalf of each of the Underwriters

[Signature Page to Underwriting Agreement]

SCHEDULE I

Underwriter	Total Number of Firm Shares to be Purchased	Number of Optional Shares to be Purchased if Maximum Option Exercised
Goldman Sachs & Co. LLC	17,391,305	2,608,695
Total	17,391,305	2,608,695

SCHEDULE II

- (a) Issuer Free Writing Prospectuses not included in the Pricing Disclosure Package:

None.

- (b) Additional documents incorporated by reference:

Current Report on Form 8-K filed with the Commission on December 6, 2018.

- (c) Information other than the Pricing Prospectus that comprise the Pricing Disclosure Package:

The Company is selling 17,391,305 shares of Stock.

The Company has granted an option to the Underwriters, severally and not jointly, to purchase up to an additional 2,608,695 shares of Stock.

The public offering price per share for the Shares is \$11.5000.

SCHEDULE III

Lock Up Signatories

Craig A. Wheeler
James R. Sulat
Bruce L. Downey
Corey N. Fishman
Georges Gemayel
Steven C. Gilman
Jose-Carlos Gutiérrez-Ramos
Thomas P. Koestler
Elizabeth Stoner
Santiago Arroyo
Jo-Ann Beltramello
Alejandra Carvajal
Ian D. Fier
Young Kwon
Anthony Manning
Michelle Robertson

Annex I

Form of Lock Up

Goldman Sachs & Co. LLC

As representative (the "Representative") of the several Underwriters
named in Schedule I to the Underwriting Agreement

c/o Goldman Sachs & Co. LLC

200 West Street

New York, NY 10282-2198

Re: Momenta Pharmaceuticals, Inc. — Lock-Up Agreement

Ladies and Gentlemen:

The undersigned understands that you, as Representative, propose to enter into an Underwriting Agreement on behalf of the several Underwriters named in Schedule I to such agreement (collectively, the "Underwriters"), with Momenta Pharmaceuticals, Inc., a Delaware corporation (the "Company"), providing for a public offering (the "Offering") of the common stock, par value \$0.0001 per share ("Common Stock"), of the Company (the "Shares") pursuant to a prospectus supplement to be filed with the Securities and Exchange Commission (the "SEC") relating to the Registration Statement on Form S-3 (No. 333-209813) (the "Registration Statement").

In consideration of the agreement by the Underwriters to offer and sell the Shares, and of other good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the undersigned agrees that, during the period commencing on the date of this Lock-Up Agreement and continuing for 90 days after the public offering date set forth on the final prospectus supplement (the "Public Offering Date") used to sell the Shares pursuant to the Underwriting Agreement (the "Lock-Up Period"), the undersigned will not offer, sell, contract to sell, pledge, grant any option to purchase, make any short sale or otherwise dispose of any shares of Common Stock of the Company, or any options or warrants to purchase any shares of Common Stock of the Company, or any securities convertible into, exchangeable for or that represent the right to receive shares of Common Stock of the Company, whether now owned or hereinafter acquired, owned directly by the undersigned (including holding as a custodian) or with respect to which the undersigned has beneficial ownership within the rules and regulations of the SEC (collectively the "Undersigned's Shares") or publicly announce the intention to do any of the foregoing. The foregoing restriction is expressly agreed to preclude the undersigned from engaging in any hedging or other transaction which is designed to or which reasonably could be expected to lead to or result in a sale or disposition of the Undersigned's Shares even if such shares would be disposed of by someone other than the undersigned. Such prohibited hedging or other transactions would include without limitation any short sale or any purchase, sale or grant of any right (including without limitation any put or call option) with respect to any of the Undersigned's Shares or with respect to any security that includes, relates to, or

derives any significant part of its value from such shares. In addition, the undersigned agrees that, without the prior written consent of the Representative on behalf of the Underwriters, it will not, during the Lock-Up Period, make any demand for or exercise any right with respect to, the registration of any shares of Common Stock or any security convertible into or exercisable or exchangeable for Common Stock.

Notwithstanding the foregoing, the undersigned may, directly or indirectly, sell, transfer, tender or otherwise dispose of (“transfer”) the Undersigned’s Shares (i) as a *bona fide* gift or gifts or by testate succession or intestate distribution, provided that, with respect to a *bona fide* gift or gifts, the recipient or recipients thereof agree to be bound in writing by the restrictions set forth herein, (ii) to any trust for the direct or indirect benefit of the undersigned or the immediate family of the undersigned, provided that the trustee of the trust agrees to be bound in writing by the restrictions set forth herein, and provided further that any such transfer shall not involve a disposition for value, (iii) to any corporation, partnership or other person or entity that is controlled by or under common control with the undersigned, provided that the transferee or transferees thereof agree to be bound in writing by the restrictions set forth herein, (iv) that are acquired in open market transactions after the date of the Offering, (v) pursuant to any contractual arrangement described in the prospectus supplement (or the documents incorporated by reference into the prospectus supplement) relating to the Registration Statement and the Offering existing on the date hereof that provides for the repurchase of the Undersigned’s Shares by the Company in connection with the termination of the undersigned’s employment or other service relationship with the Company or the undersigned’s failure to meet certain conditions set out upon receipt of such Undersigned’s Shares, (vi) solely to cover withholding tax obligations in connection with the exercise of any option or warrant (including, in each case, by way of “net” or “cashless” exercise) or the vesting of any awards issued pursuant to the Company’s equity incentive plans and any transfer to the Company for the payment of taxes as a result of the vesting or exercise of any option, warrant, or awards issued pursuant to the Company’s equity incentive plans, whether by means of a “net settlement” or otherwise, provided that (x) any such shares of Common Stock received by the undersigned shall be subject to the terms herein and (y) no filing under Section 16(a) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), reporting a reduction in beneficial ownership of shares of Common Stock shall be required or voluntarily made during the Lock-Up Period (other than a filing on a Form 4 that reports such disposition under the transaction code “F” with an explanatory footnote describing the above), or (vii) with the prior written consent of the Representative on behalf of the Underwriters, provided, however, that in the case of any transfer pursuant to clauses (i) through (iv), no filing under Section 16(a) of the Exchange Act reporting a reduction in the beneficial ownership of shares of Common Stock shall be required or voluntarily made during the Lock-Up Period (other than a filing on Form 5 made after the expiration of the Lock-Up Period). For purposes of this Lock-Up Agreement, “immediate family” shall mean any relationship by blood, marriage or adoption, not more remote than first cousin. The undersigned now has, and, except as contemplated by clauses (i) through (vii) above, for the duration of the Lock-Up Period will have, good and marketable title to the Undersigned’s Shares, free and clear of all liens, encumbrances, and claims whatsoever. The undersigned also agrees and consents to the entry of stop transfer instructions with the Company’s transfer agent and

registrar against the transfer of the Undersigned's Shares except in compliance with the foregoing restrictions.

In addition to the allowed transfers listed above, during the Lock-Up Period, the undersigned may (x) (A) exercise any stock option granted pursuant to the Company's equity incentive plans, provided that such stock option would otherwise expire during the Lock-up Period and that the restrictions described in this Lock-Up Agreement, subject to the exceptions contained in this Lock-Up Agreement, shall apply to any of the shares of Common Stock issued to the undersigned upon such exercise and (B) sell or transfer a portion of the Undersigned's Shares or any shares of Common Stock issued in connection with an exercise of a stock option solely to pay the exercise price, through "cashless" surrender or otherwise, in connection with an exercise of any stock option issued pursuant to the Company's equity incentive plans that would otherwise expire during the Lock-Up Period, provided that no filing under Section 16(a) of the Exchange Act reporting a reduction in beneficial ownership of shares of Common Stock shall be required or voluntarily made during the Lock-Up Period (other than a filing on a Form 4 that reports such disposition under the transaction code "F" with an explanatory footnote describing the above), (y) establish any contract, instruction or plan that satisfies the requirements of Rule 10b5-1 under the Exchange Act (a "Plan") for the transfer of shares of Common Stock or other securities, provided that such Plan does not provide for the transfer of shares of Common Stock or other securities during the Lock-Up Period and provided further no public announcement or filing under Section 16(a) of the Exchange Act regarding the establishment of such Plan shall be required of or voluntarily made by or on behalf of the undersigned or the Company during the Lock-Up Period, and (z) transfer Common Stock pursuant to a Plan under the Exchange Act that has been entered into by the undersigned prior to the date of this Lock-up Agreement and provided or made available to the Representative (an "Existing Plan"), provided that no amendments or other modifications are made to such Plan (except amendments or modifications, which would reduce the number of shares transferred under such Plan, provided that no public announcement or filing under Section 16(a) of the Exchange Act regarding any such amendment or modification shall be required of or voluntarily made by or on behalf of the undersigned or the Company during the Lock-Up Period) and that, to the extent a public announcement or filing under the Exchange Act, if any, is required by or on behalf of the undersigned or the Company regarding any such transfers, such announcement or filing shall include a statement to the effect that the transfer was made pursuant to a Plan. Notwithstanding clause (y) above, the undersigned may also during the Lock-Up Period (1) establish a Plan for the transfer of shares of Common Stock or other securities during the Lock-up Period if such Plan is entered into as a replacement of an Existing Plan in order to reduce the number of shares transferred under such Existing Plan (any such plan, a "New Plan"), provided that such Plan is in substantially similar form as such Existing Plan other than with respect to the reduction of the number shares transferred under such Plan (for the avoidance of doubt, any New Plan, as compared to the Existing Plan that it replaces, shall not reduce the price at which such shares of Common Stock or other securities are to be transferred, increase the number of shares of Common Stock or other securities to be transferred, or modify the dates or triggering events for such transfers such that such dates or triggering events would occur earlier than they otherwise would have under the Existing Plan), and no public announcement or filing under Section 16(a) of the Exchange Act regarding the

establishment of such Plan shall be required of or voluntarily made by or on behalf of the undersigned or the Company during the Lock-Up Period and (2) transfer Common Stock pursuant to a New Plan, provided that no amendments or other modifications are made to such Plan (except amendments or modifications, which would reduce the number of shares transferred under such Plan, provided that no public announcement or filing under Section 16(a) of the Exchange Act regarding any such amendment or modification shall be required of or voluntarily made by or on behalf of the undersigned or the Company during the Lock-Up Period) and that, to the extent a public announcement or filing under the Exchange Act, if any, is required by or on behalf of the undersigned or the Company regarding any such transfers, such announcement or filing shall include a statement to the effect that the transfer was made pursuant to a Plan.

The restrictions contained herein shall not apply to any transfers of Common Stock or any security convertible into or exercisable or exchangeable for Common Stock in connection with a bona fide third party tender offer, merger, consolidation or other similar transaction made to all holders of Common Stock involving a change of control of the Company (including, without limitation, the entering into of any lock-up, voting or similar agreement pursuant to which the undersigned may agree to transfer, sell, tender or otherwise dispose of Common Stock or other such securities in connection with such transaction, or vote any Common Stock or other such securities in favor of any such transaction) (for purposes hereof, "change of control" shall mean the transfer (whether by tender offer, merger, consolidation or other similar transaction), in one transaction or a series of related transactions, to a person or group of affiliated persons (other than an Underwriter pursuant to the Offering), of shares of Common Stock if, after such transfer, such person or group of affiliated persons would hold more than 50% of the outstanding voting securities of the Company (or the surviving entity)).

The undersigned understands that the Company and the Underwriters are relying upon this Lock-Up Agreement in proceeding toward consummation of the Offering. The undersigned hereby represents and warrants that the undersigned has full power and authority to enter into this Lock-Up Agreement. The undersigned further understands that this Lock-Up Agreement is irrevocable and shall be binding upon the undersigned's heirs, legal representatives, successors, and assigns. This Lock-Up Agreement shall lapse and become null and void if the Public Offering Date shall not have occurred on or before the earliest of (i) such time as the Underwriters, on the one hand, or the Company, on the other hand, advises the other in writing, prior to the execution of the Underwriting Agreement that it has determined not to proceed with the Offering, (ii) termination of the Underwriting Agreement prior to delivery of the Shares or (iii) on December 24, 2018, in the event the Underwriting Agreement has not been executed by that date (provided, however, that the Company may from time to time extend such termination date by up to an aggregate of three months with written notice to the undersigned prior thereto).

[Remainder of Page Intentionally Left Blank]

Very truly yours,

(signature)

Name:

(please print full name)

Address:

LATHAM & WATKINS LLP

200 Clarendon Street
 Boston, Massachusetts 02116
 Tel: +1.617.948.6000 Fax: +1.617.948.6001
 www.lw.com

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Madrid	Tokyo
Milan	Washington, D.C.

December 7, 2018

Momenta Pharmaceuticals, Inc.
 301 Binney Street
 Cambridge, Massachusetts 02142

Re: Registration Statement on Form S-3 (No. 333-209813);
20,000,000 shares of Common Stock, par value \$0.0001 per share

Ladies and Gentlemen:

We have acted as special counsel to Momenta Pharmaceuticals, Inc., a Delaware corporation (the “Company”), in connection with the proposed issuance of up to 20,000,000 shares of common stock of the Company, \$0.0001 par value per share (“Common Stock”), including up to 2,608,695 shares of Common Stock issuable upon exercise of the underwriter’s option to purchase additional shares (the “Shares”). The Shares are included in a registration statement on Form S-3 under the Securities Act of 1933, as amended (the “Act”), initially filed with the Securities and Exchange Commission (the “Commission”) on February 29, 2016 (Registration No. 333-209813) (as amended, the “Registration Statement”), and are being offered pursuant to a base prospectus dated February 29, 2016 (the “Base Prospectus”), a preliminary prospectus supplement dated December 6, 2018 filed with the Commission pursuant to Rule 424(b) under the Act (together with the Base Prospectus, the “Preliminary Prospectus”) and a prospectus supplement dated December 6, 2018 filed with the Commission pursuant to Rule 424(b) under the Act (together with the Base Prospectus, the “Prospectus”). The Shares are being sold pursuant to an underwriting agreement dated December 6, 2018 between Goldman Sachs & Co. LLC, as the underwriter, and the Company (the “Underwriting Agreement”). This opinion is being furnished in connection with the requirements of Item 601(b)(5) of Regulation S-K under the Act, and no opinion is expressed herein as to any matter pertaining to the contents of the Registration Statement, the Preliminary Prospectus or the Prospectus, other than as expressly stated herein with respect to the issue of the Shares.

As such counsel, we have examined such matters of fact and questions of law as we have considered appropriate for purposes of this letter. With your consent, we have relied upon

certificates and other assurances of officers of the Company and others as to factual matters without having independently verified such factual matters. We are opining herein as to the General Corporation Law of the State of Delaware (the "DGCL"), and we express no opinion with respect to any other laws.

Subject to the foregoing and the other matters set forth herein, it is our opinion that, as of the date hereof, when the Shares shall have been duly registered on the books of the transfer agent and registrar therefor in the name or on behalf of the purchasers, and have been issued by the Company against payment therefor (not less than par value) in the circumstances contemplated by the Underwriting Agreement, the issue and sale of the Shares will have been duly authorized by all necessary corporate action of the Company, and the Shares will be validly issued, fully paid and nonassessable. In rendering the foregoing opinion, we have assumed that the Company will comply with all applicable notice requirements regarding uncertificated shares provided in the DGCL.

This opinion is for your benefit in connection with the Registration Statement and may be relied upon by you and by persons entitled to rely upon it pursuant to the applicable provisions of the Act. We consent to your filing this opinion as an exhibit to the Company's Current Report on Form 8-K filed with the Commission on December 7, 2018 and to the reference to our firm in the Prospectus under the heading "Legal Matters." In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the Commission thereunder.

Very truly yours,

/s/ Latham & Watkins LLP