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

FORM 8-K

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

Date of Report (Date of earliest event reported): January 15, 2019 (January 14, 2019)

Anylam Pharmaceuticals, Inc.
(Exact Name of Registrant as Specified in Charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

001-36407
(Commission
File Number)

77-0602661
(IRS Employer
Identification No.)

300 Third Street, Cambridge, MA
(Address of Principal Executive Offices)

02142
(Zip Code)

Registrant's telephone number, including area code: (617) 551-8200

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

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

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

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

Emerging growth company

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

Item 1.01. Entry into a Material Definitive Agreement.

On January 14, 2019, Alnylam Pharmaceuticals, Inc. (the “Company”) entered into an underwriting agreement (the “Underwriting Agreement”) with Barclays Capital Inc. (the “Underwriter”), relating to an underwritten public offering of 5,000,000 shares (the “Shares”) of the Company’s common stock, par value \$0.01 per share (the “Common Stock”). All of the shares are being sold by the Company. The offering price to the public is \$77.50 per share, and the Underwriter has agreed to purchase the Shares from the Company pursuant to the Underwriting Agreement at a price of \$76.46 per share. After underwriting discounts and commissions and estimated offering expenses, the Company expects to receive net proceeds from the offering of approximately \$382 million (assuming the Underwriter does not exercise its option to purchase additional shares referenced below). Under the terms of the Underwriting Agreement, the Company granted the Underwriter an option, exercisable for 30 days, to purchase up to an additional 750,000 shares of Common Stock at the same price per share as the Shares solely to cover over-allotments.

The Shares will be issued pursuant to an automatically effective shelf registration statement that the Company filed with the Securities and Exchange Commission (the “SEC”) on May 5, 2017 (File No. 333-217688). A prospectus supplement relating to the offering has been filed with the SEC. The offering is expected to close on January 17, 2019, subject to satisfaction of customary closing conditions.

A copy of the Underwriting Agreement is attached as Exhibit 1.1 hereto and is incorporated herein by reference. The foregoing description of the material terms of the Underwriting Agreement does not purport to be complete and is qualified in its entirety by reference to such exhibit.

A copy of the legal opinion and consent of Goodwin Procter LLP relating to the Shares is attached as Exhibit 5.1 hereto.

Item 8.01. Other Events.

A copy of the press release announcing the pricing of the public offering is attached to this Current Report on Form 8-K as Exhibit 99.1.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits

- 1.1 [Underwriting Agreement, dated January 14, 2019, between Alnylam Pharmaceuticals, Inc. and Barclays Capital Inc.](#)
- 5.1 [Opinion of Goodwin Procter LLP](#)
- 23.1 [Consent of Goodwin Procter LLP \(included in Exhibit 5.1\)](#)
- 99.1 [Press Release of Alnylam Pharmaceuticals, Inc. dated January 14, 2019](#)

SIGNATURE

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

ALNYLAM PHARMACEUTICALS, INC.

Date: January 15, 2019

By: /s/ Manmeet S. Soni

Manmeet S. Soni

Senior Vice President, Chief Financial Officer

ALNYLAM PHARMACEUTICALS, INC.

5,000,000 Shares of Common Stock

Underwriting Agreement

January 14, 2019

Barclays Capital Inc.
745 Seventh Avenue
New York, New York 10019

As Representative of the several Underwriters
listed in Schedule I hereto

Ladies and Gentlemen:

Alnylam Pharmaceuticals, Inc., a Delaware corporation (the “Company”), proposes to issue and sell to the several underwriters listed in Schedule I hereto (the “Underwriters”), for whom Barclays Capital Inc. is acting as representative (the “Representative”), an aggregate of 5,000,000 shares of common stock, par value \$0.01 per share, of the Company (the “Underwritten Shares”) and, at the option of the Underwriters, up to an additional 750,000 shares of common stock of the Company (the “Option Shares”). The Underwritten Shares and the Option Shares are herein referred to as the “Shares”. The shares of common stock of the Company to be outstanding after giving effect to the sale of the Shares are referred to herein as the “Stock”. To the extent there are no additional Underwriters listed in Schedule I hereto, all references herein to the Underwriters shall refer just to you.

The Company hereby confirms its agreement with the several Underwriters concerning the purchase and sale of the Shares, as follows:

1. Registration Statement. The Company has prepared and filed with the Securities and Exchange Commission (the “Commission”) under the Securities Act of 1933, as amended, and the rules and regulations of the Commission thereunder (collectively, the “Securities Act”), a shelf registration statement on Form S-3 (File No. 333-217688), including a base prospectus dated May 5, 2017 (the “Base Prospectus”), relating to certain securities of the Company, including the Shares. Such registration statement, as amended as of the date of this Agreement, including the information, if any, deemed pursuant to Rule 430A, 430B or 430C under the Securities Act to be part of the registration statement at the time of its effectiveness (“Rule 430 Information”), is referred to herein as the “Registration Statement”; and as used herein, the term “Preliminary Prospectus” means any preliminary prospectus supplement together with the Base Prospectus filed with the Commission pursuant to Rule 424(a) under the Securities Act, and the term “Prospectus” means the prospectus supplement together with the Base Prospectus in the form first used (or made available upon request of purchasers pursuant to Rule 173 under the Securities Act) in connection with confirmation of sales of the Shares. If the Company has filed an abbreviated registration statement pursuant to Rule 462(b) under the Securities Act (the “Rule 462 Registration Statement”), then any reference herein to the term “Registration Statement” shall be deemed to include such Rule 462 Registration Statement. Any reference in this Agreement to the Registration Statement, 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 Securities Act, as

of the effective date of the Registration Statement or the date of such Preliminary Prospectus or the Prospectus, as the case may be, and any reference to “amend”, “amendment” or “supplement” with respect to the Registration Statement, any Preliminary Prospectus or the Prospectus shall be deemed to refer to and include any documents filed after such date under the Securities Exchange Act of 1934, as amended, and the rules and regulations of the Commission thereunder (collectively, the “Exchange Act”) that are deemed to be incorporated by reference therein. Capitalized terms used but not defined herein shall have the meanings given to such terms in the Registration Statement and the Prospectus.

At or prior to the Applicable Time (as defined below), the Company had prepared the following information (collectively with the pricing information set forth on Annex B, the “Pricing Disclosure Package”): a Preliminary Prospectus dated January 14, 2019 and each “free-writing prospectus” (as defined pursuant to Rule 405 under the Securities Act) listed on Annex B hereto.

“Applicable Time” means 4:00 P.M., New York City time, on January 14, 2019.

2. Purchase of the Shares by the Underwriters.

(a) The Company agrees to issue and sell the Underwritten Shares to the several Underwriters as provided in this Agreement, and each Underwriter, on the basis of the representations, warranties and agreements set forth herein and subject to the conditions set forth herein, agrees, severally and not jointly, to purchase from the Company the respective number of Underwritten Shares set forth opposite such Underwriter’s name in Schedule 1 hereto at a price per share (the “Purchase Price”) of \$76.46.

In addition, the Company agrees to issue and sell the Option Shares to the several Underwriters as provided in this Agreement, and the Underwriters, on the basis of the representations, warranties and agreements set forth herein and subject to the conditions set forth herein, shall have the option to purchase, severally and not jointly, from the Company the Option Shares solely to cover over-allotments at the Purchase Price less an amount per share equal to any dividends or distributions declared by the Company and payable on the Underwritten Shares but not payable on the Option Shares.

If any Option Shares are to be purchased, the number of Option Shares to be purchased by each Underwriter shall be the number of Option Shares which bears the same ratio to the aggregate number of Option Shares being purchased as the number of Underwritten Shares set forth opposite the name of such Underwriter in Schedule 1 hereto (or such number increased as set forth in Section 10 hereof) bears to the aggregate number of Underwritten Shares being purchased from the Company by the several Underwriters, subject, however, to such adjustments to eliminate any fractional Shares as the Representative in its sole discretion shall make.

The Underwriters may exercise the option to purchase Option Shares at any time in whole or in part, but not more than once, on or before the thirtieth day following the date of the Prospectus, by written notice from the Representative to the Company. Such notice shall set forth the aggregate number of Option Shares as to which the option is being exercised and the date and time when the Option Shares are to be delivered and paid for, which may be the same date and time as the Closing Date (as hereinafter defined) but shall not be earlier than the Closing Date or later than the tenth full business day (as hereinafter defined) after the date of such notice (unless such time and date are postponed in accordance with the provisions of Section 10 hereof). Any such notice shall be given at least two business days prior to the date and time of delivery specified therein.

(b) The Company understands that the Underwriters intend to make a public offering of the Shares as soon after the effectiveness of this Agreement as in the judgment of the Representative is advisable, and initially to offer the Shares on the terms set forth in the Prospectus. The Company acknowledges and agrees that the Underwriters may offer and sell Shares to or through any affiliate of an Underwriter.

(c) Payment for the Shares shall be made by wire transfer in immediately available funds to the account specified by the Company to the Representative in the case of the Underwritten Shares, at the offices of Davis Polk & Wardwell LLP at 10:00 A.M., New York City time, on January 17, 2019, or at such other time or place on the same or such other date, not later than the fifth business day thereafter, as the Representative and the Company may agree upon in writing or, in the case of the Option Shares, on the date and at the time and place specified by the Representative in the written notice of the Underwriters' election to purchase such Option Shares. The time and date of such payment for the Underwritten Shares is referred to herein as the "Closing Date" and the time and date for such payment for the Option Shares, if other than the Closing Date, is herein referred to as the "Additional Closing Date."

Payment for the Shares to be purchased on the Closing Date or the Additional Closing Date, as the case may be, shall be made against delivery to the Representative for the respective accounts of the several Underwriters of the Shares to be purchased on such date or the Additional Closing Date, as the case may be, with any transfer taxes payable in connection with the sale of such Shares duly paid by the Company. Delivery of the Shares shall be made through the facilities of The Depository Trust Company ("DTC") unless the Representative shall otherwise instruct.

(d) The Company acknowledges and agrees that the Underwriters are acting solely in the capacity of an arm's length contractual counterparty to the Company with respect to the offering of Shares contemplated hereby (including in connection with determining the terms of the offering) and not as a financial advisor or a fiduciary to, or an agent of, the Company or any other person. Additionally, neither the Representative nor any other Underwriter is advising the Company or any other person as to any legal, tax, investment, accounting or regulatory matters in any jurisdiction. The Company shall consult with its own advisors concerning such matters and shall be responsible for making its own independent investigation and appraisal of the transactions contemplated hereby, and the Underwriters shall have no responsibility or liability to the Company with respect thereto. Any review by the Underwriters of the Company, the transactions contemplated hereby or other matters relating to such transactions will be performed solely for the benefit of the Underwriters and shall not be on behalf of the Company.

3. Representations and Warranties of the Company. The Company represents and warrants to each Underwriter that:

(a) *Preliminary Prospectus.* No order preventing or suspending the use of any Preliminary Prospectus has been issued by the Commission, and each Preliminary Prospectus included in the Pricing Disclosure Package, at the time of filing thereof, complied in all material respects with the Securities Act, and no Preliminary Prospectus, at the time of filing thereof, contained any untrue statement of a material fact or omitted to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided that the Company makes no representation and warranty with respect to any statements or omissions made in reliance upon and in conformity with information relating to any Underwriter furnished to the Company in writing by such Underwriter through the Representative expressly for use in any Preliminary Prospectus, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 7(b) hereof.

(b) *Pricing Disclosure Package.* The Pricing Disclosure Package as of the Applicable Time did not, and as of the Closing Date and as of the Additional Closing Date, as the case may be, will not, contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided that the Company makes no representation and warranty with respect to any statements or omissions made in reliance upon and in conformity with information relating to any Underwriter furnished to the Company in writing by such Underwriter through the Representative expressly for use in such Pricing Disclosure Package, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 7(b) hereof.

(c) *Issuer Free Writing Prospectus.* Other than the Registration Statement, the Preliminary Prospectus and the Prospectus, the Company (including its agents and representatives, other than the Underwriters in their capacity as such) has not prepared, used, authorized, approved or referred to and will not prepare, use, authorize, approve or refer to any “written communication” (as defined in Rule 405 under the Securities Act) that constitutes an offer to sell or solicitation of an offer to buy the Shares (each such communication by the Company or its agents and representatives (other than a communication referred to in clause (i) below) an “Issuer Free Writing Prospectus”) other than (i) any document not constituting a prospectus pursuant to Section 2(a)(10)(a) of the Securities Act or Rule 134 under the Securities Act or (ii) the documents listed on Annex B hereto, each electronic road show and any other written communications approved in writing in advance by the Representative. Each such Issuer Free Writing Prospectus complied in all material respects with the Securities Act, has been or will be (within the time period specified in Rule 433) filed in accordance with the Securities Act (to the extent required thereby) and, when taken together with the Preliminary Prospectus filed prior to the first use of such Issuer Free Writing Prospectus, did not, and as of the Closing Date and as of the Additional Closing Date, as the case may be, will not, contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided that the Company makes no representation and warranty with respect to any statements or omissions made in each such Issuer Free Writing Prospectus or Preliminary Prospectus in reliance upon and in conformity with information relating to any Underwriter furnished to the Company in writing by such Underwriter through the Representative expressly for use in such Issuer Free Writing Prospectus or Preliminary Prospectus, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 7(b) hereof.

(d) *Registration Statement and Prospectus.* The Registration Statement was filed with the Commission on May 5, 2017 as an “automatic shelf registration statement”, as defined under Rule 405 of the Securities Act, and the Company has not received from the Commission any notice of objection pursuant to Rule 401(g)(2) under the Securities Act. No order suspending the effectiveness of the Registration Statement has been issued by the Commission, and no proceeding for that purpose or pursuant to Section 8A of the Securities Act against the Company or related to the offering of the Shares has been initiated or, to the Company’s knowledge, threatened by the Commission; as of the applicable effective date of the Registration Statement and any post-effective amendment thereto, the Registration Statement and any such post-effective amendment complied and will comply in all material respects with the Securities Act, and did not and will not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements therein not misleading; and as of the date of the Prospectus and any amendment or supplement thereto and as of the Closing Date and as of the Additional Closing Date, as the case may be, the Prospectus will not

contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided that the Company makes no representation and warranty with respect to any statements or omissions made in reliance upon and in conformity with information relating to any Underwriter furnished to the Company in writing by such Underwriter through the Representative expressly for use in the Registration Statement and the Prospectus and any amendment or supplement thereto, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 7(b) hereof.

(e) *Incorporated Documents.* The documents incorporated by reference in the Registration Statement, the Prospectus and the Pricing Disclosure Package, when they were filed with the Commission conformed in all material respects to the requirements of the Exchange Act, and none of such documents contained any untrue statement of a material fact or omitted to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; and any further documents so filed and incorporated by reference in the Registration Statement, the Prospectus or the Pricing Disclosure Package, when such documents are filed with the Commission, will conform in all material respects to the requirements of the Exchange Act and will not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(f) *Financial Statements.* The financial statements (including the related notes thereto) of the Company and its consolidated subsidiaries included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus comply in all material respects with the applicable requirements of the Securities Act and the Exchange Act, as applicable, and present fairly the financial position of the Company and its consolidated subsidiaries as of the dates indicated and the results of their operations and the changes in their cash flows for the periods specified; such financial statements have been prepared in conformity with generally accepted accounting principles in the United States applied on a consistent basis throughout the periods covered thereby, except as may be expressly stated in the related notes thereto, and any supporting schedules included or incorporated by reference in the Registration Statement present fairly the information required to be stated therein. 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 the information called for in all material respects and is prepared in accordance with the Commission's rules and guidelines applicable thereto.

(g) *No Material Adverse Change.* Since the respective dates as of which information is provided in the Registration Statement, the Pricing Disclosure Package and the Prospectus, (i) there has not been any change in the capital stock (other than (1) the issuance of shares of Common Stock upon exercise of stock options described as outstanding in the grant of options and awards under existing equity incentive plans and (2) the potential issuance and sale by the Company, in a private placement to occur concurrently with the offering of the Shares contemplated hereby, of the number of shares needed to maintain Genzyme's current ownership percentage of approximately 10% of the Company's Common Stock at the same public offering price as the Shares, to Genzyme pursuant to the Investor Agreement ("Investor Agreement") dated as of February 27, 2014 between the Company and Genzyme, each as described in, the Registration Statement, the Pricing Disclosure Package and the Prospectus), short-term debt or long-term debt of the Company or any of its subsidiaries, or any dividend or distribution of any kind declared, set aside for payment, paid or made by the Company on any class of capital stock; (ii) there has not been any material adverse change, or any development that would reasonably be

expected to result in a material adverse change, in the business, financial position or results of operations of the Company and its subsidiaries taken as a whole whether or not arising from transactions in the ordinary course of business; (iii) neither the Company nor any of its subsidiaries has entered into any transaction or agreement (not in the ordinary course of business) that is material to the Company and its subsidiaries taken as a whole or incurred any liability or obligation, direct or contingent, that is material to the Company and its subsidiaries taken as a whole; and (iv) neither the Company nor any of its subsidiaries has sustained any loss or interference with its business that is material to the Company and its subsidiaries taken as a whole and that is either from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor disturbance or dispute or any action, order or decree of any court or arbitrator or governmental or regulatory authority, except in each case as otherwise disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

(h) *Organization and Good Standing.* The Company and each of its significant subsidiaries have been duly organized and are validly existing and in good standing under the laws of their respective jurisdictions of organization, are duly qualified to do business and are in good standing in each jurisdiction in which their respective ownership or lease of property or the conduct of their respective businesses requires such qualification, and have all power and authority necessary to own or hold their respective properties and to conduct the businesses in which they are engaged, except where the failure to be so qualified or in good standing or have such power or authority would not, individually or in the aggregate, reasonably be expected to have a material adverse effect on the business, financial position or results of operations of the Company and such subsidiaries taken as a whole or on the performance by the Company of its obligations under this Agreement (a “Material Adverse Effect”). The Company does not own or control, directly or indirectly, any corporation, association or other entity other than the subsidiaries listed in Exhibit 21.1 to its Annual Report on Form 10-K for the fiscal year ended December 31, 2017. The Company’s significant subsidiaries are Alnylam U.S., Inc. and Alnylam Securities Corporation.

(i) *Capitalization.* The Company has an authorized capitalization as set forth in the Registration Statement, the Pricing Disclosure Package and the Prospectus under the heading “Description of Capital Stock”; all the outstanding shares of capital stock of the Company have been duly and validly authorized and issued and are fully paid and non-assessable and have been issued in compliance with federal and state securities laws and are not subject to any pre-emptive, rights of first refusal or other similar rights; except as described in or expressly contemplated by the Registration Statement, Pricing Disclosure Package and the Prospectus, there are no outstanding rights (including, without limitation, pre-emptive rights), warrants or options to acquire, or instruments convertible into or exchangeable for, any shares of capital stock or other equity interest in the Company or any of its subsidiaries, or any contract, commitment, agreement, understanding or arrangement of any kind relating to the issuance of any capital stock of the Company or any such subsidiary, any such convertible or exchangeable securities or any such rights, warrants or options; the capital stock of the Company conforms in all material respects to the description thereof contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus; and all the outstanding shares of capital stock or other equity interests of each subsidiary owned, directly or indirectly, by the Company have been duly and validly authorized and issued, are fully paid and non-assessable and are owned directly or indirectly by the Company, free and clear of any lien, charge, encumbrance, security interest, restriction on voting or transfer or any other claim of any third party.

(j) *Stock Options.* With respect to the stock options (the “Stock Options”) granted pursuant to the stock-based compensation plans of the Company and its subsidiaries (the “Company Stock Plans”), except as would not reasonably be expected to result in a Material Adverse Effect, (i) each grant of a Stock Option was duly authorized no later than the date on which the grant of such Stock Option was by its terms to be effective (the “Grant Date”) by all necessary corporate action, including, as applicable, approval by the board of directors of the Company (or a duly constituted and authorized committee thereof) and any required stockholder approval by the necessary number of votes or written consents, (ii) the award agreement governing such grant (if any) was duly executed and delivered by each party thereto and (iii) each such grant was made in accordance with the terms of the Company Stock Plans and the Exchange Act.

(k) *Underwriting Agreement.* This Agreement has been duly authorized, executed and delivered by the Company.

(l) *The Shares.* The Shares to be issued and sold by the Company hereunder have been duly authorized and, when issued and delivered and paid for as provided herein, will be duly and validly issued, will be fully paid and nonassessable and will conform to the descriptions thereof 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 satisfied or waived.

(m) *No Violation or Default.* Except as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, neither the Company nor any of its subsidiaries is (i) in violation of its charter or by-laws or similar organizational documents; (ii) in default, and no event has occurred that, with notice or lapse of time or both, would constitute such a default, in the due performance or observance of any term, covenant or condition contained in any indenture, mortgage, deed of trust, loan or credit agreement, note, contract, franchise, lease or other agreement or instrument to which the Company or any of its subsidiaries is a party or by which the Company or any of its subsidiaries is bound or to which any of the property or assets of the Company or any of its subsidiaries is subject; or (iii) in violation of any law or statute or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority, except, in the case of clauses (ii) and (iii) above, for any such default or violation that would not, individually or in the aggregate, have a Material Adverse Effect.

(n) *No Conflicts.* The execution, delivery and performance by the Company of this Agreement, the issuance and sale of the Shares and the consummation of the transactions contemplated hereby will not (i) conflict with or result in a breach or violation of any of the terms or provisions of, or constitute a default under, or result in the creation or imposition of any lien, charge or encumbrance upon any property or assets of the Company or any of its subsidiaries pursuant to, or require the consent of any other party to, any indenture, mortgage, deed of trust, loan or credit agreement, note, contract, franchise, lease or other agreement or instrument to which the Company or any of its subsidiaries is a party or by which the Company or any of its subsidiaries is bound or to which any of the property or assets of the Company or any of its subsidiaries is subject, (ii) result in any violation of the provisions of the charter or by-laws or similar organizational documents of the Company or any of its subsidiaries or (iii) result in the violation of any law or statute or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority applicable to the Company or any subsidiary, except, in the case of clauses (i) and (iii) above, for any such conflict, breach, violation or default that would not, individually or in the aggregate, have a Material Adverse Effect.

(o) *No Consents Required.* No consent, approval, authorization, order, license, registration or qualification of or with any court or arbitrator or governmental or regulatory authority is required for the execution, delivery and performance by the Company of this Agreement and the issuance and sale of the Shares and the consummation of the transactions contemplated hereby except for the registration of the Shares under the Securities Act and such consents, approvals, authorizations, orders and registrations or qualifications as have already been obtained or made or may be required by the Financial Industry Regulatory Authority, Inc. (“FINRA”), the Nasdaq Global Select Market (the “Nasdaq Market”) and under applicable state securities laws in connection with the purchase and distribution of the Shares by the Underwriters.

(p) *Legal Proceedings.* Except as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, there are no legal, governmental or regulatory investigations, actions, suits or proceedings pending to which the Company or any of its subsidiaries is or may be a party or which has as the subject thereof any officer or director of, or to which any property of the Company or any of its subsidiaries is or may be the subject that, individually or in the aggregate, if determined adversely to the Company or any of its subsidiaries, could reasonably be expected to have a Material Adverse Effect; to the knowledge of the Company, no such investigations, actions, suits or proceedings are contemplated or threatened by any governmental or regulatory authority or threatened by others; and there are no current or pending legal, governmental or regulatory actions, suits or proceedings that are required under the Securities Act to be described in the Registration Statement, the Pricing Disclosure Package or the Prospectus that are not so described in the Registration Statement, the Pricing Disclosure Package and the Prospectus. There are no contracts or other documents that are required under the Securities Act to be filed as exhibits to the Registration Statement or described in the Registration Statement, the Pricing Disclosure Package or the Prospectus that are not so filed as exhibits to the Registration Statement or described in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

(q) *Independent Accountants.* PricewaterhouseCoopers, LLP, who have audited certain financial statements of the Company and its subsidiaries, is an independent registered public accounting firm with respect to the Company and its subsidiaries within the applicable rules and regulations adopted by the Commission and the Public Company Accounting Oversight Board (United States) and as required by the Securities Act.

(r) *Title to Real and Personal Property.* Except as disclosed in the Registration Statement, Pricing Disclosure Package and the Prospectus, the Company and each of its subsidiaries has good and marketable title to all real property and good title to all other properties and assets reflected as owned in the financial statements referred to above in Section 3(f), in each case free and clear of any security interests, mortgages, liens, encumbrances, equities, claims and other defects, except such as do not materially and adversely affect the value of such property and do not materially interfere with the use made of such property by the Company or such subsidiary. The real property, improvements, equipment and personal property held under lease by the Company or any subsidiary are held under valid and enforceable leases, with such exceptions as are not material and do not materially interfere with the use made of such real property, improvements, equipment or personal property by the Company or such subsidiary or with such exceptions that would not reasonably be expected to result in a Material Adverse Effect.

(s) *Title to Intellectual Property.* Except as described in the Registration Statement, Pricing Disclosure Package and the Prospectus, the Company and its subsidiaries own or have valid and enforceable rights to use the patents, patent applications, trademarks and service marks, trademark and service mark registrations and applications, trade names, domain names, all goodwill

associated with the foregoing, copyrights, licenses, inventions, trade secrets, software, technology, know-how and other intellectual property (collectively, the “Intellectual Property”) necessary for the conduct of their respective businesses in all material respects, as now conducted, and, to the knowledge of the Company, the conduct of the respective businesses of the Company and its subsidiaries does not infringe, misappropriate or otherwise violate any Intellectual Property of any third party. Except as described in the Registration Statement, Pricing Disclosure Package and the Prospectus, (a) there is no pending action, suit, proceeding or claim or, to the Company’s knowledge, threatened action, suit, proceeding or claim, by others, challenging the Company’s or any of its subsidiary’s rights in or to any such Intellectual Property, and the Company is unaware of any material fact which would form a reasonable basis for any such claim; (b) there is no pending action, suit, proceeding or claim or, to the Company’s knowledge, threatened action, suit, proceeding or claim, by others, that the Company or any of its subsidiaries infringes, misappropriates or otherwise violates any Intellectual Property of others, and the Company is unaware of any other material fact which would form a reasonable basis for any such claim; (c) there is no pending action, suit, proceeding or claim or, to the Company’s knowledge, threatened action, suit, proceeding or claim, by others challenging the validity, enforceability or scope of any Intellectual Property owned by the Company or any of its subsidiaries, and with respect to any such Intellectual Property that the Company or any of its subsidiaries has a right to use, the Company is unaware of any such claim, and, in either case, the Company is unaware of any material fact which would form a reasonable basis for any such claim; (d) there is no prior art of which the Company is aware that would reasonably be expected to render invalid any patent owned by the Company or any of its subsidiaries or that the Company has rights to use the inventions covered thereby which has not been disclosed to the applicable government patent office; (e) the Company’s and the Company’s subsidiaries’ license agreements mentioned in the Registration Statement, Pricing Disclosure Package and the Prospectus are in full force and effect, and the Company is not in material breach or default thereof, and to the knowledge of the Company, other parties to those agreements are not in material breach or default thereof; and (f) the granted or issued patents, trademarks, and copyrights owned by the Company and its subsidiaries have been duly maintained and are in full force and in effect, and none of such patents, trademarks and copyrights have been adjudged invalid or unenforceable in whole or in part.

(t) *Patent Applications.* All patent applications owned by the Company and its subsidiaries that describe inventions necessary to conduct the business of the Company and its subsidiaries in the manner described in the Registration Statement, Pricing Disclosure Package and the Prospectus (the “Company Patent Applications”) have been duly and properly filed with the United States Patent and Trademark Office (the “PTO”) or foreign and international patent authorities. To the knowledge of the Company, the Company and its subsidiaries have complied with the PTO’s duty of candor and disclosure for the Company Patent Applications and have made no material misrepresentation during prosecution of the Company Patent Applications. Except as described in the Registration Statement, Pricing Disclosure Package and the Prospectus, to the Company’s knowledge, the Company Patent Applications disclose patentable subject matter, and the Company has not been notified of any inventorship challenges nor has any interference been declared or provoked nor is any material fact known by the Company that would preclude the issuance of patents with respect to the Company Patent Applications or would render such patents invalid or unenforceable.

(u) *Accuracy of Statements.* The statements contained in the Registration Statement, Pricing Disclosure Package and the Prospectus under the caption “Risk Factors—Risks Related to Patents, Licenses and Trade Secrets,” insofar as such statements summarize legal matters, agreements, documents, or proceedings discussed therein, are accurate and fair summaries in all material respects of such legal matters, agreements, documents or proceedings.

(v) *No Undisclosed Relationships.* There are no business relationships or related-party transactions involving the Company or any subsidiary or any other person required to be described in the Registration Statement, the Pricing Disclosure Package or the Prospectus which have not been described as required.

(w) *Investment Company Act.* The Company is not and, after giving effect to the offering and sale of the Shares and the application of the proceeds thereof as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, will not be required to register as an “investment company” or an entity “controlled” by an “investment company” within the meaning of the Investment Company Act of 1940, as amended, and the rules and regulations of the Commission thereunder (collectively, the “Investment Company Act”).

(x) *Taxes.* The Company and its consolidated subsidiaries have filed all necessary federal, state and foreign income and franchise tax returns or have properly requested extensions thereof (which extensions have not expired) and have paid all taxes required to be paid by any of them and, if due and payable, any related or similar assessment, fine or penalty levied against any of them, except as are being contested in good faith and that, if resolved unfavorably to the Company, would not result, individually or in aggregate, in a Material Adverse Effect. The Company has made adequate charges, accruals and reserves in the applicable financial statements referred to in Section 3(f) above in respect of all federal, state and foreign income and franchise taxes for all periods as to which the tax liability of the Company or any of its subsidiaries has not been finally determined except to the extent of any inadequacy that would not reasonably be expected to result in a Material Adverse Effect.

(y) *Licenses and Permits.* Except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company and each subsidiary possess such valid and current certificates, authorizations or permits issued by the appropriate state, federal or foreign regulatory agencies or bodies necessary to conduct their respective businesses (other than any the absence of which would not, singly or in the aggregate, result in a Material Adverse Effect), and neither the Company nor any subsidiary has received any notice of proceedings relating to the revocation or modification of, or non-compliance with, any such certificate, authorization or permit which, singly or in the aggregate, if the subject of an unfavorable decision, ruling or finding, could result in a Material Adverse Effect.

(z) *No Labor Disputes.* No labor disturbance by or dispute with employees of the Company or any of its subsidiaries exists or, to the knowledge of the Company, is contemplated or threatened, and the Company is not aware of any existing or imminent labor disturbance by, or dispute with, the employees of any of its or its subsidiaries’ principal suppliers, contractors or customers, except as would not have a Material Adverse Effect.

(aa) *Compliance with and Liability under Environmental Laws.* Except as would not, individually or in the aggregate, result in a Material Adverse Effect: (i) neither the Company nor any of its subsidiaries is in violation of any federal, state, local or foreign law or regulation relating to pollution or protection of human health or the environment (including, without limitation, ambient air, surface water, groundwater, sediment, land surface or subsurface strata) or wildlife, including without limitation, laws and regulations relating to emissions, discharges, releases or threatened releases of chemicals, pollutants, contaminants, wastes, toxic substances, hazardous substances, petroleum, petroleum products, toxic mold or asbestos (collectively, “Materials of Environmental Concern”), or otherwise relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of, or exposure to, Materials of Environment Concern (collectively, “Environmental Laws”), which violation includes, but is

not limited to, noncompliance with any permits or other governmental authorizations required for the operation of the business of the Company or its subsidiaries under applicable Environmental Laws, or noncompliance with the terms and conditions thereof, nor has the Company or any of its subsidiaries received any written communication, whether from a governmental authority, citizens group, employee or otherwise, that alleges that the Company or any of its subsidiaries is in violation of any Environmental Law; (ii) there is no claim, action or cause of action filed with a court or governmental authority, no investigation with respect to which the Company has received written notice, and no written notice by any person or entity alleging potential liability for investigatory costs, cleanup costs, governmental responses costs, natural resources damages, property damages, personal injuries, attorneys' fees or penalties arising out of, based on or resulting from the presence or release into the environment of, or any exposure to, any Materials of Environmental Concern at any location owned, leased or operated by the Company or any of its subsidiaries, now or in the past (collectively, "Environmental Claims"), pending or, to the Company's knowledge, threatened against the Company or any of its subsidiaries or any person or entity whose liability for any Environmental Claim the Company or any of its subsidiaries has retained or assumed either contractually or by operation of law; and (iii) to the Company's knowledge, there are no past or present actions, activities, circumstances, conditions, events or incidents, including, without limitation, the release, emission, discharge, presence or disposal of any Materials of Environmental Concern, that reasonably could result in a violation of any Environmental Law or form the basis of a potential Environmental Claim against the Company or any of its subsidiaries or against any person or entity whose liability for any Environmental Claim the Company or any of its subsidiaries has retained or assumed either contractually or by operation of law.

(bb) *Compliance with ERISA.* The Company and its subsidiaries and any "employee benefit plan" (as defined under the Employee Retirement Income Security Act of 1974, as amended, and the regulations and published interpretations thereunder (collectively, "ERISA")) established or maintained by the Company, its subsidiaries or their "ERISA Affiliates" (as defined below) are in compliance in all material respects with ERISA. "ERISA Affiliate" means, with respect to the Company or a subsidiary, any member of any group of organizations described in Sections 414(b), (c), (m) or (o) of the Internal Revenue Code of 1986, as amended, and the regulations and published interpretations thereunder (the "Code") of which the Company or such subsidiary is a member. Except as would not be expected to result in a Material Adverse Effect, no "reportable event" (as defined under Section 4043 of ERISA) has occurred or is reasonably expected to occur with respect to any "employee benefit plan" established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates. Except as would not be expected to result in a Material Adverse Effect, no "employee benefit plan" established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates, if such "employee benefit plan" were terminated, would have any "amount of unfunded benefit liabilities" (as defined under ERISA). None of the Company, its subsidiaries and their ERISA Affiliates has incurred or reasonably expects to incur any liability under (i) Title IV of ERISA with respect to termination of, or withdrawal from, any "employee benefit plan" or (ii) Section 412, 4971, 4975 or 4980B of the Code, except, in each case, as would not be expected to result in a Material Adverse Effect. Each "employee benefit plan" established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates that is intended to be qualified under Section 401(a) of the Code is so qualified and nothing has occurred, whether by action or failure to act, that would cause the loss of such qualification, except where the loss of such qualification would not be expected to result in a Material Adverse Effect.

(cc) *Disclosure Controls.* The Company and its subsidiaries have established and maintain an effective system of “disclosure controls and procedures” (as defined in Rule 13a-15(e) under the Exchange Act) that complies with the requirements of the Exchange Act and that has been designed (i) to ensure that information required to be disclosed by the Company in reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Commission’s rules and forms and (ii) to ensure that such information is accumulated and communicated to the Company’s management, including its principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure, and such controls are effective, in that they provide reasonable assurance that information required to be disclosed by the Company in the reports that the Company files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Commission’s rules and regulations, in all material respects. The Company and its subsidiaries have carried out evaluations of the effectiveness of their disclosure controls and procedures as required by Rule 13a-15 under the Exchange Act.

(dd) *Accounting Controls.* The Company maintains a system of “internal control over financial reporting” (as defined in Rule 13a-15(f) under the Exchange Act) that comply with the requirements of the Exchange Act and have been designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles, including, but not limited to, internal accounting controls sufficient to provide reasonable assurance that (i) transactions are executed in accordance with management’s general or specific authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management’s general or specific authorization; (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences and (v) interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus is prepared in accordance with the Commission’s rules and guidelines applicable thereto. Since the end of the Company’s most recent fiscal year, except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, there have been no material weaknesses in the Company’s internal controls. The Company’s auditors and the Audit Committee of the Board of Directors of the Company have been advised of: (i) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which have adversely affected or are reasonably likely to adversely affect the Company’s ability to record, process, summarize and report financial information and (ii) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company’s internal controls over financial reporting.

(ee) *Insurance.* Each of the Company and its subsidiaries is insured by recognized, financially sound and reputable institutions with policies in such amounts and with such deductibles and covering such risks as the Company has deemed adequate and customary for its businesses including, but not limited to, policies covering real and personal property owned or leased by the Company and its subsidiaries against theft, damage, destruction and acts of vandalism. The Company has no reason to believe that it or any of its subsidiaries will not be able (i) to renew its existing insurance coverage as and when such coverage expires or (ii) to obtain comparable coverage from similar institutions as may be necessary or appropriate to conduct its business as now conducted and at a cost that would not result in a Material Adverse Effect.

(ff) *Cybersecurity*. (i)(x) To the knowledge of the Company, there has been no material security breach or other compromise of or relating to any of the Company's information technology and computer systems, networks, hardware, software, data, equipment or technology (collectively, "IT Systems and Data") and (y) the Company has not been notified of, and has no knowledge of any event or condition that would reasonably be expected to result in, any material security breach or other compromise to its IT Systems and Data; (ii) the Company is presently in compliance in all material respects with all applicable laws or statutes and all judgments, orders, rules and regulations of any court or arbitrator or governmental or regulatory authority, and contractual obligations relating to the privacy and security of IT Systems and Data and to the protection of such IT Systems and Data from unauthorized use, access, misappropriation or modification; and (iii) the Company has implemented backup and disaster recovery technology.

(gg) *No Unlawful Payments*. Neither the Company nor any of its subsidiaries nor any director, officer, or employee of the Company or any of its subsidiaries nor, to the knowledge of the Company, any agent, affiliate or other person "associated with" (within the meaning of the Bribery Act 2010 of the United Kingdom and its regulations) or acting on behalf of the Company or any of its subsidiaries has (i) used any funds for any unlawful contribution, gift, entertainment or other unlawful expense relating to political activity; (ii) made or taken an act in furtherance of an offer, promise or authorization of any direct or indirect unlawful payment or benefit to any foreign or domestic government or regulatory official or employee, including of any government-owned or controlled entity or of a public international organization, or any person acting in an official capacity for or on behalf of any of the foregoing, or any political party or party official or candidate for political office; (iii) violated or is in violation of any provision of the Foreign Corrupt Practices Act of 1977, as amended, or any applicable law or regulation implementing the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, or committed an offence under the Bribery Act 2010 of the United Kingdom, or any other applicable anti-bribery or anti-corruption laws; or (iv) made, offered, agreed, requested or taken an act in furtherance of any unlawful bribe or other unlawful benefit, including, without limitation, any rebate, payoff, influence payment, kickback or other unlawful or improper payment or benefit. The Company and its subsidiaries have instituted, maintain and enforce, and will continue to maintain and enforce policies and procedures designed to promote and ensure compliance with all applicable anti-bribery and anti-corruption laws.

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

(ii) *No Conflicts with Sanctions Laws*. Neither the Company nor any of its subsidiaries, directors, officers or employees, nor, to the knowledge of the Company, any agent, or affiliate or other person while acting on behalf 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 United Nations Security Council ("UNSC"), the European Union, Her Majesty's Treasury ("HMT"), or

other relevant sanctions authority (collectively, “Sanctions”), nor is the Company or any of its subsidiaries located, organized or resident in a country or territory that is the subject or the target of Sanctions, including, without limitation, Crimea, Cuba, Iran, North Korea and Syria (each, a “Sanctioned Country”); and the Company will not directly or indirectly use the proceeds of the offering of the Securities 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 that, at the time of such funding or facilitation, is the subject or the target of Sanctions, unless such funding or facilitation is authorized under the applicable Sanctions, (ii) to fund or facilitate any activities of or business in any Sanctioned Country or (iii) 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. For the past 5 years, the Company and its subsidiaries have not knowingly engaged in, are not now knowingly engaged in, and will not engage in, any unlawful dealings or transactions with any person that at the time of the dealing or transaction is or was the subject or the target of Sanctions or with any Sanctioned Country.

(jj) *No Restrictions on Subsidiaries.* Except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, no subsidiary of the Company is currently prohibited, directly or indirectly, under any agreement or other instrument to which it is a party or is subject, from paying any dividends to the Company, from making any other distribution on such subsidiary’s capital stock, from repaying to the Company any loans or advances to such subsidiary from the Company or from transferring any of such subsidiary’s properties or assets to the Company or any other subsidiary of the Company.

(kk) *No Broker’s Fees.* None of the Company and its subsidiaries is a party to any contract, agreement or understanding with any person (other than this Agreement) that would give rise to a valid claim against the Company or any of its subsidiaries or any Underwriter for a brokerage commission, finder’s fee or like payment in connection with the offering and sale of the Shares.

(ll) *Registration Rights.* Other than the Investor Agreement dated as of February 27, 2014 by and between the Company and Genzyme Corporation, there are no contracts, agreements or understandings between the Company and any person granting such person the right to require the Company to file a registration statement under the Securities Act with respect to any securities of the Company. There are no contracts, agreements or understandings between the Company and any person granting such person the right to include such securities with the Shares registered pursuant to the Registration Statement, except for such rights as have been waived.

(mm) *No Stabilization.* The Company has not taken directly or indirectly, any action designed to or that would reasonably be expected to cause or result in stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares.

(nn) *Margin Rules.* The application of the proceeds received by the Company from the issuance, sale and delivery of the Shares as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus will not violate Regulation T, U or X of the Board of Governors of the Federal Reserve System or any other regulation of such Board of Governors.

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

(pp) *Statistical and Market Data.* Nothing has come to the attention of the Company that has caused the Company to believe that the statistical and market-related data included in the Registration Statement, the Pricing Disclosure Package and the Prospectus is not based on or derived from sources that are reliable and accurate in all material respects.

(qq) *Sarbanes-Oxley Act.* There is and has been no material 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 (the "Sarbanes-Oxley Act"), including Section 402 related to loans and Sections 302 and 906 related to certifications.

(rr) *Status under the Securities Act.* At the time of filing the Registration Statement and any post-effective amendment thereto, at the earliest time thereafter that the Company or any offering participant made a *bona fide* offer (within the meaning of Rule 164(h)(2) under the Securities Act) of the Shares and at the date hereof, the Company was not and is not an "ineligible issuer," and was and is a "well-known seasoned issuer," in each case as defined in Rule 405 under the Securities Act.

(ss) *No Outstanding Loans.* There are no outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees or indebtedness by the Company to or for the benefit of any of the executive officers or directors of the Company, except as disclosed in the Registration Statement, Pricing Disclosure Package and the Prospectus.

(tt) *Compliance with Applicable Laws.* The Company has not been advised, and has no reason to believe, that it and each of its subsidiaries are not conducting business in compliance with all applicable laws, rules and regulations of the jurisdictions in which it is conducting business, except where failure to be so in compliance would not result in a Material Adverse Effect.

(uu) *Listing.* [Reserved.]

(vv) *FDA Compliance.* The Company and its subsidiaries are in compliance in all material respects with all applicable rules and regulations of the U.S. Food and Drug Administration (the "FDA"), and all related applicable laws, statutes, ordinances, rules or regulations (including, without limitation, the Federal Food, Drug and Cosmetic Act, as amended, the Biologic Products provisions of the Public Health Act, as amended, and the Comprehensive Drug Abuse Prevention and Control Act of 1970, as amended), the enforcement of which, individually or in the aggregate, would be expected to result in a Material Adverse Effect.

(ww) *No FDA/PTO Proceedings.* To the Company's knowledge, except as disclosed in the Registration Statement, Pricing Disclosure Package and the Prospectus, there are no rulemaking or similar proceedings before the FDA or the PTO or any similar entity in any other jurisdiction which affects or involves, or will affect or involve, the Company or any of its subsidiaries or any of the processes or products which the Registration Statement, Pricing Disclosure Package and the Prospectus discloses the Company or any of its subsidiaries has developed, is developing or proposes to develop or uses or proposes to use which, if the subject of an action unfavorable to the Company, would be expected to result in a Material Adverse Effect.

(xx) *No Previous Sale of Common Stock.* Except as described in the Registration Statement, Pricing Disclosure Package and the Prospectus, the Company has not sold, granted, issued or distributed any shares of common stock during the six-month period preceding the date hereof, including any sales pursuant to Rule 144A under, or Regulation D or S of, the Securities Act, other than shares issued or distributed pursuant to employee benefit plans, qualified stock option plans or other employee compensation plans or pursuant to outstanding options or rights.

4. Further Agreements of the Company. The Company covenants and agrees with each Underwriter that:

(a) *Required Filings.* The Company will file the final Prospectus with the Commission within the time periods specified by Rule 424(b) and Rule 430A, 430B or 430C under the Securities Act, will file any Issuer Free Writing Prospectus to the extent required by Rule 433 under the Securities Act; and will furnish copies of the Prospectus and each Issuer Free Writing Prospectus (to the extent not previously delivered) to the Underwriters in New York City prior to 10:00 A.M., New York City time, on the business day next succeeding the date of this Agreement in such quantities as the Representative may reasonably request. The Company will pay the registration fee relating to the Shares as set forth in Rule 456(b)(1) under the Securities Act (without giving effect to the proviso therein) and in any event prior to the Closing Date.

(b) *Delivery of Copies.* The Company will deliver, without charge, (i) to the Representative, a signed copy of the Registration Statement as originally filed and each amendment thereto, in each case including all exhibits and consents filed therewith; and (ii) to each Underwriter (A) a conformed copy of the Registration Statement as originally filed and each amendment thereto (without exhibits) and (B) during the Prospectus Delivery Period (as defined below), as many copies of the Prospectus (including all amendments and supplements thereto and documents incorporated by reference therein and each Issuer Free Writing Prospectus) as the Representative may reasonably request. As used herein, the term "Prospectus Delivery Period" means such period of time after the first date of the public offering of the Shares as in the opinion of counsel for the Underwriters a prospectus relating to the Shares is required by law to be delivered (or required to be delivered but for Rule 172 under the Securities Act) in connection with sales of the Shares by any Underwriter or dealer.

(c) *Amendments or Supplements, Issuer Free Writing Prospectuses.* Before preparing, using, authorizing, approving, referring to or filing any Issuer Free Writing Prospectus, and before filing any amendment or supplement to the Registration Statement or the Prospectus, whether before or after the time that the Registration Statement becomes effective, the Company will furnish to the Representative and counsel for the Underwriters a copy of the proposed Issuer Free Writing Prospectus, amendment or supplement for review and will not prepare, use, authorize, approve, refer to or file any such Issuer Free Writing Prospectus or file any such proposed amendment or supplement to which the Representative reasonably objects.

(d) *Notice to the Representative.* The Company will advise the Representative promptly, and confirm such advice in writing, (i) when any amendment to the Registration Statement has been filed or becomes effective; (ii) when any supplement to the Prospectus or any Issuer Free Writing Prospectus or any amendment to the Prospectus has been filed with the Commission or distributed; (iii) of any request by the Commission for any amendment to the Registration Statement or any amendment or supplement to the Prospectus or the receipt of any comments from the Commission relating to the Registration Statement or any other request by the Commission for any additional information; (iv) of the issuance by the Commission of any order suspending the effectiveness of the Registration Statement or preventing or suspending the use of

any Preliminary Prospectus, any of the Pricing Disclosure Package or the Prospectus or the initiation or threatening of any proceeding for that purpose or pursuant to Section 8A of the Securities Act; (v) of the occurrence of any event within the Prospectus Delivery Period as a result of which the Prospectus, the Pricing Disclosure Package or any Issuer Free Writing Prospectus as then amended or supplemented would include any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances existing when the Prospectus, the Pricing Disclosure Package or any such Issuer Free Writing Prospectus is delivered to a purchaser, not misleading; (vi) of the receipt by the Company of any notice of objection of the Commission pursuant to Rule 401(g)(2) under the Securities Act; and (vii) of the receipt by the Company of any notice with respect to any suspension of the qualification of the Shares for offer and sale in any jurisdiction or, to its knowledge, the initiation or threatening of any proceeding for such purpose; and the Company will use its reasonable best efforts to prevent the issuance of any such order suspending the effectiveness of the Registration Statement, preventing or suspending the use of any Preliminary Prospectus, any of the Pricing Disclosure Package or the Prospectus or suspending any such qualification of the Shares and, if any such order is issued, will use its reasonable best efforts to obtain as soon as possible the withdrawal thereof.

(e) *Ongoing Compliance.* (1) If during the Prospectus Delivery Period (i) any event shall occur or condition shall exist as a result of which the Prospectus as then amended or supplemented would include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances existing when the Prospectus is delivered to a purchaser, not misleading or (ii) in the opinion of the Representative's counsel, it is necessary to amend or supplement the Prospectus to comply with law, the Company will immediately notify the Underwriters thereof and forthwith prepare and, subject to paragraph (c) above, file with the Commission and furnish to the Underwriters and to such dealers as the Representative may designate such amendments or supplements to the Prospectus as may be necessary so that the statements in the Prospectus as so amended or supplemented will not, in the light of the circumstances existing when the Prospectus is delivered to a purchaser, be misleading or so that the Prospectus will comply with law and (2) if at any time prior to the Closing Date (i) any event shall occur or condition shall exist as a result of which the Pricing Disclosure Package as then amended or supplemented would 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 existing when the Pricing Disclosure Package is delivered to a purchaser, not misleading or (ii) in the opinion of the Representative's counsel, it is necessary to amend or supplement the Pricing Disclosure Package to comply with law, the Company will immediately notify the Underwriters thereof and forthwith prepare and, subject to paragraph (c) above, file with the Commission (to the extent required) and furnish to the Underwriters and to such dealers as the Representative may designate such amendments or supplements to the Pricing Disclosure Package as may be necessary so that the statements in the Pricing Disclosure Package as so amended or supplemented will not, in the light of the circumstances existing when the Pricing Disclosure Package is delivered to a purchaser, be misleading or so that the Pricing Disclosure Package will comply with law.

(f) *Blue Sky Compliance.* The Company will qualify the Shares for offer and sale under the securities or Blue Sky laws of such jurisdictions as the Representative shall reasonably request and will continue such qualifications in effect so long as required for distribution of the Shares; provided that 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 so qualify, (ii) file any general consent to service of process in any such jurisdiction or (iii) subject itself to taxation in any such jurisdiction if it is not otherwise so subject.

(g) *Earning Statement.* The Company will make generally available to its security holders and the Representative as soon as practicable an earning statement that satisfies the provisions of Section 11(a) of the Securities Act and Rule 158 of the Commission promulgated thereunder covering a period of at least twelve months beginning with the first fiscal quarter of the Company occurring after the “effective date” (as defined in Rule 158) of the Registration Statement.

(h) *Clear Market.* For a period of 60 days after the date of the Prospectus (as may be extended as set forth below, the “Lock-Up Period”), the Company will not (i) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, or file with the Commission a registration statement under the Securities Act relating to, any shares of Stock or any securities convertible into or exercisable or exchangeable for Stock, 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, or (iii) file any registration statement (other than a registration statement on Form S-8 or a registration statement filed in connection with a demand for registration pursuant to an existing agreement) with the Commission relating to the offering by the Company of any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock without the prior written consent of Barclays Capital Inc.

The restrictions contained in the preceding paragraph shall not apply to (a) the Shares to be sold hereunder; (b) the issuance by the Company of shares of Common Stock upon the exercise of an option or the conversion of a security outstanding on the date hereof; (c) the issuance or distribution by the Company of shares of Common Stock in accordance with the terms of the Company’s employee stock purchase plan and 401(k) plan in existence on the date hereof; (d) the grant of options, restricted stock or other equity-based awards under equity incentive plans now established and currently maintained by the Company (or as inducement material to employees entering employment with the Company pursuant to Nasdaq Listing Rule 5635(c)(4)) or assumed in connection with a business combination, provided that such options, restricted stock and other equity-based awards do not vest, in whole or in part, during the Lock-Up Period or the underlying shares are subject to a “lock-up” agreement, substantially in the form of Annex C hereto; and (e) the issuance by the Company of shares of Common Stock representing up to 10% of the Company’s outstanding stock as of the date hereof, pursuant to any strategic alliance, license, collaboration, acquisition or loan agreements entered into during the Lock-Up Period, *provided that* such shares of Common Stock are subject to a “lock-up” agreement, substantially in the form of Annex C hereto; and (f) the potential issuance and sale by the Company, in a private placement to occur concurrently with the offering of the Shares contemplated hereby, of the number of shares needed to maintain Genzyme’s current ownership percentage of approximately 10% of the Company’s Common Stock at the same public offering price as the Shares, to Genzyme pursuant to the Investor Agreement.

(i) *Use of Proceeds.* The Company will apply the net proceeds from the sale of the Shares as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus under the heading “Use of proceeds.”

(j) *No Stabilization.* The Company will not take, directly or indirectly, any action designed to or that could reasonably be expected to cause or result in any stabilization or manipulation of the price of the Stock.

(k) *Exchange Listing.* The Company will use its reasonable best efforts to list, subject to notice of issuance, the Shares on the Nasdaq Market.

5. Certain Agreements of the Underwriters. Each Underwriter hereby represents and agrees that:

(a) It has not used, authorized use of, referred to or participated in the planning for use of, and will not use, authorize use of, refer to or participate in the planning for use of, any “free writing prospectus,” as defined in Rule 405 under the Securities Act (which term includes use of any written information furnished to the Commission by the Company and not incorporated by reference into the Registration Statement and any press release issued by the Company) other than (i) a free writing prospectus that contains no “issuer information” (as defined in Rule 433(h)(2) under the Securities Act) that was not included (including through incorporation by reference) in the Preliminary Prospectus or a previously filed Issuer Free Writing Prospectus, (ii) any Issuer Free Writing Prospectus listed on Annex B or prepared pursuant to Section 3(c) or Section 4(c) above (including any electronic road show), or (iii) any free writing prospectus prepared by such underwriter and approved by the Company in advance in writing (each such free writing prospectus referred to in clauses (i) or (iii), an “Underwriter Free Writing Prospectus”).

(b) It has not and will not, without the prior written consent of the Company, use any free writing prospectus that contains the final terms of the Shares unless such terms have previously been included in a free writing prospectus filed with the Commission; *provided* that Underwriters may use a term sheet substantially in the form of Annex A hereto without the consent of the Company; *provided further* that any Underwriter using such term sheet shall notify the Company, and provide a copy of such term sheet to the Company, prior to, or substantially concurrently with, the first use of such term sheet.

(c) It is not subject to any pending proceeding under Section 8A of the Securities Act with respect to the offering (and will promptly notify the Company if any such proceeding against it is initiated during the Prospectus Delivery Period).

6. Conditions of Underwriters’ Obligations. The obligation of each Underwriter to purchase the Underwritten Shares on the Closing Date or the Option Shares on the Additional Closing Date, as the case may be, as provided herein is subject to the performance by the Company of its covenants and other obligations hereunder and to the following additional conditions:

(a) *Registration Compliance; No Stop Order.* No order suspending the effectiveness of the Registration Statement shall be in effect, and no proceeding for such purpose or pursuant to Section 8A under the Securities Act shall be pending before or threatened by the Commission; the Company shall not have received a notice of objection of the Commission pursuant to Rule 401(g)(2) under the Securities Act; the Prospectus and each Issuer Free Writing Prospectus shall have been timely filed with the Commission under the Securities Act (in the case of an Issuer Free Writing Prospectus, to the extent required by Rule 433 under the Securities Act) and in accordance with Section 4(a) hereof; and all requests by the Commission for additional information shall have been complied with to the reasonable satisfaction of the Representative.

(b) *Representations and Warranties.* The representations and warranties of the Company contained herein shall be true and correct on the date hereof and on and as of the Closing Date or the Additional Closing Date, as the case may be; and the statements of the Company and its officers made in any certificates delivered pursuant to this Agreement shall be true and correct on and as of the Closing Date or the Additional Closing Date, as the case may be.

(c) *No Downgrade.* Subsequent to the earlier of (A) the Applicable Time and (B) the execution and delivery of this Agreement, if there are any debt securities or preferred stock of, or guaranteed by, the Company or any of its subsidiaries that are rated by a “nationally recognized statistical rating organization,” as such term is defined in Section 3(a)(62) of the Exchange Act, (i) no downgrading shall have occurred in the rating accorded any such debt securities or preferred stock and (ii) no such organization shall have publicly announced that it has under surveillance or review, or has changed its outlook with respect to, its rating of any such debt securities or preferred stock (other than an announcement with positive implications of a possible upgrading).

(d) *No Material Adverse Change.* Subsequent to the execution and delivery of this Agreement, no event or condition of a type described in Section 3(g)(ii) hereof shall have occurred or shall exist, which event or condition is not described in the Pricing Disclosure Package (excluding any amendment or supplement thereto) and the Prospectus (excluding any amendment or supplement thereto) and the effect of which in the judgment of the Representative makes it impracticable or inadvisable to proceed with the offering, sale or delivery of the Shares on the Closing Date or the Additional Closing Date, as the case may be, on the terms and in the manner contemplated by this Agreement, the Pricing Disclosure Package and the Prospectus.

(e) *Officer's Certificate.* The Representative shall have received on and as of the Closing Date or the Additional Closing Date, as the case may be, a certificate of the principal financial officer or principal accounting officer of the Company and one additional senior executive officer of the Company who is reasonably satisfactory to the Representative (i) confirming that such officers have carefully reviewed the Registration Statement, the Pricing Disclosure Package and the Prospectus and, to the knowledge of such officers, the representations set forth in Sections 3(b) and 3(d) hereof are true and correct, (ii) confirming that the other representations and warranties of the Company in this Agreement are true and correct and that the Company has complied in all material respects with all agreements and satisfied in all material respects all conditions on its part to be performed or satisfied hereunder at or prior to the Closing Date or the Additional Closing Date, as the case may be, and (iii) to the effect set forth in paragraphs (a) and (d) above.

(f) *Comfort Letters.* On the date of this Agreement and on the Closing Date or the Additional Closing Date, as the case may be, PricewaterhouseCoopers LLP shall have furnished to the Representative, at the request of the Company, letters, dated the respective dates of delivery thereof and addressed to the Underwriters, in form and substance reasonably satisfactory to the Representative, containing statements and information of the type customarily included in accountants' “comfort letters” to underwriters with respect to the financial statements and certain financial information contained or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus; provided that the letter delivered on the Closing Date or the Additional Closing Date, as the case may be, shall use a “cut-off” date no more than three business days prior to such Closing Date or such Additional Closing Date, as the case may be.

(g) *Opinion and 10b-5 Statement of U.S. Counsel for the Company.* Goodwin Procter LLP, U.S. outside counsel for the Company, shall have furnished to the Representative, at the request of the Company, its written opinion and 10b-5 statement, dated the Closing Date or the Additional Closing Date, as the case may be, and addressed to the Underwriters, in form and substance reasonably satisfactory to the Representative, to the effect set forth in Exhibit A hereto.

(h) *Opinion of IP Counsel for the Company.* (i) McCarter & English LLP, Intellectual Property Counsel for the Company, (ii) Lando & Anastasi, Intellectual Property Counsel for the Company, and (iii) Steven Bossone, Vice President of the Company's Intellectual Property Department, shall each have furnished to the Representative, at the request of the Company, their written opinion dated the Closing Date, or the Additional Closing Date, as the case may be, with respect to such matters as the Representative may reasonably request.

(i) *Opinion and 10b-5 Statement of Counsel for the Underwriters.* The Representative shall have received on and as of the Closing Date or the Additional Closing Date, as the case may be, an opinion and 10b-5 statement of Davis Polk & Wardwell LLP, counsel for the Underwriters, with respect to such matters as the Representative may reasonably request, and such counsel shall have received such documents and information as they may reasonably request to enable them to pass upon such matters.

(j) *PFO Certificate.* The Representative shall have received on the date of this Agreement and on Closing Date or the Additional Closing Date, as the case may be, a certificate of the principal financial officer of the Company to the effect set forth on Exhibit B.

(k) *No Legal Impediment to Issuance.* No action shall have been taken and no statute, rule, regulation or order shall have been enacted, adopted or issued by any federal, state or foreign governmental or regulatory authority that would, as of the Closing Date or the Additional Closing Date, as the case may be, prevent the issuance or sale of the Shares; and no injunction or order of any federal, state or foreign court shall have been issued that would, as of the Closing Date or the Additional Closing Date, as the case may be, prevent the issuance or sale of the Shares.

(l) *Good Standing.* The Representative shall have received on and as of the Closing Date or the Additional Closing Date, as the case may be, satisfactory evidence of the good standing of the Company and its U.S. subsidiaries in their respective jurisdictions of organization and their good standing as foreign entities in such other jurisdictions as the Representative may reasonably request, in each case in writing or any standard form of telecommunication from the appropriate governmental authorities of such jurisdictions.

(m) *Exchange Listing.* The Shares to be delivered on the Closing Date or Additional Closing Date, as the case may be, shall have been approved for listing on the Nasdaq Market, subject to official notice of issuance.

(n) *Lock-up Agreements.* The "lock-up" agreements, each substantially in the form of Annex C hereto, between Barclays Capital Inc. and (1) the officers and directors of the Company and (2) Genzyme, relating to sales and certain other dispositions of shares of Stock or certain other securities, delivered to you on or before the date hereof, shall be in full force and effect on the Closing Date or Additional Closing Date, as the case may be.

(o) *Additional Documents.* On or prior to the Closing Date or the Additional Closing Date, as the case may be, the Company shall have furnished to the Representative such further certificates and documents as the Representative may reasonably request.

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

7. Indemnification and Contribution.

(a) *Indemnification of the Underwriters.* The Company agrees to indemnify and hold harmless each Underwriter, its affiliates, directors and officers and each person, if any, who controls such Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, from and against any and all losses, claims, damages and liabilities (including, without limitation, reasonable legal fees and other reasonable expenses incurred in connection with any suit, action or proceeding or any claim asserted, as such fees and expenses are incurred), joint or several, that arise out of, or are based upon, (i) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement or caused by any omission or alleged omission to state therein a material fact required to be stated therein or necessary in order to make the statements therein, not misleading, (ii) or any untrue statement or alleged untrue statement of a material fact contained in the Prospectus (or any amendment or supplement thereto), any Issuer Free Writing Prospectus, any “issuer information” filed or required to be filed pursuant to Rule 433(d) under the Securities Act, any road show as defined in Rule 433(h) under the Securities Act (a “road show”) or any Pricing Disclosure Package (including any Pricing Disclosure Package that has subsequently been amended), or caused by any omission or alleged omission to state therein a material fact necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading, in each case except insofar as such losses, claims, damages or liabilities arise out of, or are based upon, any untrue statement or omission or alleged untrue statement or omission made in reliance upon and in conformity with any information relating to any Underwriter furnished to the Company in writing by such Underwriter through the Representative expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in subsection (b) below.

(b) *Indemnification of the Company.* Each Underwriter agrees, severally and not jointly, to indemnify and hold harmless the Company, its directors, its officers who signed the Registration Statement and each person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act to the same extent as the indemnity set forth in paragraph (a) above, but only with respect to any losses, claims, damages or liabilities that arise out of, or are based upon, any untrue statement or omission or alleged untrue statement or omission made in reliance upon and in conformity with any information relating to such Underwriter furnished to the Company in writing by such Underwriter through the Representative expressly for use in the Registration Statement, the Prospectus (or any amendment or supplement thereto), any Issuer Free Writing Prospectus, any road show or any Pricing Disclosure Package (including any Pricing Disclosure Package that has subsequently been amended), it being understood and agreed upon that the only such information furnished by any Underwriter consists of the following information in the Prospectus furnished on behalf of each Underwriter: the concession figure appearing in the fourth paragraph, the information regarding electronic and internet distribution appearing in the eighth paragraph, the information contained in the seventeenth paragraph describing passive market making, in each case under the caption “Underwriting”.

(c) *Notice and Procedures.* If any suit, action, proceeding (including any governmental or regulatory investigation), claim or demand shall be brought or asserted against any person in respect of which indemnification may be sought pursuant to either paragraph (a) or (b) above, such person (the “Indemnified Person”) shall promptly notify the person against whom such indemnification may be sought (the “Indemnifying Person”) in writing; provided that the failure to notify the Indemnifying Person shall not relieve it from any liability that it may have under paragraph (a) or (b) above except to the extent that it has been materially prejudiced (through the forfeiture of substantive rights or defenses) by such failure;

and provided, further, that the failure to notify the Indemnifying Person shall not relieve it from any liability that it may have to an Indemnified Person otherwise than under paragraph (a) or (b) above. If any such proceeding shall be brought or asserted against an Indemnified Person and it shall have notified the Indemnifying Person thereof, the Indemnifying Person shall retain counsel reasonably satisfactory to the Indemnified Person (who shall not, without the consent of the Indemnified Person, be counsel to the Indemnifying Person) to represent the Indemnified Person in such proceeding and shall pay the reasonable fees and expenses of such counsel related to such proceeding, as incurred. In any such proceeding, any Indemnified Person shall have the right to retain its own counsel, but the fees and expenses of such counsel shall be at the expense of such Indemnified Person unless (i) the Indemnifying Person and the Indemnified Person shall have mutually agreed to the contrary; (ii) the Indemnifying Person has failed within a reasonable time to retain counsel reasonably satisfactory to the Indemnified Person; (iii) the Indemnified Person shall have reasonably concluded that there may be legal defenses available to it that are different from or in addition to those available to the Indemnifying Person; or (iv) the named parties in any such proceeding (including any impleaded parties) include both the Indemnifying Person and the Indemnified Person and representation of both parties by the same counsel would be inappropriate due to actual or potential differing interest between them. It is understood and agreed that the Indemnifying Person shall not, in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the fees and expenses of more than one separate firm (in addition to any local counsel) for all Indemnified Persons, and that all such fees and expenses shall be paid or reimbursed as they are incurred. Any such separate firm for any Underwriter, its affiliates, directors and officers and any control persons of such Underwriter shall be designated in writing by Barclays Capital Inc. and any such separate firm for the Company, its directors, its officers who signed the Registration Statement and any control persons of the Company shall be designated in writing by the Company. The Indemnifying Person shall not be liable for any settlement of any proceeding effected without its written consent, but if settled with such consent or if there be a final judgment for the plaintiff, the Indemnifying Person agrees to indemnify each Indemnified Person from and against any loss or liability by reason of such settlement or judgment. Notwithstanding the foregoing sentence, if at any time an Indemnified Person shall have requested that an Indemnifying Person reimburse the Indemnified Person for fees and expenses of counsel as contemplated by this paragraph, the Indemnifying Person shall be liable for any settlement of any proceeding effected without its written consent if (i) such settlement is entered into more than 30 days after receipt by the Indemnifying Person of such request and (ii) the Indemnifying Person shall not have reimbursed the Indemnified Person in accordance with such request prior to the date of such settlement. No Indemnifying Person shall, without the written consent of the Indemnified Person, effect any settlement of any pending or threatened proceeding in respect of which any Indemnified Person is or could have been a party and indemnification could have been sought hereunder by such Indemnified Person, unless such settlement (x) includes an unconditional release of such Indemnified Person, in form and substance reasonably satisfactory to such Indemnified Person, from all liability on claims that are the subject matter of such proceeding and (y) does not include any statement as to or any admission of fault, culpability or a failure to act by or on behalf of any Indemnified Person.

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

the one hand, and the Underwriters on the other, shall be deemed to be in the same respective proportions as the net proceeds (before deducting expenses) received by the Company from the sale of the Shares and the total underwriting discounts and commissions received by the Underwriters in connection therewith, in each case as set forth in the table on the cover of the Prospectus, bear to the aggregate offering price of the Shares. The relative fault of the Company, on the one hand, and the Underwriters on the other, shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company or by the Underwriters and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission.

(e) *Limitation on Liability.* The Company and the Underwriters agree that it would not be just and equitable if contribution pursuant to paragraph 7(d) above 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 that does not take account of the equitable considerations referred to in paragraph (d) above. The amount paid or payable by an Indemnified Person as a result of the losses, claims, damages and liabilities referred to in paragraph 7(d) above shall be deemed to include, subject to the limitations set forth above, any legal or other expenses incurred by such Indemnified Person in connection with any such action or claim. Notwithstanding the provisions of paragraphs 7(d) and 7(e), in no event shall an Underwriter be required to contribute any amount in excess of the amount by which the total underwriting discounts and commissions received by such Underwriter with respect to the offering of the Shares exceeds the amount of any damages that such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters' obligations to contribute pursuant to paragraphs 7(d) and 7(e) are several in proportion to their respective purchase obligations hereunder and not joint.

(f) *Non-Exclusive Remedies.* The remedies provided for in this Section 7 are not exclusive and shall not limit any rights or remedies which may otherwise be available to any Indemnified Person at law or in equity.

8. Effectiveness of Agreement. This Agreement shall become effective upon the execution and delivery hereof by the parties hereto.

9. Termination. This Agreement may be terminated in the absolute discretion of the Representative, by notice to the Company, if after the execution and delivery of this Agreement and prior to the Closing Date or, in the case of the Option Shares, prior to the Additional Closing Date (i) trading generally shall have been suspended or materially limited on or by any of the New York Stock Exchange, the American Stock Exchange, the Nasdaq Market, the Chicago Board Options Exchange, the Chicago Mercantile Exchange or the Chicago Board of Trade; (ii) trading of any securities issued or guaranteed by the Company shall have been suspended on any exchange or in any over-the-counter market; (iii) a general moratorium on commercial banking activities shall have been declared by federal or New York State authorities; or (iv) there shall have occurred any outbreak or escalation of hostilities or any change in financial markets or any calamity or crisis, either within or outside the United States, that, in the judgment of the Representative, is material and adverse and makes it impracticable or inadvisable to proceed with the offering, sale or delivery of the Shares on the Closing Date or the Additional Closing Date, as the case may be, on the terms and in the manner contemplated by this Agreement, the Pricing Disclosure Package and the Prospectus.

10. Defaulting Underwriter.

(a) If, on the Closing Date or the Additional Closing Date, as the case may be, any Underwriter defaults on its obligation to purchase the Shares that it has agreed to purchase hereunder on such date, the non-defaulting Underwriters may in their discretion arrange for the purchase of such Shares by other persons satisfactory to the Company on the terms contained in this Agreement. If, within 36 hours after any such default by any Underwriter, the non-defaulting Underwriters do not arrange for the purchase of such Shares, then the Company shall be entitled to a further period of 36 hours within which to procure other persons satisfactory to the non-defaulting Underwriters to purchase such Shares on such terms. If other persons become obligated or agree to purchase the Shares of a defaulting Underwriter, either the non-defaulting Underwriters or the Company may postpone the Closing Date or the Additional Closing Date, as the case may be, for up to five full business days in order to effect any changes that in the opinion of counsel for the Company or counsel for the Underwriters may be necessary in the Registration Statement and the Prospectus or in any other document or arrangement, and the Company agrees to promptly prepare any amendment or supplement to the Registration Statement and the Prospectus that effects any such changes. As used in this Agreement, the term "Underwriter" includes, for all purposes of this Agreement unless the context otherwise requires, any person not listed in Schedule 1 hereto that, pursuant to this Section 10, purchases Shares that a defaulting Underwriter agreed but failed to purchase.

(b) If, after giving effect to any arrangements for the purchase of the Shares of a defaulting Underwriter or Underwriters by the non-defaulting Underwriters and the Company as provided in paragraph (a) above, the aggregate number of Shares that remain unpurchased on the Closing Date or the Additional Closing Date, as the case may be, does not exceed one-eleventh of the aggregate number of Shares to be purchased on such date, then the Company shall have the right to require each non-defaulting Underwriter to purchase the number of Shares that such Underwriter agreed to purchase hereunder on such date plus such Underwriter's pro rata share (based on the number of Shares that such Underwriter agreed to purchase on such date) of the Shares of such defaulting Underwriter or Underwriters for which such arrangements have not been made.

(c) If, after giving effect to any arrangements for the purchase of the Shares of a defaulting Underwriter or Underwriters by the non-defaulting Underwriters and the Company as provided in paragraph (a) above, the aggregate number of Shares that remain unpurchased on the Closing Date or the Additional Closing Date, as the case may be, exceeds one-eleventh of the aggregate amount of Shares to be purchased on such date, or if the Company shall not exercise the right described in paragraph (b) above, then this Agreement or, with respect to any Additional Closing Date, the obligation of the Underwriters to purchase Shares on the Additional Closing Date shall terminate without liability on the part of the non-defaulting Underwriters. Any termination of this Agreement pursuant to this Section 10 shall be without liability on the part of the Company, except that the Company will continue to be liable for the payment of expenses as set forth in Section 11 hereof and except that the provisions of Section 7 hereof shall not terminate and shall remain in effect.

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

11. Payment of Expenses.

(a) Whether or not the transactions contemplated by this Agreement are consummated or this Agreement is terminated, the Company will pay or cause to be paid all costs and expenses incident to the performance of its obligations hereunder, including without limitation, (i) the costs incident to the authorization, issuance, sale, preparation and delivery of the Shares and any taxes payable in that connection;

(ii) the costs incident to the preparation, printing and filing under the Securities Act of the Registration Statement, the Preliminary Prospectus, any Issuer Free Writing Prospectus, any Pricing Disclosure Package and the Prospectus (including all exhibits, amendments and supplements thereto) and the distribution thereof; (iii) the fees and expenses of the Company's counsel and independent accountants; (v) the fees and expenses incurred in connection with the registration or qualification of the Shares under the state or foreign securities or blue sky laws of such jurisdictions as the Representative may designate and the preparation, printing and distribution of a Blue Sky Memorandum (including the related fees and expenses of counsel for the Underwriters); (vi) the cost of preparing stock certificates; (vii) the costs and charges of any transfer agent and any registrar; (viii) all expenses and application fees incurred in connection with any filing with, and clearance of the offering by, FINRA; (ix) all expenses incurred by the Company in connection with any "road show" presentation to potential investors; and (x) all expenses and application fees related to the listing of the Shares on the Nasdaq Market. It is understood, however, that except as provided in this Section 11, Section 7 entitled Indemnification and Contribution and the paragraph set forth below, the Underwriters will pay all of their own costs and expenses, including fees and disbursements of their counsel and stock transfer taxes payable on resale of any of the Shares by them.

(b) If (i) this Agreement is terminated pursuant to Section 9, (ii) the Company for any reason fails to tender the Shares for delivery to the Underwriters or (iii) the Underwriters decline to purchase the Shares for any reason permitted under this Agreement, the Company agrees to reimburse the Underwriters for all out-of-pocket costs and expenses (including the fees and expenses of their counsel) reasonably incurred by the Underwriters in connection with this Agreement and the offering contemplated hereby.

12. Persons Entitled to Benefit of Agreement. This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and the officers and directors and any controlling persons referred to in Section 7 hereof. Nothing in this Agreement is intended or shall be construed to give any other person any legal or equitable right, remedy or claim under or in respect of this Agreement or any provision contained herein. No purchaser of Shares from any Underwriter shall be deemed to be a successor merely by reason of such purchase.

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

14. Certain Defined Terms. For purposes of this Agreement, (a) except where otherwise expressly provided, the term "affiliate" has the meaning set forth in Rule 405 under the Securities Act; (b) the term "business day" means any day other than a day on which banks are permitted or required to be closed in New York City; and (c) the term "subsidiary" means any wholly owned subsidiary of the Company; and (d) the term "significant subsidiary" has the meaning set forth in Rule 1-02 of Regulation S-X under the Exchange Act.

15. Miscellaneous.

(a) *Authority of Barclays Capital Inc.* Any action by the Underwriters hereunder may be taken by Barclays Capital Inc. on behalf of the Underwriters, and any such action taken by Barclays Capital Inc. shall be binding upon the Underwriters.

(b) *Notices.* All notices and other communications hereunder shall be in writing and shall be deemed to have been duly given if mailed or transmitted and confirmed by any standard form of telecommunication. Notices to the Underwriters shall be given to Barclays Capital Inc., 745 Seventh Avenue, New York, New York 10019, Attention: Syndicate Registration (Fax: (646) 834-8133) and Notices to the Company shall be given to it at Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, Massachusetts 02142 (fax: 617-812-0353); Attention: Chief Financial Officer.

(c) *Patriot Act.* In accordance with the requirements of the USA Patriot Act (Title III of Pub. L. 107-56 (signed into law October 26, 2001)), the 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.

(d) *Governing Law.* This Agreement and any claim, controversy or dispute arising under or related to this Agreement shall be governed by and construed in accordance with the laws of the State of New York applicable to agreements made and to be performed in such state.

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

(f) *Amendments or Waivers.* No amendment or waiver of any provision of this Agreement, and no consent or approval to any departure therefrom, shall in any event be effective unless the same shall be in writing and signed by the parties hereto.

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

(h) *Recognition of the U.S. Special Resolution Regimes.*

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

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

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

“Covered Entity” means any of the following: (i) a “covered entity” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 252.82(b); (ii) a “covered bank” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 47.3(b); or (iii) a “covered FSI” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 382.2(b).

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

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

If the foregoing is in accordance with your understanding, please indicate your acceptance of this Agreement by signing in the space provided below.

Very truly yours,

ALNYLAM PHARMACEUTICALS, INC.

By: /s/ Manmeet S. Soni

Name: Manmeet S. Soni

Title: Chief Financial Officer

[Signature Page to Underwriting Agreement]

Accepted as of the date first written above.

BARCLAYS CAPITAL INC.

For itself and on behalf of the
several Underwriters listed
in Schedule I hereto.

BARCLAYS CAPITAL INC.

By: /s/ Aaron Schwimmer

Name: Aaron Schwimmer

Title: Managing Director

[Signature Page to Underwriting Agreement]

<u>Underwriter</u>	<u>Number of Shares</u>
Barclays Capital Inc.	5,000,000
Total	<u><u>5,000,000</u></u>

Form of Opinion and 10b-5 Letter of Goodwin Procter, LLP, Counsel for the Company

CERTIFICATE OF THE PRINCIPAL FINANCIAL OFFICER

ALNYLAM PHARMACEUTICALS, INC.

January [], 2019

Reference is hereby made to (i) the Underwriting Agreement, dated January [], 2019 (the "Underwriting Agreement") between Alnylam Pharmaceuticals, Inc. (the "Company") and Barclays Capital Inc., as the underwriter (the "Underwriter") and (ii) the [Preliminary] Prospectus dated January [], 2019 (the "[Preliminary] Prospectus") related to the offering (the "Offering") of [] shares of the Company's common stock and, at the option of the Underwriter, up to an additional [] shares of common stock of the Company.

In connection with the Offering and to assist the Underwriter in its investigation of the affairs of the Company, I, in my capacity as the principal financial officer of the Company, pursuant to Section 6(j) of the Underwriting Agreement, hereby certify that, to the best of my knowledge after reasonable inquiry:

1. The estimate of cash, cash equivalents and marketable debt securities and restricted investments excluding equity securities of the Company as of December 31, 2018 (the "Cash Information") contained in the [Preliminary] Prospectus under the caption "Prospectus Supplement Summary—Key 2018 Highlights" (a) is derived from the books and records of the Company and its subsidiaries, a summary of which is attached hereto as Exhibit A, and (b) fairly presents in all material respects the Company's preliminary estimates of the cash, cash equivalents and marketable debt securities and restricted investments excluding equity securities of the Company as of December 31, 2018. Nothing has come to my attention that would cause me to believe that the Company's cash, cash equivalents and marketable debt securities and restricted investments excluding equity securities as of December 31, 2018 would be inconsistent in any material respect with the Cash Information.
2. Nothing has come to my attention that would cause me to believe that as of the date hereof, there has been any material change in the capital stock, any material increase in long-term debt, or any material decreases in consolidated net current assets or stockholders' equity of the Company and its subsidiaries as compared to the amounts presented as of September 30, 2018 in the [Preliminary] Prospectus or the documents incorporated by reference therein, except for changes, increases or decreases the [Preliminary] Prospectus or the documents incorporated by reference therein discloses have occurred or may have occurred, which disclosures include, for the avoidance of doubt, the information referenced in paragraph 1 above.

[Signature page follows]

¹ To be delivered at pricing and closing.

IN WITNESS WHEREOF, the undersigned has signed his name as of the date first written above.

Name: Manmeet Soni
Title: Chief Financial Officer

Pricing Term Sheet

None.

a. Pricing Disclosure Package

None.

b. Pricing Information Provided Orally by Underwriters

Public Offering Price: \$77.50

Number of Underwritten Shares: 5,000,000

Number of Option Shares: 750,000

FORM OF LOCK-UP AGREEMENT

January [], 2019

Barclays Capital Inc.
745 Seventh Avenue
New York, New York 10019

As Representative of
the several Underwriters listed in
Schedule I to the Underwriting
Agreement referred to below

Re: ALNYLAM PHARMACEUTICALS, INC.—Public Offering

Ladies and Gentlemen:

The undersigned understands that you (the “Representative”) propose to enter into an Underwriting Agreement (the “Underwriting Agreement”), as representative of the several underwriters to be named therein (the “Underwriters”), with Alnylam Pharmaceuticals, Inc., a Delaware corporation (the “Company”), providing for the public offering (the “Public Offering”) of shares of Common Stock, \$0.01 per share par value, of the Company (such shares of Common Stock to be sold in the Public Offering, the “Securities”). Capitalized terms used herein and not otherwise defined shall have the meanings set forth in the Underwriting Agreement.

In consideration of the Underwriters’ agreement to purchase and make the Public Offering of the Securities, and for other good and valuable consideration receipt of which is hereby acknowledged, the undersigned hereby agrees that, without the prior written consent of Barclays Capital Inc., the undersigned will not, during the period ending 60 days after the date of the prospectus relating to the Public Offering (the “Prospectus”), (1) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock, \$0.01 per share par value, of the Company (the “Common Stock”) or any securities convertible into or exercisable or exchangeable for Common Stock (including without limitation, Common Stock or such other securities which may be deemed to be beneficially owned by the undersigned in accordance with the rules and regulations of the Securities and Exchange Commission and securities which may be issued upon exercise of a stock option or warrant), or publicly disclose the intention to make any offer, sale, pledge or disposition, (2) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the Common Stock or such other securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of Common Stock or such other securities, in cash or otherwise or (3) 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, in each case other than (A) any Securities to be sold by the undersigned pursuant to the Underwriting Agreement, (B) transfers of shares of Common Stock or such other securities as a bona fide gift or gifts, and (C) transfers or dispositions of shares of Common Stock or such other securities to any trust for the direct or indirect benefit of the undersigned or the immediate family of the undersigned in a transaction

Annex C-1

not involving a disposition for value, (D) transfers or dispositions of shares of Common Stock or such other securities to any corporation, partnership, limited liability company or other entity all of the beneficial ownership interests of which are held by the undersigned or the immediate family of the undersigned in a transaction not involving a disposition for value, (E) transfers or dispositions of shares of Common Stock or such other securities by will, other testamentary document or intestate succession to the legal representative, heir, beneficiary or a member of the immediate family of the undersigned, and (F) distributions of shares of Common Stock or such other securities to partners, members or stockholders of the undersigned; provided that in the case of any transfer, disposition or distribution pursuant to clause (B), (C), (D), (E) or (F), each transferee, donee or distributee shall execute and deliver to the Representative a lock-up letter in the form of this Letter Agreement; and provided, further, that in the case of any transfer, disposition or distribution pursuant to clause (B), (C), (D) or (F), no filing by any party (donor, donee, transferor or transferee) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or other public announcement reporting a reduction in the beneficial ownership of Common Stock held by the undersigned shall be required or shall be made voluntarily in connection with such transfer, disposition or distribution (other than a filing on a Form 5 made after the expiration of the 60-day period referred to above). For purposes of this Letter Agreement, "immediate family" shall mean any relationship by blood, marriage or adoption, not more remote than first cousin. Furthermore, notwithstanding the restrictions imposed by this Letter Agreement, the undersigned may, without the prior written consent of Barclays Capital Inc., (i) exercise an option to purchase shares of Common Stock granted under any stock incentive plan or stock purchase plan of the Company, provided that the underlying shares of Common Stock shall continue to be subject to the restrictions on transfer set forth in this Letter Agreement[, (ii) sell shares of Common Stock under a trading plan, as in effect as of the date hereof, established pursuant to Rule 10b5-1 under the Exchange Act,]² (iii) establish a trading plan pursuant to Rule 10b5-1 under the Exchange Act for the transfer of Common Stock, provided that such plan does not provide for any transfers of Common Stock during the 60-day restricted period or any extension thereof pursuant to this Letter Agreement and provided further that no filing with the United States Securities and Exchange Commission or other public announcement shall be required or voluntarily made by the undersigned or any other person in connection therewith, and (iv) transfer or dispose of shares of Common Stock acquired on the open market following the Public Offering, provided that no filing by any party under the Exchange Act or other public announcement reporting a reduction in the beneficial ownership of Common Stock held by the undersigned shall be required or shall be made voluntarily in connection with such transfer or disposition (other than a filing on Form 5 made after the expiration of the 60-day period referred to above).

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

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

² Delete for any director or officer who does not currently have a 10b5-1 plan.

This Letter Agreement shall automatically terminate upon the earliest to occur, if any, of: (1) either the Representative, on the one hand, or the Company, on the other hand, advising the other in writing, prior to the execution of the Underwriting Agreement, that it has determined not to proceed with the Public Offering, (2) termination of the Underwriting Agreement before the sale of any Shares to the Underwriters or (3) January 31, 2019, in the event that the Public Offering has not been consummated by that date. The undersigned understands that the Underwriters will enter into the Underwriting Agreement and proceed with the Public Offering in reliance upon this Letter Agreement.

This Letter Agreement and any claim, controversy or dispute arising under or related to this Letter Agreement shall be governed by and construed in accordance with the laws of the State of New York, without regard to the conflict of laws principles thereof.

Very truly yours,

By: _____
Name:
Title:

Annex C-3

[LETTERHEAD OF GOODWIN PROCTER LLP]

January 15, 2019

Alnylam Pharmaceuticals, Inc.
300 Third Street
Cambridge, Massachusetts 02142

Re: Securities Registered under Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to you in connection with your filing of a Registration Statement on Form S-3 (File No. 333-217688) (as amended or supplemented, the "Registration Statement") filed on May 5, 2017 with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act") and the prospectus supplement (the "Prospectus Supplement") dated January 14, 2019 by the Company with the Commission pursuant to Rule 424(b) under the Securities Act. The Registration Statement became effective upon filing on May 5, 2017. The Prospectus Supplement relates to the offering by the Company of up to 5,750,000 shares of the Company's Common Stock, par value \$0.01 per share (the "Shares") covered by the Registration Statement. The Shares include an option to purchase additional shares granted to the underwriter of the offering to purchase 750,000 Shares. The Shares are being sold to the underwriter named in, and pursuant to, an Underwriting Agreement between the Company and such underwriter, dated January 14, 2019 (the "Underwriting Agreement"). We understand that the Shares are to be offered and sold in the manner described in the Prospectus Supplement.

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinion set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinion set forth below, on certificates of officers of the Company.

The opinion set forth below is limited to the Delaware General Corporation Law.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized and, upon issuance and delivery against payment therefor in accordance with the terms of the Underwriting Agreement, the Shares will be validly issued, fully paid and non-assessable.

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement and to the references to our firm under the caption "Legal Matters" in the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ Goodwin Procter LLP
GOODWIN PROCTER LLP

**Contacts:****Alnylam Pharmaceuticals, Inc.**

Christine Regan Lindenboom

(Investors and Media)

617-682-4340

Josh Brodsky

(Investors)

617-551-8276

Manmeet Soni

(Investors)

617-682-4260

Alnylam Pharmaceuticals Prices Public Offering of Common Stock

CAMBRIDGE, Mass. January 14, 2019 – Alnylam Pharmaceuticals, Inc. (Nasdaq: ALNY), the leading RNAi therapeutics company, today announced the pricing of an underwritten public offering of 5,000,000 shares of its common stock at a public offering price of \$77.50 per share. The gross proceeds to Alnylam from the offering, before deducting the underwriting discounts and commissions and other estimated offering expenses, are expected to be approximately \$387,500,000. The offering is expected to close on or about January 17, 2019, subject to the satisfaction of customary closing conditions. In addition, Alnylam has granted the underwriter a 30-day option to purchase up to an additional 750,000 shares of its common stock solely to cover over-allotments. All of the shares in the offering are to be sold by Alnylam.

Barclays Capital Inc. is acting as sole book-running manager for the offering.

Alnylam intends to use the net proceeds from this offering for general corporate purposes, including advancing the ongoing commercialization of ONPATTRO® (patisiran) in the United States and Europe and, assuming favorable regulatory reviews, the potential expansion into additional countries, development efforts directed towards the potential expansion of the ONPATTRO label in the United States, continuing to advance its late stage clinical pipeline and preparing for the potential global launch of several additional products, continuing investment in its early stage pipeline, including its CNS and ocular programs, clinical trial costs and other research and development expenses, continued growth of its manufacturing, quality, commercial and medical affairs capabilities to support its commercialization efforts, potential acquisitions, investments or licenses in businesses, products or technologies that are complementary to Alnylam's business, working capital, capital expenditures and general and administrative expenses.

The securities described above are being offered by Alnylam pursuant to an automatically effective shelf registration statement that Alnylam previously filed with the Securities and Exchange Commission (SEC).

A registration statement (including a base prospectus and a preliminary prospectus supplement) relating to these securities has been filed with the SEC and has become effective. Before you invest, you should read these and other documents Alnylam has filed with the SEC for more complete information about Alnylam and this offering. You may get these documents for free by visiting EDGAR on the SEC website at www.sec.gov.

The offering will be made only by means of a prospectus supplement and related prospectus. Copies of the preliminary prospectus supplement and, when available, the final prospectus supplement and the accompanying base prospectus relating to the offering may be obtained by contacting Barclays Capital Inc., c/o Broadridge Financial Solutions, 1155 Long Island Avenue, Edgewood, New York 11717; barclaysprospectus@broadridge.com (phone 888-603-5847).

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

About Alnylam Pharmaceuticals

Alnylam (Nasdaq:ALNY) is leading the translation of RNA interference (RNAi) into a new class of innovative medicines with the potential to improve the lives of people afflicted with rare genetic, cardio-metabolic, hepatic infectious, and central nervous system (CNS)/ocular diseases. Based on Nobel Prize-winning science, RNAi therapeutics represent a powerful, clinically validated approach for the treatment of a wide range of severe and debilitating diseases. Founded in 2002, Alnylam is delivering on a bold vision to turn scientific possibility into reality, with a robust discovery platform. ONPATPRO® (patisiran) lipid complex injection, available in the U.S. for the treatment of the polyneuropathy of hereditary transthyretin-mediated (hATTR) amyloidosis in adults, is Alnylam's first U.S. FDA-approved RNAi therapeutic. In the EU, ONPATPRO is approved for the treatment of hATTR amyloidosis in adults with stage 1 or stage 2 polyneuropathy. Alnylam has a deep pipeline of investigational medicines, including three product candidates that are in late-stage development. Looking forward, Alnylam will continue to execute on its "Alnylam 2020" strategy of building a multi-product, commercial-stage biopharmaceutical company with a sustainable pipeline of RNAi-based medicines to address the needs of patients who have limited or inadequate treatment options. Alnylam employs over 1,000 people worldwide and is headquartered in Cambridge, MA.

Alnylam Forward-Looking Statements

Statements in this release concerning Alnylam's future expectations, plans and prospects, including, without limitation, statements about Alnylam's proposed public offering, intended use of proceeds and Alnylam's expectations regarding future company achievements, constitute forward-looking statements for the purposes of the safe harbor provisions under The Private Securities Litigation Reform Act of 1995. Actual results and future plans may differ materially from those indicated by these forward-looking statements as a result of various important factors, including, without limitation, risks related to fluctuations in our stock price, those associated with market conditions and the satisfaction of customary closing conditions related to the proposed offering, as well as those risks more fully discussed in the "Risk Factors" filed with Alnylam's most recent Quarterly Report on Form 10-Q filed with the SEC and in other filings

that Alnylam makes with the SEC. There can be no assurance that Alnylam will be able to complete the proposed public offering on the anticipated terms, or at all. You should not place undue reliance on these forward-looking statements. In addition, any forward-looking statements represent Alnylam's views only as of today and should not be relied upon as representing its views as of any subsequent date. Alnylam explicitly disclaims any obligation, except to the extent required by law, to update any forward-looking statements.