

ALNYLAM PHARMACEUTICALS, INC.

Form DEF 14A

April 22, 2009

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**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
SCHEDULE 14A
(Rule 14a-101)
INFORMATION REQUIRED IN PROXY STATEMENT
SCHEDULE 14A INFORMATION**

**Proxy Statement Pursuant to Section 14(a) of the Securities
Exchange Act of 1934**

Filed by the Registrant

Filed by a Party other than the Registrant

Check the appropriate box:

Preliminary Proxy Statement

Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))

Definitive Proxy Statement

Definitive Additional Materials

Soliciting Material Pursuant to §240.14a-12

ALNYLAM PHARMACEUTICALS, INC.

(Name of Registrant as Specified in Its Charter)

(Name of Person(s) Filing Proxy Statement, if Other Than the Registrant)

Payment of Filing Fee (Check the appropriate box):

No fee required.

Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.

(1) Title of each class of securities to which transaction applies:

(2) Aggregate number of securities to which transaction applies:

(3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):

(4) Proposed maximum aggregate value of transaction:

(5) Total fee paid:

- o Fee paid previously with preliminary materials: _____
- o Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.

(1) Amount previously paid:

(2) Form, Schedule or Registration Statement No.:

(3) Filing Party:

(4) Date Filed:

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**ALNYLAM PHARMACEUTICALS, INC.
300 THIRD STREET
CAMBRIDGE, MASSACHUSETTS 02142**

**NOTICE OF 2009 ANNUAL MEETING OF STOCKHOLDERS
To Be Held On June 11, 2009**

To our Stockholders:

NOTICE IS HEREBY GIVEN that the Annual Meeting of Stockholders of Alnylam Pharmaceuticals, Inc. will be held on Thursday, June 11, 2009 at 9:00 a.m., Eastern Time, at the offices of Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, Massachusetts. At the meeting, stockholders will consider and vote on the following matters:

1. To elect three (3) members to our board of directors, each to serve as a Class II director for a term ending in 2012, or until his or her successor has been duly elected and qualified;
2. To approve the amendment and restatement of our 2004 Stock Incentive Plan;
3. To approve the adoption of our 2009 Stock Incentive Plan; and
4. To ratify the appointment of PricewaterhouseCoopers LLP, an independent registered public accounting firm, as our independent auditors for the fiscal year ending December 31, 2009.

The stockholders will also act on any other business that may properly come before the annual meeting or any adjournment thereof.

Stockholders of record at the close of business on April 15, 2009, the record date for the annual meeting, are entitled to notice of, and to vote at, the annual meeting or any adjournment thereof. Your vote is important regardless of the number of shares you own. If you are a stockholder of record, please vote in one of these three ways:

Vote Over the Internet, by going to the website of our tabulator, Computershare Trust Company, N.A., at www.investorvote.com/ALNY and following the instructions for Internet voting shown on the enclosed proxy card;

Vote By Telephone, by calling 1-800-652-VOTE (8683) and following the recorded instructions; or

Vote By Mail, by completing and signing your enclosed proxy card and mailing it in the enclosed postage prepaid envelope. If you vote by Internet or telephone, please do not mail your proxy.

If your shares are held in street name, that is, held for your account by a broker or other nominee, you will receive instructions from the holder of record that you must follow for your shares to be voted.

We encourage all stockholders to attend the annual meeting in person. You may obtain directions to the location of the annual meeting on our website at www.alnylam.com. Whether or not you plan to attend the annual meeting in person,

we hope you will take the time to vote your shares.

By Order of the Board of Directors

John M. Maraganore, Ph.D.
Chief Executive Officer

Cambridge, Massachusetts
April 22, 2009

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**ALNYLAM PHARMACEUTICALS, INC.
300 THIRD STREET
CAMBRIDGE, MASSACHUSETTS 02142**

PROXY STATEMENT

**for the 2009 Annual Meeting of Stockholders
to be held on June 11, 2009**

This proxy statement and the enclosed proxy card are being furnished in connection with the solicitation of proxies by the board of directors of Alnylam Pharmaceuticals, Inc. for use at the Annual Meeting of Stockholders to be held on Thursday, June 11, 2009 at 9:00 a.m., Eastern Time, at the offices of Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, Massachusetts, and at any adjournment thereof.

All proxies will be voted in accordance with the instructions contained in those proxies. If no choice is specified, the proxies will be voted in favor of the matters set forth in the accompanying Notice of Meeting.

Our Annual Report to Stockholders and our Annual Report on Form 10-K for the fiscal year ended December 31, 2008 are being mailed to stockholders with the mailing of these proxy materials on or about April 24, 2009.

**Important Notice Regarding the Availability of Proxy Materials for
the Annual Meeting of Stockholders to be Held on June 11, 2009:**

This proxy statement and our 2008 Annual Report to Stockholders are available for viewing, printing and downloading at www.alnylam.com/2009AnnualMeeting.

A copy of our Annual Report on Form 10-K for the fiscal year ended December 31, 2008, as filed with the Securities and Exchange Commission, or SEC, will be furnished without charge to any stockholder upon written request to Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, Massachusetts 02142, Attention: Investor Relations and Corporate Communications. This proxy statement and our Annual Report on Form 10-K for the fiscal year ended December 31, 2008 are also available on the SEC's website at www.sec.gov.

IMPORTANT INFORMATION ABOUT THE ANNUAL MEETING AND VOTING

- Q. Why did I receive these proxy materials?**
- A.** We are providing these proxy materials to you in connection with the solicitation by our board of directors of proxies to be voted at our 2009 annual meeting of stockholders to be held at our offices at 300 Third Street, Cambridge, Massachusetts on Thursday, June 11, 2009 at 9:00 a.m., Eastern Time. As a stockholder of Alnylam, you are invited to attend our annual meeting and are entitled and requested to vote on the proposals described in this proxy statement.

- Q. Who can vote at the annual meeting?**
- A.** To be able to vote, you must have been a stockholder of record at the close of business on April 15, 2009, the record date for our annual meeting. The holders of the 41,443,690 shares of our common stock outstanding as of the record date are entitled to vote at the annual meeting.

If you were a stockholder of record on that date, you are entitled to vote all of the shares that you held on that date at the annual meeting and at any postponements or adjournments thereof.

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Q. What are the voting rights of the holders of common stock? **A.** Each outstanding share of our common stock will be entitled to one vote on each matter considered at the annual meeting.

Q. How do I vote? **A. If your shares are registered directly in your name, you may vote:**

(1) **Over the Internet:** Go to the website of our tabulator, Computershare Trust Company, N.A., at www.investorvote.com/ALNY. Use the vote control number printed on your enclosed proxy card to access your account and vote your shares. You must specify how you want your shares voted or your Internet vote cannot be completed and you will receive an error message. Your shares will be voted according to your instructions. You must submit your Internet proxy before 11:59 p.m., Eastern Time, on June 10, 2009, the day before the annual meeting, for your proxy to be valid and your vote to count.

(2) **By Telephone:** Call 1-800-652-VOTE (8683), toll free from the United States, Canada and Puerto Rico, and follow the recorded instructions. You must specify how you want your shares voted and confirm your vote at the end of the call or your telephone vote cannot be completed. Your shares will be voted according to your instructions. You must submit your telephonic proxy before 11:59 p.m., Eastern Time, on June 10, 2009, the day before the annual meeting, for your proxy to be valid and your vote to count.

(3) **By Mail:** Complete and sign your enclosed proxy card and mail it in the enclosed postage prepaid envelope to Computershare. Computershare must receive the proxy card not later than June 10, 2009, the day before the annual meeting, for your proxy to be valid and your vote to count. Your shares will be voted according to your instructions. If you do not specify how you want your shares voted, they will be voted as recommended by our board.

(4) **In Person at the Meeting:** If you attend the annual meeting, you may deliver your completed proxy card in person or you may vote by completing a ballot, which we will provide to you at the meeting.

If your shares are held in street name, meaning they are held for your account by a broker or other nominee, you may vote:

(1) **Over the Internet or by Telephone:** You will receive instructions from your broker or other nominee if they permit Internet or telephone voting. You should follow those instructions.

(2) **By Mail:** You will receive instructions from your broker or other nominee explaining how you can vote your shares by mail. You should follow those instructions.

(3) **In Person at the Meeting:** Contact your broker or other nominee who holds your shares to obtain a broker's proxy card and bring it with you to the annual meeting. A broker's proxy is *not* the form of proxy enclosed with this proxy statement. **You will not be able to vote shares you hold in street name in person at the annual meeting unless you have a proxy from your broker issued in your name giving you the right to vote your shares.**

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Q. Can I change my vote? **A. If your shares are registered directly in your name,** you may revoke your proxy and change your vote at any time before the annual meeting. To do so, you must do one of the following:

(1) Vote over the Internet or by telephone as instructed above. Only your latest Internet or telephone vote is counted. You may not change your vote over the Internet or by telephone after 11:59 p.m., Eastern Time, on June 10, 2009.

(2) Sign a new proxy and submit it as instructed above. Only your latest dated proxy will be counted.

(3) Attend the annual meeting, request that your proxy be revoked and vote in person as instructed above. Attending the annual meeting will not revoke your Internet vote, telephone vote or proxy, as the case may be, unless you specifically request it.

If your shares are held in street name, you may submit new voting instructions by contacting your broker, bank or nominee. You may also vote in person at the annual meeting if you obtain a broker's proxy as described in the answer above.

Q. Will my shares be voted if I do not return my proxy? **A. If your shares are registered directly in your name,** your shares will not be voted if you do not vote over the Internet, by telephone, by returning your proxy or by ballot at the annual meeting.

If your shares are held in street name, your brokerage firm may under certain circumstances vote your shares if you do not return your proxy. Brokerage firms can vote customers' unvoted shares on routine matters. If you do not return a proxy to your brokerage firm to vote your shares, your brokerage firm may, on routine matters, either vote your shares or leave your shares unvoted. Your brokerage firm cannot vote your shares on any matter that is not considered routine.

Proposal 1, election of directors, and Proposal 4, ratification of the appointment of our independent auditors, are both considered routine matters. However, Proposal 2, amendment and restatement of our 2004 Stock Incentive Plan, which we refer to as the 2004 Plan, and Proposal 3, adoption of our 2009 Stock Incentive Plan, which we refer to as the 2009 Plan, are not routine matters. We encourage you to provide voting instructions to your brokerage firm or other nominee by giving your proxy to them. This ensures that your shares will be voted at the annual meeting according to your instructions. You should receive directions from your brokerage firm about how to submit your proxy to them at the time you receive this proxy statement.

Q. A.

How many shares must be present to hold the annual meeting?

A majority of our outstanding shares of common stock must be present to hold the annual meeting and conduct business. This is called a quorum. For purposes of determining whether a quorum exists, we count as present any shares that are voted over the Internet, by telephone, by completing and submitting a proxy or that are represented in person at the meeting. Further, for purposes of establishing a quorum, we will count as present shares that a stockholder holds even if the stockholder votes to abstain or only votes on one of the proposals. In addition, we will count as present shares held in street name by brokers or nominees who indicate on their proxies that they do not have authority to vote those shares on Proposals 2 or 3. If a quorum is not present, we expect to adjourn the annual meeting until we obtain a quorum.

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Q. What vote is required to approve each matter and how are votes counted?

A. Proposal 1 Election of three Class II Directors

The three nominees for director to receive the highest number of votes FOR election will be elected as directors. This is called a plurality. Abstentions are not counted for purposes of electing directors. If your shares are held by your broker in street name, and you do not vote your shares, your brokerage firm may vote your unvoted shares on Proposal 1. You may:

vote FOR all nominees;

vote FOR one or more nominee(s) and WITHHOLD your vote from the other nominee(s); or

WITHHOLD your vote from all nominees.

Votes that are withheld will not be included in the vote tally for the election of directors and will not affect the results of the vote.

Proposal 2 Approval of Amendment and Restatement of the 2004 Plan

To approve Proposal 2, stockholders holding a majority of the votes cast on the matter must vote FOR the proposal. Proposal 2 is not considered a routine matter. Therefore, if your shares are held by your broker in street name, and you do not vote your shares, your brokerage firm cannot vote your shares on Proposal 2. Shares held in street name by brokers or nominees who indicate on their proxies that they do not have authority to vote the shares on Proposal 2, will not be counted as votes in favor of or against the proposal, and will also not be counted as votes cast or shares voting on the proposal. If you vote to ABSTAIN on Proposal 2, your shares will not be voted for or against the proposal and will also not be counted as votes cast or shares voting on the proposal. As a result, broker non-votes and votes to ABSTAIN will have no effect on the voting on the proposal.

Proposal 3 Approval of Adoption of the 2009 Plan

To approve Proposal 3, stockholders holding a majority of the votes cast on the matter must vote FOR the proposal. Proposal 3 is not considered a routine matter. Therefore, if your shares are held by your broker in street name, and you do not vote your shares, your brokerage firm cannot vote your shares on Proposal 3. Shares held in street name by brokers or nominees who indicate on their proxies that they do not have authority to vote the shares on Proposal 3, will not be counted as votes in favor of or against the proposal, and will also not be counted as votes cast or shares voting on the proposal. If you vote to ABSTAIN on Proposal 3, your shares will not be voted for or against the proposal and will also not be

counted as votes cast or shares voting on the proposal. As a result, broker non-votes and votes to ABSTAIN will have no effect on the voting on the proposal.

Proposal 4 Ratification of Appointment of Independent Auditors

To approve Proposal 4, stockholders holding a majority of the votes cast on the matter must vote FOR the proposal. If your shares are held by your broker in street name, and you do not vote your shares, your brokerage firm may vote your unvoted shares on Proposal 4. If you vote to ABSTAIN on Proposal 4, your shares will not be voted in favor of or against the proposal and will also not be counted as votes cast or shares voting on the proposal. As a result, voting to ABSTAIN will have no effect on the voting on the proposal.

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Although stockholder approval of our audit committee's appointment of PricewaterhouseCoopers LLP as our independent auditors is not required, we believe that it is advisable to give stockholders an opportunity to ratify this appointment. If this proposal is not approved at the annual meeting, our audit committee will reconsider its appointment of PricewaterhouseCoopers LLP.

- Q. Are there other matters to be voted on at the annual meeting?** **A.** We do not know of any matters that may come before the annual meeting other than the election of three Class II directors, the approval of the 2004 Plan, the approval of the 2009 Plan and the ratification of the appointment of our independent auditors. If any other matters are properly presented at the annual meeting, the persons named in the accompanying proxy intend to vote, or otherwise act, in accordance with their judgment on the matter.
- Q. Where can I find the voting results?** **A.** We expect to report the voting results in our Quarterly Report on Form 10-Q for the second quarter ending June 30, 2009, which we anticipate filing with the SEC in August 2009.
- Q. What are the costs of soliciting these proxies?** **A.** We will bear the cost of soliciting proxies. In addition to these proxy materials, our directors, officers and employees may solicit proxies by telephone, e-mail, facsimile and in person, without additional compensation. We have also retained The Altman Group to solicit proxies by mail, courier, telephone and facsimile and to request brokers, custodians and fiduciaries to forward proxy soliciting materials to the owners of stock held in their names. For these services, we will pay a fee of \$12,150, plus expenses. We may reimburse brokers or persons holding stock in their names, or in the names of their nominees, for their expenses in sending proxies and proxy material to beneficial owners.
- Q: How do I vote my 401(k) shares?** **A.** You may give voting instructions for the number of shares of Alnylam common stock equal to the interest in Alnylam common stock credited to your 401(k) plan account as of the record date. To vote these shares, complete and return to Computershare the proxy card sent to you with this proxy statement. The 401(k) plan trustee will vote your shares according to your instructions. Only Computershare and its affiliates or agents will have access to your individual voting instructions. You may revoke previously given voting instructions by filing with the trustee either a written revocation or a properly completed and signed proxy bearing a later date. If you do not provide voting instructions to the 401(k) plan trustee, the 401(k) plan trustee will not vote your shares.

Householding of Annual Meeting Materials

Some banks, brokers and other nominee record holders may be participating in the practice of "householding" proxy statements and annual reports. This means that only one copy of our proxy statement and annual report to stockholders may have been sent to multiple stockholders in your household. We will promptly deliver a separate copy of either document to you upon written or oral request to Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge,

Massachusetts 02142, Attention: Investor Relations and Corporate Communications, telephone: (617) 551-8200. If you want to receive separate copies of the proxy statement or annual report to stockholders in the future, or if you are receiving multiple copies and would like to receive only one copy per household, you should contact your bank, broker or other nominee record holder, or you may contact us at the above address and phone number.

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The following table sets forth information regarding beneficial ownership of our common stock as of February 28, 2009 by:

each person, or group of affiliated persons, known to us to be the beneficial owner of 5% or more of the outstanding shares of our common stock;

each of our directors;

our principal executive officer, our principal financial officer and our two other executive officers who served during the year ended December 31, 2008, whom, collectively, we refer to as our named executive officers; and

all of our directors and executive officers as a group.

The number of shares of common stock beneficially owned by each person or entity is determined in accordance with the applicable rules of the SEC and includes voting or investment power with respect to shares of our common stock. The information is not necessarily indicative of beneficial ownership for any other purpose. Unless otherwise indicated, to our knowledge, all persons named in the table have sole voting and investment power with respect to their shares of common stock, except to the extent authority is shared by spouses under community property laws. The inclusion herein of any shares as beneficially owned does not constitute an admission of beneficial ownership.

Name and Address of Beneficial Owner(1)	Number of Shares Owned	+	Common Stock Underlying Options Acquirable Within 60 Days(2)	=	Total Beneficial Ownership	Percentage of Common Stock Beneficially Owned(3)
Holders of more than 5% of our common stock						
FMR LLC(4)	6,211,963				6,211,963	15.0%
Novartis Pharma AG(5)	5,481,753				5,481,753	13.2%
Aletheia Research and Management, Inc.(6)	2,791,191				2,791,191	6.7%
Barclays Global Investors, NA(7)	2,106,674				2,106,674	5.1%
Directors and Named Executive Officers						
John K. Clarke	8,891		35,000		43,891	*
Victor J. Dzau, M.D.			20,000		20,000	*
John M. Maraganore, Ph.D.	844(8)		986,500		987,344	2.3%
Vicki L. Sato, Ph.D.			40,000		40,000	*
Paul R. Schimmel, Ph.D.	296,473(9)		15,000		311,473	*

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Edward M. Scolnick, M.D.		15,000	15,000	*
Phillip A. Sharp, Ph.D.	289,472	188,750	478,222	1.1%
Kevin P. Starr		117,631	117,631	*
James L. Vincent	10,000	100,000	110,000	*
Patricia L. Allen	1,631(8)	123,142	124,773	*
Barry E. Greene	717(8)	265,567	266,284	*
John (Jack) A. Schmidt, Jr., M.D.(10)				*
All directors and executive officers as a group (12 persons)	608,028	1,906,590	2,514,618	5.8%

* Less than 1% of our outstanding common stock.

(1) Unless otherwise indicated, the address of each stockholder is c/o Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, MA 02142.

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- (2) For purposes of this table, shares underlying options that will vest within 60 days after February 28, 2009 are deemed outstanding.
- (3) Percentage of beneficial ownership is based on 41,434,194 shares of our common stock outstanding as of February 28, 2009. Shares of common stock subject to options currently exercisable, or exercisable within 60 days of February 28, 2009, are deemed outstanding for computing the percentage of the common stock beneficially owned by the person holding such options but are not deemed outstanding for computing the percentage ownership for any other person.
- (4) According to Amendment No. 4 to a Schedule 13G filed by FMR LLC (previously known as FMR Corp.) with the SEC on February 13, 2009, as of December 31, 2008, Fidelity Management & Research Company, a wholly-owned subsidiary of FMR LLC and an investment adviser registered under Section 203 of the Investment Advisers Act of 1940, is the beneficial owner of 6,201,958 shares, as a result of acting as an investment advisor to various investment companies registered under Section 8 of the Investment Company Act of 1940. The ownership of one investment company, Fidelity Growth Company Fund, amounted to 4,008,509 shares, or 9.7% of our outstanding common stock. Edward C. Johnson 3d, Chairman of FMR LLC, and FMR LLC, through its control of Fidelity Management & Research Company, and the funds each has sole power to dispose of the 6,201,958 shares owned by such funds. Neither FMR LLC nor Edward C. Johnson 3d has the sole power to vote or direct the voting of the shares owned directly by such funds, which power resides with the funds' Boards of Trustees. Fidelity Management & Research Company carries out the voting of the shares under written guidelines established by the funds' Boards of Trustees. Strategic Advisors, Inc., a wholly owned subsidiary of FMR LLC and an investment adviser registered under Section 203 of the Investment Advisers Act of 1940, is the beneficial owner of 10,005 shares. Various persons have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, the shares of our common stock held by these funds. The address of FMR LLC is 82 Devonshire Street, Boston, MA 02109.
- (5) According to Amendment No. 1 to a Schedule 13G filed by Novartis AG and Novartis Pharma AG with the SEC on February 6, 2009, as of December 31, 2008, Novartis Pharma AG is the record and beneficial owner of 5,481,753 shares and Novartis AG, as parent of Novartis Pharma AG, is the indirect beneficial owner of such shares. Our investor rights agreement with Novartis Pharma AG provides Novartis with the right to acquire additional equity securities of Alnylam in the event that we propose to sell or issue any equity securities, subject to specified exceptions, as described in the investor rights agreement, such that Novartis would be able generally to maintain its ownership percentage in Alnylam. In accordance with terms of the investor rights agreement, in connection with the issuance of shares of our common stock under our stock plans during 2008, Novartis has the right until May 3, 2009 to purchase from us up to 65,922 shares of our common stock at a purchase price of \$17.50 per share. The information contained in the table above does not include the 65,922 shares that Novartis has the right to purchase under the investor rights agreement. The address of Novartis Pharma AG is Lichstrasse 35, 4053 Basel, Switzerland.
- (6) According to Amendment No. 2 to a Schedule 13G filed by Aletheia Research and Management, Inc. with the SEC on February 17, 2009, as of December 31, 2008, Aletheia Research and Management, Inc. is an investment adviser registered under Section 203 of the Investment Advisers Act of 1940 and serves in such capacity for a number of managed accounts and funds. In its role as investment advisor or manager, Aletheia Research and Management, Inc. possesses investment and/or voting power over the shares of common stock reported as beneficially owned. Aletheia Research and Management, Inc. disclaims beneficial ownership of such shares of common stock. Various accounts and funds managed by Aletheia Research and Management, Inc. have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, the shares of our common stock held in their respective accounts. The address of Aletheia Research and Management, Inc. is 100

Wilshire Boulevard, Suite 1960, Santa Monica, CA 90401.

- (7) According to Schedule 13G filed by Barclays Global Investors, NA, a wholly owned subsidiary of Barclays PLC, with the SEC on February 5, 2009, as of December 31, 2008, Barclays Global Investors, NA is the beneficial owner of 2,106,674 shares, as a result of acting as an investment advisor and institutional manager to various investment companies registered under Section 8 of the Investment

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Company Act of 1940. The ownership of Barclays Global Investors, NA amounted to 875,163 shares, or 2.1% of our outstanding common stock, and the ownership of another investment company, Barclays Global Fund Advisors amounted to 1,231,511 shares, or 3.0% of our outstanding common stock. Barclays Global Investors, NA has sole power to dispose of the 2,106,674 shares owned by such funds. Barclays Global Investors, NA has the sole power to vote or direct the voting of 1,986,862 shares owned directly by such funds. Various persons have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, the shares of our common stock held by these funds. The address of Barclays Global Investors, NA is 400 Howard Street, San Francisco, CA 94105.

- (8) Includes shares contributed by Alnylam to our 401(k) plan for the benefit of the named executive officers as of February 28, 2009: Dr. Maraganore, 844 shares; Ms. Allen, 561 shares; and Mr. Greene, 717 shares.
- (9) Includes shares held by the Paul Schimmel Prototype PSP, of which Dr. Schimmel is the trustee and over which he has sole investment and voting power.
- (10) Dr. Schmidt joined Alnylam as our senior vice president and chief scientific officer on September 29, 2008 and is an executive officer of Alnylam.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Securities Exchange Act of 1934, or the Exchange Act, as amended, requires our directors, executive officers and the holders of more than 10% of our common stock to file with the SEC initial reports of ownership of our common stock and other equity securities on a Form 3 and reports of changes in such ownership on a Form 4 or Form 5. Officers, directors and 10% stockholders are required by SEC regulations to furnish us with copies of all Section 16(a) forms they file. Based solely on a review of our records and written representations by the persons required to file these reports, we believe that all filing requirements of Section 16(a) were satisfied with respect to our most recent fiscal year.

PROPOSAL 1 ELECTION OF CLASS II DIRECTORS

We have three classes of directors, currently consisting of three Class I directors, three Class II directors and three Class III directors. At each annual meeting, directors are elected for a term of three years to succeed those whose terms are expiring. The terms of the three classes are staggered so that only one class is elected by stockholders annually. John K. Clarke, Vicki L. Sato, Ph.D., and James L. Vincent are currently serving as Class II directors. Mr. Clarke has served as a director since 2002 and each of Dr. Sato and Mr. Vincent has served as a director since 2005. The Class II directors elected this year will serve as members of our board until the 2012 annual meeting of stockholders, or until their respective successors are elected and qualified.

The persons named in the enclosed proxy will vote to elect Mr. Clarke, Dr. Sato and Mr. Vincent as Class II directors unless the proxy is marked otherwise. Mr. Clarke, Dr. Sato and Mr. Vincent have indicated their willingness to serve on our board, if elected; however, if any nominee should be unable to serve, the person acting under the proxy may vote the proxy for a substitute nominee designated by our board. Our board has no reason to believe that Mr. Clarke, Dr. Sato or Mr. Vincent would be unable to serve if elected.

Board Recommendation

The board of directors recommends a vote FOR the election of each of the Class II director nominees.

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Set forth below for each director, including the Class II director nominees, Mr. Clarke, Dr. Sato and Mr. Vincent, is information as of February 28, 2009 with respect to his or her (a) name and age, (b) positions and offices at Alnylam, if any, (c) principal occupation and business experience during at least the past five years, (d) directorships, if any, of other publicly held companies and (e) the year such person became a member of our board of directors. The duration of an individual's service on our board or as an officer described below includes service on the board of directors or as an officer of our predecessor company, which was also known as Alnylam Pharmaceuticals, Inc.

Name	Age	Director Since	Principal Occupation, Other Business Experience During the Past Five Years and Other Directorships
Class II directors, nominees to be elected at the annual meeting (terms expiring in 2012)			
John K. Clarke <i>Chairman of the Board Audit Committee Nominating and Corporate Governance Committee (Chair)</i>	55	2002	Mr. Clarke is a founder of Alnylam and has served as the chairman of our board of directors since June 2002. Since founding Cardinal Partners, a venture capital firm focused on healthcare, in 1997, Mr. Clarke has served as its Managing General Partner. Mr. Clarke also serves as a director of Momenta Pharmaceuticals, Inc.
Vicki L. Sato, Ph.D. <i>Compensation Committee (Chair)</i>	60	2005	Dr. Sato has served as a member of our board of directors since December 2005. Dr. Sato currently is Professor of Management Practice at Harvard Business School and Professor of the Practice at Harvard University Department of Molecular and Cell Biology. Dr. Sato served as President of Vertex Pharmaceuticals Incorporated from December 2000 to February 2005. Prior to serving as Vertex's President, Dr. Sato served as its Chief Scientific Officer. Prior to joining Vertex, she held numerous positions at Biogen, Inc. (now Biogen Idec Inc.). She also serves as a director of Infinity Pharmaceuticals, Inc. (through June 2009), PerkinElmer, Inc. and Bristol-Myers Squibb Company.
James L. Vincent <i>Compensation Committee</i>	69	2005	Mr. Vincent has served as a member of our board of directors since July 2005. Mr. Vincent was the Chairman of the Board of Biogen, Inc. (now Biogen Idec Inc.) from 1985 to 2002 and also served as Chief Executive Officer for a majority of that time period.
Class III directors (terms expiring in 2010)			
Victor J. Dzau, M.D. <i>Nominating and Corporate Governance Committee</i>	63	2007	Dr. Dzau has served as a member of our board of directors since April 2007. Dr. Dzau is currently the Chancellor for Health Affairs at Duke University and President and Chief Executive Officer of the Duke University Health System since July 2004. From July 1996 until September 2004, he was the Hersey Professor of Theory and Practice of Medicine at Harvard Medical School and Chair of the Department of Medicine, Physician in Chief and Director of Research at Brigham and Women's Hospital. He is a

former Chairman of the National Institutes of Health (NIH) Cardiovascular Disease Advisory Committee and served on the Advisory Committee to the Director of the NIH. He is a member of the Institute of Medicine. He also serves as a director of Duke University Health System, Medtronic, Inc., PepsiCo, Inc. and Genzyme Corporation.

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Name	Age	Director Since	Principal Occupation, Other Business Experience During the Past Five Years and Other Directorships
Edward M. Scolnick, M.D.	68	2008	Dr. Scolnick has served as a member of our board of directors since February 2008. Dr. Scolnick has served as the Director of the Stanley Center for Psychiatric Research at the Broad Institute of Harvard University and the Massachusetts Institute of Technology since September 2004. From 1982 to 2003, Dr. Scolnick served in a number of key leadership roles at Merck Research Laboratories, most recently as President. Prior to joining Merck, he worked at the National Cancer Institute and the National Heart Institute. Dr. Scolnick is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the Institute of Medicine. Dr. Scolnick served as a member of the Food and Drug Administration Science Board from 2000 to 2002 and also currently serves as a director of Millipore Corporation.
Kevin P. Starr <i>Audit Committee (Chair)</i> <i>Compensation Committee</i>	46	2003	Mr. Starr has served as a member of our board of directors since September 2003. Since April 2007, Mr. Starr has been a Partner of Third Rock Ventures, a venture capital firm and from June 2008, Mr. Starr has served as the interim Chief Executive Officer of Agios Pharmaceuticals, a portfolio company of Third Rock Ventures. From December 2002 to March 2007, Mr. Starr was an entrepreneur. From December 2001 to December 2002, Mr. Starr served as Chief Operating Officer of Millennium Pharmaceuticals, Inc. He also served as Millennium's Chief Financial Officer from December 1998 to December 2002.
Class I directors (terms expiring in 2011)			
John M. Maraganore, Ph.D.	46	2002	Dr. Maraganore has served as our Chief Executive Officer and as a member of our board of directors since December 2002. Dr. Maraganore also served as our President from December 2002 to December 2007. From April 2000 to December 2002, Dr. Maraganore served as Senior Vice President, Strategic Product Development for Millennium Pharmaceuticals, Inc. He also serves as a director of the Biotechnology Industry Organization.
Paul R. Schimmel, Ph.D. <i>Audit Committee</i>	68	2002	Dr. Schimmel is a scientific founder of Alnylam and has served as a member of our board of directors since June 2002. Dr. Schimmel has been the Ernest and Jean Hahn Professor of Molecular Biology and Chemistry and a member of the Skaggs Institute for Chemical Biology at the Scripps Research Institute since 1997. Dr. Schimmel is a member of the National Academy of Sciences, the Institute of Medicine and the American Academy of Arts and Sciences.

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Name	Age	Director Since	Principal Occupation, Other Business Experience During the Past Five Years and Other Directorships
Phillip A. Sharp, Ph.D.	64	2002	Dr. Sharp is a scientific founder of Alnylam and has served as a member of our board of directors since June 2002. Dr. Sharp is currently an Institute Professor at the David H. Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, and was the Founding Director of the McGovern Institute for Brain Research at the Massachusetts Institute of Technology. Dr. Sharp has been a professor at the Massachusetts Institute of Technology since 1974. He is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the Institute of Medicine. Dr. Sharp received the Nobel Prize for Physiology or Medicine in 1993. He also serves as a director of Biogen Idec Inc., which he co-founded in 1978.

CORPORATE GOVERNANCE**General**

We believe that good corporate governance is important to ensure that Alnylam is managed for the long-term benefit of our stockholders. This section describes key corporate governance practices that we have adopted.

We have adopted a Code of Business Conduct and Ethics, which applies to all of our officers, directors and employees, as well as charters for our audit committee, our compensation committee and our nominating and corporate governance committee, and corporate governance guidelines. We have posted copies of the Code of Business Conduct and Ethics, each committee's charter and our corporate governance guidelines on the Corporate Governance page of the Investors section of our website, www.alnylam.com. We intend to disclose on our website any amendments to, or waivers from, our Code of Business Conduct and Ethics required to be disclosed by law or NASDAQ Global Market listing standards.

Corporate Governance Guidelines

Our board of directors has adopted corporate governance guidelines to assist in the exercise of its duties and responsibilities and to serve the best interests of Alnylam and our stockholders. These guidelines, which provide a framework for the conduct of our board of directors' business, provide that:

our board's principal responsibility is to oversee the management of Alnylam;

a majority of the members of our board shall be independent directors;

the independent directors meet regularly in executive session;

directors have full and free access to management and, as necessary and appropriate, independent advisors; and

periodically, our board and its committees will conduct a self-evaluation to determine whether they are functioning effectively.

We have posted a copy of our corporate governance guidelines on the Corporate Governance page of the Investors section of our website, www.alnylam.com.

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Board Determination of Independence

Under The NASDAQ Stock Market (NASDAQ) Marketplace Rules, a director only will qualify as an independent director if, in the opinion of our board, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. Our board has determined that none of Drs. Dzau, Sato, Schimmel and Scolnick and Messrs. Clarke, Starr and Vincent have a relationship which would interfere with the exercise of independent judgment in carrying out the responsibilities of a director and that each of these directors is an independent director as defined under NASDAQ Rule 4200(a)(15). In making such determination, our board considered relationships, if any, that each non-employee director has with Alnylam, their beneficial ownership of our outstanding common stock and all other facts and circumstances our board deemed relevant in determining their independence.

Role of the Board

Our board of directors has responsibility for establishing broad corporate policies and reviewing our overall performance rather than day-to-day operations. The primary responsibility of our board is to oversee the management of our company and, in doing so, serve the best interests of the company and our stockholders. Our board selects, evaluates and provides for the succession of executive officers and, subject to stockholder election, directors. It reviews and approves corporate objectives and strategies, and evaluates significant policies and proposed major commitments of corporate resources. Our board also participates in decisions that have a potential major economic impact on our company. Management keeps our directors informed of company activity through regular communication, including written reports and presentations at board of directors and committee meetings.

Board of Directors Meetings and Attendance

Our board met six times during 2008, either in person or by teleconference, and acted by written consent once. During 2008, each of our directors attended at least 75% of the aggregate number of board meetings and meetings of the committees on which he or she then served, except Dr. Scolnick, who attended a majority of the meetings of the board and does not serve on any board committees.

Our directors are expected to attend the annual meeting of stockholders. Eight of the nine members of our board attended the 2008 annual meeting of stockholders. We expect substantially all of our directors to attend the 2009 annual meeting.

Board Committees

Our board of directors has established three standing committees – audit, compensation and nominating and corporate governance – each of which operates under a written charter that has been approved by our board. We have posted copies of each committee’s charter on the Corporate Governance page of the Investors section of our website, www.alnylam.com. The members of each committee are appointed by our board, upon recommendation of our nominating and corporate governance committee.

Our board has determined that all of the members of each of its three standing committees are independent as defined under the NASDAQ Marketplace rules, and, in the case of all members of our audit committee, the independence requirements of Rule 10A-3 under the Exchange Act.

Audit Committee

Our audit committee is responsible for:

appointing, evaluating, retaining, approving the compensation of and, when necessary, terminating the engagement of our independent auditors;

taking appropriate action, or recommending that our board of directors take appropriate action, to oversee the independence of our independent auditors;

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reviewing and discussing with management and the independent auditors our annual and quarterly financial statements and related disclosures;

monitoring our internal control over financial reporting, disclosure controls and procedures and Code of Business Conduct and Ethics;

reviewing and discussing our risk management policies;

establishing policies regarding hiring employees from our independent auditors and procedures for the receipt and retention of accounting related complaints and concerns;

meeting independently with our independent auditors and management; and

preparing the audit committee report required by SEC rules, which is included beginning on page 15 of this proxy statement.

In addition, our audit committee must approve or ratify any related party transaction entered into by us. Our policies and procedures for the review and approval of related person transactions are summarized under the heading Policies and Procedures For Related Person Transactions, which appears on page 17 of this proxy statement.

The members of our audit committee are Messrs. Starr (Chair) and Clarke and Dr. Schimmel. We believe that each member of our audit committee satisfies the requirements for membership, including independence, established by NASDAQ and the SEC. Our board has determined that Mr. Starr is an audit committee financial expert as defined in Item 407(d)(5) of Regulation S-K. No member of our audit committee is the beneficial owner of more than 10% of our common stock.

Our audit committee met six times during 2008.

Compensation Committee

Our compensation committee is responsible for:

annually reviewing and approving corporate goals and objectives relevant to compensation of our executive officers;

reviewing and approving, or making recommendations to our board with respect to, the compensation of our chief executive officer and other executive officers;

overseeing an evaluation of our senior executives;

overseeing and administering our stock-based compensation plans and 401(k) plan, and performing the duties imposed on the compensation committee by the terms of those plans;

reviewing and making recommendations to our board with respect to director compensation;

reviewing, and amending as necessary, our compensation philosophy and objectives;

reviewing and discussing annually with management our Compensation Discussion and Analysis, which is included beginning on page 18 of this proxy statement; and

preparing the compensation committee report required by SEC rules, which is included on page 27 of this proxy statement.

The processes and procedures followed by our compensation committee in considering and determining executive and director compensation are described below under the heading Compensation Discussion and Analysis.

The members of our compensation committee are Dr. Sato (Chair) and Messrs. Starr and Vincent. We believe that each member of our compensation committee satisfies the requirements for membership, including independence, as established by NASDAQ.

Our compensation committee met six times during 2008.

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Nominating and Corporate Governance Committee

Our nominating and corporate governance committee is responsible for:

- identifying individuals qualified to become members of our board;
- recommending to our board the persons to be nominated for election as directors and the persons to be appointed to each of our board committees;
- reviewing and making recommendations to our board with respect to management succession planning;
- developing and recommending to our board a set of corporate governance principles; and
- overseeing the evaluation of our board.

The processes and procedures followed by our nominating and corporate governance committee in identifying and evaluating director candidates are described below under the heading **Director Nomination Process**.

The members of our nominating and corporate governance committee are Mr. Clarke (Chair) and Dr. Dzau. We believe that each member of our nominating and corporate governance committee satisfies the requirements for membership, including independence, as established by NASDAQ.

Our nominating and corporate governance committee met three times during 2008 and acted by written consent once.

Director Nomination Process

Our nominating and corporate governance committee is responsible for identifying individuals qualified to become directors, consistent with criteria approved by our board, and recommending the persons to be nominated for election as directors, except where we are legally required by contract, law or otherwise to provide third parties with the right to nominate.

The process followed by our nominating and corporate governance committee to identify and evaluate director candidates includes requests to board members and others for recommendations, meetings from time to time to evaluate biographical information and background material relating to potential candidates and interviews of selected candidates by members of the committee and our board.

In considering whether to recommend any particular candidate for inclusion in our board's slate of recommended director nominees, our nominating and corporate governance committee will apply certain criteria, including the candidate's integrity, business acumen, knowledge of our business and industry, experience, diligence, conflicts of interest and ability to act in the interests of all stockholders. The committee does not assign specific weights to particular criteria and no particular criterion is a prerequisite for each prospective nominee. We believe that the backgrounds and qualifications of our directors, considered as a group, should provide a composite mix of experience, knowledge and abilities that will allow our board to fulfill its responsibilities.

Stockholders may recommend individuals to our nominating and corporate governance committee for consideration as potential director candidates by submitting their names, together with appropriate biographical information and background materials and, if the stockholder is not a stockholder of record, a statement as to whether the stockholder or group of stockholders making the recommendation has beneficially owned more than 5% of our common stock for at least a year as of the date such recommendation is made, to the nominating and corporate governance committee,

c/o Corporate Secretary, Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, Massachusetts 02142. Assuming that appropriate biographical and background material has been provided on a timely basis, the committee will evaluate stockholder-recommended candidates by following substantially the same process, and applying substantially the same criteria, as it follows for candidates submitted by others. Stockholders also have the right under our bylaws to nominate director candidates directly, without any action or recommendation on the part of the committee or the board,

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by following the procedures set forth under the heading "Stockholder Proposals," which appears on page 50 of this proxy statement.

At the annual meeting, stockholders will be asked to consider the election of Mr. Clarke, Dr. Sato and Mr. Vincent, all of whom currently serve on our board of directors. Mr. Clarke, Dr. Sato and Mr. Vincent were proposed to our board by our nominating and corporate governance committee and our board determined to include them as its nominees.

Communicating with the Independent Directors

Our board of directors will give appropriate attention to written communications that are submitted by stockholders, and will respond if and as appropriate. The chair of our board (if an independent director), the lead director (if one is appointed), or otherwise the chair of our nominating and corporate governance committee, is primarily responsible for monitoring communications from stockholders and for providing copies or summaries to the other directors as he or she considers appropriate.

Communications are forwarded to all directors if they relate to important substantive matters and include suggestions or comments that the chair of our board (if an independent director), or the lead director (if one is appointed), or otherwise the chair of our nominating and corporate governance committee, considers to be important for the directors to know. In general, communications relating to corporate governance and long-term corporate strategy are more likely to be forwarded than communications relating to ordinary business affairs, personal grievances and matters as to which we tend to receive repetitive communications.

Stockholders who wish to send communications on any topic to our board should address such communications to the Board of Directors, c/o Corporate Secretary, Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, Massachusetts 02142.

Report of the Audit Committee

Our audit committee reports to and acts on behalf of our board by providing oversight of our financial management, related person transaction policies and procedures, audits of our financial statements and financial reporting controls and accounting policies and procedures. Our management is responsible for the preparation, presentation and integrity of our financial statements, the appropriateness of our accounting principles and reporting policies, and for establishing and maintaining adequate internal control over financial reporting. The independent registered public accounting firm is responsible for conducting an independent audit of our annual financial statements and our internal control over financial reporting. Our audit committee is responsible for independently overseeing the conduct of these activities by our management and our independent registered public accounting firm.

Our audit committee operates under a written charter adopted by our board that reflects standards contained in the NASDAQ Marketplace Rules. Our audit committee reviews its charter annually and, in February 2009, approved an amendment thereto. A complete copy of the current audit committee charter, as amended, is posted on the Corporate Governance page of the Investors section of our website, www.alnylam.com and is attached to this proxy statement as Appendix A.

Our audit committee has reviewed our audited financial statements for the fiscal year ended December 31, 2008, and has discussed them with our management and our independent registered public accounting firm, PricewaterhouseCoopers LLP. Our audit committee has also received from, and discussed with, PricewaterhouseCoopers LLP various communications that PricewaterhouseCoopers LLP is required to provide to our audit committee, including the matters required to be discussed by the Public Company Accounting Oversight Board (PCAOB), AU Section 380, *Communication with Audit Committees*, as amended, which requires the independent

registered public accounting firm to provide the audit committee with additional information regarding the scope and results of the audit, including the independent registered public accounting firm's responsibilities under PCAOB standards, significant issues or disagreements concerning our accounting practices or financial statements, significant accounting policies, significant

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accounting adjustments, alternative accounting treatments, accounting for significant unusual transactions, and estimates, judgments and uncertainties.

In addition, PricewaterhouseCoopers LLP provided our audit committee with the written disclosures and the letter required by PCAOB Rule 3526, *Communications with Audit Committees Concerning Independence*, as amended, and our audit committee and PricewaterhouseCoopers LLP have discussed its independence from us and our management, including the matters in those written disclosures.

In this context, our audit committee meets regularly with PricewaterhouseCoopers LLP and our management (including private sessions with each of PricewaterhouseCoopers LLP and members of management) to discuss any matters that our audit committee or these individuals believe should be discussed. Our audit committee conducts a meeting each quarter to review the financial statements prior to the public release of earnings.

Based on its discussions with management and PricewaterhouseCoopers LLP, and its review of the representations and information provided by management and PricewaterhouseCoopers LLP, our audit committee recommended to our board that the audited financial statements be included in our Annual Report on Form 10-K for the year ended December 31, 2008. Our audit committee also recommended to our board, and our board has approved, subject to stockholder ratification, the appointment of PricewaterhouseCoopers LLP as our independent auditors for the fiscal year ending December 31, 2009.

By the audit committee of the board of directors of Alnylam,

Kevin P. Starr, Chair
John K. Clarke
Paul R. Schimmel, Ph.D.

Principal Accountant Fees and Services

The following table summarizes the fees that our independent auditors, PricewaterhouseCoopers LLP, an independent registered public accounting firm, billed to us for each of the last two fiscal years for audit and other services:

Fee Category	2008	2007
Audit Fees(1)	\$ 566,700	\$ 526,200
Audit-Related Fees(2)	75,000	70,000
Tax Fees(3)	116,000	297,300
All Other Fees(4)	1,500	1,500
Total Fees	\$ 759,200	\$ 895,000

(1) **Audit Fees** consist of fees for the audit of our financial statements, the review of the interim financial statements included in our quarterly reports on Form 10-Q and other professional services provided in connection with regulatory filings or engagements.

(2) **Audit-Related Fees** consist of fees for services related to accounting consultations and advice, including an audit of our government contracts.

- (3) Tax Fees consist of fees for tax compliance, tax consultations and tax studies. Tax studies include an analysis of our net operating loss carryforwards and research and development credits.
- (4) All Other Fees represent payment for access to the PricewaterhouseCoopers LLP on-line accounting research database.

All such services were pre-approved by our audit committee in accordance with the Pre-Approval Policies and Procedures described below.

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Pre-Approval Policies and Procedures

Our audit committee is required to pre-approve all audit services to be provided to us, whether provided by our principal independent auditors or other firms, and all other services to be provided to us by our independent auditors, except that de minimis non-audit services may be approved in accordance with applicable SEC rules.

CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

Policies and Procedures For Related Person Transactions

Our board has adopted written policies and procedures for the review of any transaction, arrangement or relationship in which Alnylam is a participant, the amount involved exceeds \$120,000, and one of our executive officers, directors, director nominees or 5% stockholders (or their immediate family members), each of whom we refer to as a related person, has a direct or indirect material interest.

If a related person proposes to enter into such a transaction, arrangement or relationship, which we refer to as a related person transaction, the related person must report the proposed related person transaction to our president and chief operating officer. The policy calls for the proposed related person transaction to be reviewed and, if deemed appropriate, approved by our audit committee. Whenever practicable, the reporting, review and approval will occur prior to entry into the transaction. If advance review and approval is not practicable, our audit committee will review, and, in its discretion, may ratify the related person transaction. The policy also permits the chair of our audit committee to review and, if deemed appropriate, approve proposed related person transactions that arise between committee meetings, subject to ratification by our audit committee at its next meeting. Any related person transactions that are ongoing in nature will be reviewed annually.

A related person transaction reviewed under the policy will be considered approved or ratified if it is authorized by our audit committee after full disclosure of the related person's interest in the transaction. As appropriate for the circumstances, our audit committee will review and consider:

the related person's interest in the related person transaction;

the approximate dollar value of the amount involved in the related person transaction;

the approximate dollar value of the amount of the related person's interest in the transaction without regard to the amount of any profit or loss;

whether the transaction was undertaken in the ordinary course of our business;

whether the terms of the transaction are no less favorable to us than terms that could have been reached with an unrelated third party;

the purpose of, and the potential benefits to us of, the transaction; and

any other information regarding the related person transaction or the related person in the context of the proposed transaction that would be material to investors in light of the circumstances of the particular transaction.

Our audit committee may approve or ratify the transaction only if the committee determines that, under all of the circumstances, the transaction is not inconsistent with our best interests. Our audit committee may impose any

conditions on the related person transaction that it deems appropriate.

In addition to the transactions that are excluded by the instructions to the SEC's related person transaction disclosure rule, our board has determined that the following transactions do not create a material direct or indirect interest on behalf of related persons and, therefore, are not related person transactions for purposes of this policy:

interests arising solely from the related person's position as an executive officer of another entity (whether or not the person is also a director of such entity), that is a participant in the transaction,

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where (a) the related person and all other related persons own in the aggregate less than a 10% equity interest in such entity, and (b) the related person and his or her immediate family members are not involved in the negotiation of the terms of the transaction and do not receive any special benefits as a result of the transaction; and

a transaction that is specifically contemplated by provisions of our charter or bylaws.

The policy provides that transactions involving compensation of executive officers shall be reviewed and approved by our compensation committee in the manner specified in its charter.

Related Person Transactions

Agreements with Novartis

Beginning in September 2005, we entered into the first of two strategic alliances with Novartis Pharma AG and its affiliate, Novartis Institutes for Biomedical Research, Inc., whom we refer to collectively as Novartis. At that time, we and Novartis executed a stock purchase agreement and an investor rights agreement, and ultimately executed a research collaboration and license agreement. As of March 31, 2009, Novartis owned approximately 13.2% of our common stock and pursuant to the terms of the investor rights agreement, Novartis has the right until May 3, 2009 to purchase up to an additional 65,922 shares of our common stock at a purchase price of \$17.50 per share, which, if purchased, would result in Novartis owning approximately 13.4% of our outstanding common stock.

In February 2006, we entered into the Novartis flu alliance. During 2008, we and Novartis agreed to stop this program and currently there are no specific resource commitments for this program.

Other than these transactions, we have not been a participant in any transaction, nor is there any currently proposed transaction, that is reportable under Item 404(a) of Regulation S-K.

INFORMATION ABOUT EXECUTIVE OFFICER AND DIRECTOR COMPENSATION

Compensation Discussion and Analysis

Our compensation committee is responsible for overseeing the compensation of our senior management team, which is comprised of our named executive officers and all of our vice presidents. In this capacity, our compensation committee designs, implements, reviews and approves all compensation for our chief executive officer and our other named executive officers. The goal of our compensation committee is to ensure that our compensation programs are aligned with our business goals and that the total compensation paid to each of our named executive officers is fair, reasonable and competitive.

Compensation Objectives and Philosophy

Our compensation programs are designed to attract and retain qualified and talented executives, motivating them to achieve our business goals and rewarding them for superior short- and long-term performance. In particular, our compensation programs are intended to reward the achievement of specified predetermined quantitative and qualitative individual and corporate performance goals and objectives and to align the interests of our senior management team with those of our stockholders in order to attain our ultimate objective of increasing stockholder value.

Elements of Total Compensation and Relationship to Performance

Key elements of our compensation programs include:

base salary;

equity incentive compensation, typically in the form of stock options, the value of which depends on the performance of our common stock price, and which is typically subject to multi-year vesting that requires continued service; and

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an annual incentive program, under which awards were made in stock options in 2008 and, beginning in 2009, will be made in cash.

Both base salary compensation and incentive compensation are designed to reward annual achievements as measured against pre-determined quantitative and qualitative individual and corporate performance goals and objectives, with consideration given to the officer's scope of responsibility, leadership abilities and effectiveness. For fiscal 2008 and 2007, we awarded annual and bonus stock options to our named executive officers and the other members of our senior management team, but did not award cash bonuses to any of these individuals. In fiscal 2009, our named executive officers and the other members of our senior management team will be eligible to receive cash bonuses under our 2009 annual incentive program, which is described in more detail below. With the exception of our 2008 executive stock option bonus plan and our 2009 annual cash incentive program, we do not have any pre-established targets for allocations or apportionment by type of compensation. The mix of compensation components is designed to reward annual results as well as drive long-term company performance and stockholder value creation.

Determining and Setting Executive Compensation

We develop our compensation programs by utilizing publicly available compensation data and subscription survey data for a peer group of national and regional companies in the biopharmaceutical and biotechnology industries, which we believe are generally comparable to Alnylam in terms of organizational structure, size and stage of development, and against which we believe we compete for executive talent.

Defining and Comparing Compensation to Market Benchmarks

During 2008, our compensation committee engaged Towers, Perrin, Forster & Crosby, Inc. (Towers Perrin) to assist our compensation committee with its review of the compensation of our executive officers. In evaluating the total compensation of our named executive officers, our compensation committee, with the assistance of Towers Perrin, considered a peer group of 19 publicly traded, national and regional companies in the biopharmaceutical and biotechnology industries that was selected based on a balance of the following criteria:

companies whose organizational structure, number of employees, stage of development, market capitalization, research and development expenditures and revenues are similar to ours;

companies with similar executive positions to ours;

companies that generally overlap with us in the labor market for talent; and

public companies based in the United States whose compensation and financial data are available in proxy statements or other public documents.

Based on these criteria, our peer group for 2008 was comprised of the following:

Acorda Therapeutics, Inc.
Alexion Pharmaceuticals, Inc.
Alkermes, Inc.
Cubist Pharmaceuticals, Inc.
Exelixis, Inc.
Human Genome Sciences, Inc.

Isis Pharmaceuticals, Inc.
Lexicon Pharmaceuticals, Inc.
Medarex, Inc.
Momenta Pharmaceuticals, Inc.
Onyx Pharmaceuticals, Inc.
PDL BioPharma, Inc.

Seattle Genetics, Inc.
Theravance, Inc.
The Medicines Company
XenoPort, Inc.
ZymoGenetics, Inc.

Incyte Corporation

Regeneron Pharmaceuticals, Inc.

Our compensation committee compared the total compensation of our remaining senior management team to a broader biotechnology industry group, which, for 2008, consisted of 47 biotechnology and biopharmaceutical companies in the 2007 Radford Global Life Sciences Survey, with a focus on peer companies with 50 to 149 employees. This select group of peer companies included Cubist Pharmaceuticals, Inc., Isis Pharmaceuticals, Inc., Medarex, Inc., Momenta Pharmaceuticals, Inc., Myriad Genetics, Inc., Seattle Genetics, The Medicines Company and Theravance, Inc., among others. When conducting its review of our executive compensation programs as compared to those of our industry peers, Towers Perrin utilized both the peer group companies for 2008, as well as the Radford published survey data sample described above. Our peer group is approved by our compensation committee annually.

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We believe that the compensation practices of our peer group provide us with appropriate compensation benchmarks for evaluating the compensation of our named executive officers. Notwithstanding the similarities of the peer group to Alnylam, due to the nature of our business, we compete for executive talent with many companies that are larger and better established than we are or that possess greater resources than we do, as well as with highly prestigious academic and non-profit institutions. Accordingly, our compensation committee generally targets base salaries between the 50th and 60th percentile of the range of salaries in our peer group, annual cash incentive awards at or below the 25th percentile (beginning in 2009) and total equity incentive awards (annual and 2008 bonus) at or above the 75th percentile, resulting in total compensation for our executives between the 50th and 75th percentile of compensation paid to similarly situated executives of the companies in our peer group. Other considerations, including market factors, the experience level of an executive and the executive's performance against established corporate goals and individual objectives, may dictate variations to this general target.

Other Key Factors in Determining Executive Compensation

As the biopharmaceutical industry is characterized by a very long product development cycle, including a lengthy research and development period and a rigorous approval phase involving human testing and governmental regulatory approval, many of the traditional benchmarking metrics, such as product sales, revenues and profits are inappropriate for an early-stage biopharmaceutical company, such as Alnylam. Instead, the specific factors our compensation committee considers when determining the compensation of our named executives include:

- key research and development achievements;
- clinical trial progress;
- achievement of regulatory milestones;
- establishment and maintenance of key strategic relationships;
- development of organizational capabilities; and
- financial and operating performance.

Annual Performance Reviews

Our compensation committee conducts an annual performance review for our senior management team under which annual corporate goals and individual performance objectives are determined and set forth in writing during the first quarter of each fiscal year. Our compensation committee then determines executive compensation levels after carefully reviewing overall corporate performance and performing a detailed evaluation of a named executive's annual performance against established corporate goals and individual objectives. In addition, our compensation committee applies its judgment, as it deems appropriate, in determining executive compensation.

Annual corporate goals are proposed by our senior management team and approved by our board. Individual objectives focus on contributions that facilitate the achievement of the corporate goals and are proposed by each member of senior management. Our compensation committee approves the individual objectives for each of our named executive officers and the remaining members of our senior management team. Increases in base salary, annual stock option awards, awards under our 2008 executive stock option bonus plan, if any, and, beginning in 2009, cash awards under our 2009 annual incentive program, if any, are tied to the achievement of these corporate and individual performance goals and objectives. Our compensation committee also established the size of the award under our 2008 executive stock option bonus plan to be granted to each member of senior management, in the event that all corporate

goals and individual objectives were met or exceeded, and the maximum award under our stock option bonus plan to be granted in the aggregate. Our compensation committee has also established the maximum opportunity for each member of our senior management team under the 2009 annual incentive program, representing a percentage of each individual's base salary for 2009.

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During the last quarter of each fiscal year, our senior management team evaluates our corporate performance and each officer's individual performance, as compared to the corporate goals and individual objectives for that year. Based on this evaluation, our chief executive officer recommends to our compensation committee any increases in base salary, annual stock option awards and awards under our stock option bonus plan for 2008 and, beginning in 2009, under our annual cash incentive program. Our chief executive officer's individual performance evaluation is conducted by our compensation committee with input from the chairman of our board, which also determines whether to change his base salary, grant awards as part of our annual stock option grant to employees or grant awards under our stock option bonus plan, or in 2009, under our annual cash incentive program. Our board typically grants annual and bonus plan stock option awards at its last meeting of the year. Any changes in base salary are effective at the beginning of the following year. Any cash bonuses awarded under our 2009 annual incentive program will be paid in January 2010.

Base Salary

We provide base salaries to our named executive officers to compensate them with a fair and competitive base level of compensation for services rendered during the year. Our compensation committee typically determines the base salary for each executive based on the executive's responsibilities, experience and, if applicable, the base salary level of the executive at his or her prior employment. In addition, our compensation committee reviews and considers the level of base salary paid by companies in our peer group for similar positions. Generally, our compensation committee believes our executives' base salaries should be targeted between the 50th and 60th percentile of the range of salaries in our peer group.

Merit-based increases in base salary for all of our executives, other than our chief executive officer, are determined by our compensation committee based upon a written summary of the executive's performance and a recommendation from our chief executive officer. Any merit-based increases in base salary for our chief executive officer are based upon an assessment of his performance by our compensation committee, with input from the chairman of our board of directors and a review by our compensation committee of the base salary of chief executive officers in our peer group.

Equity Awards

Our equity awards program is designed to:

- reward demonstrated leadership and performance;
- align our executive officers' interests with those of our stockholders;
- retain our executive officers through the term of the awards;
- maintain competitive levels of executive compensation; and
- motivate our executive officers for outstanding future performance.

The market for qualified and talented executives in the biopharmaceutical industry is highly competitive and we compete for talent with many companies that have greater resources than we do. Accordingly, we believe equity compensation is a crucial component of any competitive executive compensation package we may offer.

Historically, our equity awards have taken the form of stock options. We typically grant stock options to each of our executive officers upon commencement of employment and annually in conjunction with our review of individual performance. In fiscal 2008 and 2007, we also granted stock options to our executive officers under our executive stock option bonus plan. In February 2009, following a review of our executive compensation programs, our

compensation committee authorized the implementation of an annual cash incentive program to replace the executive stock option bonus plan beginning in fiscal 2009.

All stock option grants to our executive officers are approved by our compensation committee and, other than grants to new hires, are typically granted at our compensation committee's regularly scheduled meeting at the end of the fiscal year. All stock options granted to our executives have exercise prices equal to the fair market value of our common stock on the date of grant, so that the recipient will not earn any compensation

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from his or her options unless our share price increases above the exercise price. In addition, the stock options granted to our executive officers typically vest over four years, which we believe provides an incentive to our executives to add value to the company over the long-term and to remain with Alnylam.

Stock option grant levels vary among our executive officers based on their positions and annual performance assessment. In addition, our compensation committee reviews all components of the executive's compensation to ensure that his or her total compensation is aligned with our overall philosophy and objectives.

Typically, the stock options we grant to our executives have a ten-year term and vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% of the shares at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary of the grant date. Vesting ceases upon termination of employment and exercise rights cease three months following termination of employment, except in the case of death or disability. Prior to the exercise of an option, the holder does not have any rights as a stockholder with respect to the shares subject to such option, including voting rights and the right to receive dividends or dividend equivalents.

The number of stock options granted to our named executive officers, and the value of those grants determined in accordance with SFAS 123R, are shown in the 2008 Grants of Plan-Based Awards Table on page 29.

We do not have any equity ownership guidelines for our executives.

2008 Stock Option Bonus Plan

In March 2008, our compensation committee authorized the implementation of an executive stock option bonus plan for 2008, pursuant to which each of our named executive officers and the other members of our senior management team was eligible to receive an annual bonus in the form of an award of stock options based upon the achievement of individual and corporate goals and objectives for 2008 that were approved by our compensation committee. The corporate goals for 2008 focused on: advancing our RSV program into Phase II studies in naturally infected patients; advancing development programs to investigational new drug stage with the United States Food and Drug Administration; continuing to advance our delivery capabilities; funding the business with existing and new strategic alliances, including ending the year with a specified minimum cash balance; and building and developing the organization in accordance with our investment plan. In addition, under the executive stock option incentive plan for 2008, each participant was eligible to receive an additional award of stock options for individual performance as measured against his or her annual individual performance objectives. Under this plan, the maximum stock option award for each executive officer, assuming he or she exceeded his or her individual annual performance objectives, was as follows: 40,000 shares for our chief executive officer, 25,000 shares for our president and chief operating officer, and 12,500 shares for our vice president of finance and treasurer.

In December 2008, under this plan, our compensation committee reviewed corporate and individual performance, measured such performance against the pre-established goals and objectives, and approved option awards for our senior management team, including an option to purchase 28,320 shares awarded to John M. Maraganore, Ph.D., an option to purchase 17,700 shares awarded to Barry E. Greene and an option to purchase 8,663 shares awarded to Patricia L. Allen, three of our named executive officers, each at an exercise price equal to the fair market value of our common stock on the date of grant. Such stock options will vest in accordance with our typical four-year vesting schedule. John (Jack) A. Schmidt, M.D., our other named executive officer in fiscal 2008, joined us in September 2008 and was not eligible to participate in the executive stock option bonus plan for 2008.

In February 2009, following a review of our executive compensation programs, our compensation committee authorized the implementation of the annual cash incentive program described below to replace the executive stock

option bonus plan in fiscal 2009.

Table of Contents***2009 Annual Incentive Program***

Our compensation committee's goal is to determine an appropriate mix of cash payments and equity incentive awards to meet short- and long-term goals and objectives. During 2008, our compensation committee engaged Towers Perrin to assist our compensation committee with its review of the compensation of our executive officers relative to marketplace norms and practices by comparing current proxy statement data and salary survey data. This review was intended to evaluate the competitiveness of our executive compensation through comparisons with a peer group, assess our corporate performance to ensure compensation was appropriately tied to performance and inform our compensation committee as to whether changes to our compensation plan were needed. Results of the review conducted by Towers Perrin indicated that the executive compensation programs of our peer group companies all included a cash incentive component. Based upon this analysis, in February 2009, the compensation committee authorized the implementation of an annual cash incentive program to replace the executive stock option bonus plan beginning in fiscal 2009.

Under the annual cash incentive program, specified employees, including our named executive officers and the other members of our senior management team, are eligible to receive an annual cash bonus based upon the achievement of corporate goals and individual objectives for 2009. The corporate goals for 2009 were proposed by our executive officers and approved by our board. Individual objectives focus on contributions that facilitate the achievement of our corporate goals. The compensation committee approved the individual objectives for our named executive officers and the other members of our senior management team. The individual objectives for the other eligible participants were approved by our chief executive officer.

Awards under the 2009 annual cash incentive program, if any, will be determined by first establishing a participant's individual award, which will be based upon performance against individual objectives for 2009. Each participant has an established maximum opportunity under the incentive program, as set forth in the table below, representing a percentage of the participant's base salary for 2009. The individual award will range from 0% to 100% of the participant's maximum opportunity (capped at 100% of the maximum opportunity) based upon the participant's individual performance against his or her 2009 objectives.

2009 Annual Incentive Program Maximum Opportunities

Band	Title	Maximum Opportunity
	Chief Executive Officer	50%
	President and Chief Operating Officer	30%
	Chief Scientific Officer	30%
	Senior Vice President/Vice President	20%
	Senior Director/Director	12%
	Associate Director	7%

A corporate performance modifier will then be applied to the individual award. The corporate performance modifier will range from 0% to 100% and will be based upon our performance against the 2009 corporate goals approved by our board; provided, however, that if corporate performance for 2009 falls below a threshold of 50%, the corporate performance modifier will be 0%. Our compensation committee retains the ability under the 2009 annual incentive program to exercise its discretion in adjusting an award higher or lower as it deems appropriate under the specific circumstances. At the end of 2009, our compensation committee will evaluate individual and corporate performance against the established goals and objectives and determine the amount of the annual cash incentive, if any, to be awarded under the program to each of our named executive officers. Any cash awards made under the 2009 annual

incentive program will be paid in January 2010.

Benefits and Other Compensation

Other compensation to our executives consists primarily of the broad-based benefits we provide to all employees, including health and dental insurance, life and disability insurance, an employee stock purchase plan and a 401(k) plan, except that executive officers are not eligible to participate in our employee stock purchase plan. Our 401(k) plan is a tax-qualified retirement savings plan pursuant to which all U.S. based employees, including executive officers, are able to contribute the lesser of up to 60% of their annual salary or the limit prescribed by

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the Internal Revenue Service on a before-tax basis. We match, in the form of shares of our common stock, 50% of the first 6% of a plan participant's pay that is contributed to the plan. Our contribution is made at the end of each quarter up to an annual maximum number of shares with a value of \$5,250 for each participant. Our matching contributions become fully vested after the employee has been employed by us for two years.

Compensation for Our Named Executive Officers in 2008***Chief Executive Officer Compensation***

In determining the 2008 equity compensation and annual stock option bonus award for our chief executive officer, John M. Maraganore, Ph.D., our compensation committee reviewed the performance of the company during 2008 and Dr. Maraganore's performance as compared to his individual corporate, financial, strategic and operational objectives for the year. In particular, in making its determination for the bonus award, our compensation committee determined that Dr. Maraganore successfully achieved most of his goals and objectives, including leading greater than 80% achievement of our corporate goals; advancing our RSV program into Phase II studies in naturally infected patients; advancing our VSP program to investigational new drug stage with the United States Food and Drug Administration; continuing to work on major delivery breakthroughs; managing key financial goals; funding the business with existing and new alliances; building and developing the organization; advancing new, longer-range business opportunities; and leading our external interface with investors, academic and industry leaders. Our compensation committee reviewed the company's performance against corporate goals and Dr. Maraganore's performance against his objectives and determined that the combined overall achievement represented 89% of these goals and objectives. Our compensation committee acknowledged the many accomplishments of the company during 2008. As a result of our compensation committee's determination regarding the company's and Dr. Maraganore's performance and its desire to provide an annual equity award above the 75th percentile of industry survey data, Dr. Maraganore received an annual option award to purchase 125,000 shares of common stock, and was awarded additional stock options to purchase 28,320 shares of common stock, which represented 89% of Dr. Maraganore's target grant under the executive stock option bonus plan for 2008.

Dr. Maraganore did not receive an increase in his base salary for 2009 and it remains at \$525,000. Notwithstanding the company's many accomplishments in 2008, our compensation committee decided to accept the recommendation of management that no member of our senior management team, including Dr. Maraganore, receive a merit increase in his or her base salary in 2009 in order to conserve cash in light of the broader market conditions.

Compensation for Our Other Named Executive Officers

2009 Base Salary. Notwithstanding the company's many accomplishments in 2008, which are discussed below, our compensation committee decided to accept the recommendation of management that no member of our senior management team receive a merit increase in his or her base salary in 2009 in light of broader market conditions. Accordingly, the base salary for 2009 of our vice president of finance and treasurer, Patricia L. Allen, remains at \$227,830. However, our compensation committee determined that a base pay market adjustment was needed to align the base salary of our president and chief operating officer, Barry E. Greene with our compensation philosophy. In December 2007, Mr. Greene was promoted to the additional office of president in recognition of his broader leadership responsibilities in business and product development. The results of the review of our executive compensation programs as compared to those of our industry peers conducted by Towers Perrin indicated that Mr. Greene's base salary was below the 25th percentile as compared to the peer group described above. As a result of our compensation committee's goal of providing a competitive base salary between the 50th and 60th percentiles of our peer group with respect to Mr. Greene, our compensation committee approved an 11% increase in Mr. Greene's annual base salary from \$350,000 in 2008 to \$390,000 in 2009. Mr. Greene's 2009 base salary is slightly above the 50th percentile of our peer group.

2008 Annual Bonus Awards. In determining the 2008 annual stock option bonus awards for Mr. Greene and Ms. Allen, our compensation committee reviewed the performance of the company during 2008 and their individual performances as compared to their individual corporate, financial, strategic and operational objectives for

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the year. The individual objectives for Mr. Greene involved meeting specified targets in the following areas: business development achievements; external alliance management and funding; pipeline development; advancing our intellectual property position; organizational growth; and operating performance. Our compensation committee also considered Dr. Maraganore's recommendations with respect to Mr. Greene's performance. For the bonus award, our compensation committee determined that Mr. Greene successfully achieved several key objectives for the year, including: providing leadership, planning and executing key alliance management initiatives; driving business development accomplishments; achieving key pipeline objectives specific to our RSV program; advancing our VSP program to investigational new drug stage with the United States Food and Drug Administration; and building and developing the organization for long-term growth. Our compensation committee reviewed the company's performance against corporate goals and Mr. Greene's performance against his objectives and determined that the combined overall achievement represented 89% of these goals and objectives. In addition, as a result of our compensation committee's determination regarding the company's performance and Mr. Greene's performance against his objectives and its desire to provide an annual equity award above the 75th percentile of industry survey data, Mr. Greene received an annual option award to purchase 72,300 shares of common stock. He also was awarded additional stock options to purchase 17,700 shares of common stock under the executive stock option bonus plan for 2008, which represented 89% of Mr. Greene's target grant.

The individual objectives for Ms. Allen involved meeting specified targets in the following areas: financial leadership in support of our corporate goals; long-range planning; external guidance; and overall financial management, including meeting specified operating expense levels and minimum cash balance requirements at year-end. Our compensation committee also considered both Dr. Maraganore's and Mr. Greene's recommendations with respect to Ms. Allen's performance. For the bonus award, our compensation committee determined that Ms. Allen successfully achieved several key objectives for the year, including: meeting our goals for the year-end cash; providing financial leadership in support of our business development goals and assisting in securing funding for our business with new alliances; successfully completing long-term financing and investment planning objectives; and developing financial systems to support our research and development efforts. Our compensation committee reviewed the company's performance against corporate goals and Ms. Allen's performance against her objectives and determined that the combined overall performance was 87% of these goals and objectives. The compensation committee acknowledged the many accomplishments of the company during 2008. As a result of our compensation committee's determination regarding the company's performance and Ms. Allen's performance against her objectives, Ms. Allen received an annual option award to purchase 23,000 shares of common stock. She also was awarded additional stock options to purchase 8,663 shares of common stock under the executive stock option bonus plan for 2008, which represented approximately 87% of Ms. Allen's target grant.

In September 2008, we hired Dr. Schmidt as our senior vice president and chief scientific officer. Dr. Schmidt received a starting annual base salary of \$425,000. Pursuant to the terms of his offer of employment, Dr. Schmidt also received a signing bonus of \$175,000, and is eligible to receive an additional payment of \$100,000 on January 15, 2010. Dr. Schmidt received an option to purchase 200,000 shares of common stock at the closing price on his first day of employment with the company. Dr. Schmidt also received certain relocation benefits associated with his transfer to the Cambridge area. Since Dr. Schmidt joined us in September 2008, he received a pro-rated annual option award to purchase 15,000 shares of common stock and was not eligible to participate in the executive stock option bonus plan for 2008.

Bonus Compensation for Our Named Executive Officers in 2009

In determining the 2009 bonus compensation for our named executive officers under the 2009 annual incentive program, our compensation committee will review the performance of the company during 2009 and the individual performance of each individual named executive officer as compared to such named executive officer's individual corporate, financial, strategic and operational objectives for the year. In particular, in making its determination, our

compensation committee will consider our success against the following corporate goals: partnering our RSV program and continuing to advance Phase II clinical studies for RSV; advancing our VSP program into a Phase I clinical trial; advancing one development program to investigational new drug stage with the United States Food and Drug Administration; continuing to advance our delivery capabilities; funding the

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business with existing and new alliances, including ending the year with a specified minimum cash balance; and building and developing the organization in accordance with our plan. In addition, the compensation committee will evaluate the performance of each named executive officer as compared to his or her individual objectives for 2009. Dr. Maraganore's individual objectives are heavily weighted toward achieving corporate goals, but also include specific targets with respect to supporting and strengthening our intellectual property estate and pursuing new business opportunities. Mr. Greene's individual objectives are also heavily weighted toward achieving corporate goals, but also include specific targets with respect to managing our various strategic alliances, pursuing new business development opportunities, advancing our intellectual property position and managing our profit and loss. Ms. Allen's individual objectives focus on meeting specified financial goals, managing our plans and position and investment portfolio and providing support to our business development team. Dr. Schmidt's individual objectives directly support achieving corporate goals, with focus on key scientific objectives. In March 2009, the board appointed Akshay Vaishnaw, M.D., Ph.D., our senior vice president of clinical research, as an executive officer of the company. Dr. Vaishnaw's individual objectives focus on continuing to advance our clinical development programs.

Compliance with IRS Code Section 162(m)

Section 162(m) of the Internal Revenue Code of 1986, as amended (the "Code"), generally disallows a tax deduction to public companies for compensation in excess of \$1.0 million paid to a company's chief executive officer and its three other officers (other than the chief financial officer) whose compensation is required to be disclosed to stockholders pursuant to the Exchange Act by reason of being among the Company's most highly compensated officers. Qualified performance-based compensation is not subject to the deduction limitation if specified requirements are met. We periodically review the potential effects of Section 162(m) and we consider whether to structure the performance-based portion of our executive compensation, to comply with exemptions in Section 162(m) so that the compensation remains tax deductible to us. However, our compensation committee may, in its judgment, authorize compensation payments that do not comply with the exemptions in Section 162(m) when it believes that such payments are appropriate to attract and retain executive talent and are in our best interest and that of our stockholders.

Stock Option Granting Practices

Delegation to Our Chief Executive Officer

Currently, all of our regular employees, including our named executive officers, are eligible to participate in our 2004 Stock Incentive Plan and will be eligible to participate in the Amended and Restated 2004 Stock Incentive Plan and the 2009 Stock Incentive Plan, if approved by our stockholders. All new employees are granted stock options when they start employment and all continuing employees are eligible for stock option grants on an annual basis based on performance and upon promotions to positions of greater responsibility. Our compensation committee has delegated to Dr. Maraganore, our chief executive officer, the authority to make stock option grants under our 2004 Stock Incentive Plan to new hires, other than vice presidents and executive officers. The number of stock options he may grant to any one individual must be within the range specifically set by our board for these grants. The exercise price of such stock options must be equal to the closing price of our common stock on the NASDAQ Global Market on the date of grant. With respect to stock option grants to new hires other than vice presidents and executive officers, Dr. Maraganore approves the grant prior to the employee's first date of employment with such authority and provides that the award is to be granted to the new hire on his or her first date of regular employment, with a price equal to the fair market value of the common stock (as defined in the 2004 Stock Incentive Plan) on the first date of regular employment. Dr. Maraganore is required to maintain a list of options granted pursuant to such delegated authority and report to our compensation committee regarding such grants. Our compensation committee will delegate to Dr. Maraganore similar authority under the Amended and Restated 2004 Stock Incentive Plan and the 2009 Stock Incentive Plan, if approved by stockholders.

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Report of the Compensation Committee on Executive Compensation

Our compensation committee has reviewed and discussed the Compensation Discussion and Analysis required by Item 402(b) of Regulation S-K with management. Based upon such review and discussions, our compensation committee recommended to our board that such section be included in this proxy statement and incorporated by reference in our Annual Report on Form 10-K for the year ended December 31, 2008, which was filed with the SEC on March 2, 2009.

By the compensation committee of the board of directors of Alnylam,

Vicki L. Sato, Ph.D., Chair

Kevin P. Starr

James L. Vincent

Table of Contents**Executive Compensation**

The following table sets forth the total compensation paid or accrued for the years ended December 31, 2008, 2007 and 2006 to our named executive officers.

Summary Compensation Table

Name	Year	Salary (\$)	Bonus(2) (\$)	Option Awards(3)(4) (\$)	All Other Compensation(5) (\$)	Total (\$)
John M. Maraganore, Ph.D. <i>Chief Executive Officer</i>	2008	525,000		1,387,878	8,073	1,920,951
	2007	431,600		949,058	17,324	1,397,982
	2006	415,000		951,008	20,886	1,386,894
Barry E. Greene <i>President and Chief Operating Officer</i>	2008	350,000		725,761	30,701	1,106,462
	2007	309,000		511,681	26,218	846,899
	2006	300,000		567,164	24,827	891,991
Patricia L. Allen <i>Vice President of Finance and Treasurer</i>	2008	227,830		284,910	5,797	518,537
	2007	217,069		196,900	5,797	419,766
	2006	210,746		230,197	2,027	442,970
John (Jack) A. Schmidt, Jr., M.D.(1) <i>Senior Vice President and Chief Scientific Officer</i>	2008	109,470	175,000	236,221	15,708	536,399

(1) Dr. Schmidt joined Alnylam as our senior vice president and chief scientific officer on September 29, 2008. This amount represents the total salary earned by Dr. Schmidt during 2008 and is based upon an annual base salary of \$425,000. Dr. Schmidt was not eligible to participate in our executive stock option bonus plan for 2008 and received an on-hire stock option award and a pro-rated annual stock option award.

(2) Pursuant to the terms of his offer of employment, we paid Dr. Schmidt a sign-on bonus of \$175,000. We did not award cash bonuses to our named executive officers in 2008, 2007 or 2006. In March 2008, our compensation committee authorized the implementation of an executive stock option bonus plan for 2008, pursuant to which each of our vice presidents and executive officers was eligible to receive an annual bonus in the form of an award of stock options based upon the achievement of corporate goals and individual objectives for 2008 that were approved by our compensation committee. Bonus stock option awards made in 2008 under this plan are included in the amounts reported in the Option Awards column and detailed in footnote 1 to the 2008 Grants of Plan-Based Awards Table on page 29. In February 2009, following a review of our executive compensation programs, our compensation committee authorized the implementation of the annual cash incentive program to replace the stock bonus program beginning in fiscal 2009. The 2009 annual cash incentive program is described in the Compensation Discussion and Analysis under the heading 2009 Annual Incentive Program on page 23.

(3) We did not grant any restricted stock awards or stock appreciation rights to our named executive officers in 2008, 2007 or 2006.

(4)

The amounts reported in the Option Awards column represent the compensation expense, without any reduction for risk of forfeiture, for financial reporting purposes for the fiscal years ended December 31, 2008, 2007 and 2006 of grants of options to each of the named executive officers, calculated in accordance with the provisions of SFAS 123R. The assumptions we used in calculating these amounts are included in Note 9 of our audited consolidated financial statements for the year ended December 31, 2008 included in our Annual Report on Form 10-K, filed with the SEC on March 2, 2009. To see the value of awards made to the named executive officers in 2008, see the 2008 Grants of Plan-Based Awards Table on page 29. To see the value actually received by the named executive officer in 2008, see the 2008 Option Exercises and Stock Vested Table on page 32.

Details of each of the grants reflected above can be found in the Outstanding Equity Awards at Fiscal Year-End for 2008 Table on page 30.

The amounts reported in the Summary Compensation Table for these option awards may not represent the amounts that the named executive officers will actually realize from the awards. Whether, and to what extent, a named executive officer realizes value will depend on our actual operating performance, stock price fluctuations and the named executive officer's continued employment.

- (5) The amounts reported in the All Other Compensation column reflect, for each named executive officer, the sum of (i) the incremental cost to us of all perquisites and other personal benefits; (ii) the amount we

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contributed to the 401(k) plan in respect of such executive officer; and (iii) the dollar value of life insurance premiums we paid. Specifically the All Other Compensation column above includes:

Name	Year	Term Life Insurance Premiums Paid by Alnylam (\$)	Dollar Value of Alnylam Common Stock Contributed by Alnylam to the Executive's Account Under 401(k) Plan (\$)	Incremental Cost to Alnylam of All Perquisites and Other Personal Benefits (\$)
John M. Maraganore, Ph.D. <i>Chief Executive Officer</i>	2008	600	5,250	2,223(a)
	2007	600	5,250	11,474(a)
	2006	540	4,844	15,502(a)
Barry E. Greene <i>President and Chief Operating Officer</i>	2008	742	5,250	24,709(b)
	2007	742	5,250	20,226(b)
	2006	540	3,000	21,287(b)
Patricia L. Allen <i>Vice President of Finance and Treasurer</i>	2008	547	5,250	
	2007	547	5,250	
	2006	446	1,581	
John (Jack) A. Schmidt, Jr., M.D. <i>Senior Vice President and Chief Scientific Officer</i>	2008	600		15,108(c)

- (a) Represents amounts for travel and related expenses, paid by Alnylam, including \$819 in 2008, \$3,643 in 2007 and \$4,947 in 2006 as gross-ups for the related tax liability, for the executive's spouse to accompany the executive to certain industry events that spouses were expected to attend.
- (b) Represents amounts for travel and related expenses, paid by Alnylam, including \$9,097 in 2008, \$6,799 in 2007 and \$6,927 in 2006 as gross-ups for the related tax liability, for the executive's spouse to accompany the executive to certain industry events that spouses were expected to attend.
- (c) Represents amounts for relocation and related expenses, paid by Alnylam, including \$4,708 in 2008 as gross-ups for the related tax liability, in connection with Dr. Schmidt's move to the Cambridge area to join Alnylam.

The following table sets forth information concerning each grant of an award made to a named executive officer during the fiscal year ended December 31, 2008 under any plan, contract, authorization or arrangement pursuant to which cash, securities, similar instruments or other property may be received:

2008 Grants of Plan-Based Awards

**Exercise
or**

Name	Date of Grant(1)	Option Awards:	Base Price	Grant Date Fair
		Number of Securities Underlying Options	of Option Awards (\$)	Value of Option Awards (\$)(2)
John M. Maraganore, Ph.D. <i>Chief Executive Officer</i>	12/09/08	153,320	21.35	2,014,931
Barry E. Greene <i>President and Chief Operating Officer</i>	12/09/08	90,000	21.35	1,182,780
Patricia L. Allen <i>Vice President of Finance and Treasurer</i>	12/09/08	31,663	21.35	416,115
John (Jack) A. Schmidt, Jr., M.D. <i>Senior Vice President and Chief Scientific Officer</i>	09/29/08	200,000	30.25	3,664,320
	12/09/08	15,000	21.35	197,130

(1) None of our named executive officers received restricted stock awards or stock appreciation rights in 2008. The option awards reported in the 2008 Grants of Plan-Based Awards Table were granted pursuant to our 2004 Stock Incentive Plan and include options to purchase 28,320, 17,700 and 8,663 shares of our common stock granted to Dr. Maraganore, Mr. Greene and Ms. Allen, respectively, pursuant to our executive stock option bonus plan for 2008, which is described in the Compensation Discussion and Analysis under the heading "2008 Stock Option Bonus Plan" on page 22. Dr. Schmidt joined Alnylam as

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our senior vice president and chief scientific officer on September 29, 2008, and, accordingly, he was not eligible to participate in our executive stock option bonus plan for 2008 and received a pro-rated annual stock option award. Our 2004 Stock Incentive Plan generally provides that the option exercise price may not be less than 100% of the fair market value of our common stock on the date of grant. Pursuant to the 2004 Stock Incentive Plan, these stock options vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% of the shares at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary of the grant date.

- (2) The Grant Date Fair Value, computed in accordance with SFAS 123R, represents the SFAS 123R value of options granted during the year.

The amounts reported in the Summary Compensation Table for these option awards reflect our accounting expense and may not represent the amounts our named executive officers will actually realize from the awards. Whether, and to what extent, a named executive officer realizes value will depend on our actual operating performance, stock price fluctuations and that named executive officer's continued employment.

Information Relating to Equity Awards and Holdings

The following table sets forth information concerning stock options that have not been exercised for each of our named executive officers outstanding at December 31, 2008.

Outstanding Equity Awards at Fiscal Year-End for 2008

Name	Number of Securities Underlying Unexercised Options Exercisable	Option Awards		Option Exercise Price (\$)	Option Expiration Date
		Number of Securities Underlying Unexercised Options Unexercisable			
John M. Maraganore, Ph.D. <i>Chief Executive Officer</i>	92,302(1)			0.475	02/26/2013
	96,315(2)			0.475	02/26/2013
	73,684(3)			0.95	01/06/2014
	105,263(4)			0.95	01/06/2014
	150,000(5)			6.78	12/07/2014
	250,000(6)			7.47	12/21/2014
	93,750(7)	31,250(7)		13.12	12/07/2015
	62,500(8)	62,500(8)		22.75	12/14/2016
	37,650(9)	112,950(9)		31.39	12/12/2017
Barry E. Greene <i>President and Chief Operating Officer</i>		153,320(13)		21.35	12/09/2018
	48,058(10)			0.95	11/06/2013
	7,894(3)			0.95	01/06/2014
	14,928(11)			0.95	04/26/2014
	75,000(5)			6.78	12/07/2014
	56,250(7)	18,750(7)		13.12	12/07/2015
	30,000(8)	30,000(8)		22.75	12/14/2016
	20,000(9)	60,000(9)		31.39	12/12/2017

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		90,000(13)	21.35	12/09/2018
Patricia L. Allen	58,947(12)		0.95	05/04/2014
<i>Vice President of Finance</i>	16,750(5)		6.78	12/07/2014
<i>and Treasurer</i>	24,000(7)	8,000(7)	13.12	12/07/2015
	10,000(8)	10,000(8)	22.75	12/14/2016
	8,157(9)	24,468(9)	31.39	12/12/2017
		31,663(13)	21.35	12/09/2018
John (Jack) A. Schmidt, Jr., M.D.		200,000(14)	30.25	09/29/2018
<i>Senior Vice President and Chief</i>		15,000(13)	21.35	12/09/2018
<i>Scientific Officer</i>				

- (1) These options were granted on February 26, 2003. The options vested as to 25% of the shares on December 9, 2003, and as to an additional 6.25% at the end of each successive three-month period thereafter until December 9, 2006.

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- (2) These options were granted on February 26, 2003 and vested as to 50% of the shares upon us entering into our first significant strategic alliance, which occurred on September 8, 2003. The remaining 50% of these shares vest in equal installments on the last day of each quarterly period thereafter over four years.
- (3) These options were granted on January 6, 2004. The options vested as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary.
- (4) These options were granted on January 6, 2004 and vested in full upon our initial public offering in May 2004.
- (5) These options were granted on December 7, 2004. The options vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary.
- (6) These options were granted on December 21, 2004 and, pursuant to the terms of the grant, vested in full upon the effective date of the Novartis research collaboration and license agreement, described above under Agreements with Novartis on page 18.
- (7) These options were granted on December 7, 2005. The options vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary.
- (8) These options were granted on December 14, 2006. The options vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary.
- (9) These options were granted on December 12, 2007. The options vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary.
- (10) These options were granted on November 6, 2003. The options vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary.
- (11) These options were granted on April 26, 2004. The options vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary.
- (12) These options were granted on May 4, 2004. The options vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary.
- (13) These options were granted on December 9, 2008. The options vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% at the end of each successive three-month period following the first anniversary of the grant date until the fourth anniversary.
- (14) These options were granted on September 29, 2008. The options vest as to 25% of the shares on the first anniversary of the grant date and as to an additional 6.25% at the end of each successive three-month period

following the first anniversary of the grant date until the fourth anniversary.

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The following table sets forth information concerning the exercise of stock options during 2008 for each of our named executive officers.

2008 Option Exercises and Stock Vested

Name	Option Awards	
	Number of Shares Acquired on Exercise(1)	Value Realized on Exercise (\$)
John M. Maraganore, Ph.D. <i>Chief Executive Officer</i>	78,750	2,622,626
Barry E. Greene <i>President and Chief Operating Officer</i>	30,889	1,019,034
Patricia L. Allen <i>Vice President of Finance and Treasurer</i>		
John (Jack) A. Schmidt, Jr., M.D. <i>Senior Vice President and Chief Scientific Officer</i>		

(1) The value realized on exercise is based on the sales price of the shares less the applicable option exercise price.

Potential Payments Upon Termination or Change-in-Control

We do not have agreements with any of our executive officers pursuant to which they are eligible for potential payments upon termination or change in control of Alnylam.

Employment Arrangements

Each executive officer has signed a nondisclosure, invention and non-competition agreement providing for the protection of our confidential information and ownership of intellectual property developed by such executive officer and a covenant not to compete with us for a period of eighteen months after termination of employment.

Securities Authorized for Issuance Under Equity Compensation Plans

The following table provides information as of December 31, 2008 about the securities authorized for issuance under our equity compensation plans, consisting of our 2002 Employee, Director and Consultant Stock Option Plan (the 2002 Plan), our 2003 Employee, Director and Consultant Stock Option Plan (the 2003 Plan), our 2004 Stock Incentive Plan, as amended, and our 2004 Employee Stock Purchase Plan, as amended. All of our equity compensation plans were adopted with the approval of our stockholders.

Equity Compensation Plan Information

	Number of Securities to Be Issued	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights (\$)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans(1)
	Upon Exercise of Outstanding Options, Warrants and Rights		
Equity compensation plans approved by stockholders	7,037,214	19.87	681,763
Equity compensation plans not approved by stockholders			
Total	7,037,214	19.87	681,763

(1) Consists of 523,084 shares of our common stock available for future issuance under our 2004 Stock Incentive Plan and 158,679 shares of our common stock available for future issuance under our 2004 Employee Stock Purchase Plan. No shares of our common stock were available for issuance under our

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2002 Plan or our 2003 Plan as of December 31, 2008. On January 1, 2009, in accordance with the provisions of the 2004 Stock Incentive Plan, the number of shares available for issuance under the 2004 Stock Incentive Plan automatically increased by 2,070,691 shares.

- (2) At March 2, 2009, options to purchase 7,013,473 shares of common stock were outstanding under our 2004 Stock Incentive Plan, our 2002 Plan and our 2003 Plan, and an additional 2,597,150 shares were available for future grants under our 2004 Stock Incentive Plan. The weighted average remaining contractual life for options outstanding at March 2, 2009 was 7.98 years and the weighted average exercise price for such options was \$19.85. In addition, at March 2, 2009, there were 28,518 shares of restricted stock outstanding under the 2004 Plan with a weighted average remaining contractual life of 0.8 years. The amendment and restatement of our 2004 Stock Incentive Plan will not increase the number of shares of common stock available for issuance under the 2004 Stock Incentive Plan.

Compensation of Directors

We compensate our non-employee directors for their service as directors. We do not pay directors who are also our employees any additional compensation for their service as a director. Accordingly, Dr. Maraganore does not receive any additional compensation for his service as a director.

Our compensation committee periodically reviews the compensation we pay our non-employee directors. Our compensation committee compares our board compensation to compensation paid to non-employee directors of similarly sized public companies at a similar stage of development in the biotechnology industry. Our compensation committee also considers the responsibilities we ask of our board members along with the amount of time required to perform those responsibilities.

Each non-employee director is eligible to receive a cash fee of \$20,000 per year and the chairs of our board, our compensation committee and our nominating and corporate governance committee are each entitled to receive an additional \$5,000 per year. The chair of our audit committee is entitled to receive an additional \$15,000 per year. Each non-employee director is also entitled to receive upon his or her initial election to our board a stock option grant for 30,000 shares of common stock, vesting annually over three years, and an additional stock option grant to purchase 15,000 shares of common stock at each year's annual meeting at which he or she served as a director, vesting in full on the first anniversary of the date of grant. In addition, the chair of our audit committee is entitled to an additional stock option grant to purchase 10,000 shares of common stock per year. Our board may, in its discretion, increase or decrease the size of the award made to a director upon election or in connection with the annual stock option grant or make other option grants to our directors. The exercise price of these stock options is the fair market value of our common stock on the date of grant.

We also reimburse our directors for reasonable travel and other related expenses incurred in connection with their service on our board.

The following table sets forth information concerning the compensation of our non-employee directors in 2008.

Director Compensation

Fees Earned or Paid in Cash	Option Awards	All Other Compensation	Total
--	--------------------------	-----------------------------------	--------------

Name	(\$)	(\$)(1)(2)(3)	(\$)	(\$)
John K. Clarke	30,000	212,611		242,611
Victor J. Dzau, M.D.	20,000	255,470		275,470
Vicki L. Sato, Ph.D.	25,000	227,354		252,354
Paul R. Schimmel, Ph.D.	20,000	212,611		232,611
Edward M. Scolnick, M.D.	15,000	263,543		278,543
Phillip A. Sharp, Ph.D.	20,000	212,611	755,721(4)	988,332
Kevin P. Starr	35,000	356,050		391,050
James L. Vincent	20,000	224,472		244,472

(1) The amounts in this column include the compensation expense for financial statement reporting purposes for the fiscal year ended December 31, 2008, in accordance with SFAS 123R of stock options granted

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under our equity plans for service on our board and treated for accounting purposes as employee grants, and may include amounts from stock options granted in and prior to 2008. There can be no assurance that the SFAS 123R amounts will ever be realized. The assumptions we used to calculate these amounts are included in Note 9 to our audited consolidated financial statements for the fiscal year ended December 31, 2008 included in our Annual Report on Form 10-K, filed with the SEC on March 2, 2009. See footnote 4 below for the compensation expense of stock options granted under our equity plans for service on our board, but not accounted for under SFAS 123R.

- (2) As of December 31, 2008, our non-employee directors held the following aggregate number of shares under outstanding stock options (representing unexercised option awards both exercisable and unexercisable):

Name	Number of Shares Underlying Outstanding Stock	Number of Shares Underlying Outstanding Stock
	Options for Board Service	Options for Non-Board Service
John K. Clarke	50,000	
Victor J. Dzau, M.D.	45,000	
Vicki L. Sato, Ph.D.	55,000	
Paul R. Schimmel, Ph.D.	30,000	
Edward M. Scolnick, M.D.	45,000	
Phillip A. Sharp, Ph.D.	50,000	175,000
Kevin P. Starr	142,631	
James L. Vincent	115,000	

- (3) The number of shares underlying stock options granted to our non-employee directors for their service on our board during 2008 and the grant date fair value of such stock options are as follows:

Name	Date of Grant	Number of Shares Underlying Stock	Grant Date Fair Value of Stock Option Grants in 2008 \$(a)
		Option Grants in 2008	
John K. Clarke	06/03/2008	15,000	249,741
Victor J. Dzau, M.D.	06/03/2008	15,000	249,741
Vicki L. Sato, Ph.D.	06/03/2008	15,000	249,741
Paul R. Schimmel, Ph.D.	06/03/2008	15,000	249,741
Edward M. Scolnick, M.D.	02/11/2008	45,000(b)	891,491
Phillip A. Sharp, Ph.D.	06/03/2008	15,000	249,741
Kevin P. Starr	06/03/2008	25,000	416,235
James L. Vincent	06/03/2008	15,000	249,741

- (a) The Grant Date Fair Value computed in accordance with SFAS 123R represents the SFAS 123R value of options granted during 2008. The weighted-average grant date fair value per option was \$16.65, with the exception of the grant to Dr. Scolnick, for which the grant date fair value per option was \$19.81. There can be no assurance that the Grant Date Fair Value computed in accordance with SFAS 123R will ever be realized.
- (b) Dr. Scolnick received a stock option grant for 45,000 shares of common stock in connection with his election to our board in February 2008 but was not eligible to receive an annual stock option grant in June 2008. In granting this option, our board exercised its discretion in determining the amount of the award.
- (4) This amount relates to compensation to Dr. Sharp for service on our scientific advisory board and includes (A) a cash payment of \$36,000 paid to Dr. Sharp during 2008 and (B) the compensation expense for financial statement reporting purposes for stock options granted to him in 2005, 2006, 2007 and 2008 for an aggregate of 175,000 shares. Because these stock options were compensation for service on our

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scientific advisory board, they are non-employee grants and, therefore, are accounted for using the fair value method in accordance with SFAS No. 123, as amended, and Emerging Issues Task Force Issue No. 96-18

Accounting for Equity Instruments that are Issued to Other than Employees for Acquiring, or in Conjunction with, Selling, Goods or Services, under which compensation is generally recognized over the vesting period of the award. Under the fair value method, compensation associated with non-employee stock-based awards is determined based on the estimated fair value of the award, measured using an established option-pricing model. At the end of each financial reporting period prior to vesting, the value of these options (as calculated using the Black-Scholes option pricing model) are re-measured using the then current fair value of our common stock. The assumptions we used to calculate this amount is included in Note 9 to our audited consolidated financial statements for the fiscal year ended December 31, 2008 included in our Annual Report on Form 10-K, filed with the SEC on March 2, 2009.

Compensation Committee Interlocks and Insider Participation

During fiscal year 2008, the members of our compensation committee were Dr. Sato and Messrs. Starr and Vincent, none of whom was a current or former officer or employee of Alnylam and none of whom had any related person transaction involving Alnylam.

PROPOSAL 2 AMENDMENT AND RESTATEMENT OF 2004 STOCK INCENTIVE PLAN

Overview

On April 16, 2009, upon the recommendation of the compensation committee, our board of directors approved the amendment and restatement of our 2004 Stock Incentive Plan, or the Existing Plan, which, as amended and restated, we refer to as the 2004 Plan, to, among other things: (1) limit the type of equity award that may granted under the plan to only stock options; (2) delete the annual share increase provision; (3) modify the per-participant sublimits on the number of shares subject to options that may be granted; and (4) prohibit repricing of options without further stockholder approval.

At March 2, 2009, options to purchase 7,013,473 shares of common stock were outstanding under our Existing Plan, our 2002 Plan and our 2003 Plan, and an additional 2,597,150 shares were available for future grants under our Existing Plan. No shares of our common stock were available for future grants under our 2002 Plan or our 2003 Plan as of March 2, 2009. The weighted average remaining contractual life for options outstanding at March 2, 2009 was 7.98 years and the weighted average exercise price for such options was \$19.85. In addition, at March 2, 2009, there were 28,518 shares of restricted stock outstanding under our Existing Plan with a weighted average remaining contractual life of 0.8 years. The amendment and restatement of our Existing Plan will not increase the number of shares of common stock available for issuance under the 2004 Plan.

As required by the 2004 Plan and the NASDAQ Marketplace Rules, our board is submitting the 2004 Plan for approval by our stockholders and has specifically conditioned its effectiveness on such approval.

Description of the 2004 Plan

The following summary of the 2004 Plan is qualified in its entirety by reference to the 2004 Plan, a copy of which is attached as Appendix B to the electronic copy of this proxy statement filed with the SEC and may be accessed from the SEC's website at www.sec.gov. In addition, a copy of the 2004 Plan may be obtained by making a written request to: Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, Massachusetts 02142, Attention: Investor Relations and Corporate Communications. References to our board of directors in this summary shall include the compensation committee of our board or similar committee appointed by our board to administer the 2004 Plan.

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Purpose

The purpose of the 2004 Plan is to advance the interests of our stockholders by enhancing our ability to attract, retain and motivate persons who are expected to make important contributions to our company by providing such persons with stock ownership opportunities and performance-based incentives that are intended to better align the interests of such persons with those of our stockholders.

Eligibility

Our employees, officers, directors, consultants and advisors and those of our subsidiaries and other business ventures in which we have a controlling interest are eligible to participate in the 2004 Plan. Subject to stockholder approval of the 2004 Plan, the date of which we refer to as the Amendment Date, only options may be granted under the 2004 Plan. Prior to the Amendment Date, we granted options and restricted stock awards, each of which we refer to as an Award, under the Existing Plan. The terms and conditions of any Awards outstanding on the Amendment Date will be governed by the 2004 Plan. Each person who, prior to the Amendment Date, was granted an Award or who, following the Amendment Date, is granted options shall be deemed a Participant.

Administration and Delegation

The 2004 Plan will be administered by our board. Our board has the authority to grant options, to adopt, amend and repeal the administrative rules, guidelines and practices relating to the 2004 Plan and to interpret the provisions of the 2004 Plan and any Award agreements entered into under the 2004 Plan. To the extent permitted by law, our board may delegate authority under the 2004 Plan to one or more committees or subcommittees of our board and may delegate to one or more of our officers the power to grant options to our employees or officers, provided that our board shall fix the term of the options granted by such officers (including the exercise price) and the maximum number of shares subject to such options; provided further, however, that no officer shall be authorized to grant options to any of our executive officers (as defined by Rule 3b-7 under the Exchange Act) or to any of our officers (as defined by Rule 16a-1 under the Exchange Act).

Subject to any applicable limitations contained in the 2004 Plan, our board, or any committee to whom our board delegates authority, as the case may be, selects the recipients of options and determines (a) the number of shares of our common stock subject to options and the dates upon which options become exercisable, (b) the exercise price of options (which may not be less than 100% of the fair market value of our common stock on the date of grant), and (c) the duration of options, which may not exceed ten years.

Discretionary options to non-employee directors will only be granted and administered by a committee, all of the members of which are independent as defined by Section 4200(a)(15) of the NASDAQ Marketplace Rules.

Stock Available for Awards

Types of Awards. Following the Amendment Date, our board may grant incentive stock options intended to qualify under Section 422 of the Code and non-statutory stock options. Under present law, incentive stock options may only be granted to our employees and those of our subsidiaries.

Authorized Number of Shares. Subject to adjustment in the event of stock splits and other similar events, options may be granted under the 2004 Plan for the number of shares of our common stock that is equal to the sum of (1) 9,915,170 shares and (2) such additional number of shares of common stock (up to 2,451,315 shares) as is equal to the sum of (x) the number of shares of common stock reserved for issuance under our 2002 Plan and our 2003 Plan, which collectively we refer to as the Prior Plans, that remained available for grant under the Prior Plans immediately

prior to the closing of our initial public offering and (y) the number of shares of common stock subject to awards granted under the Prior Plans which awards expire, terminate or are otherwise surrendered, canceled, forfeited or repurchased by us at their original issuance price pursuant to a contractual repurchase right (subject, however, in the case of incentive stock options to any limitations of the Code).

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Share Counting. For purposes of counting the number of shares available for the grant of options under the 2004 Plan, if any Award expires or is terminated, surrendered or canceled without having been fully exercised or is forfeited in whole or in part (including as the result of shares of common stock subject to such Award being repurchased by us at the original issuance price pursuant to a contractual repurchase right) or results in any common stock not being issued, the unused common stock covered by such Award shall again be available for the grant of options under the 2004 Plan; provided, however, in the case of incentive stock options, the foregoing shall be subject to any limitations under the Code. Shares of common stock delivered to us by a Participant to (A) purchase shares of common stock upon the exercise of an Award or (B) satisfy tax withholding obligations (including shares retained from the Award creating the tax obligation) shall not be added back to the number of shares available for the future grant of options. Shares of common stock repurchased by us on the open market using the proceeds from the exercise of an Award shall not increase the number of shares available for future grant of options. Shares issued under the 2004 Plan may consist in whole or in part of authorized but unissued shares or treasury shares.

Sublimits. The maximum number of shares with respect to which options may be granted to any Participant under the 2004 Plan may not exceed 500,000 per calendar year (subject to adjustment for changes in our capital stock), except in the calendar year in which the Participant is hired by us, in which case the maximum number of shares shall be 1,000,000 (subject to adjustment for changes in our capital stock). Following the Amendment Date, the maximum number of shares with respect to which awards may be granted to our non-employee directors shall be 5% of the maximum number of authorized shares under the 2004 Plan.

Description of Awards

Incentive Stock Options and Non-statutory Stock Options. Our board may grant options to purchase shares of our common stock. Optionees receive the right to purchase a specified number of shares of our common stock at a specified option price and subject to such other terms and conditions as are specified in connection with the option grant. Options may not be granted at an exercise price less than 100% of the fair market value of our common stock on the date the option is granted; provided that if our board approves the grant of an option with an exercise price to be determined on a future date, the exercise price shall not be less than 100% of the fair market value on such future date. Options may not be granted for a term in excess of ten years. The 2004 Plan permits the following forms of payment of the exercise price of options: (a) payment by cash or check, (b) in connection with a cashless exercise through a broker, (c) subject to certain conditions, surrender to us of shares of our common stock, (d) in the case of non-statutory stock options, by delivery of a notice of net exercise to us, (e) payment of such lawful consideration as our board may determine or (f) any combination of these forms of payment.

Director Options. The provisions of the 2004 Plan shall apply to options granted to our non-employee directors under the Existing Plan prior to the Amendment Date. However, following the Amendment Date, neither automatic initial grants to new non-employee directors nor automatic annual grants to non-employee directors shall be made under the 2004 Plan.

Limitation on Repricing of Options. Unless such action is approved by our stockholders: (1) we may not amend any outstanding option granted under the 2004 Plan to provide an exercise price per share that is lower than the then-current exercise price per share of any outstanding option, other than adjustments for changes in our capitalization and (2) we may not cancel any outstanding option (whether or not granted under the 2004 Plan) and grant in substitution therefor new Awards under the 2004 Plan covering the same or a different number of shares and having an exercise price per share lower than the then-current exercise price per share of the cancelled option.

Restricted Stock Awards. The provisions of the 2004 Plan shall apply to restricted stock awards granted under the Existing Plan prior to the Amendment Date. No restricted stock awards shall be granted under the plan following the Amendment Date.

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Adjustments for Changes in Capital Stock

We are required to make equitable adjustments, in the manner determined by our board, in connection with the 2004 Plan and any outstanding Awards or options to reflect stock splits, stock dividends, recapitalizations, spin-offs and other similar changes in capitalization.

Reorganization Events

Definition. The 2004 Plan contains provisions addressing the consequences of any Reorganization Event, which we define as (a) any merger or consolidation of our company with or into another entity as a result of which all of our common stock is converted into or exchanged for the right to receive cash, securities or other property or is cancelled, (b) any transfer or disposition of all of our common stock for cash, securities or other property pursuant to a share exchange or other transaction or (c) any liquidation or dissolution of our company.

Consequences of a Reorganization Event on Options. In connection with a Reorganization Event, our board may take any one or more of the following actions as to all or any outstanding options on such terms as our board determines: (i) provide that options shall be assumed, or substantially equivalent options shall be substituted, by the acquiring or succeeding corporation (or an affiliate thereof), (ii) upon written notice to a Participant, provide that the Participant's unexercised options shall become exercisable in full and will terminate immediately prior to the consummation of such Reorganization Event unless exercised by the Participant within a specified period following the date of such notice, (iii) in the event of a Reorganization Event under the terms of which holders of common stock will receive upon consummation thereof a cash payment for each share surrendered in the Reorganization Event, which we refer to as the Acquisition Price, make or provide for a cash payment to a Participant equal to (A) the Acquisition Price times the number of shares of common stock subject to the Participant's options (to the extent the exercise price does not exceed the Acquisition Price) minus (B) the aggregate exercise price of all such outstanding options, in exchange for the termination of such options, (iv) provide that outstanding options shall become realizable or deliverable, or restrictions applicable to an option shall lapse, in whole or in part prior to or upon such Reorganization Event, (v) provide that, in connection with a liquidation or dissolution of our company, options shall convert into the right to receive liquidation proceeds (if applicable, net of the exercise price thereof and any applicable tax withholdings) and (vi) any combination of the foregoing. In taking any of the actions permitted under this provision, our board shall not be obligated by the 2004 Plan to treat all options, all options held by a Participant, or all options of the same type, identically.

Consequences of a Reorganization Event on Restricted Stock Awards. Upon the occurrence of a Reorganization Event other than a liquidation or dissolution of our company, our repurchase and other rights under each outstanding restricted stock award shall inure to the benefit of our successor and shall, unless our board determines otherwise, apply to the cash, securities or other property which the common stock was converted into or exchanged for pursuant to such Reorganization Event in the same manner and to the same extent as they applied to the common stock subject to such restricted stock award. Upon the occurrence of a Reorganization Event involving the liquidation or dissolution of our company, except to the extent specifically provided to the contrary in the instrument evidencing any restricted stock award or any other agreement between a Participant and us, all restrictions and conditions on all restricted stock awards then outstanding shall automatically be deemed terminated or satisfied.

Transferability of Awards

Awards may not be sold, assigned, transferred, pledged or otherwise encumbered by the person to whom they are granted, either voluntarily or by operation of law, except by will or the laws of descent and distribution or, other than in the case of an incentive stock option, pursuant to a qualified domestic relations order. During the life of the participant, Awards are exercisable only by the participant.

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Provisions for Non-U.S. Participants

Options may, and prior to the Amendment Date Awards could, be granted to Participants who are non-U.S. citizens or residents employed outside the United States, or both, on such terms and conditions different from those applicable to options or Awards to Participants employed in the United States as may, in the judgment of our board, be necessary or desirable in order to recognize differences in local law or tax policy. Our board also may impose conditions on the exercise or vesting of options, or Awards granted under the Existing Plan prior to the Amendment Date, in order to minimize our board's obligation with respect to tax equalization for Participants on assignments outside their home country. Our board may approve such supplements to or amendments, restatements or alternative versions of the 2004 Plan as it may consider necessary or appropriate for such purposes, without thereby affecting the terms of the 2004 Plan as in effect for any other purpose.

Amendment or Termination

No options shall be granted under the 2004 Plan after the 10th anniversary of the Amendment Date, but options previously granted may extend beyond that date. Our board may at any time amend, suspend or terminate the 2004 Plan or any portion thereof; provided that (1) to the extent required by Section 162(m), no Award granted to a Participant that is intended to comply with Section 162(m) after the date of such amendment shall become exercisable, realizable or vested, as applicable to such Award, unless and until our stockholders approve such amendment if required by Section 162(m) (including the vote required under Section 162(m)); (2) no amendment that would require stockholder approval under the rules of NASDAQ may be made effective unless and until our stockholders approve such amendment; and (3) if NASDAQ amends its corporate governance rules so that such rules no longer require stockholder approval of material amendments to equity compensation plans, then, from and after the effective date of such amendment to the NASDAQ rules, no amendment to the 2004 Plan (A) materially increasing the number of shares authorized under the 2004 Plan, (B) expanding the types of Awards that may be granted under the 2004 Plan, or (C) materially expanding the class of participants eligible to participate in the 2004 Plan shall be effective unless and until our stockholders approve such amendment. In addition, if at any time the approval of our stockholders is required as to any other modification or amendment under Section 422 of the Code or any successor provision with respect to incentive stock options, our board may not effect such modification or amendment without such approval. Unless otherwise specified in the amendment, any amendment to the 2004 Plan adopted in accordance with this provision shall apply to, and be binding on the holders of, all Awards outstanding under the 2004 Plan as of the Amendment Date, provided our board determines that such amendment does not materially and adversely affect the rights of Participants under the plan. No Award will be made that is conditioned upon stockholder approval of any amendment to the 2004 Plan.

Plan Benefits

As of March 31, 2009, approximately 190 persons were eligible to receive Awards under the 2004 Plan, including our five executive officers and eight non-employee directors. The granting of options under the 2004 Plan is discretionary, and we cannot now determine the number of options to be granted in the future to any particular person or group.

If our stockholders do not approve the 2004 Plan, our Existing Plan, excluding the proposed amendments, will remain in effect. In such event, our board will consider whether to adopt alternative arrangements based on its assessment of our needs.

Federal Income Tax Consequences

The following is a summary of the United States federal income tax consequences that generally will arise with respect to stock options granted under the 2004 Plan. This summary is based on the federal tax laws in effect as of the

date of this proxy statement. In addition, this summary assumes that all stock options granted under the 2004 plan are exempt from, or comply with, the rules under Section 409A of the Code regarding nonqualified deferred compensation. Changes to these laws could alter the tax consequences described below.

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Incentive Stock Options

A Participant will not have income upon the grant of an incentive stock option. Also, except as described below, a Participant will not have income upon exercise of an incentive stock option if the Participant has been employed by us or a 50% or more-owned corporate subsidiary of ours at all times beginning with the option grant date and ending three months before the date the Participant exercises the option. If the Participant has not been so employed during that time, then the Participant will be taxed as described below under Non-Statutory Stock Options. The exercise of an incentive stock option may subject the Participant to the alternative minimum tax.

A Participant will have income upon the sale of the stock acquired under an incentive stock option at a profit (if sales proceeds exceed the exercise price). The type of income will depend on when the Participant sells the stock. If a Participant sells the stock more than two years after the option was granted and more than one year after the option was exercised, then all of the profit will be long-term capital gain. If a Participant sells the stock prior to satisfying these waiting periods, then the Participant will have engaged in a disqualifying disposition and a portion of the profit will be ordinary income and a portion may be capital gain. This capital gain will be long-term if the Participant has held the stock for more than one year and otherwise will be short-term. If a Participant sells the stock at a loss (sales proceeds are less than the exercise price), then the loss will be a capital loss. This capital loss will be long-term if the Participant held the stock for more than one year and otherwise will be short-term.

Non-Statutory Stock Options

A Participant will not have income upon the grant of a non-statutory stock option. A Participant will have compensation income upon the exercise of a non-statutory stock option equal to the value of the stock on the day the Participant exercised the option less the exercise price. Upon sale of the stock, the Participant will have capital gain or loss equal to the difference between the sales proceeds and the value of the stock on the day the option was exercised. This capital gain or loss will be long-term if the Participant has held the stock for more than one year and otherwise will be short-term.

Tax Consequences to the Company

There will be no tax consequences to us except that we will be entitled to a deduction when a Participant has compensation income. Any such deduction will be subject to the limitations of Section 162(m) of the Code.

Board Recommendation

Our Board of Directors believes that our future success depends, in large part, upon our ability to maintain a competitive position in attracting, retaining and motivating key personnel. Accordingly, our board believes adoption of the 2004 Plan is in the best interests of Alnylam and our stockholders and recommends a vote FOR this proposal.

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PROPOSAL 3 ADOPTION OF 2009 STOCK INCENTIVE PLAN

Overview

On April 16, 2009, upon the recommendation of the compensation committee, our board of directors adopted, subject to stockholder approval, the 2009 Stock Incentive Plan, or the 2009 Plan. The 2009 Plan will augment our 2004 Plan.

At March 2, 2009, options to purchase 7,013,473 shares of common stock were outstanding under our Existing Plan, our 2002 Plan and our 2003 Plan, and an additional 2,597,150 shares were available for future grants under our Existing Plan. No shares of our common stock were available for future grants under our 2002 Plan or our 2003 Plan as of March 2, 2009. The weighted average remaining contractual life for options outstanding at March 2, 2009 was 7.98 years and the weighted average exercise price for such options was \$19.85. In addition, at March 2, 2009, there were 28,518 shares of restricted stock outstanding under our Existing Plan with a weighted average remaining contractual life of 0.8 years. The amendment and restatement of our Existing Plan will not increase the number of shares of common stock available for issuance under the 2004 Plan.

If the 2009 Plan is approved by our stockholders, an additional 2,200,000 shares of our common stock will be reserved for issuance thereunder.

In the opinion of our board, our future success depends in large part on our ability to maintain a competitive position in attracting, retaining and motivating key employees with experience and ability. Our board believes that adoption of the 2009 Plan and the authorization of the shares for issuance thereunder is appropriate and in the best interests of our stockholders given our current expectations on hiring, the highly competitive environment in which we recruit and retain employees and our historical burn rate. Our management will carefully consider all proposed grants under the 2009 Plan.

Description of the 2009 Plan

The following summary of the 2009 Plan is qualified in its entirety by reference to the 2009 Plan, a copy of which is attached as Appendix C to the electronic copy of this proxy statement filed with the SEC and may be accessed from the SEC's website at www.sec.gov. In addition, a copy of the 2009 Plan may be obtained by making a written request to: Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, Massachusetts 02142, Attention: Investor Relations and Corporate Communications. References to our board of directors in this summary shall include the compensation committee of our board of directors or similar committee appointed by the board of directors to administer the 2009 Plan.

Purpose

The purpose of the 2009 Plan is to advance the interests of our stockholders by enhancing our ability to attract, retain and motivate persons who are expected to make important contributions to our company by providing such persons with equity ownership opportunities and performance-based incentives that are intended to better align the interests of such persons with those of our stockholders.

Eligibility

Our employees, officers, directors, consultants and advisors and those of our subsidiaries and other business ventures in which we have a controlling interest are eligible participate in and be granted Awards (as defined below) under the

2009 Plan. Each person who is granted an Award under the 2009 Plan is deemed a Participant.

Administration and Delegation

The 2009 Plan is administered by our board. Our board has the authority to adopt, amend and repeal the administrative rules, guidelines and practices relating to the 2009 Plan and to interpret the provisions of the 2009 Plan and any Award agreements entered into under the 2009 Plan. Pursuant to the terms of the 2009

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Plan, our board may delegate authority under the 2009 Plan to one or more committees or subcommittees of our board and may delegate to one or more of our officers the power to grant options to our employees or officers, provided that our board shall fix the term of the options granted by such officers (including the exercise) and the maximum number of shares subject to such options; provided further, however, that no officer shall be authorized to grant options to any of our executive officers (as defined by Rule 3b-7 under the Exchange Act) or to any of our officers (as defined by Rule 16a-1 under the Exchange Act).

Subject to any applicable limitations contained in the 2009 Plan, our board, or any committee to whom our board delegates authority, as the case may be, selects the recipients of Awards and determines (a) the number of shares of our common stock covered by options and the dates upon which such options become exercisable, (b) the exercise price of options (which may not be less than 100% of the fair market value of our common stock on the date of grant), (c) the duration of options (which may not exceed ten years), and (d) the number of shares of our common stock subject to any stock appreciation right, restricted stock award, restricted stock unit award or other stock-based Awards and the terms and conditions of such Awards, including conditions for repurchase, issue price and repurchase price.

Discretionary Awards to non-employee directors will only be granted and administered by a committee, all of the members of which are independent as defined by Section 4200(a)(15) of the NASDAQ Marketplace Rules.

Stock Available for Awards

Types of Awards. The 2009 Plan provides for the grant of incentive stock options intended to qualify under Section 422 of the Code, non-statutory stock options, stock appreciation rights (SARs), restricted stock, restricted stock units (RSUs), and other stock-based awards as described below, which we refer to in this proxy statement collectively as Awards. Under present law, incentive stock options may only be granted to our employees and those of our subsidiaries.

Authorized Number of Shares; Fungible Share Pool. Subject to adjustment in the event of stock splits and other similar events, Awards may be granted under the 2009 Plan for up to 2,200,000 shares of our common stock. Any restricted stock award, RSU or other stock-based award made under the 2009 Plan, each of which we refer to as a Full Value Award, will be counted against the shares reserved for issuance under the 2009 Plan, and the limits described below, as 1.5 shares for each share of common stock subject to such award and any option or stock appreciation right award made under the 2009 Plan will be counted against the shares reserved for issuance under the 2009 Plan, and the limits described below, as one share for each one share of common stock underlying the award. To the extent a share that was subject to an award that was counted as 1.5 shares is returned to the 2009 Plan, the share reserve and limits will be credited with 1.5 shares. To the extent a share that was subject to an Award that was counted as one share is returned to the 2009 Plan, the share reserve and limits will be credited with one share.

Share Counting. For purposes of counting the number of shares available for the grant of Awards under the 2009 Plan and under the sublimits described below (i) all shares of common stock covered by independent SARs shall be counted against the number of shares available for the grant of Awards; provided, however, that independent SARs that may be settled only in cash shall not be so counted; (ii) if any Award (A) expires or is terminated, surrendered or canceled without having been fully exercised or is forfeited in whole or in part (including as the result of shares of common stock subject to such Award being repurchased by us at the original issuance price pursuant to a contractual repurchase right) or (B) results in any common stock not being issued (including as a result of an independent SAR that was settleable either in cash or in stock actually being settled in cash), the unused common stock covered by such Award shall again be available for the grant of Awards; provided, however, in the case of incentive stock options, the foregoing shall be subject to any limitations under the Code; and provided further, in the case of independent SARs, that the full number of shares subject to any stock-settled SAR shall be counted against the shares available under the 2009 Plan and against the sublimits described below in proportion to the portion of the SAR actually exercised

regardless of the number of shares actually used to settle such SAR upon exercise; (iii) shares of common stock delivered (by actual delivery, attestation, or net exercise) to us by a Participant to (A) purchase shares of

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common stock upon the exercise of an Award or (B) satisfy tax withholding obligations (including shares retained from the Award creating the tax obligation) shall not be added back to the number of shares available for the future grant of Awards; and (iv) shares of common stock repurchased by us on the open market using the proceeds from the exercise of an Award shall not increase the number of shares available for future grant of Awards.

Sublimits. The maximum number of shares with respect to which Awards may be granted to any participant under the 2009 Plan may not exceed 500,000 per calendar year (subject to adjustment for changes in our capital stock), except in the calendar year in which the Participant is hired by us, in which case the maximum number of shares shall be 1,000,000 (subject to adjustment for changes in our capital stock). For purposes of this limit, the combination of an option in tandem with a SAR is treated as a single award. In addition, except for initial and annual grants provided under the section below entitled *Director Options*, the maximum number of shares with respect to which awards may be granted to directors who are not our employees at the time of the grant shall be 5% of the maximum number of authorized shares under the 2009 Plan.

Substitute Awards. In connection with our merger or consolidation with another entity or our acquisition of property or stock of an entity, our board may grant options in substitution for any options or other stock or stock-based awards granted by such entity or an affiliate thereof. Substitute options may be granted on such terms, as our board deems appropriate in the circumstances, notwithstanding any limitations on options contained in the 2009 Plan. Substitute options will not count against the 2009 Plan's overall share limit, except as may be required by the Code.

Description of Awards

Incentive Stock Options and Non-Statutory Stock Options. Our board may grant options to purchase shares of our common stock. Optionees receive the right to purchase a specified number of shares of our common stock at a specified option price and subject to such other terms and conditions as are specified in connection with the option grant. Options may not be granted at an exercise price less than 100% of the fair market value of our common stock on the date the option is granted; provided that if our board approves the grant of an option with an exercise price to be determined on a future date, the exercise price shall not be less than 100% of the fair market value on such future date. Options may not be granted for a term in excess of ten years. The 2009 Plan permits the following forms of payment of the exercise price of options: (a) payment by cash or check, (b) in connection with a cashless exercise through a broker, (c) subject to certain conditions, surrender to us of shares of our common stock, (d) in the case of nonstatutory stock options, by delivery of a notice of net exercise to us, (e) payment of such lawful consideration as our board may determine, or (f) any combination of these forms of payment.

Director Options. The 2009 Plan provides for the automatic grant of nonstatutory stock options to our non-employee directors. Upon the commencement of service on our board, each non-employee director will receive a nonstatutory stock option to purchase 30,000 shares of our common stock, subject to adjustment for changes in our capital stock. Additionally, on the date of each annual meeting of stockholders, each non-employee director who is both serving as a director immediately prior to and immediately following such meeting will receive a nonstatutory stock option to purchase 15,000 shares of our common stock, subject to adjustment for changes in our capital stock; provided, however, that a non-employee director shall not be eligible to receive this annual option grant unless such director has served on our board for at least six months. In addition, on the date of each annual meeting, the chairman of the audit committee of our board shall receive a nonstatutory stock option to purchase an additional 10,000 shares of our common stock, subject to adjustment for changes in our capital stock.

Our board retains the specific authority to from time to time increase or decrease the number of shares subject to such director options and to issue stock appreciation rights, restricted stock, restricted stock units and other stock-based awards in lieu of some or all of the options otherwise issuable under this section, subject to the limitation on the aggregate number of shares issuable to non-employee directors described above.

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Options automatically granted to our non-employee directors will (i) have an exercise price equal to the fair market value on the date of grant, (ii) vest in full on the first anniversary of the date of grant provided that the individual is serving on our board on such date (or, in the case of options granted upon commencement of service on our board, as to one-third of the shares subject to the option on each of the first, second and third anniversaries of the date of grant); provided that no additional vesting shall take place after the participant ceases to serve as a director and further provided that the board may provide for accelerated vesting in the case of death, disability, change in control, attainment of mandatory retirement age or retirement, (iii) expire on the earlier of 10 years from the date of grant or three months following cessation of service on our board and (iv) contain such other terms and conditions as the board shall determine.

Stock Appreciation Rights. A SAR is an award entitling the holder, upon exercise, to receive an amount in our common stock or cash or a combination thereof determined by reference to appreciation, from and after the date of grant, in the fair market value of a share of our common stock over the measurement price established pursuant to the applicable SAR agreement, provided that such measurement price shall not be less than 100% of the fair market value of our common stock on the effective date of grant. SARs may be granted independently or in tandem with an option. SARs may not be granted with a term in excess of ten years.

Limitation on Repricing of Options and SARs. Unless approved by our stockholders: (1) we may not amend any outstanding option or SAR granted under the 2009 Plan to provide an exercise price per share that is lower than the then-current exercise price per share of such outstanding option or SAR, other than adjustments for changes in our capitalization and (2) our board may not cancel any outstanding option or SAR (whether or not granted under the 2009 Plan) and grant in substitution therefor new Awards under the 2009 Plan covering the same or a different number of shares and having an exercise price per share lower than the then-current exercise price per share of the cancelled option or SAR.

Restricted Stock Awards. Restricted stock awards entitle recipients to acquire shares of our common stock, subject to our right to repurchase all or part of such shares from the recipient in the event that the conditions specified in the applicable Award are not satisfied prior to the end of the applicable restriction period established for such Award. Our board shall determine the terms and conditions of a restricted stock award. Restricted stock awards that vest solely based on the passage of time shall be (a) zero percent vested prior to the first anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the first annual meeting held after the date of grant), (b) no more than one-third vested prior to the second anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the second annual meeting held after the date of grant), and (c) no more than two-thirds vested prior to the third anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the third annual meeting held after the date of grant). Restricted stock awards that do not vest solely based on the passage of time shall not vest prior to the first anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the first annual meeting held after the date of grant). The two foregoing sentences shall not apply to (1) performance awards, as described below, or (2) restricted stock awards granted, in the aggregate, for up to 10% of the maximum number of authorized shares under the 2009 Plan. Our board may, however, in its discretion, either at the time a restricted stock award is made or at any time thereafter, waive its right to repurchase shares of common stock (or waive the forfeiture thereof) or remove or modify any part or all of the restrictions applicable to the restricted stock award, provided that our board may only exercise such rights in the following extraordinary circumstances: death, disability or retirement of the participant, or a merger, consolidation, sale, reorganization, recapitalization, or change in control of our company.

Restricted Stock Unit Awards. RSUs entitle the recipient to receive shares of our common stock to be delivered at the time such shares vest pursuant to the terms and conditions described above. Our board may provide that the settlement of RSUs will be deferred on a mandatory basis or at the election of the Participant in a manner that complies with Section 409A of the Code.

Other Stock-Based Awards. Under the 2009 Plan, our board has the right to grant other Awards based upon our common stock having such terms and conditions as our board may determine, including the grant of shares based upon certain conditions, the grant of Awards that are valued in whole or in part by reference to,

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or otherwise based on, shares of our common stock, and the grant of Awards entitling recipients to receive shares of our common stock to be delivered in the future. Other stock-based awards that vest solely based on the passage of time shall be (a) zero percent vested prior to the first anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the first annual meeting held after the date of grant), (b) no more than one-third vested prior to the second anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the second annual meeting held after the date of grant), and (c) no more than two-thirds vested prior to the third anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the third annual meeting held after the date of grant). Other stock-based awards that do not vest solely based on the passage of time shall not vest prior to the first anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the first annual meeting held after the date of grant). The two foregoing sentences shall not apply to (1) performance awards or (2) restricted stock awards granted, in the aggregate, for up to 10% of the maximum number of authorized shares under the 2009 Plan. Our board may, however, in its discretion, either at the time another stock-based award is made or at any time thereafter, waive its right to repurchase shares of common stock (or waive the forfeiture thereof) or remove or modify any part or all of the restrictions applicable to the other stock-based award, provided that our board may only exercise such rights in the following extraordinary circumstances: death, disability or retirement of the participant, or a merger, consolidation, sale, reorganization, recapitalization, or change in control of our company.

Performance Conditions. Restricted stock awards and other stock-based awards under the 2009 Plan may be made subject to the achievement of specified performance goals designed to qualify for deduction under Section 162(m) of the Code. Grants of performance awards shall be made only by a committee comprised solely of two or more directors eligible to serve on a committee making Awards qualifying as performance-based compensation under Section 162(m). The performance criteria for each such Award will be based on one or more of the following measures: net income, earnings before or after discontinued operations, interest, taxes, depreciation and/or amortization, operating profit before or after discontinued operations and/or taxes, sales, sales growth, earnings growth, cash flow or cash position, gross margins, stock price, market share, return on sales, assets, equity or investment, improvement of financial ratings, achievement of balance sheet or income statement objectives, total shareholder return, market penetration goals, unit volume, geographic business expansion goals, drug discovery or other scientific goals, pre-clinical or clinical goals, regulatory approvals, cost targets and goals relating to acquisitions, divestitures and/or strategic partnerships.

These performance goals may reflect absolute entity or business unit performance or a relative comparison to the performance of a peer group of entities or other external measure of the selected performance criteria and may be absolute in their terms or measured against or in relationship to other companies comparably, similarly or otherwise situated. Our board may specify that such performance measures shall be adjusted to exclude any one or more of (i) extraordinary items, (ii) gains or losses on the dispositions of discontinued operations, (iii) the cumulative effects of changes in accounting principles, (iv) the write-down of any asset, and (v) charges for restructuring and rationalization programs. Such performance measures: (i) may vary by Participant and may be different for different Awards; (ii) may be particular to a Participant or the department, branch, line of business, subsidiary or other unit in which the Participant works and may cover such period as may be specified by the Committee; and (iii) shall be set by the Committee within the time period prescribed by, and shall otherwise comply with the requirements of, Section 162(m).

We believe that disclosure of any further details concerning the performance measures for any particular year may be confidential commercial or business information, the disclosure of which would adversely affect us.

Adjustments for Changes in Capital Stock

We are required to make equitable adjustments, in the manner determined by our board, in connection with the 2009 Plan and any outstanding Awards to reflect stock splits, stock dividends, recapitalizations, spin-offs and other similar changes in capitalization.

Table of Contents***Reorganization Events***

Definition. The 2009 Plan contains provisions addressing the consequences of any Reorganization Event, which is defined as (a) any merger or consolidation of our company with or into another entity as a result of which all of our common stock is converted into or exchanged for the right to receive cash, securities or other property or is cancelled, (b) any transfer or disposition of all of our common stock for cash, securities or other property pursuant to a share exchange or other transaction or (c) any liquidation or dissolution of our company.

Consequences of a Reorganization Event on Awards Other than Restricted Stock Awards. In connection with a Reorganization Event, our board will take any one or more of the following actions as to all or any outstanding Awards other than restricted stock awards on such terms as our board determines: (i) provide that Awards will be assumed, or substantially equivalent Awards will be substituted, by the acquiring or succeeding corporation (or an affiliate thereof), (ii) upon written notice, provide that all unexercised options or other unexercised Awards will become exercisable in full and will terminate immediately prior to the consummation of such Reorganization Event unless exercised within a specified period following the date of such notice, (iii) provide that outstanding Awards will become realizable or deliverable, or restrictions applicable to an Award will lapse, in whole or in part prior to or upon such Reorganization Event, (iv) in the event of a Reorganization Event under the terms of which holders of our common stock will receive upon consummation thereof a cash payment for each share surrendered in the Reorganization Event, which we refer to as the Acquisition Price, make or provide for a cash payment to an Award holder equal to (A) the Acquisition Price times the number of shares of our common stock subject to the holder's Awards (to the extent the exercise price does not exceed the Acquisition Price) minus (B) the aggregate exercise price of all the holder's outstanding Awards, in exchange for the termination of such Awards, (v) provide that, in connection with a liquidation or dissolution of our company, Awards will convert into the right to receive liquidation proceeds (if applicable, net of the exercise price thereof and any applicable tax withholdings) and (vi) any combination of the foregoing.

Consequences of a Reorganization Event on Restricted Stock Awards. With respect to restricted stock awards, upon the occurrence of a Reorganization Event other than a liquidation or dissolution of our company, our repurchase and other rights under each outstanding restricted stock award shall inure to the benefit of our successor and shall, unless the board determines otherwise, apply to the cash, securities or other property which the common stock was converted into or exchanged for pursuant to such Reorganization Event in the same manner and to the same extent as they applied to the common stock subject to such restricted stock award; provided, however, that our board may provide for termination or deemed satisfaction of such repurchase or other rights under the instrument evidencing any restricted stock award or any other agreement between a Participant and us, either initially or by amendment. Upon the occurrence of a Reorganization Event involving the liquidation or dissolution of our company, except to the extent specifically provided to the contrary in the instrument evidencing any restricted stock award or any other agreement between a participant and us, all restrictions and conditions on all restricted stock awards then outstanding shall automatically be deemed terminated or satisfied.

If any Award expires or is terminated, surrendered or canceled without having been fully exercised or is forfeited in whole or in part or results in any common stock not being issued, the unused shares of our common stock covered by such Award will again be available for grant under the 2009 Plan, subject, however, in the case of incentive stock options, to any limitations under the Code. The 2009 Plan also provides that to the extent any Award that is a Full-Value Award is returned to the 2009 Plan, the share reserve and the share limits specified in the 2009 Plan shall increase by 1.5 shares for each one share of our common stock that is subject to such Award.

Transferability of Awards

Except as our board may otherwise determine or provide in an Award, Awards may not be sold, assigned, transferred, pledged or otherwise encumbered by the person to whom they are granted, either voluntarily or by operation of law, except by will or the laws of descent and distribution or, other than in the case of an

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incentive stock option, pursuant to a qualified domestic relations order. During the life of the participant, Awards are exercisable only by the participant.

Provisions for Non-U.S. Participants

Our board may modify Awards granted to participants who are non-U.S. citizens or residents employed outside the United States, or both, on such terms and conditions different from those applicable to Awards to participants employed in the United States as may, in the judgment of our board, be necessary or desirable in order to recognize differences in local law or tax policy. Our board also may impose conditions on the exercise or vesting of Awards in order to minimize our board's obligation with respect to tax equalization for participants on assignments outside their home country.

Amendment or Termination

No Award may be made under the 2009 Plan after June 10, 2019 but Awards previously granted may extend beyond that date. Our board may at any time amend, suspend or terminate the 2009 Plan or any portion thereof; provided that (1) to the extent required by Section 162(m), no Award granted to a Participant that is intended to comply with Section 162(m) after the date of such amendment shall become exercisable, realizable or vested, as applicable to such Award, unless and until our stockholders approve such amendment if required by Section 162(m) (including the vote required under Section 162(m)); (2) no amendment that would require stockholder approval under the NASDAQ rules may be made effective unless and until our stockholders approve such amendment; and (3) if NASDAQ amends its corporate governance rules so that such rules no longer require stockholder approval of material amendments to equity compensation plans, then, from and after the effective date of such amendment to the NASDAQ rules, no amendment to the 2009 Plan (A) materially increasing the number of shares authorized under the 2009 Plan, (B) expanding the types of Awards that may be granted under the 2009 Plan, or (C) materially expanding the class of participants eligible to participate in the 2009 Plan shall be effective unless and until our stockholders approve such amendment. In addition, if at any time the approval of our stockholders is required as to any other modification or amendment under Section 422 of the Code or any successor provision with respect to incentive stock options, our board may not effect such modification or amendment without such approval. Unless otherwise specified in the amendment, any amendment to the 2009 Plan adopted in accordance with this provision shall apply to, and be binding on the holders of, all Awards outstanding under the 2009 Plan at the time the amendment is adopted, provided our board determines that such amendment does not materially and adversely affect the rights of Participants under the plan. No Award will be made that is conditioned upon stockholder approval of any amendment to the 2009 Plan.

Plan Benefits

As of March 31, 2009, approximately 190 persons were eligible to receive Awards under the 2009 Plan, including our five executive officers and eight non-employee directors. We cannot now determine the number or type of Awards to be granted in the future to any particular person or group.

If our stockholders do not approve the adoption of the 2009 Plan, the 2009 Plan will not go into effect, and we will not grant any Awards under the 2009 Plan. In such event, our board will consider whether to adopt alternative arrangements based on its assessment of our needs.

Federal Income Tax Consequences

The following is a summary of the United States federal income tax consequences that generally will arise with respect to Awards granted under the 2009 Plan. This summary is based on the federal tax laws in effect as of the date of this proxy statement. In addition, this summary assumes that all Awards are exempt from, or comply with, the rules

under Section 409A of the Code regarding nonqualified deferred compensation. Changes to these laws could alter the tax consequences described below.

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Incentive Stock Options

A Participant will not have income upon the grant of an incentive stock option. Also, except as described below, a Participant will not have income upon exercise of an incentive stock option if the Participant has been employed by us or a 50% or more-owned corporate subsidiary of ours at all times beginning with the option grant date and ending three months before the date the Participant exercises the option. If the Participant has not been so employed during that time, then the Participant will be taxed as described below under Non-Statutory Stock Options. The exercise of an incentive stock option may subject the Participant to the alternative minimum tax.

A Participant will have income upon the sale of the stock acquired under an incentive stock option at a profit (if sales proceeds exceed the exercise price). The type of income will depend on when the Participant sells the stock. If a Participant sells the stock more than two years after the option was granted and more than one year after the option was exercised, then all of the profit will be long-term capital gain. If a Participant sells the stock prior to satisfying these waiting periods, then the Participant will have engaged in a disqualifying disposition and a portion of the profit will be ordinary income and a portion may be capital gain. This capital gain will be long-term if the Participant has held the stock for more than one year and otherwise will be short-term. If a Participant sells the stock at a loss (sales proceeds are less than the exercise price), then the loss will be a capital loss. This capital loss will be long-term if the Participant held the stock for more than one year and otherwise will be short-term.

Non-Statutory Stock Options

A Participant will not have income upon the grant of a non-statutory stock option. A Participant will have compensation income upon the exercise of a non-statutory stock option equal to the value of the stock on the day the Participant exercised the option less the exercise price. Upon sale of the stock, the Participant will have capital gain or loss equal to the difference between the sales proceeds and the value of the stock on the day the option was exercised. This capital gain or loss will be long-term if the Participant has held the stock for more than one year and otherwise will be short-term.

Stock Appreciation Rights

A Participant will not have income upon the grant of a stock appreciation right. A Participant generally will recognize compensation income upon the exercise of an SAR equal to the amount of the cash and the fair market value of any stock received. Upon the sale of the stock, the Participant will have capital gain or loss equal to the difference between the sales proceeds and the value of the stock on the day the SAR was exercised. This capital gain or loss will be long-term if the Participant held the stock for more than one year and otherwise will be short-term.

Restricted Stock Awards

A Participant will not have income upon the grant of restricted stock unless an election under Section 83(b) of the Code is made within 30 days of the date of grant. If a timely 83(b) election is made, then a Participant will have compensation income equal to the value of the stock less the purchase price. When the stock is sold, the Participant will have capital gain or loss equal to the difference between the sales proceeds and the value of the stock on the date of grant. If the Participant does not make an 83(b) election, then when the stock vests the Participant will have compensation income equal to the value of the stock on the vesting date less the purchase price. When the stock is sold, the Participant will have capital gain or loss equal to the sales proceeds less the value of the stock on the vesting date. Any capital gain or loss will be long-term if the Participant held the stock for more than one year and otherwise will be short-term.

Restricted Stock Units

A Participant will not have income upon the grant of a restricted stock unit. A Participant is not permitted to make a Section 83(b) election with respect to a restricted stock unit award. When the restricted stock unit vests, the Participant will have income on the vesting date in an amount equal to the fair market value of the

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stock on the vesting date less the purchase price, if any. When the stock is sold, the Participant will have capital gain or loss equal to the sales proceeds less the value of the stock on the vesting date. Any capital gain or loss will be long-term if the Participant held the stock for more than one year and otherwise will be short-term.

Other Stock-Based Awards

The tax consequences associated with any other stock-based Award granted under the 2009 Plan will vary depending on the specific terms of such Award. Among the relevant factors are whether or not the Award has a readily ascertainable fair market value, whether or not the Award is subject to forfeiture provisions or restrictions on transfer, the nature of the property to be received by the Participant under the Award and the Participant's holding period and tax basis for the Award or underlying Common Stock.

Tax Consequences to the Company

There will be no tax consequences to us except that we will be entitled to a deduction when a Participant has compensation income. Any such deduction will be subject to the limitations of Section 162(m) of the Code.

Board Recommendation

Our Board of Directors believes that our future success depends, in large part, upon our ability to maintain a competitive position in attracting, retaining and motivating key personnel. Accordingly, our board believes adoption of the 2009 Plan is in the best interests of Alnylam and our stockholders and recommends a vote FOR this proposal.

PROPOSAL 4 RATIFICATION OF APPOINTMENT OF INDEPENDENT AUDITORS

Board Recommendation

Our board of directors recommends a vote FOR the ratification of the appointment of PricewaterhouseCoopers LLP as our independent auditors for the fiscal year ending December 31, 2009.

Our board has appointed the firm of PricewaterhouseCoopers LLP, an independent registered public accounting firm, as independent auditors for the fiscal year ending December 31, 2009. Although stockholder approval of our board's appointment of PricewaterhouseCoopers LLP is not required by law, our board believes that it is advisable to give stockholders an opportunity to ratify this appointment. If this proposal is not approved at the annual meeting, our board will reconsider its appointment of PricewaterhouseCoopers LLP. Representatives of PricewaterhouseCoopers LLP are expected to be present at the annual meeting and will have the opportunity to make a statement, if they desire to do so, and will be available to respond to appropriate questions from our stockholders.

OTHER MATTERS

Our board of directors does not know of any other matters which may come before the meeting. However, if any other matters are properly presented to the meeting, it is the intention of the persons named in the accompanying proxy card to vote, or otherwise act, in accordance with their judgment on those matters.

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STOCKHOLDER PROPOSALS

In order to be included in proxy material for the 2010 annual meeting of stockholders, stockholders' proposals must be received by us at our principal executive offices, 300 Third Street, Cambridge, Massachusetts 02142 no later than December 25, 2009. We suggest that proponents submit their proposals by certified mail, return receipt requested, addressed to our Corporate Secretary.

In addition, our bylaws require that we be given advance notice of stockholder nominations for election to our board of directors and of other matters which stockholders wish to present for action at an annual meeting of stockholders, other than matters included in our proxy statement. The required notice must be in writing and received by our corporate secretary at our principal offices not later than March 13, 2010 (90 days prior to the first anniversary of our 2009 annual meeting of stockholders) and not before February 11, 2010 (120 days prior to the first anniversary of our 2009 annual meeting of stockholders). However, if the 2010 annual meeting of stockholders is advanced by more than 20 days, or delayed by more than 60 days, from the first anniversary of the 2009 annual meeting of stockholders, notice must be received not earlier than the 120th day prior to such annual meeting and not later than the close of business on the later of (1) the 90th day prior to such annual meeting and (2) the 10th day following the date on which notice of the date of such annual meeting was mailed or public disclosure of the date of such annual meeting was made, whichever occurs first. Our bylaws also specify requirements relating to the content of the notice which stockholders must provide, including a stockholder nomination for election to our board of directors, to be properly presented at the 2010 annual meeting of stockholders.

By Order of the Board of Directors

John M. Maraganore, Ph.D.
Chief Executive Officer

Cambridge, Massachusetts
April 22, 2009

OUR BOARD OF DIRECTORS ENCOURAGES STOCKHOLDERS TO ATTEND THE ANNUAL MEETING. WHETHER OR NOT YOU PLAN TO ATTEND IN PERSON, YOU ARE URGED TO VOTE BY PROXY OVER THE INTERNET, BY TELEPHONE OR BY MAIL AS DESCRIBED IN THE ENCLOSED PROXY CARD. A PROMPT RESPONSE WILL GREATLY FACILITATE ARRANGEMENTS FOR THE ANNUAL MEETING AND YOUR COOPERATION WILL BE APPRECIATED. STOCKHOLDERS WHO ATTEND THE ANNUAL MEETING MAY VOTE THEIR STOCK PERSONALLY EVEN THOUGH THEY HAVE SUBMITTED A PROXY PREVIOUSLY.

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Appendix A

Approved by Board of Directors March 4, 2009

ALNYLAM PHARMACEUTICALS, INC.

**SECOND RESTATED
AUDIT COMMITTEE CHARTER**

A. Purpose

1. The purpose of the Audit Committee of the Board of Directors of Alnylam Pharmaceuticals, Inc. (the Company) is to assist the Board of Directors' oversight of the Company's accounting and financial reporting processes and the audits of the Company's financial statements.

B. Structure and Membership

1. Number. Except as otherwise permitted by the applicable The NASDAQ Marketplace Rules, the Audit Committee shall consist of at least three members of the Board of Directors.

2. Independence. Except as otherwise permitted by the applicable NASDAQ rules, each member of the Audit Committee shall be independent as defined by such rules, meet the criteria for independence set forth in Rule 10A-3(b)(1) under the Securities Exchange Act of 1934, as amended (the Exchange Act) (subject to the exemptions provided in Rule 10A-3(c)), and not have participated in the preparation of the financial statements of the Company or any current subsidiary of the Company at any time during the past three years.

3. Financial Literacy. Each member of the Audit Committee must be able to read and understand fundamental financial statements, including the Company's balance sheet, income statement, and cash flow statement, at the time of his or her appointment to the Audit Committee. In addition, at least one member must have past employment experience in finance or accounting, requisite professional certification in accounting, or any other comparable experience or background which results in the individual's financial sophistication, including being or having been a chief executive officer, chief financial officer or other senior officer with financial oversight responsibilities. Unless otherwise determined by the Board of Directors (in which case disclosure of such determination shall be made in the Company's annual report filed with the SEC), at least one member of the Audit Committee shall be an audit committee financial expert (as defined by applicable SEC rules).

4. Chair. Unless the Board of Directors elects a Chair of the Audit Committee, the Audit Committee shall elect a Chair by majority vote.

5. Compensation. The compensation of Audit Committee members shall be as determined by the Board of Directors. No member of the Audit Committee may receive, directly or indirectly, any consulting, advisory or other compensatory fee from the Company or any of its subsidiaries, other than fees paid in his or her capacity as a member of the Board of Directors or a committee of the Board.

6. Selection and Removal. Members of the Audit Committee shall be appointed by the Board of Directors, upon the recommendation of the Nominating and Corporate Governance Committee. The Board of Directors may remove members of the Audit Committee from such committee, with or without cause.

C. Authority and Responsibilities

General

The Audit Committee shall discharge its responsibilities, and shall assess the information provided by the Company's management and the independent auditor, in accordance with its business judgment. Management is responsible for the preparation, presentation, and integrity of the Company's financial statements, for the appropriateness of the accounting principles and reporting policies that are used by the Company and for establishing and maintaining adequate internal control over financial reporting. The independent auditor is

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responsible for auditing the Company's financial statements and the Company's internal control over financial reporting and for reviewing the Company's unaudited interim financial statements. The authority and responsibilities set forth in this Charter do not reflect or create any duty or obligation of the Audit Committee to plan or conduct any audit, to determine or certify that the Company's financial statements are complete, accurate, fairly presented, or in accordance with generally accepted accounting principles or applicable law, or to guarantee the independent auditor's reports.

Oversight of Independent Auditor

1. **Selection.** The Audit Committee shall be solely and directly responsible for appointing, evaluating, retaining and, when necessary, terminating the engagement of the independent auditor. The Audit Committee may, in its discretion, seek stockholder ratification of the independent auditor it appoints.
2. **Independence.** The Audit Committee shall take, or recommend that the full Board of Directors take, appropriate action to oversee the independence of the independent auditor. In connection with this responsibility, the Audit Committee shall obtain and review the written disclosures and the letter from the independent auditor required by applicable requirements of the Public Company Accounting Oversight Board (the PCAOB) regarding the independent auditor's communications with the Audit Committee concerning independence. The Audit Committee shall actively engage in dialogue with the independent auditor concerning any disclosed relationships or services that might impact the objectivity and independence of the auditor, and confirm the regular rotation of the lead audit partner and reviewing partner as required by Section 203 of the Sarbanes-Oxley Act.
3. **Compensation.** The Audit Committee shall have sole and direct responsibility for setting the compensation of the independent auditor. The Audit Committee is empowered, without further action by the Board of Directors, to cause the Company to pay the compensation of the independent auditor established by the Audit Committee.
4. **Preapproval of Services.** The Audit Committee shall preapprove all audit services to be provided to the Company, whether provided by the principal auditor or other firms, and all other services (review, attest and non-audit) to be provided to the Company by the independent auditor; provided, however, that de minimis non-audit services may instead be approved in accordance with applicable SEC rules.
5. **Oversight.** The independent auditor shall report directly to the Audit Committee, and the Audit Committee shall have sole and direct responsibility for overseeing the work of the independent auditor, including resolution of disagreements between Company management and the independent auditor regarding financial reporting. In connection with its oversight role, the Audit Committee shall, from time to time as appropriate, receive and consider the reports required to be made by the independent auditor regarding:

critical accounting policies and practices;

alternative treatments within generally accepted accounting principles for policies and practices related to material items that have been discussed with Company management, including ramifications of the use of such alternative disclosures and treatments, and the treatment preferred by the independent auditor; and

other material written communications between the independent auditor and Company management.

Audited Financial Statements

6. **Review and Discussion.** The Audit Committee shall review and discuss with the Company's management and independent auditor the Company's audited financial statements, including the matters about which Statement on Auditing Standards No. 61 (Codification of Statements on Auditing Standards, AU § 380), as amended, and adopted

by the PCAOB, requires discussion.

7. Recommendation to Board Regarding Financial Statements. The Audit Committee shall consider whether it will recommend to the Board of Directors that the Company's audited financial statements be included in the Company's Annual Report on Form 10-K.

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8. **Audit Committee Report.** The Audit Committee shall prepare an annual committee report for inclusion where necessary in the proxy statement of the Company relating to its annual meeting of security holders.

Review of Other Financial Disclosures

9. **Independent Auditor Review of Interim Financial Statements.** The Audit Committee shall direct the independent auditor to use its best efforts to perform all reviews of interim financial information prior to disclosure by the Company of such information and to discuss promptly with the Audit Committee and the Chief Financial Officer any matters identified in connection with the auditor's review of interim financial information which are required to be discussed by applicable auditing standards. The Audit Committee shall direct management to advise the Audit Committee in the event that the Company proposes to disclose interim financial information prior to completion of the independent auditor's review of interim financial information.

Controls and Procedures

10. **Oversight.** The Audit Committee shall coordinate the Board of Directors' oversight of the Company's internal control over financial reporting, disclosure controls and procedures and code of conduct. The Audit Committee shall receive and review the reports of the principal executive officer and principal financial officer required by Rule 13a-14 of the Exchange Act.

11. **Internal Audit Function.** The Audit Committee shall coordinate the Board of Director's oversight of the performance of the Company's internal audit function.

12. **Evaluation of Financial Management.** The Audit Committee shall coordinate with the Compensation Committee the evaluation of the Company's financial management personnel.

13. **Procedures for Complaints.** The Audit Committee shall establish procedures for (i) the receipt, retention and treatment of complaints received by the Company regarding accounting, internal accounting controls or auditing matters; and (ii) the confidential, anonymous submission by employees of the Company of concerns regarding questionable accounting or auditing matters.

14. **Related-Person Transactions.** In accordance with the terms of the Company's Related Person Transaction Policy (the Policy), attached hereto as Exhibit A, the Audit Committee shall review and approve every Related Person Transaction, as defined by the Policy, prior to effectiveness or consummation of the transaction, wherever practicable. In addition, in accordance with the Policy, any Related Person Transaction previously approved by the Audit Committee or otherwise already existing that is ongoing in nature shall be reviewed by the Audit Committee annually to ensure that such Related Person Transaction has been conducted in accordance with the previous approval granted by the Audit Committee, if any, and that all required disclosures regarding the Related Person Transaction are made.

15. **Additional Powers.** The Audit Committee shall have such other duties as may be delegated from time to time by the Board of Directors.

D. Procedures and Administration

1. **Meetings.** The Audit Committee shall meet as often as it deems necessary in order to perform its responsibilities. The Audit Committee may also act by unanimous written consent in lieu of a meeting. The Audit Committee shall periodically meet separately with: (i) the independent auditor; (ii) the Company management; and (iii) the Company's internal auditors. The Audit Committee shall keep such records of its meetings as it shall deem appropriate.

2. Subcommittees. The Audit Committee may form and delegate authority to one or more subcommittees (including a subcommittee consisting of a single member), as it deems appropriate from time to time under the circumstances. Any decision of a subcommittee to preapprove audit, review, attest or non-audit services shall be presented to the full Audit Committee at its next scheduled meeting.
3. Reports to Board. The Audit Committee shall report regularly to the Board of Directors.

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4. Charter. At least annually, the Audit Committee shall review and reassess the adequacy of this Charter and recommend any proposed changes to the Board of Directors for approval.

5. Independent Advisors. The Audit Committee is authorized, without further action by the Board of Directors, to engage such independent legal, accounting and other advisors as it deems necessary or appropriate to carry out its responsibilities. Such independent advisors may be the regular advisors to the Company. The Audit Committee is empowered, without further action by the Board of Directors, to cause the Company to pay the compensation of such advisors as established by the Audit Committee.

6. Investigations. The Audit Committee shall have the authority to conduct or authorize investigations into any matters within the scope of its responsibilities as it shall deem appropriate, including the authority to request any officer, employee or advisor of the Company to meet with the Audit Committee or any advisors engaged by the Audit Committee.

7. Funding. The Audit Committee is empowered, without further action by the Board of Directors, to cause the Company to pay the ordinary administrative expenses of the Audit Committee that are necessary or appropriate in carrying out its duties.

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EXHIBIT A

ALNYLAM PHARMACEUTICALS, INC.

RELATED PERSON TRANSACTION POLICY

The Code of Business Conduct and Ethics of Alnylam Pharmaceuticals, Inc. (the *Company*) provides that employees, executive officers and directors must act in the best interests of the Company and refrain from engaging in any activity or having a personal interest that presents a conflict of interest. In addition, under applicable SEC rules, the Company is required to disclose related person transactions as defined in the SEC's rules.

The Company's Board of Directors (the *Board*) has adopted this Related Person Transaction Policy (the *Policy*) to set forth the policies and procedures for the review and approval or ratification of Related Person Transactions (as defined below).

1. Definitions

For the purposes of this Policy, a *Related Person* is:

- a) any person who is or was an executive officer, director, or director nominee of the Company at any time since the beginning of the Company's last fiscal year;
- b) a person who is or was an Immediate Family Member of an executive officer, director, director nominee at any time since the beginning of the Company's last fiscal year;
- c) any person who, at the time of the occurrence or existence of the transaction, is the beneficial owner of more than 5% of any class of the Company's voting securities (a *Significant Shareholder*); or
- d) any person who, at the time of the occurrence or existence of the transaction, is an Immediate Family Member of a Significant Shareholder of the Company.

An *Immediate Family Member* of a person is any child, stepchild, parent, stepparent, spouse, sibling, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law or sister-in-law of such person, or any other person sharing the household of such person, other than a tenant or employee.

A *Related Person Transaction* is any transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships in which the Company was or is to be a participant, the amount involved exceeds \$120,000, and a Related Person had or will have a direct or indirect material interest. Except as otherwise set forth in this policy, *Related Person Transaction* specifically includes, without limitation, purchases of goods or services by or from the Related Person or entities in which the Related Person has a material interest, indebtedness, guarantees of indebtedness, and employment by the Company of a Related Person. The Board has determined that the following do not create a material direct or indirect interest on behalf of the Related Person, and are, therefore, not *Related Person Transactions* for purposes of this Policy:

- 1. Interests arising only from the Related Person's position as a director of another corporation or organization that is a party to the transaction; or
- 2. Interests arising only from the direct or indirect ownership by the Related Person and all other Related Persons in the aggregate of less than a 10% equity interest (other than a general partnership interest) in another entity which is a

party to the transaction; or

3. Interests arising from both the position and ownership level described in (1) and (2) above; or

4. Interests arising solely from the Related Person's position as an executive officer of another entity (whether or not the person is also a director of such entity) that is a participant in the transaction, where (a) the Related Person and all other Related Persons own in the aggregate less than a 10% equity interest in such entity, (b) the Related Person and his or her Immediate Family Members are not involved in the negotiation of the terms of the transaction with the Company and do not receive any special benefits as a

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result of the transaction, and (c) the amount involved in the transaction equals less than the greater of \$200,000 or 5% of the annual gross revenues of the company receiving payment under the transaction; or

5. Interests arising solely from the ownership of a class of the Company's equity securities if all holders of that class of equity securities receive the same benefit on a pro rata basis; or

6. A transaction that involves compensation to an executive officer if the compensation has been approved, or recommended to the Board for approval, by the Compensation Committee of the Board or a group of independent directors of the Company performing a similar function; or

7. A transaction that involves compensation to a director for services as a director of the Company if such compensation will be reported pursuant to Item 402(k) of Regulation S-K; or

8. A transaction that is specifically contemplated by provisions of the Certificate of Incorporation or Bylaws of the Company; or

9. Interests arising solely from indebtedness of a Significant Shareholder or an Immediate Family Member of a Significant Shareholder to the Company; or

10. A transaction where the rates or charges involved in the transaction are determined by competitive bids; or

11. A transaction that involves the rendering of services as a common or contract carrier or public utility at rates or charges fixed in conformity with law or governmental authority; or

12. A transaction that involves services as a bank depository of funds, transfer agent, registrar, trustee under a trust indenture, or similar services.

2. Policies and Procedures for Review, Approval or Ratification of Related Person Transactions

Any Related Person Transaction proposed to be entered into by the Company must be reported to the Chief Operating Officer of the Company, Barry Greene, and shall be reviewed and approved by the Audit Committee of the Board (the Committee) in accordance with the terms of this Policy, prior to effectiveness or consummation of the transaction, whenever practicable. If the Chief Operating Officer determines that advance approval of a Related Person Transaction is not practicable under the circumstances, the Committee shall review and, in its discretion, may ratify the Related Person Transaction at the next meeting of the Committee, or at the next meeting following the date that the Related Person Transaction comes to the attention of the Chief Operating Officer; *provided, however*, that the Chief Operating Officer may present a Related Person Transaction arising in the time period between meetings of the Committee to the Chair of the Committee, who shall review and may approve the Related Person Transaction, subject to ratification by the Committee at the next meeting of the Committee.

In addition, any Related Person Transaction previously approved by the Committee or otherwise already existing that is ongoing in nature shall be reviewed by the Committee annually to ensure that such Related Person Transaction has been conducted in accordance with the previous approval granted by the Committee, if any, and that all required disclosures regarding the Related Person Transaction are made.

Transactions involving compensation of executive officers shall be reviewed and approved by the Compensation Committee in the manner specified in the charter of the Compensation Committee.

3. Standards for Review, Approval or Ratification of Related Person Transactions

A Related Person Transaction reviewed under this Policy will be considered approved or ratified if it is authorized by the Committee in accordance with the standards set forth in this Policy after full disclosure of the Related Person's interests in the transaction. As appropriate for the circumstances, the Committee shall review and consider:

the Related Person's interest in the Related Person Transaction;

the approximate dollar value of the amount involved in the Related Person Transaction;

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the approximate dollar value of the amount of the Related Person's interest in the transaction without regard to the amount of any profit or loss;

whether the transaction was undertaken in the ordinary course of business of the Company;

whether the transaction with the Related Person is proposed to be, or was, entered into on terms no less favorable to the Company than terms that could have been reached with an unrelated third party;

the purpose of, and the potential benefits to the Company of, the transaction; and

any other information regarding the Related Person Transaction or the Related Person in the context of the proposed transaction that would be material to investors in light of the circumstances of the particular transaction.

The Committee will review all relevant information available to it about the Related Person Transaction. The Committee may approve or ratify the Related Person Transaction only if the Committee determines that, under all of the circumstances, the transaction is not inconsistent with the best interests of the Company. The Committee may, in its sole discretion, impose such conditions as it deems appropriate on the Company or the Related Person in connection with approval of the Related Person Transaction.

The review, approval or ratification of a transaction, arrangement or relationship pursuant to this Policy does not necessarily imply that such transaction, arrangement or relationship is required to be disclosed under Item 404(a) of Regulation S-K.

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ALNYLAM PHARMACEUTICALS, INC.
AMENDED AND RESTATED 2004 STOCK INCENTIVE PLAN

1. Purpose

The purpose of this Amended and Restated 2004 Stock Incentive Plan (the *Plan*) of Alnylam Pharmaceuticals, Inc., a Delaware corporation (the *Company*), is to advance the interests of the Company's stockholders by enhancing the Company's ability to attract, retain and motivate persons who make (or are expected to make) important contributions to the Company by providing such persons with equity ownership opportunities and performance-based incentives and thereby better aligning the interests of such persons with those of the Company's stockholders. Except where the context otherwise requires, the term *Company* shall include any of the Company's present or future parent or subsidiary corporations as defined in Sections 424(e) or (f) of the Internal Revenue Code of 1986, as amended, and any regulations promulgated thereunder (the *Code*) and any other business venture (including, without limitation, joint venture or limited liability company) in which the Company has a controlling interest, as determined by the Board of Directors of the Company (the *Board*).

2. Eligibility

All of the Company's employees, officers, directors, consultants and advisors (including persons who have entered into an agreement with the Company under which they will be employed by the Company in the future) are eligible to participate in the Plan. Options and restricted stock awards (each, an *Award*) were granted under the Plan prior to the Amendment Date (as hereinafter defined). As of the Amendment Date, only options may be granted under the Plan. Notwithstanding the foregoing, the terms and conditions of any restricted stock awards outstanding on the Amendment Date will continue to be governed by the Plan. Each person who has been granted an Award under the Plan shall be deemed a *Participant*. The Amendment Date shall be [*date amended plan is approved by stockholders*].

3. Administration and Delegation

(a) **Administration by Board of Directors.** The Plan will be administered by the Board. The Board shall have authority to grant Options (as hereinafter defined) and to adopt, amend and repeal such administrative rules, guidelines and practices relating to the Plan as it shall deem advisable. The Board may construe and interpret the terms of the Plan and any Award agreements entered into under the Plan. The Board may correct any defect, supply any omission or reconcile any inconsistency in the Plan or any Award in the manner and to the extent it shall deem expedient to carry the Plan into effect and it shall be the sole and final judge of such expediency. All decisions by the Board shall be made in the Board's sole discretion and shall be final and binding on all persons having or claiming any interest in the Plan or in any Award.

(b) **Appointment of Committees.** To the extent permitted by applicable law, the Board may delegate any or all of its powers under the Plan to one or more committees or subcommittees of the Board (a *Committee*). All references in the Plan to the *Board* shall mean the Board or a Committee of the Board or the officers referred to in Section 3(c) to the

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extent that the Board's powers or authority under the Plan have been delegated to such Committee or officers.

(c) **Delegation to Officers.** To the extent permitted by applicable law, the Board may delegate to one or more officers of the Company the power to grant Options to employees or officers of the Company or any of its present or future subsidiary corporations and to exercise such other powers under the Plan as the Board may determine, provided that the Board shall fix the terms of the Options to be granted by such officers (including the exercise price of such Options, which may include a formula by which the exercise price will be determined) and the maximum number of shares subject to Options that the officers may grant; provided further, however, that no officer shall be authorized to grant Options to any executive officer of the Company (as defined by Rule 3b-7 under the Securities Exchange Act of 1934, as amended (the Exchange Act)) or to any officer of the Company (as defined by Rule 16a-1 under the Exchange Act).

(d) **Options to Non-Employee Directors.** Discretionary Options to non-employee directors will only be granted and administered by a Committee, all of the members of which are independent as defined by Section 4200(a)(15) of the Nasdaq Marketplace Rules.

4. Stock Available for Awards

(a) **Number of Shares.** Subject to adjustment under Section 8, Options may be granted under the Plan for up to the number of shares of common stock, \$0.01 par value per share, of the Company (the Common Stock) that is equal to the sum of:

(1) 9,915,170 shares of Common Stock; plus

(2) such additional number of shares of Common Stock (up to 2,451,315 shares) as is equal to the sum of (x) the number of shares of Common Stock reserved for issuance under the Company's 2002 and 2003 Employee, Director and Consultant Stock Plans (the Existing Plans) that remain available for grant under the Existing Plans immediately prior to the closing of the Company's initial public offering and (y) the number of shares of Common Stock subject to awards granted under the Existing Plans which awards expire, terminate or are otherwise surrendered, canceled, forfeited or repurchased by the Company at their original issuance price pursuant to a contractual repurchase right (subject, however, in the case of Incentive Stock Options (as hereinafter defined) to any limitations of the Code).

(b) **Share Counting.** For purposes of counting the number of shares available for the grant of Options under the Plan and under the sublimit contained in Section 4(c)(2), if any Award expires or is terminated, surrendered or canceled without having been fully exercised or is forfeited in whole or in part (including as the result of shares of Common Stock subject to such Award being repurchased by the Company at the original issuance price pursuant to a contractual repurchase right) or results in any Common Stock not being issued, the unused Common Stock covered by such Award shall again be available for the grant of Options under the Plan; *provided, however*, in the case of Incentive Stock Options (as hereinafter defined), the foregoing shall be subject to any limitations under the Code.

Shares of Common Stock delivered (by actual delivery, attestation, or net exercise) to the Company by a Participant to

(A) purchase shares of

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Common Stock upon the exercise of an Award or (B) satisfy tax withholding obligations (including shares retained from the Award creating the tax obligation) shall not be added back to the number of shares available for the future grant of Options. Shares of Common Stock repurchased by the Company on the open market using the proceeds from the exercise of an Award shall not increase the number of shares available for future grant of Options. Shares issued under the Plan may consist in whole or in part of authorized but unissued shares or treasury shares.

(c) Sub-limits. Subject to adjustment under Section 8, the following sub-limits on the number of shares subject to Options shall apply:

(1) Section 162(m) Per-Participant Limit. Subject to adjustment under Section 8, the maximum number of shares of Common Stock with respect to which Options may be granted to any Participant under the Plan shall be 500,000 per calendar year, except in the calendar year in which the Participant is hired by the Company, in which case the maximum number of shares shall be 1,000,000. The per Participant limit described in this Section 4(c)(1) shall be construed and applied consistently with Section 162(m) of the Code or any successor provision thereto, and the regulations thereunder (Section 162(m)).

(2) Limit on Awards to Non-Employee Directors. Following the Amendment Date, the maximum number of shares with respect to which Options may be granted to directors who are not employees of the Company at the time of grant shall be 5% of the maximum number of authorized shares set forth in Section 4(a).

5. Stock Options

(a) General. The Board may grant options to purchase Common Stock (each, an Option) and determine the number of shares of Common Stock to be covered by each Option, the exercise price of each Option and the conditions and limitations applicable to the exercise of each Option, including conditions relating to applicable federal or state securities laws, as it considers necessary or advisable. An Option that is not intended to be an Incentive Stock Option (as hereinafter defined) shall be designated a Nonstatutory Stock Option .

(b) Incentive Stock Options. An Option that the Board intends to be an incentive stock option as defined in Section 422 of the Code (an Incentive Stock Option) shall only be granted to employees of Alnylam Pharmaceuticals, Inc., any of Alnylam Pharmaceuticals, Inc.'s present or future parent or subsidiary corporations as defined in Sections 424(e) or (f) of the Code, and any other entities the employees of which are eligible to receive Incentive Stock Options under the Code, and shall be subject to and shall be construed consistently with the requirements of Section 422 of the Code. The Company shall have no liability to a Participant, or any other party, if an Option (or any part thereof) that is intended to be an Incentive Stock Option is not an Incentive Stock Option or if the Company converts an Incentive Stock Option to a Nonstatutory Stock Option.

(c) Exercise Price. The Board shall establish the exercise price of each Option and specify the exercise price in the applicable option agreement. The exercise price shall be not less than 100% of the Fair Market Value (as hereinafter defined) on the date the Option is granted;

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provided, however, that if the Board approves the grant of an Option with an exercise price to be determined on a future date, the exercise price shall be not less than 100% of the Fair Market Value on such future date. Fair Market Value of a share of Common Stock for purposes of the Plan will be determined as follows:

(1) if the Common Stock trades on a national securities exchange, the closing sale price (for the primary trading session) on the date of grant;

(2) if the Common Stock does not trade on any such exchange, the average of the closing bid and asked prices as reported by an authorized OTCBB market data vendor as listed on the OTCBB website (otcbb.com) on the date of grant; or

(3) if the Common Stock is not publicly traded, the Board will determine the Fair Market Value for purposes of the Plan using any measure of value it determines to be appropriate (including, as it considers appropriate, relying on appraisals) in a manner consistent with the valuation principles under Section 409A of the Code, except as the Board or Committee may expressly determine otherwise.

For any date that is not a trading day, the Fair Market Value of a share of Common Stock for such date will be determined by using the closing sale price or average of the bid and asked prices, as appropriate, for the immediately preceding trading day and with the timing in the formulas above adjusted accordingly. The Board can substitute a particular time of day or other measure of closing sale price or bid and asked prices if appropriate because of exchange or market procedures or can, in its sole discretion, use weighted averages either on a daily basis or such longer period as complies with Section 409A of the Code. The Board has sole discretion to determine the Fair Market Value for purposes of this Plan, and all Options are conditioned on the participants' agreement that the Board's determination is conclusive and binding even though others might make a different determination.

(d) Duration of Options. Each Option shall be exercisable at such times and subject to such terms and conditions as the Board may specify in the applicable option agreement; provided, however, that no Option will be granted for a term in excess of 10 years.

(e) Exercise of Option. Options may be exercised by delivery to the Company of a written notice of exercise signed by the proper person or by any other form of notice (including electronic notice) approved by the Company, together with payment in full as specified in Section 5(f) for the number of shares for which the Option is exercised. Shares of Common Stock subject to the Option will be delivered by the Company as soon as practicable following exercise.

(f) Payment Upon Exercise. Common Stock purchased upon the exercise of an Option granted under the Plan shall be paid for as follows:

(1) in cash or by check, payable to the order of the Company;

(2) except as may otherwise be provided in the applicable option agreement, by (i) delivery of an irrevocable and unconditional undertaking by a creditworthy broker to deliver promptly to the Company sufficient funds to pay the exercise price and any required tax

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withholding or (ii) delivery by the Participant to the Company of a copy of irrevocable and unconditional instructions to a creditworthy broker to pay promptly to the Company the exercise price and any required tax withholding;

(3) to the extent provided for in the applicable option agreement or approved by the Company in its sole discretion, by delivery of shares of Common Stock owned by the Participant valued at their Fair Market Value, provided (i) such method of payment is then permitted under applicable law, (ii) such Common Stock, if acquired directly from the Company, was owned by the Participant at least six months prior to such delivery and (iii) such Common Stock is not subject to any repurchase, forfeiture, unfulfilled vesting or other similar requirements;

(4) to the extent provided for in the applicable Nonstatutory Stock Option agreement or approved by the Board in its sole discretion, by delivery of a notice of net exercise to the Company, as a result of which the Participant would receive the number of shares of Common Stock underlying the Option so exercised reduced by the number of shares of Common Stock equal to the aggregate exercise price of the Option divided by the Fair Market Value on the date of exercise;

(5) to the extent permitted by applicable law and provided for in the applicable Option agreement or approved by the Board, in its sole discretion, by payment of such other lawful consideration as the Board may determine; or

(6) by any combination of the above permitted forms of payment.

(g) Limitation on Repricing. Unless such action is approved by the Company's stockholders: (1) no outstanding Option granted under the Plan may be amended to provide an exercise price per share that is lower than the then-current exercise price per share of such outstanding Option (other than adjustments pursuant to Section 8) and (2) the Board may not cancel any outstanding option (whether or not granted under the Plan) and grant in substitution therefor new Awards under the Plan covering the same or a different number of shares of Common Stock and having an exercise price per share lower than the then-current exercise price per share of the cancelled option.

6. Director Options.

The provisions of this Section 6 shall apply to option awards granted prior to the Amendment Date. No Options shall be granted pursuant to this Section 6 following the Amendment Date.

(a) Initial Grant to New Directors. Upon the commencement of service on the Board by any individual who is not then an employee of the Company or any subsidiary of the Company, the Company shall grant to such person a Nonstatutory Stock Option to purchase 30,000 shares of Common Stock (subject to adjustment under Section 8).

(b) Annual Grant. On the date of each annual meeting of stockholders of the Company, beginning with the annual meeting in 2005, the Company shall grant a Nonstatutory Stock Option to purchase 15,000 shares of Common Stock (subject to adjustment under

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Section 8) to each member of the Board of Directors of the Company (1) who is both serving as a director of the Company immediately prior to and immediately following such annual meeting, (2) who is not then an employee of the Company or any of its subsidiaries; and (3) who has served as a director of the Company for at least six months. In addition, on the date of each annual meeting of stockholders of the Company, beginning with the annual meeting in 2005, the Company shall grant a Nonstatutory Stock Option to purchase 10,000 shares of Common Stock (subject to adjustment under Section 8) to the Chairman of the Audit Committee of the Board of Directors of the Company.

(c) **Terms of Director Options.** Options granted under this Section 6 shall (i) have an exercise price equal to the last reported sale price of the Common Stock on The Nasdaq Stock Market or the national securities exchange on which the Common Stock is then traded on the date of grant (and if the Common Stock is not then traded on The Nasdaq Stock Market or a national securities exchange, the fair market value of the Common Stock on such date as determined by the Board), (ii) expire on the earlier of 10 years from the date of grant or three months following termination of service as a director and (iii) contain such other terms and conditions as the Board shall determine. Options granted under Section 6(a) shall vest as to 10,000 shares on each of the first and second anniversaries of the date of grant and as to the remaining 10,000 shares on the third anniversary of the date of grant subject to the individual's continued service as a director. Options granted under Section 6(b) shall vest in full on the first anniversary of the date of grant subject to the individual's continued service as a director.

(d) **Board Discretion.** The Board retains the specific authority to from time to time increase or decrease the number of shares subject to Options granted under this Section 6.

7. Restricted Stock

The provisions of this Section 7 shall apply to Restricted Stock Awards (as hereinafter defined) granted prior to the Amendment Date. No Restricted Stock Awards shall be granted following the Amendment Date.

(a) **Grants.** The Board may grant Awards entitling recipients to acquire shares of Common Stock, subject to the right of the Company to repurchase all or part of such shares at their issue price or other stated or formula price (or to require forfeiture of such shares if issued at no cost) from the recipient in the event that conditions specified by the Board in the applicable Award are not satisfied prior to the end of the applicable restriction period or periods established by the Board for such Award (each, a Restricted Stock Award).

(b) **Terms and Conditions.** The Board shall determine the terms and conditions of a Restricted Stock Award, including the conditions for repurchase (or forfeiture) and the issue price, if any.

(c) **Stock Certificates.** Any stock certificates issued in respect of a Restricted Stock Award shall be registered in the name of the Participant and, unless otherwise determined by the Board, deposited by the Participant, together with a stock power endorsed in blank, with the Company (or its designee). At the expiration of the applicable restriction periods, the Company (or such designee) shall deliver the certificates no longer subject to such restrictions to the Participant or if the Participant has died, to the beneficiary designated, in a manner determined

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by the Board, by a Participant to receive amounts due or exercise rights of the Participant in the event of the Participant's death (the Designated Beneficiary). In the absence of an effective designation by a Participant, Designated Beneficiary shall mean the Participant's estate.

8. Adjustments for Changes in Common Stock and Certain Other Events

(a) Changes in Capitalization. In the event of any stock split, reverse stock split, stock dividend, recapitalization, combination of shares, reclassification of shares, spin-off or other similar change in capitalization or event, or any dividend or distribution to holders of Common Stock other than an ordinary cash dividend, (i) the number and class of securities available under the Plan, (ii) the sub-limits and share counting rules set forth in Sections 4(a) and 4(b), (iii) the number and class of securities and exercise price per share of each outstanding Option and (iv) the number of shares subject to and the repurchase price per share subject to each outstanding Restricted Stock Award, shall be equitably adjusted by the Company (or substituted Awards may be made, if applicable) in the manner determined by the Board. Without limiting the generality of the foregoing, in the event the Company effects a split of the Common Stock by means of a stock dividend and the exercise price of and the number of shares subject to an outstanding Option are adjusted as of the date of the distribution of the dividend (rather than as of the record date for such dividend), then an optionee who exercises an Option between the record date and the distribution date for such stock dividend shall be entitled to receive, on the distribution date, the stock dividend with respect to the shares of Common Stock acquired upon such Option exercise, notwithstanding the fact that such shares were not outstanding as of the close of business on the record date for such stock dividend.

(b) Reorganization Events.

(1) Definition. A Reorganization Event shall mean: (a) any merger or consolidation of the Company with or into another entity as a result of which all of the Common Stock of the Company is converted into or exchanged for the right to receive cash, securities or other property or is cancelled, (b) any transfer or disposition of all of the Common Stock of the Company for cash, securities or other property pursuant to a share exchange or other transaction or (c) any liquidation or dissolution of the Company.

(2) Consequences of a Reorganization Event on Options. In connection with a Reorganization Event, the Board may take any one or more of the following actions as to all or any outstanding Options on such terms as the Board determines: (i) provide that Options shall be assumed, or substantially equivalent Options shall be substituted, by the acquiring or succeeding corporation (or an affiliate thereof), (ii) upon written notice to a Participant, provide that the Participant's unexercised Options shall become exercisable in full and will terminate immediately prior to the consummation of such Reorganization Event unless exercised by the Participant within a specified period following the date of such notice, (iii) in the event of a Reorganization Event under the terms of which holders of Common Stock will receive upon consummation thereof a cash payment for each share surrendered in the Reorganization Event (the Acquisition Price), make or provide for a cash payment to a Participant equal to (A) the Acquisition Price times the number of shares of Common Stock subject to the Participant's Options (to the extent the exercise price does not exceed the Acquisition Price) minus (B) the aggregate exercise price of all such outstanding Options, in exchange for the termination of such

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Options, (iv) provide that outstanding Options shall become realizable or deliverable, or restrictions applicable to an Option shall lapse, in whole or in part prior to or upon such Reorganization Event, (v) provide that, in connection with a liquidation or dissolution of the Company, Options shall convert into the right to receive liquidation proceeds (if applicable, net of the exercise price thereof and any applicable tax withholdings) and (vi) any combination of the foregoing. In taking any of the actions permitted under this Section 8(b), the Board shall not be obligated by the Plan to treat all Options, all Options held by a Participant, or all Options of the same type, identically.

For purposes of clause (i) above, an Option shall be considered assumed if, following consummation of the Reorganization Event, the Option confers the right to purchase, for each share of Common Stock subject to the Option immediately prior to the consummation of the Reorganization Event, the consideration (whether cash, securities or other property) received as a result of the Reorganization Event by holders of Common Stock for each share of Common Stock held immediately prior to the consummation of the Reorganization Event (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding shares of Common Stock); provided, however, that if the consideration received as a result of the Reorganization Event is not solely common stock of the acquiring or succeeding corporation (or an affiliate thereof), the Company may, with the consent of the acquiring or succeeding corporation, provide for the consideration to be received upon the exercise of Options to consist solely of common stock of the acquiring or succeeding corporation (or an affiliate thereof) equivalent in fair market value to the per share consideration received by holders of outstanding shares of Common Stock as a result of the Reorganization Event.

To the extent all or any portion of an Option becomes exercisable solely as a result of clause (ii) above, the Board may provide that upon exercise of such Option the Participant shall receive shares subject to a right of repurchase by the Company or its successor at the Option exercise price; such repurchase right (x) shall lapse at the same rate as the Option would have become exercisable under its terms and (y) shall not apply to any shares subject to the Option that were exercisable under its terms without regard to clause (ii) above.

Without limiting the generality of Sections 9(f) and 10(d) below, the Board shall have the right to amend this Section 8(b)(2) to the extent it deems necessary or advisable.

(3) Consequences of a Reorganization Event on Restricted Stock Awards. Upon the occurrence of a Reorganization Event other than a liquidation or dissolution of the Company, the repurchase and other rights of the Company under each outstanding Restricted Stock Award shall inure to the benefit of the Company's successor and shall, unless the Board determines otherwise, apply to the cash, securities or other property which the Common Stock was converted into or exchanged for pursuant to such Reorganization Event in the same manner and to the same extent as they applied to the Common Stock subject to such Restricted Stock Award. Upon the occurrence of a Reorganization Event involving the liquidation or dissolution of the Company, except to the extent specifically provided to the contrary in the instrument evidencing any Restricted Stock Award or any other agreement between a Participant and the Company, all restrictions and conditions on all Restricted Stock Awards then outstanding shall automatically be deemed terminated or satisfied.

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9. General Provisions Applicable to Awards

(a) **Transferability of Awards.** Awards shall not be sold, assigned, transferred, pledged or otherwise encumbered by the person to whom they are granted, either voluntarily or by operation of law, except by will or the laws of descent and distribution or, other than in the case of an Option intended to be an Incentive Stock Option, pursuant to a qualified domestic relations order, and, during the life of the Participant, shall be exercisable only by the Participant; *provided, however*, that the Board may permit or provide in an Award for the gratuitous transfer of the Award by the Participant to or for the benefit of any immediate family member, family trust or other entity established for the benefit of the Participant and/or an immediate family member thereof if, with respect to such proposed transferee, the Company would be eligible to use a Form S-8 for the registration of the sale of the Common Stock subject to such Award under the Securities Act of 1933, as amended; provided, further, that the Company shall not be required to recognize any such transfer until such time as the Participant and such permitted transferee shall, as a condition to such transfer, deliver to the Company a written instrument in form and substance satisfactory to the Company confirming that such transferee shall be bound by all of the terms and conditions of the Award. References to a Participant, to the extent relevant in the context, shall include references to authorized transferees.

(b) **Documentation.** Each Award shall be evidenced in such form (written, electronic or otherwise) as the Board shall determine. Each Award may contain terms and conditions in addition to those set forth in the Plan.

(c) **Board Discretion.** Except as otherwise provided by the Plan, each Award may be made alone or in addition or in relation to any other Award. The terms of each Award need not be identical, and the Board need not treat Participants uniformly.

(d) **Termination of Status.** The Board shall determine the effect on an Award of the disability, death, retirement, authorized leave of absence or other change in the employment or other status of a Participant and the extent to which, and the period during which, the Participant, or the Participant's legal representative, conservator, guardian or Designated Beneficiary may exercise rights under the Award.

(e) **Withholding.** The Participant must satisfy all applicable federal, state, and local or other income and employment tax withholding obligations before the Company will deliver stock certificates or otherwise recognize ownership of Common Stock under an Award. The Company may decide to satisfy the withholding obligations through additional withholding on salary or wages. If the Company elects not to or cannot withhold from other compensation, the Participant must pay the Company the full amount, if any, required for withholding or have a broker tender to the Company cash equal to the withholding obligations. Payment of withholding obligations is due before the Company will issue any shares on exercise or release from forfeiture of an Award or, if the Company so requires, at the same time as is payment of the exercise price unless the Company determines otherwise. If provided for in an Award or approved by the Board in its sole discretion, a Participant may satisfy such tax obligations in whole or in part by delivery (either by actual delivery or attestation) of shares of Common Stock, including shares retained from the Award creating the tax obligation, valued at their Fair Market Value; provided, however, except as otherwise provided by the Board, that the total tax

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withholding where stock is being used to satisfy such tax obligations cannot exceed the Company's minimum statutory withholding obligations (based on minimum statutory withholding rates for federal and state tax purposes, including payroll taxes, that are applicable to such supplemental taxable income). Shares surrendered to satisfy tax withholding requirements cannot be subject to any repurchase, forfeiture, unfulfilled vesting or other similar requirements.

(f) Amendment of Award. The Board may amend, modify or terminate any outstanding Award, including but not limited to, substituting therefor another Award of the same or a different type, changing the date of exercise or realization, and converting an Incentive Stock Option to a Nonstatutory Stock Option. The Participant's consent to such action shall be required unless (i) the Board determines that the action, taking into account any related action, would not materially and adversely affect the Participant's rights under the Plan or (ii) the change is permitted under Section 7 hereof.

(g) Conditions on Delivery of Stock. The Company will not be obligated to deliver any shares of Common Stock pursuant to the Plan or to remove restrictions from shares previously delivered under the Plan until (i) all conditions of the Award have been met or removed to the satisfaction of the Company, (ii) in the opinion of the Company's counsel, all other legal matters in connection with the issuance and delivery of such shares have been satisfied, including any applicable securities laws and any applicable stock exchange or stock market rules and regulations, and (iii) the Participant has executed and delivered to the Company such representations or agreements as the Company may consider appropriate to satisfy the requirements of any applicable laws, rules or regulations.

(h) Acceleration. The Board may at any time provide that any Award shall become immediately exercisable in full or in part, free of some or all restrictions or conditions, or otherwise realizable in full or in part, as the case may be.

(i) Share Issuance. To the extent that the Plan provides for issuance of stock certificates to reflect the issuance of shares of Common Stock or Restricted Stock, the Board may provide for the issuance of such shares on a non-certificated basis, to the extent not prohibited by applicable law or the rules of any stock exchange on which the Common Stock is traded.

10. Miscellaneous

(a) No Right To Employment or Other Status. No person shall have any claim or right to be granted an Award, and the grant of an Award shall not be construed as giving a Participant the right to continued employment or any other relationship with the Company. The Company expressly reserves the right at any time to dismiss or otherwise terminate its relationship with a Participant free from any liability or claim under the Plan, except as expressly provided in the applicable Award.

(b) No Rights As Stockholder. Subject to the provisions of the applicable Award, no Participant or Designated Beneficiary shall have any rights as a stockholder with respect to any shares of Common Stock to be distributed with respect to an Award until becoming the record holder of such shares.

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(c) Effective Date and Term of Plan. The Plan shall become effective on Amendment Date. No Options shall be granted under the Plan after the 10th anniversary of the Amendment Date, but Options previously granted may extend beyond that date.

(d) Amendment of Plan. The Board may amend, suspend or terminate the Plan or any portion thereof at any time provided that (i) to the extent required by Section 162(m), no Award granted to a Participant that is intended to comply with Section 162(m) after the date of such amendment shall become exercisable, realizable or vested, as applicable to such Award, unless and until the Company's stockholders approve such amendment if required by Section 162(m) (including the vote required under Section 162(m)); (ii) no amendment that would require stockholder approval under the rules of the NASDAQ Stock Market ("NASDAQ") may be made effective unless and until the Company's stockholders approve such amendment; and (iii) if the NASDAQ amends its corporate governance rules so that such rules no longer require stockholder approval of material amendments to equity compensation plans, then, from and after the effective date of such amendment to the NASDAQ rules, no amendment to the Plan (A) materially increasing the number of shares authorized under the Plan (other than pursuant to Section 8), (B) expanding the types of Awards that may be granted under the Plan, or (C) materially expanding the class of participants eligible to participate in the Plan shall be effective unless and until the Company's stockholders approve such amendment. In addition, if at any time the approval of the Company's stockholders is required as to any other modification or amendment under Section 422 of the Code or any successor provision with respect to Incentive Stock Options, the Board may not effect such modification or amendment without such approval. Unless otherwise specified in the amendment, any amendment to the Plan adopted in accordance with this Section 10(d) shall apply to, and be binding on the holders of, all Awards outstanding under the Plan at the time the amendment is adopted, provided the Board determines that such amendment does not materially and adversely affect the rights of Participants under the Plan. No Award shall be made that is conditioned upon stockholder approval of any amendment to the Plan.

(e) Authorization of Sub-Plans. The Board may from time to time establish one or more sub-plans under the Plan for purposes of satisfying applicable securities or tax laws of various jurisdictions. The Board shall establish such sub-plans by adopting supplements to the Plan containing (i) such limitations on the Board's discretion under the Plan as the Board deems necessary or desirable or (ii) such additional terms and conditions not otherwise inconsistent with the Plan as the Board shall deem necessary or desirable. All supplements adopted by the Board shall be deemed to be part of the Plan, but each supplement shall apply only to Participants within the affected jurisdiction and the Company shall not be required to provide copies of any supplement to Participants in any jurisdiction which is not the subject of such supplement.

(f) Non-U.S. Participants. Options and, prior to the Amendment Date, Awards may be granted to Participants who are non-U.S. citizens or residents employed outside the United States, or both, on such terms and conditions different from those applicable to Options or Awards to Participants employed in the United States as may, in the judgment of the Board, be necessary or desirable in order to recognize differences in local law or tax policy. The Board also may impose conditions on the exercise or vesting of Options, or Awards granted prior to the Amendment Date, in order to minimize the Board's obligation with respect to tax equalization

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for Participants on assignments outside their home country. The Board may approve such supplements to or amendments, restatements or alternative versions of the Plan as it may consider necessary or appropriate for such purposes, without thereby affecting the terms of this Plan as in effect for any other purpose, and the Secretary or other appropriate officer of the Company may certify any such document as having been approved and adopted in the same manner as this Plan.

(g) **Compliance with Section 409A of the Code.** Except as provided in individual Award agreements initially or by amendment, if and to the extent any portion of any payment, compensation or other benefit provided to a Participant in connection with his or her employment termination is determined to constitute nonqualified deferred compensation within the meaning of Section 409A of the Code and the Participant is a specified employee as defined in Section 409A(a)(2)(B)(i) of the Code, as determined by the Company in accordance with its procedures, by which determination the Participant (through accepting the Award) agrees that he or she is bound, such portion of the payment, compensation or other benefit shall not be paid before the day that is six months plus one day after the date of separation from service (as determined under Section 409A of the Code) (the New Payment Date), except as Section 409A of the Code may then permit. The aggregate of any payments that otherwise would have been paid to the Participant during the period between the date of separation from service and the New Payment Date shall be paid to the Participant in a lump sum on such New Payment Date, and any remaining payments will be paid on their original schedule.

The Company makes no representations or warranty and shall have no liability to the Participant or any other person if any provisions of or payments, compensation or other benefits under the Plan are determined to constitute nonqualified deferred compensation subject to Section 409A of the Code but do not to satisfy the conditions of that section.

(h) **Limitations on Liability.** Notwithstanding any other provisions of the Plan, no individual acting as a director, officer, other employee, or agent of the Company will be liable to any Participant, former Participant, spouse, beneficiary, or any other person for any claim, loss, liability, or expense incurred in connection with the Plan, nor will such individual be personally liable with respect to the Plan because of any contract or other instrument he or she executes in his or her capacity as a director, officer, other employee, or agent of the Company. The Company will indemnify and hold harmless each director, officer, other employee, or agent of the Company to whom any duty or power relating to the administration or interpretation of the Plan has been or will be delegated, against any cost or expense (including attorneys' fees) or liability (including any sum paid in settlement of a claim with the Board's approval) arising out of any act or omission to act concerning this Plan unless arising out of such person's own fraud or bad faith.

(i) **Governing Law.** The provisions of the Plan and all Awards made hereunder shall be governed by and interpreted in accordance with the laws of the State of Delaware, excluding choice-of-law principles of the law of such state that would require the application of the laws of a jurisdiction other than such state.

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Appendix C

ALNYLAM PHARMACEUTICALS, INC.
2009 STOCK INCENTIVE PLAN

1. Purpose

The purpose of this 2009 Stock Incentive Plan (the *Plan*) of Alnylam Pharmaceuticals, Inc., a Delaware corporation (the *Company*), is to advance the interests of the Company's stockholders by enhancing the Company's ability to attract, retain and motivate persons who are expected to make important contributions to the Company by providing such persons with equity ownership opportunities and performance-based incentives that are intended to better align the interests of such persons with those of the Company's stockholders. Except where the context otherwise requires, the term *Company* shall include any of the Company's present or future parent or subsidiary corporations as defined in Sections 424(e) or (f) of the Internal Revenue Code of 1986, as amended, and any regulations promulgated thereunder (the *Code*) and any other business venture (including, without limitation, joint venture or limited liability company) in which the Company has a controlling interest, as determined by the Board of Directors of the Company (the *Board*).

2. Eligibility

All of the Company's employees, officers and directors are eligible to be granted options, stock appreciation rights (*SARs*), restricted stock, restricted stock units (*RSUs*) and other stock-based awards (each, an *Award*) under the Plan. Consultants and advisors to the Company (as such terms are defined and interpreted for purposes of Form S-8 (or any successor form)) are also eligible to be granted Awards. Each person who is granted an Award under the Plan is deemed a *Participant*.

3. Administration and Delegation

(a) Administration by Board of Directors. The Plan will be administered by the Board. The Board shall have authority to grant Awards and to adopt, amend and repeal such administrative rules, guidelines and practices relating to the Plan as it shall deem advisable. The Board may construe and interpret the terms of the Plan and any Award agreements entered into under the Plan. The Board may correct any defect, supply any omission or reconcile any inconsistency in the Plan or any Award in the manner and to the extent it shall deem expedient to carry the Plan into effect and it shall be the sole and final judge of such expediency. All decisions by the Board shall be made in the Board's sole discretion and shall be final and binding on all persons having or claiming any interest in the Plan or in any Award.

(b) Appointment of Committees. To the extent permitted by applicable law, the Board may delegate any or all of its powers under the Plan to one or more committees or subcommittees of the Board (a *Committee*). All references in the Plan to the *Board* shall mean the Board or a Committee of the Board or the officers referred to in Section 3(c) to the extent that the Board's powers or authority under the Plan have been delegated to such Committee or officers.

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(c) **Delegation to Officers.** To the extent permitted by applicable law, the Board may delegate to one or more officers of the Company the power to grant Options and other Awards that constitute rights under Delaware law (subject to any limitations under the Plan) to employees or officers of the Company or any of its present or future subsidiary corporations and to exercise such other powers under the Plan as the Board may determine, provided that the Board shall fix the terms of the Awards to be granted by such officers (including the exercise price of the Awards, which may include a formula by which the exercise price will be determined) and the maximum number of shares subject to such Awards that the officers may grant; provided further, however, that no officer shall be authorized to grant Awards to any executive officer of the Company (as defined by Rule 3b-7 under the Securities Exchange Act of 1934, as amended (the *Exchange Act*)) or to any officer of the Company (as defined by Rule 16a-1 under the Exchange Act). The Board may not delegate authority under this Section 3(c) to grant restricted stock, unless Delaware law then permits such delegation.

(d) **Awards to Non-Employee Directors.** Discretionary Awards to non-employee directors will only be granted and administered by a Committee, all of the members of which are independent as defined by Section 4200(a)(15) of the Nasdaq Marketplace Rules.

4. **Stock Available for Awards**

(a) **Number of Shares; Share Counting.**

(1) **Authorized Number of Shares.** Subject to adjustment under Section 10, Awards may be made under the Plan for up to 2,200,000 shares of common stock, \$0.01 par value per share, of the Company (the *Common Stock*), any or all of which Awards may be in the form of Incentive Stock Options. Shares issued under the Plan may consist in whole or in part of authorized but unissued shares or treasury shares.

(2) **Fungible Share Pool.** Subject to adjustment under Section 10, any Award that is not a Full-Value Award shall be counted against the share limits specified in Sections 4(a)(1) and 4(b)(2) as one share for each share of Common Stock subject to such Award and any Award that is a Full-Value Award shall be counted against the share limits specified in Sections 4(a)(1) and 4(b)(2) as 1.5 shares for each one share of Common Stock subject to such Full-Value Award. ***Full-Value Award*** means any Restricted Stock Award or Other Stock-Based Award (each as defined below). To the extent a share that was subject to an Award that counted as one share is returned to the Plan pursuant to Section 4(a)(3), each applicable share reserve will be credited with one share. To the extent that a share that was subject to a Full-Value Award that counted as 1.5 shares is returned to the Plan pursuant to Section 4(a)(3), each applicable share reserve will be credited with 1.5 shares.

(3) **Share Counting.** For purposes of counting the number of shares available for the grant of Awards under the Plan and under the sublimits contained in Section 4(b)(2), (i) all shares of Common Stock covered by independent SARs shall be counted against the number of shares available for the grant of Awards; *provided, however*, that independent SARs that may be settled only in cash shall not be so counted; (ii) if any Award (A) expires or is terminated, surrendered or canceled without having been fully exercised or is forfeited in whole or in part (including as the result of shares of Common Stock subject to such Award being repurchased by

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the Company at the original issuance price pursuant to a contractual repurchase right) or (B) results in any Common Stock not being issued (including as a result of an independent SAR that was settleable either in cash or in stock actually being settled in cash), the unused Common Stock covered by such Award shall again be available for the grant of Awards; *provided, however*, in the case of Incentive Stock Options (as hereinafter defined), the foregoing shall be subject to any limitations under the Code; and provided further, in the case of independent SARs, that the full number of shares subject to any stock-settled SAR shall be counted against the shares available under the Plan and against the sublimits listed in the first clause of this Section in proportion to the portion of the SAR actually exercised regardless of the number of shares actually used to settle such SAR upon exercise; (iii) shares of Common Stock delivered (by actual delivery, attestation, or net exercise) to the Company by a Participant to (A) purchase shares of Common Stock upon the exercise of an Award or (B) satisfy tax withholding obligations (including shares retained from the Award creating the tax obligation) shall not be added back to the number of shares available for the future grant of Awards; and (iv) shares of Common Stock repurchased by the Company on the open market using the proceeds from the exercise of an Award shall not increase the number of shares available for future grant of Awards.

(b) Sub-limits. Subject to adjustment under Section 10, the following sub-limits on the number of shares subject to Awards shall apply:

(1) Section 162(m) Per-Participant Limit. The maximum number of shares of Common Stock with respect to which Awards may be granted to any Participant under the Plan shall be 500,000 per calendar year, except in the calendar year in which the Participant is hired by the Company, in which case the maximum number of shares shall be 1,000,000. For purposes of the foregoing limit, the combination of an Option in tandem with a SAR (as each is hereafter defined) shall be treated as a single Award. The per Participant limit described in this Section 4(b)(1) shall be construed and applied consistently with Section 162(m) of the Code or any successor provision thereto, and the regulations thereunder (*Section 162(m)*).

(2) Limit on Awards to Directors. Except for initial and annual grants provided under Section 6, the maximum number of shares with respect to which Awards may be granted to directors who are not employees of the Company at the time of grant shall be 5% of the maximum number of authorized shares set forth in Section 4(a)(1).

(c) Substitute Awards. In connection with a merger or consolidation of an entity with the Company or the acquisition by the Company of property or stock of an entity, the Board may grant awards in substitution for any options, stock or stock-based awards granted by such entity or an affiliate thereof. Substitute Awards may be granted on such terms as the Board deems appropriate in the circumstances, notwithstanding any limitations on Awards contained in the Plan. Substitute Awards shall not count against the overall share limit set forth in Section 4(a)(1) or any sublimits contained in the Plan, except as may be required by reason of Section 422 and related provisions of the Code.

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5. Stock Options

(a) **General**. The Board may grant options to purchase Common Stock (each, an ***Option***) and determine the number of shares of Common Stock to be covered by each Option, the exercise price of each Option and the conditions and limitations applicable to the exercise of each Option, including conditions relating to applicable federal or state securities laws, as it considers necessary or advisable. An Option that is not intended to be an Incentive Stock Option (as hereinafter defined) shall be designated a ***Nonstatutory Stock Option*** .

(b) **Incentive Stock Options**. An Option that the Board intends to be an incentive stock option as defined in Section 422 of the Code (an ***Incentive Stock Option***) shall only be granted to employees of Alnylam Pharmaceuticals, Inc., any of Alnylam Pharmaceuticals, Inc.'s present or future parent or subsidiary corporations as defined in Sections 424(e) or (f) of the Code, and any other entities the employees of which are eligible to receive Incentive Stock Options under the Code, and shall be subject to and shall be construed consistently with the requirements of Section 422 of the Code. The Company shall have no liability to a Participant, or any other party, if an Option (or any part thereof) that is intended to be an Incentive Stock Option is not an Incentive Stock Option or if the Company converts an Incentive Stock Option to a Nonstatutory Stock Option.

(c) **Exercise Price**. The Board shall establish the exercise price of each Option and specify the exercise price in the applicable option agreement. The exercise price shall be not less than 100% of the Fair Market Value (as defined below) on the date the Option is granted; provided that if the Board approves the grant of an Option with an exercise price to be determined on a future date, the exercise price shall be not less than 100% of the Fair Market Value on such future date. ***Fair Market Value*** of a share of Common Stock for purposes of the Plan will be determined as follows:

(1) if the Common Stock trades on a national securities exchange, the closing sale price (for the primary trading session) on the date of grant;

(2) if the Common Stock does not trade on any such exchange, the average of the closing bid and asked prices as reported by an authorized OTCBB market data vendor as listed on the OTCBB website (otcbb.com) on the date of grant; or

(3) if the Common Stock is not publicly traded, the Board will determine the Fair Market Value for purposes of the Plan using any measure of value it determines to be appropriate (including, as it considers appropriate, relying on appraisals) in a manner consistent with the valuation principles under Section 409A of the Code, except as the Board or Committee may expressly determine otherwise.

For any date that is not a trading day, the Fair Market Value of a share of Common Stock for such date will be determined by using the closing sale price or average of the bid and asked prices, as appropriate, for the immediately preceding trading day and with the timing in the formulas above adjusted accordingly. The Board can substitute a particular time of day or other measure of closing sale price or bid and asked prices if appropriate because of exchange or market procedures or can, in its sole discretion, use weighted averages either on a daily basis or

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such longer period as complies with Section 409A of the Code. The Board has sole discretion to determine the Fair Market Value for purposes of this Plan, and all Awards are conditioned on the participants' agreement that the Board's determination is conclusive and binding even though others might make a different determination.

(d) Duration of Options. Each Option shall be exercisable at such times and subject to such terms and conditions as the Board may specify in the applicable option agreement; *provided, however*, that no Option will be granted for a term in excess of 10 years.

(e) Exercise of Option. Options may be exercised by delivery to the Company of a written notice of exercise signed by the proper person or by any other form of notice (including electronic notice) approved by the Company, together with payment in full as specified in Section 5(f) for the number of shares for which the Option is exercised. Shares of Common Stock subject to the Option will be delivered by the Company as soon as practicable following exercise.

(f) Payment Upon Exercise. Common Stock purchased upon the exercise of an Option granted under the Plan shall be paid for as follows:

(1) in cash or by check, payable to the order of the Company;

(2) except as may otherwise be provided in the applicable option agreement, by (i) delivery of an irrevocable and unconditional undertaking by a creditworthy broker to deliver promptly to the Company sufficient funds to pay the exercise price and any required tax withholding or (ii) delivery by the Participant to the Company of a copy of irrevocable and unconditional instructions to a creditworthy broker to deliver promptly to the Company cash or a check sufficient to pay the exercise price and any required tax withholding;

(3) to the extent provided for in the applicable option agreement or approved by the Board, in its sole discretion, by delivery (either by actual delivery or attestation) of shares of Common Stock owned by the Participant valued at their Fair Market Value, provided (i) such method of payment is then permitted under applicable law, (ii) such Common Stock, if acquired directly from the Company, was owned by the Participant for such minimum period of time, if any, as may be established by the Board in its discretion and (iii) such Common Stock is not subject to any repurchase, forfeiture, unfulfilled vesting or other similar requirements;

(4) to the extent provided for in the applicable Nonstatutory Stock Option agreement or approved by the Board in its sole discretion, by delivery of a notice of net exercise to the Company, as a result of which the Participant would receive the number of shares of Common Stock underlying the Option so exercised reduced by the number of shares of Common Stock equal to the aggregate exercise price of the Option divided by the Fair Market Value on the date of exercise;

(5) to the extent permitted by applicable law and provided for in the applicable Option agreement or approved by the Board, in its sole discretion, by payment of such other lawful consideration as the Board may determine; or

(6) by any combination of the above permitted forms of payment.

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(g) **Limitation on Repricing.** Unless such action is approved by the Company's stockholders: (1) no outstanding Option granted under the Plan may be amended to provide an exercise price per share that is lower than the then-current exercise price per share of such outstanding Option (other than adjustments pursuant to Section 10) and (2) the Board may not cancel any outstanding option (whether or not granted under the Plan) and grant in substitution therefor new Awards under the Plan covering the same or a different number of shares of Common Stock and having an exercise price per share lower than the then-current exercise price per share of the cancelled option.

6. Director Options

(a) **Initial Grant.** Upon the commencement of service on the Board by any individual who is not then an employee of the Company or any subsidiary of the Company, the Company shall grant to such person a Nonstatutory Stock Option to purchase 30,000 shares of Common Stock (subject to adjustment under Section 10).

(b) **Annual Grant.** On the date of each annual meeting of stockholders of the Company, the Company shall grant to each member of the Board who is both serving as a director of the Company immediately prior to and immediately following such annual meeting and who is not then an employee of the Company or any of its subsidiaries, a Nonstatutory Stock Option to purchase 15,000 shares of Common Stock (subject to adjustment under Section 10); *provided, however*, that a director shall not be eligible to receive an option grant under this Section 6(b) until such director has served on the Board for at least six months. In addition, on the date of each annual meeting of stockholders of the Company, the Company shall grant a Nonstatutory Stock Option to purchase an additional 10,000 shares of Common Stock (subject to adjustment under Section 10) to the Chairman of the Audit Committee of the Board.

(c) **Terms of Director Options.** Options granted under this Section 6 shall (i) have an exercise price equal to the Fair Market Value on the date of grant, (ii) vest in full on the first anniversary of the date of grant provided that the individual is serving on the Board on such date (or, in the case of Options granted under Section 6(a), as to one-third of the shares subject to the Option on each of the first, second and third anniversaries of the date of grant); provided that no additional vesting shall take place after the Participant ceases to serve as a director and further provided that the Board may provide for accelerated vesting in the case of death, disability, change in control, attainment of mandatory retirement age or retirement, (iii) expire on the earlier of 10 years from the date of grant or three months following cessation of service on the Board and (iv) contain such other terms and conditions as the Board shall determine.

(d) **Board Discretion.** The Board retains the specific authority to from time to time increase or decrease the number of shares subject to Options granted under this Section 6, subject to the limitation on the aggregate number of shares issuable to non-employee directors contained in Section 4(b)(2). The Board also retains the specific authority to issue SARs, Restricted Stock Awards or Other Stock-Based Awards in lieu of some or all of the Options otherwise issuable under this Section 6, subject to the limitation on the aggregate number of shares issuable to non-employee directors contained in Section 4(b)(2).

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7. Stock Appreciation Rights

(a) **General**. The Board may grant Awards consisting of SARs entitling the holder, upon exercise, to receive an amount of Common Stock or cash or a combination thereof (such form to be determined by the Board) determined by reference to appreciation, from and after the date of grant, in the Fair Market Value of a share of Common Stock over the measurement price established pursuant to Section 7(c). The date as of which such appreciation is determined shall be the exercise date.

(b) **Grants**. SARs may be granted in tandem with, or independently of, Options granted under the Plan.

(1) **Tandem Awards**. When SARs are expressly granted in tandem with Options, (i) the SAR will be exercisable only at such time or times, and to the extent, that the related Option is exercisable (except to the extent designated by the Board in connection with a Reorganization Event and will be exercisable in accordance with the procedure required for exercise of the related Option; (ii) the SAR will terminate and no longer be exercisable upon the termination or exercise of the related Option, except to the extent designated by the Board in connection with a Reorganization Event and except that a SAR granted with respect to less than the full number of shares covered by an Option will not be reduced until the number of shares as to which the related Option has been exercised or has terminated exceeds the number of shares not covered by the SAR; (iii) the Option will terminate and no longer be exercisable upon the exercise of the related SAR; and (iv) the SAR will be transferable only with the related Option.

(2) **Independent SARs**. A SAR not expressly granted in tandem with an Option will become exercisable at such time or times, and on such conditions, as the Board may specify in the SAR Award.

(c) **Measurement Price**. The Board shall establish the measurement price of each SAR and specify it in the applicable SAR agreement. The measurement price shall not be less than 100% of the Fair Market Value on the date the SAR is granted; provided that if the Board approves the grant of a SAR with a measurement price to be determined on a future date, the measurement price shall be not less than 100% of the Fair Market Value on such future date.

(d) **Duration of SARs**. Each SAR shall be exercisable at such times and subject to such terms and conditions as the Board may specify in the applicable SAR agreement; *provided, however*, that no SAR will be granted with a term in excess of 10 years.

(e) **Exercise of SARs**. SARs may be exercised by delivery to the Company of a written notice of exercise signed by the proper person or by any other form of notice (including electronic notice) approved by the Company, together with any other documents required by the Board.

(f) **Limitation on Repricing**. Unless such action is approved by the Company's stockholders: (1) no outstanding SAR granted under the Plan may be amended to provide an exercise price per share that is lower than the then-current exercise price per share of such outstanding SAR (other than adjustments pursuant to Section 10) and (2) the Board may not cancel any outstanding SAR (whether or not granted under the Plan) and grant in substitution

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therefor new Awards under the Plan covering the same or a different number of shares of Common Stock and having an exercise price per share lower than the then-current exercise price per share of the cancelled SAR.

8. Restricted Stock; Restricted Stock Units

(a) **General**. The Board may grant Awards entitling recipients to acquire shares of Common Stock (*Restricted Stock*), subject to the right of the Company to repurchase all or part of such shares at their issue price or other stated or formula price (or to require forfeiture of such shares if issued at no cost) from the recipient in the event that conditions specified by the Board in the applicable Award are not satisfied prior to the end of the applicable restriction period or periods established by the Board for such Award. Instead of granting Awards for Restricted Stock, the Board may grant Awards entitling the recipient to receive shares of Common Stock or cash to be delivered at the time such Award vests (*Restricted Stock Units*) (Restricted Stock and Restricted Stock Units are each referred to herein as a *Restricted Stock Award*).

(b) **Terms and Conditions for All Restricted Stock Awards**. The Board shall determine the terms and conditions of a Restricted Stock Award, including the conditions for vesting and repurchase (or forfeiture) and the issue price, if any. Restricted Stock Awards that vest solely based on the passage of time shall be zero percent vested prior to the first anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the first annual meeting held after the date of grant), no more than one-third vested prior to the second anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the second annual meeting held after the date of grant), and no more than two-thirds vested prior to the third anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the third annual meeting held after the date of grant). Restricted Stock Awards that do not vest solely based on the passage of time shall not vest prior to the first anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the first annual meeting held after the date of grant). The two foregoing sentences shall not apply to (1) Performance Awards granted pursuant to Section 11(i) or (2) Restricted Stock Awards granted, in the aggregate, for up to 10% of the maximum number of authorized shares set forth in Section 4(a)(1). Notwithstanding any other provision of this Plan (other than Section 11(i), if applicable), the Board may, in its discretion, either at the time a Restricted Stock Award is made or at any time thereafter, waive its right to repurchase shares of Common Stock (or waive the forfeiture thereof) or remove or modify any part or all of the restrictions applicable to the Restricted Stock Award, provided that the Board may only exercise such rights in the following extraordinary circumstances: death, disability or retirement of the Participant, or a merger, consolidation, sale, reorganization, recapitalization, or change in control of the Company.

(c) Additional Provisions Relating to Restricted Stock

(1) **Dividends**. Participants holding shares of Restricted Stock will be entitled to all ordinary cash dividends paid with respect to such shares, unless otherwise provided by the Board. Unless otherwise provided by the Board, if any dividends or distributions are paid in shares, or consist of a dividend or distribution to holders of Common Stock other than an

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ordinary cash dividend, the shares, cash or other property will be subject to the same restrictions on transferability and forfeitability as the shares of Restricted Stock with respect to which they were paid. Each dividend payment will be made no later than the end of the calendar year in which the dividends are paid to shareholders of that class of stock or, if later, the 15th day of the third month following the date the dividends are paid to shareholders of that class of stock.

(2) **Stock Certificates**. The Company may require that any stock certificates issued in respect of shares of Restricted Stock shall be deposited in escrow by the Participant, together with a stock power endorsed in blank, with the Company (or its designee). At the expiration of the applicable restriction periods, the Company (or such designee) shall deliver the certificates no longer subject to such restrictions to the Participant or if the Participant has died, to the beneficiary designated, in a manner determined by the Board, by a Participant to receive amounts due or exercise rights of the Participant in the event of the Participant's death (the ***Designated Beneficiary***). In the absence of an effective designation by a Participant, ***Designated Beneficiary*** shall mean the Participant's estate.

(d) **Additional Provisions Relating to Restricted Stock Units**.

(1) **Settlement**. Upon the vesting of and/or lapsing of any other restrictions (i.e., settlement) with respect to each Restricted Stock Unit, the Participant shall be entitled to receive from the Company one share of Common Stock or an amount of cash equal to the Fair Market Value of one share of Common Stock, as provided in the applicable Award agreement. The Board may, in its discretion, provide that settlement of Restricted Stock Units shall be deferred, on a mandatory basis or at the election of the Participant in a manner that complies with Section 409A of the Code.

(2) **Voting Rights**. A Participant shall have no voting rights with respect to any Restricted Stock Units.

(3) **Dividend Equivalents**. To the extent provided by the Board, in its sole discretion, a grant of Restricted Stock Units may provide Participants with the right to receive an amount equal to any dividends or other distributions declared and paid on an equal number of outstanding shares of Common Stock (***Dividend Equivalents***). Dividend Equivalents may be paid currently or credited to an account for the Participants, may be settled in cash and/or shares of Common Stock and may be subject to the same restrictions on transfer and forfeitability as the Restricted Stock Units with respect to which paid, as determined by the Board in its sole discretion, subject in each case to such terms and conditions as the Board shall establish, in each case to be set forth in the applicable Award agreement.

9. Other Stock-Based Awards

(a) **General**. Other Awards of shares of Common Stock, and other Awards that are valued in whole or in part by reference to, or are otherwise based on, shares of Common Stock or other property, may be granted hereunder to Participants (***Other Stock-Based-Awards***), including without limitation Awards entitling recipients to receive shares of Common Stock to be delivered in the future. Such Other Stock-Based Awards shall also be available as a form of payment in the settlement of other Awards granted under the Plan or as payment in lieu of

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compensation to which a Participant is otherwise entitled. Other Stock-Based Awards may be paid in shares of Common Stock or cash, as the Board shall determine.

(b) **Terms and Conditions.** Subject to the provisions of the Plan, the Board shall determine the terms and conditions of each Other Stock-Based Award, including any purchase price applicable thereto. Other Stock-Based Awards that vest solely based on the passage of time shall be zero percent vested prior to the first anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the first annual meeting held after the date of grant), no more than one-third vested prior to the second anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the second annual meeting held after the date of grant), and no more than two-thirds vested prior to the third anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the third annual meeting held after the date of grant). Other Stock-Based Awards that do not vest solely based on the passage of time shall not vest prior to the first anniversary of the date of grant (or, in the case of Awards to non-employee directors, if earlier, the date of the first annual meeting held after the date of grant). The two foregoing sentences shall not apply to (1) Performance Awards granted pursuant to Section 11(i) or (2) Other Stock-Based Awards granted, in the aggregate, for up to 10% of the maximum number of authorized shares set forth in Section 4(a)(1). Notwithstanding any other provision of this Plan (other than Section 11(i), if applicable), the Board may, in its discretion, either at the time an Other Stock-Based Award is made or at any time thereafter, waive its right to repurchase shares of Common Stock (or waive the forfeiture thereof) or remove or modify any part or all of the restrictions applicable to the Other Stock-Based Award, provided that the Board may only exercise such rights in the following extraordinary circumstances: death, disability or retirement of the Participant, or a merger, consolidation, sale, reorganization, recapitalization, or change in control of the Company.

10. **Adjustments for Changes in Common Stock and Certain Other Events**

(a) **Changes in Capitalization.** In the event of any stock split, reverse stock split, stock dividend, recapitalization, combination of shares, reclassification of shares, spin-off or other similar change in capitalization or event, or any dividend or distribution to holders of Common Stock other than an ordinary cash dividend, (i) the number and class of securities available under the Plan, (ii) the sub-limits, fungible pool and share counting rules set forth in Sections 4(a) and 4(b), (iii) the minimum vesting provisions of Restricted Stock Awards and Other Stock-Based Awards set forth in Sections 8(b) and 9(b), (iv) the number and class of securities and exercise price per share of each outstanding Option and each Option issuable under Section 6, (v) the share- and per-share provisions and the measurement price of each SAR, (vi) the number of shares subject to and the repurchase price per share subject to each outstanding Restricted Stock Award and (vii) the share- and per-share-related provisions and the purchase price, if any, of each outstanding Other Stock-Based Award, shall be equitably adjusted by the Company (or substituted Awards may be made, if applicable) in the manner determined by the Board. Without limiting the generality of the foregoing, in the event the Company effects a split of the Common Stock by means of a stock dividend and the exercise price of and the number of shares subject to an outstanding Option are adjusted as of the date of the distribution of the dividend (rather than as of the record date for such dividend), then an optionee who exercises an Option between the record date and the distribution date for such stock dividend

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shall be entitled to receive, on the distribution date, the stock dividend with respect to the shares of Common Stock acquired upon such Option exercise, notwithstanding the fact that such shares were not outstanding as of the close of business on the record date for such stock dividend.

(b) Reorganization Events.

(1) **Definition.** A ***Reorganization Event*** shall mean: (a) any merger or consolidation of the Company with or into another entity as a result of which all of the Common Stock of the Company is converted into or exchanged for the right to receive cash, securities or other property or is cancelled, (b) any transfer or disposition of all of the Common Stock of the Company for cash, securities or other property pursuant to a share exchange or other transaction or (c) any liquidation or dissolution of the Company.

(2) **Consequences of a Reorganization Event on Awards Other than Restricted Stock Awards.** In connection with a Reorganization Event, the Board may take any one or more of the following actions as to all or any (or any portion of) outstanding Awards other than Restricted Stock Awards on such terms as the Board determines: (i) provide that Awards shall be assumed, or substantially equivalent Awards shall be substituted, by the acquiring or succeeding corporation (or an affiliate thereof), (ii) upon written notice to a Participant, provide that the Participant's unexercised Awards will terminate immediately prior to the consummation of such Reorganization Event unless exercised by the Participant within a specified period following the date of such notice, (iii) provide that outstanding Awards shall become exercisable, realizable, or deliverable, or restrictions applicable to an Award shall lapse, in whole or in part prior to or upon such Reorganization Event, (iv) in the event of a Reorganization Event under the terms of which holders of Common Stock will receive upon consummation thereof a cash payment for each share surrendered in the Reorganization Event (the ***Acquisition Price***), make or provide for a cash payment to a Participant equal to the excess, if any, of (A) the Acquisition Price times the number of shares of Common Stock subject to the Participant's Awards (to the extent the exercise price does not exceed the Acquisition Price) over (B) the aggregate exercise price of all such outstanding Awards and any applicable tax withholdings, in exchange for the termination of such Awards, (v) provide that, in connection with a liquidation or dissolution of the Company, Awards shall convert into the right to receive liquidation proceeds (if applicable, net of the exercise price thereof and any applicable tax withholdings) and (vi) any combination of the foregoing. In taking any of the actions permitted under this Section 10(b), the Board shall not be obligated by the Plan to treat all Awards, all Awards held by a Participant, or all Awards of the same type, identically.

For purposes of clause (i) above, an Option shall be considered assumed if, following consummation of the Reorganization Event, the Option confers the right to purchase, for each share of Common Stock subject to the Option immediately prior to the consummation of the Reorganization Event, the consideration (whether cash, securities or other property) received as a result of the Reorganization Event by holders of Common Stock for each share of Common Stock held immediately prior to the consummation of the Reorganization Event (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding shares of Common Stock); *provided, however*, that if the consideration received as a result of the Reorganization Event is not solely common stock of the acquiring or succeeding corporation (or an affiliate thereof), the Company may, with the consent

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of the acquiring or succeeding corporation, provide for the consideration to be received upon the exercise of Options to consist solely of common stock of the acquiring or succeeding corporation (or an affiliate thereof) equivalent in value (as determined by the Board) to the per share consideration received by holders of outstanding shares of Common Stock as a result of the Reorganization Event.

(3) Consequences of a Reorganization Event on Restricted Stock Awards. Upon the occurrence of a Reorganization Event other than a liquidation or dissolution of the Company, the repurchase and other rights of the Company under each outstanding Restricted Stock Award shall inure to the benefit of the Company's successor and shall, unless the Board determines otherwise, apply to the cash, securities or other property which the Common Stock was converted into or exchanged for pursuant to such Reorganization Event in the same manner and to the same extent as they applied to the Common Stock subject to such Restricted Stock Award; *provided, however*, that the Board may provide for termination or deemed satisfaction of such repurchase or other rights under the instrument evidencing any Restricted Stock Award or any other agreement between a Participant and the Company, either initially or by amendment. Upon the occurrence of a Reorganization Event involving the liquidation or dissolution of the Company, except to the extent specifically provided to the contrary in the instrument evidencing any Restricted Stock Award or any other agreement between a Participant and the Company, all restrictions and conditions on all Restricted Stock Awards then outstanding shall automatically be deemed terminated or satisfied.

11. General Provisions Applicable to Awards

(a) Transferability of Awards. Awards shall not be sold, assigned, transferred, pledged or otherwise encumbered by the person to whom they are granted, either voluntarily or by operation of law, except by will or the laws of descent and distribution or, other than in the case of an Incentive Stock Option, pursuant to a qualified domestic relations order, and, during the life of the Participant, shall be exercisable only by the Participant; *provided, however*, that the Board may permit or provide in an Award for the gratuitous transfer of the Award by the Participant to or for the benefit of any immediate family member, family trust or other entity established for the benefit of the Participant and/or an immediate family member thereof if, with respect to such proposed transferee, the Company would be eligible to use a Form S-8 for the registration of the sale of the Common Stock subject to such Award under the Securities Act of 1933, as amended; provided, further, that the Company shall not be required to recognize any such transfer until such time as the Participant and such permitted transferee shall, as a condition to such transfer, deliver to the Company a written instrument in form and substance satisfactory to the Company confirming that such transferee shall be bound by all of the terms and conditions of the Award. References to a Participant, to the extent relevant in the context, shall include references to authorized transferees.

(b) Documentation. Each Award shall be evidenced in such form (written, electronic or otherwise) as the Board shall determine. Each Award may contain terms and conditions in addition to those set forth in the Plan.

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(c) **Board Discretion.** Except as otherwise provided by the Plan, each Award may be made alone or in addition or in relation to any other Award. The terms of each Award need not be identical, and the Board need not treat Participants uniformly.

(d) **Termination of Status.** The Board shall determine the effect on an Award of the disability, death, termination or other cessation of employment, authorized leave of absence or other change in the employment or other status of a Participant and the extent to which, and the period during which, the Participant, or the Participant's legal representative, conservator, guardian or Designated Beneficiary, may exercise rights under the Award.

(e) **Withholding.** The Participant must satisfy all applicable federal, state, and local or other income and employment tax withholding obligations before the Company will deliver stock certificates or otherwise recognize ownership of Common Stock under an Award. The Company may decide to satisfy the withholding obligations through additional withholding on salary or wages. If the Company elects not to or cannot withhold from other compensation, the Participant must pay the Company the full amount, if any, required for withholding or have a broker tender to the Company cash equal to the withholding obligations. Payment of withholding obligations is due before the Company will issue any shares on exercise or release from forfeiture of an Award or, if the Company so requires, at the same time as is payment of the exercise price unless the Company determines otherwise. If provided for in an Award or approved by the Board in its sole discretion, a Participant may satisfy such tax obligations in whole or in part by delivery (either by actual delivery or attestation) of shares of Common Stock, including shares retained from the Award creating the tax obligation, valued at their Fair Market Value; *provided, however*, except as otherwise provided by the Board, that the total tax withholding where stock is being used to satisfy such tax obligations cannot exceed the Company's minimum statutory withholding obligations (based on minimum statutory withholding rates for federal and state tax purposes, including payroll taxes, that are applicable to such supplemental taxable income). Shares used to satisfy tax withholding requirements cannot be subject to any repurchase, forfeiture, unfulfilled vesting or other similar requirements.

(f) **Amendment of Award.** Except as otherwise provided in Sections 8(b) and 9(b) with respect to the vesting of Restricted Stock Awards and Other Stock-Based Awards, Section 11(i) with respect to Performance Awards or Section 12(d) with respect to actions requiring shareholder approval, the Board may amend, modify or terminate any outstanding Award, including but not limited to, substituting therefor another Award of the same or a different type, changing the date of exercise or realization, and converting an Incentive Stock Option to a Nonstatutory Stock Option. The Participant's consent to such action shall be required unless (i) the Board determines that the action, taking into account any related action, would not materially and adversely affect the Participant's rights under the Plan or (ii) the change is permitted under Section 10 hereof.

(g) **Conditions on Delivery of Stock.** The Company will not be obligated to deliver any shares of Common Stock pursuant to the Plan or to remove restrictions from shares previously delivered under the Plan until (i) all conditions of the Award have been met or removed to the satisfaction of the Company, (ii) in the opinion of the Company's counsel, all other legal matters in connection with the issuance and delivery of such shares have been satisfied, including any applicable securities laws and any applicable stock exchange or stock

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market rules and regulations, and (iii) the Participant has executed and delivered to the Company such representations or agreements as the Company may consider appropriate to satisfy the requirements of any applicable laws, rules or regulations.

(h) **Acceleration.** Except as otherwise provided in Sections 8(b), 9(b) and 11(i), the Board may at any time provide that any Award shall become immediately exercisable in full or in part, free of some or all restrictions or conditions, or otherwise realizable in full or in part, as the case may be.

(i) **Performance Awards.**

(1) **Grants.** Restricted Stock Awards and Other Stock-Based Awards under the Plan may be made subject to the achievement of performance goals pursuant to this Section 11(i) (**Performance Awards**), subject to the limit in Section 4(b)(1) on shares covered by such grants. Subject to Section 11(i)(4), no Performance Awards shall vest prior to the first anniversary of the date of grant.

(2) **Committee.** Grants of Performance Awards to any Covered Employee intended to qualify as performance-based compensation under Section 162(m) (**Performance-Based Compensation**) shall be made only by a Committee (or subcommittee of a Committee) comprised solely of two or more directors eligible to serve on a committee making Awards qualifying as performance-based compensation under Section 162(m). In the case of such Awards granted to Covered Employees, references to the Board or to a Committee shall be treated as referring to such Committee or subcommittee. **Covered Employee** shall mean any person who is, or whom the Committee, in its discretion, determines may be, a covered employee under Section 162(m)(3) of the Code.

(3) **Performance Measures.** For any Award that is intended to qualify as Performance-Based Compensation, the Committee shall specify that the degree of granting and vesting shall be subject to the achievement of one or more objective performance measures established by the Committee, which shall be based on the relative or absolute attainment of specified levels of one or any combination of the following: net income, earnings before or after discontinued operations, interest, taxes, depreciation and/or amortization, operating profit before or after discontinued operations and/or taxes, sales, sales growth, earnings growth, cash flow or cash position, gross margins, stock price, market share, return on sales, assets, equity or investment, improvement of financial ratings, achievement of balance sheet or income statement objectives, total shareholder return, market penetration goals, unit volume, geographic business expansion goals, drug discovery or other scientific goals, pre-clinical or clinical goals, organizational goals, regulatory approvals, cost targets and goals relating to acquisitions, divestitures and/or strategic partnerships.

(4) **Adjustments.** Notwithstanding any provision of the Plan, with respect to any Performance Award that is intended to qualify as Performance-Based Compensation, the Committee may adjust downwards, but not upwards, the cash or number of Shares payable pursuant to such Award, and the Committee may not waive the achievement of the applicable performance measures except in the case of the death or disability of the Participant or a change in control of the Company.

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(5) Other. The Committee shall have the power to impose such other restrictions on Performance Awards as it may deem necessary or appropriate to ensure that such Awards satisfy all requirements for Performance-Based Compensation.

12. Miscellaneous

(a) No Right To Employment or Other Status. No person shall have any claim or right to be granted an Award, and the grant of an Award shall not be construed as giving a Participant the right to continued employment or any other relationship with the Company. The Company expressly reserves the right at any time to dismiss or otherwise terminate its relationship with a Participant free from any liability or claim under the Plan, except as expressly provided in the applicable Award.

(b) No Rights As Stockholder. Subject to the provisions of the applicable Award, no Participant or Designated Beneficiary shall have any rights as a stockholder with respect to any shares of Common Stock to be distributed with respect to an Award until becoming the record holder of such shares.

(c) Effective Date and Term of Plan. The Plan shall become effective on the date the Plan is approved by the Company's stockholders (the *Effective Date*). No Awards shall be granted under the Plan after the expiration of 10 years from the Effective Date, but Awards previously granted may extend beyond that date.

(d) Amendment of Plan. The Board may amend, suspend or terminate the Plan or any portion thereof at any time provided that (i) to the extent required by Section 162(m), no Award granted to a Participant that is intended to comply with Section 162(m) after the date of such amendment shall become exercisable, realizable or vested, as applicable to such Award, unless and until the Company's stockholders approve such amendment if required by Section 162(m) (including the vote required under Section 162(m)); (ii) no amendment that would require stockholder approval under the rules of the NASDAQ Stock Market (*NASDAQ*) may be made effective unless and until the Company's stockholders approve such amendment; and (iii) if the NASDAQ amends its corporate governance rules so that such rules no longer require stockholder approval of material amendments to equity compensation plans, then, from and after the effective date of such amendment to the NASDAQ rules, no amendment to the Plan (A) materially increasing the number of shares authorized under the Plan (other than pursuant to Sections 4(c) or 10), (B) expanding the types of Awards that may be granted under the Plan, or (C) materially expanding the class of participants eligible to participate in the Plan shall be effective unless and until the Company's stockholders approve such amendment. In addition, if at any time the approval of the Company's stockholders is required as to any other modification or amendment under Section 422 of the Code or any successor provision with respect to Incentive Stock Options, the Board may not effect such modification or amendment without such approval. Unless otherwise specified in the amendment, any amendment to the Plan adopted in accordance with this Section 12(d) shall apply to, and be binding on the holders of, all Awards outstanding under the Plan at the time the amendment is adopted, provided the Board determines that such amendment does not materially and adversely affect the rights of Participants under the Plan. No Award shall be made that is conditioned upon stockholder approval of any amendment to the Plan.

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(e) **Authorization of Sub-Plans.** The Board may from time to time establish one or more sub-plans under the Plan for purposes of satisfying applicable securities or tax laws of various jurisdictions. The Board shall establish such sub-plans by adopting supplements to the Plan containing (i) such limitations on the Board's discretion under the Plan as the Board deems necessary or desirable or (ii) such additional terms and conditions not otherwise inconsistent with the Plan as the Board shall deem necessary or desirable. All supplements adopted by the Board shall be deemed to be part of the Plan, but each supplement shall apply only to Participants within the affected jurisdiction and the Company shall not be required to provide copies of any supplement to Participants in any jurisdiction which is not the subject of such supplement.

(f) **Non-U.S. Participants.** Awards may be granted to Participants who are non-U.S. citizens or residents employed outside the United States, or both, on such terms and conditions different from those applicable to Awards to Participants employed in the United States as may, in the judgment of the Board, be necessary or desirable in order to recognize differences in local law or tax policy. The Board also may impose conditions on the exercise or vesting of Awards in order to minimize the Board's obligation with respect to tax equalization for Participants on assignments outside their home country. The Board may approve such supplements to or amendments, restatements or alternative versions of the Plan as it may consider necessary or appropriate for such purposes, without thereby affecting the terms of this Plan as in effect for any other purpose, and the Secretary or other appropriate officer of the Company may certify any such document as having been approved and adopted in the same manner as this Plan.

(g) **Compliance with Section 409A of the Code.** Except as provided in individual Award agreements initially or by amendment, if and to the extent any portion of any payment, compensation or other benefit provided to a Participant in connection with his or her employment termination is determined to constitute nonqualified deferred compensation within the meaning of Section 409A of the Code and the Participant is a specified employee as defined in Section 409A(a)(2)(B)(i) of the Code, as determined by the Company in accordance with its procedures, by which determination the Participant (through accepting the Award) agrees that he or she is bound, such portion of the payment, compensation or other benefit shall not be paid before the day that is six months plus one day after the date of separation from service (as determined under Section 409A of the Code) (the ***New Payment Date***), except as Section 409A of the Code may then permit. The aggregate of any payments that otherwise would have been paid to the Participant during the period between the date of separation from service and the New Payment Date shall be paid to the Participant in a lump sum on such New Payment Date, and any remaining payments will be paid on their original schedule.

The Company makes no representations or warranty and shall have no liability to the Participant or any other person if any provisions of or payments, compensation or other benefits under the Plan are determined to constitute nonqualified deferred compensation subject to Section 409A of the Code but do not to satisfy the conditions of that section.

(h) **Limitations on Liability.** Notwithstanding any other provisions of the Plan, no individual acting as a director, officer, other employee, or agent of the Company will be liable to any Participant, former Participant, spouse, beneficiary, or any other person for any claim, loss, liability, or expense incurred in connection with the Plan, nor will such individual be personally

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liable with respect to the Plan because of any contract or other instrument he or she executes in his or her capacity as a director, officer, other employee, or agent of the Company. The Company will indemnify and hold harmless each director, officer, other employee, or agent of the Company to whom any duty or power relating to the administration or interpretation of the Plan has been or will be delegated, against any cost or expense (including attorneys' fees) or liability (including any sum paid in settlement of a claim with the Board's approval) arising out of any act or omission to act concerning this Plan unless arising out of such person's own fraud or bad faith.

(i) Governing Law. The provisions of the Plan and all Awards made hereunder shall be governed by and interpreted in accordance with the laws of the State of Delaware, excluding choice-of-law principles of the law of such state that would require the application of the laws of a jurisdiction other than such state.

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C123456789 000004 000000000.000000 ext 000000000.000000 ext 000000000.000000 ext 000000000.000000 ext MR A SAMPLE DESIGNATION (IF ANY) 000000000.000000 ext 000000000.000000 ext ADD 1 Electronic Voting Instructions ADD 2 ADD 3 You can vote by Internet or telephone! ADD 4 Available 24 hours a day, 7 days a week! ADD 5 Instead of mailing your proxy, you may choose one of the two voting ADD 6 methods outlined below to vote your proxy. VALIDATION DETAILS ARE LOCATED BELOW IN THE TITLE BAR. Proxies submitted by the Internet or telephone must be received by 11:59 p.m., Eastern Time, on June 10, 2009. Vote by Internet Log on to the Internet and go to www.investorvote.com/ALNY Follow the steps outlined on the secured website. Vote by telephone Call toll free 1-800-652-VOTE (8683) within the United States, Canada & Puerto Rico any time on a touch tone telephone. There is NO CHARGE to you for the call. Using a black ink pen, mark your votes with an X as shown in X Follow the instructions provided by the recorded message. this example. Please do not write outside the designated areas. Annual Meeting Proxy Card 123456 C0123456789 12345 3 IF YOU HAVE NOT VOTED VIA THE INTERNET OR TELEPHONE, FOLD ALONG THE PERFORATION, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. 3 A Proposals The Board of Directors recommends a vote FOR the listed nominees to serve for a term ending in 2012 and FOR Proposals 2, 3 and 4. 1. To elect the following nominees as Class II directors of Alnylam: + For Withhold For Withhold For Withhold 01 John K. Clarke 02 Vicki L. Sato, Ph.D. 03 James L. Vincent For Against Abstain For Against Abstain 2. To approve the amendment and restatement of Alnylam s 4. To ratify the appointment of PricewaterhouseCoopers LLP, 2004 Stock Incentive Plan. an independent registered public accounting firm, as Alnylam s independent auditors for the fiscal year ending 3. To approve the adoption of Alnylam s 2009 Stock December 31, 2009. Incentive Plan. B Non-Voting Items Change of Address Please print new address below. Comments Please print your comments below. C Authorized Signatures This section must be completed for your vote to be counted. Date and Sign Below Please sign exactly as your name(s) appear(s) hereon. All holders must sign. When signing as attorney, executor, administrator or other fiduciary, please give your full title as such. Joint owners should each sign personally. If a corporation, please sign in full corporate name, by authorized officer. If a partnership, please sign in partnership name by authorized person. Date (mm/dd/yyyy) Please print date below. Signature 1 Please keep signature within the box. Signature 2 Please keep signature within the box. C 1234567890 J N T MR A SAMPLE (THIS AREA IS SET UP TO ACCOMMODATE 140 CHARACTERS) MR A SAMPLE AND MR A SAMPLE AND MR A SAMPLE AND MR A SAMPLE AND MR A SAMPLE AND NNNNNNN1 U P X 0 2 1 5 7 5 1 MR A SAMPLE AND MR A SAMPLE AND MR A SAMPLE AND + <STOCK#> 011GFB

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IF YOU HAVE NOT VOTED VIA THE INTERNET OR TELEPHONE, FOLD ALONG THE PERFORATION, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. Proxy ALNYLAM PHARMACEUTICALS, INC. ANNUAL MEETING OF STOCKHOLDERS To be held on June 11, 2009 at 9:00 a.m., Eastern Time This Proxy is solicited on behalf of the Board of Directors of Alnylam Pharmaceuticals, Inc. (Alnylam). The undersigned, having received notice of the annual meeting of stockholders and the proxy statement therefor and revoking all prior proxies, hereby appoints each of John M. Maraganore, Ph.D., Barry E. Greene and Patricia L. Allen (each with full power of substitution), as proxies of the undersigned, to attend the annual meeting of stockholders of Alnylam to be held at 9:00 a.m., Eastern Time, on Thursday, June 11, 2009, at the offices of Alnylam, 300 Third Street, Cambridge, Massachusetts 02142, and any adjourned or postponed session thereof, and there to vote and act as indicated upon the matters on the reverse side in respect of all shares of common stock which the undersigned would be entitled to vote or act upon, with all powers the undersigned would possess if personally present. You can revoke your proxy at any time before it is voted at the annual meeting by (i) submitting another properly completed proxy bearing a later date; (ii) giving written notice of revocation to the Secretary of Alnylam; (iii) if you submitted a proxy through the Internet or by telephone, by submitting a proxy again through the Internet or by telephone prior to the close of the Internet voting facility or the telephone voting facility; or (iv) voting in person at the annual meeting. If you hold any of the shares of common stock in a fiduciary, custodial or joint capacity or capacities, this proxy is signed by you in every such capacity as well as individually. The shares of common stock of Alnylam represented by this proxy will be voted as directed by the undersigned for the proposals herein proposed by Alnylam. If no direction is given with respect to any proposal specified herein, this proxy will be voted FOR the proposal. In their discretion, the proxies are authorized to vote upon any other business that may properly come before the annual meeting or any adjournment thereof. Please vote, date and sign on reverse side and return promptly in the enclosed pre-paid envelope. Your vote is important. Please vote immediately. CONTINUED AND TO BE SIGNED ON REVERSE SIDE
SEE REVERSE SIDE