

ALNYLAM PHARMACEUTICALS, INC.

Form DEF 14A

April 20, 2010

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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 2010 ANNUAL MEETING OF STOCKHOLDERS  
To Be Held On June 2, 2010**

To our Stockholders:

NOTICE IS HEREBY GIVEN that the Annual Meeting of Stockholders of Alnylam Pharmaceuticals, Inc. will be held on Wednesday, June 2, 2010 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 two (2) members to our board of directors, each to serve as a Class III director for a term ending in 2013, or until his successor has been duly elected and qualified;
2. To approve an amendment to our 2004 Employee Stock Purchase Plan, as amended, to increase the number of shares authorized for issuance thereunder from 315,789 shares to 715,789 shares; and
3. To ratify the appointment of PricewaterhouseCoopers LLP, an independent registered public accounting firm, as our independent auditors for the fiscal year ending December 31, 2010.

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, 2010, 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](http://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](http://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 20, 2010

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

**PROXY STATEMENT**

**for the 2010 Annual Meeting of Stockholders  
to be held on June 2, 2010**

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 Wednesday, June 2, 2010 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, 2009 are being mailed to stockholders with these proxy materials on or about April 22, 2010.

**Important Notice Regarding the Availability of Proxy Materials for  
the Annual Meeting of Stockholders to be Held on June 2, 2010:**

**This proxy statement and our 2009 Annual Report to Stockholders are available for viewing, printing and downloading at [www.alnylam.com/AnnualMeeting](http://www.alnylam.com/AnnualMeeting).**

**A copy of our Annual Report on Form 10-K for the fiscal year ended December 31, 2009, 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, 2009 are also available on the SEC's website at [www.sec.gov](http://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 2010 annual meeting of stockholders to be held at our offices at 300 Third Street, Cambridge, Massachusetts on Wednesday, June 2, 2010 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 entitled to vote, you must have been a stockholder of record at the close of business on April 15, 2010, the record date for our annual meeting. The holders of the 41,894,605 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 April 15, 2010, 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](http://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 1, 2010, 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 1, 2010, 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 1, 2010, 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 1, 2010.
- (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 2, amendment of our 2004 Employee Stock Purchase Plan, as amended, which we refer to as our Existing ESPP, are not considered routine matters.** Proposal 3, ratification of the appointment of our independent auditors, is considered a routine matter. 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. How many shares must be present to**      **A.** 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

**hold the annual  
meeting?**

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 1 and 2. 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 two Class III Directors**

The two nominees for director to receive the highest number of votes FOR election will be elected as directors. This is called a plurality. **Proposal 1 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 1. 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 1 will not be counted as votes FOR or WITHHELD from any nominee. As a result, broker non-votes will have no effect on the voting on Proposal 1. You may:

vote FOR both nominees;

vote FOR one nominee and WITHHOLD your vote from the other nominee; or

WITHHOLD your vote from both 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 to the Existing ESPP**

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 FOR 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 Proposal 2.

**Proposal 3 Ratification of Appointment of Independent Auditors**

To approve Proposal 3, stockholders holding a majority of the votes cast on the matter must vote FOR the proposal. **Proposal 3 is considered a routine matter.** 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 3. 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, voting

to ABSTAIN will have no effect on the voting on Proposal 3.

Although stockholder approval of our audit committee's appointment of PricewaterhouseCoopers LLP as our independent auditors for the year ended December 31, 2010 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 as our independent auditors for the year ended December 31, 2010.

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- 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 two Class III directors, the approval of an amendment to our Existing ESPP 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 will report the voting results in a Current Report on Form 8-K within four business days following the adjournment of our annual meeting.
- 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 have paid a fee of \$6,500, 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. To vote your 401(k) plan shares, you must provide your voting instructions to Computershare before 11:59 p.m., Eastern Time, on May 30, 2010, for your proxy to be valid and your vote to count. 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.



**Table of Contents****OWNERSHIP OF OUR COMMON STOCK**

The following table sets forth information regarding beneficial ownership of our common stock as of February 28, 2010 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 three other executive officers who served during the year ended December 31, 2009, 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	=	Total	Percentage of Common Stock
			60 Days(2)		Beneficial Ownership	Beneficially Owned(3)
<b>Holders of more than 5% of our common stock</b>						
FMR LLC(4)	6,272,308				6,272,308	15.0%
Novartis Pharma AG(5)	5,547,675				5,547,675	13.3%
Aletheia Research and Management, Inc.(6)	2,863,569				2,863,569	6.8%
BlackRock, Inc.(7)	2,362,637				2,362,637	5.6%
<b>Directors and Named Executive Officers</b>						
John K. Clarke	8,891		50,000		58,891	*
Victor J. Dzau, M.D.			45,000		45,000	*
John M. Maraganore, Ph.D.	1,109(8)		1,006,749		1,007,858	2.4%
Vicki L. Sato, Ph.D.			55,000		55,000	*
Paul R. Schimmel, Ph.D.	221,473(9)		30,000		251,473	*

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Edward M. Scolnick, M.D.		30,000	30,000	*
Phillip A. Sharp, Ph.D.	252,630(10)	225,000	477,630	1.1%
Kevin P. Starr		142,631	142,631	*
James L. Vincent	10,000	115,000	125,000	*
Barry E. Greene	979(8)	342,754	343,733	*
Akshay K.				
Vaishnaw, M.D., Ph.D.	1,057(8)	102,279	103,336	*
Patricia L. Allen	1,880(8)	127,192	129,072	*
John A. Schmidt, Jr., M.D.(11)				
All directors and executive officers as a group (13 persons)	498,019	2,271,605	2,769,624	6.3%

\* Less than 1% of our outstanding common stock.

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- (1) Unless otherwise indicated, the address of each stockholder is c/o Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, MA 02142.
- (2) For purposes of this table, shares underlying options that will vest within 60 days after February 28, 2010 are deemed outstanding.
- (3) Percentage of beneficial ownership is based on 41,837,647 shares of our common stock outstanding as of February 28, 2010. Shares of common stock subject to options currently exercisable, or exercisable within 60 days of February 28, 2010, 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 of any other person.
- (4) According to Amendment No. 5 to a Schedule 13G filed by FMR LLC (previously known as FMR Corp.) with the SEC on February 16, 2010, as of December 31, 2009, 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 6,270,753 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 4,181,165 shares, or approximately 10% 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 6,270,753 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 1,555 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. 2 to a Schedule 13G filed by Novartis AG and Novartis Pharma AG with the SEC on February 16, 2010, as of December 31, 2009, Novartis Pharma AG is the record and beneficial owner of 5,547,675 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 Pharma AG 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 2009, Novartis has the right until April 30, 2010 to purchase from us up to 55,223 shares of our common stock at a purchase price of \$17.99 per share. The information contained in the table above does not include the 55,223 shares that Novartis has the right to purchase under the investor rights agreement. The address of Novartis Pharma AG is Lichtstrasse 35, V8 CH-4002, Basel, Switzerland.
- (6) According to Amendment No. 3 to a Schedule 13G filed by Aletheia Research and Management, Inc. with the SEC on February 16, 2010, as of December 31, 2009, Aletheia Research and Management, Inc. is an investment advisor 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 an 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.

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- (7) According to a Schedule 13G filed by BlackRock, Inc. with the SEC on January 29, 2010, on December 1, 2009, BlackRock, Inc. completed its acquisition of Barclays Global Investors, NA from Barclays Bank PLC. As a result, Barclays Global Investors, NA and certain of its affiliates are now included as subsidiaries of BlackRock, Inc. for the purposes of Schedule 13G filings. The Schedule 13G filed by BlackRock, Inc. amended the most recent Schedule 13G filing made by Barclays Global Investors, NA and certain of its affiliates with respect to ownership of our common stock. According to the Schedule 13G, as of December 31, 2009, BlackRock, Inc. has the sole power to vote or direct the voting of the shares owned. 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 BlackRock, Inc. and/or its subsidiaries. The address of BlackRock, Inc. is 55 East 52nd Street, New York, NY 10055.
- (8) Includes shares contributed by Alnylam to our 401(k) plan for the benefit of the named executive officers as of February 28, 2010: Dr. Maraganore, 1,109 shares; Mr. Greene, 979 shares; Dr. Vaishnav, 1,057 shares; and Ms. Allen, 810 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) Includes shares held by the Phillip A. Sharp 2009 Grantor Retained Annuity Trust, of which Dr. Sharp is the trustee and over which he has sole investment and voting power.
- (11) Dr. Schmidt resigned from his position as senior vice president and chief scientific officer and his employment with us terminated as of September 30, 2009.

**Section 16(a) Beneficial Ownership Reporting Compliance**

Section 16(a) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, 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 2009.

**PROPOSAL 1 ELECTION OF CLASS III 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. Victor J. Dzau, M.D., Edward M. Scolnick, M.D. and Kevin P. Starr are currently serving as Class III directors. Mr. Starr has served as a director since 2003, Dr. Dzau has served as a director since 2007 and Dr. Scolnick has served as a director since 2008. Following the 2010 annual meeting, we will have a vacancy on our board of directors as a result of Dr. Scolnick's decision to retire from the board at the 2010 annual meeting and not stand for reelection as a Class III director. We intend to fill this vacancy by a vote of the majority of our remaining directors, which is expected to occur after the 2010 annual meeting, pursuant to our amended and restated bylaws. The Class III directors elected this year will serve as members of our board until the 2013 annual meeting of stockholders, or until their respective successors are elected and qualified.

The persons named in the enclosed proxy will vote to elect Dr. Dzau and Mr. Starr as Class III directors unless the proxy is marked otherwise. Dr. Dzau and Mr. Starr 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 Dr. Dzau or Mr. Starr would be unable to serve if elected.

**Table of Contents****Board Recommendation**

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

Set forth below for each director, including the Class III director nominees, Dr. Dzau and Mr. Starr, is information as of February 28, 2010 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, held currently or during the past five years, 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.

We have also included information below regarding each director's specific experience, qualifications, attributes and skills that led our board of directors to the conclusion that he or she should serve as a director in light of our business and structure. There are no family relationships among any of our directors or executive officers.

Name	Age	Director Since	Principal Occupation, Other Business Experience and Other Directorships During the Past Five Years, and Other Specific Experience, Qualifications, Attributes and Skills
<b>Class III directors, nominees to be elected at the 2010 annual meeting (terms expiring in 2013)</b> Victor J. Dzau, M.D. <i>Nominating and Corporate Governance Committee</i>	64	2007	Dr. Dzau has served as a member of our board of directors since April 2007. Dr. Dzau has been 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.

Dr. Dzau brings to our board extensive experience in the medical field, both in the hospital, as a practicing physician, and the academic research settings. As the President and Chief Executive Officer of the Duke University Health System, Dr. Dzau has a deep understanding of health care providers and of physicians, who are key opinion leaders and partners to Alnylam as we continue to advance our clinical development pipeline and initiate additional clinical trials.



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Name	Age	Director Since	Principal Occupation, Other Business Experience and Other Directorships During the Past Five Years, and Other Specific Experience, Qualifications, Attributes and Skills
Kevin P. Starr <i>Audit Committee (Chair)</i> <i>Compensation Committee</i>	47	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. 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.
<b>Class III director (term expiring at the 2010 annual meeting)</b>			Mr. Starr is a proven operational leader who brings to our board over 25 years of experience building and leading biotechnology companies. Mr. Starr's background includes executive management roles with responsibility over key financial and business planning functions, including extensive experience in the oversight of financial audits, the design and implementation of financial controls, and corporate governance best practices. In addition, as an entrepreneur and venture capitalist, Mr. Starr has focused on the formation, development and business strategy of multiple start-up companies. Mr. Starr's depth and breadth of financial expertise and his experience handling complex financial and business issues also position him well to serve as chair and financial expert of our audit committee.
Edward M. Scolnick, M.D.	69	2008	Dr. Scolnick has served as a member of our board of directors since February 2008. Dr. Scolnick will retire from our board of directors and his term will expire at the 2010 annual meeting. 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, or FDA, Science Board from 2000 to 2002 and also currently serves as a director of Millipore Corporation.

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Name	Age	Director Since	Principal Occupation, Other Business Experience and Other Directorships During the Past Five Years, and Other Specific Experience, Qualifications, Attributes and Skills
<b>Class I directors (terms expiring in 2011)</b>			Dr. Scolnick brought to our board extensive experience in the medical field, both in the industry and academic research settings. With his experience as a world class researcher and his leadership role at Merck, as well as his work at the Broad Institute, he has offered important scientific insight regarding the clinical research and development process to our board as we continue to advance our pre-clinical and clinical development pipeline.
John M. Maraganore, Ph.D.	47	2002	<p>Dr. Maraganore has served as our Chief Executive Officer and as a member of our board of directors since December 2002.</p> <p>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.</p> <p>Dr. Maraganore has 25 years of experience in the biotechnology industry, bringing to our board critical scientific, research and development, and general management expertise. In prior roles, Dr. Maraganore has led the research, development and FDA approval and commercialization of important drug therapies, including Angiomax<sup>®</sup>, an anticoagulant for patients undergoing coronary angioplasty procedures, of which Dr. Maraganore was an inventor. As a founder and leader of new businesses, he has developed high-performing organizations and created shareholder value while focusing on leading-edge scientific research. A true visionary, strategist and innovator, Dr. Maraganore's broad experience and personal passion bring an invaluable perspective to our board.</p>
Paul R. Schimmel, Ph.D. <i>Audit Committee</i>	69	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 and Other Directorships During the Past Five Years, and Other Specific Experience, Qualifications, Attributes and Skills
			<p>Dr. Schimmel is a noted academic scholar and his knowledge and experience offer a critical scientific perspective to our board. Dr. Schimmel has authored or co-authored more than 450 scientific papers, and is a member of the National Academy of Sciences and the Institute of Medicine. Having a longstanding interest in the applications of basic biomedical research to human health, Dr. Schimmel holds several patents and is a co-founder or founding director of 11 biotechnology companies, of which many, including Alnylam, are publicly traded. As one of our scientific founders, Dr. Schimmel's insight and scientific expertise are invaluable assets to the board when evaluating our strategy and unique challenges as one of the first companies focused on the discovery and development of RNAi therapeutics.</p>
Phillip A. Sharp, Ph.D.	65	2002	<p>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 Institute of Medicine and American Academy of Arts and Sciences. Dr. Sharp received the Nobel Prize for Physiology or Medicine in 1993. He also formerly served as a director of Biogen Idec Inc., which he co-founded in 1978.</p> <p>Dr. Sharp, a leading researcher in molecular biology and biochemistry, brings to our board a fundamental understanding of the core scientific principles of our business. A Nobel Prize recipient, Dr. Sharp has also authored over 350 scientific papers, received numerous awards and honorary degrees for his scientific work, and has served on many advisory boards for the government, academic institutions, scientific societies and companies. Dr. Sharp has strategic expertise based upon his role as a co-founder and former director of Biogen Idec Inc. As one of our scientific founders, Dr. Sharp's insight and scientific expertise are invaluable assets to the board when evaluating our strategy and unique challenges as one of the first companies focused on the discovery and development of RNAi therapeutics.</p>

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Name	Age	Director Since	Principal Occupation, Other Business Experience and Other Directorships During the Past Five Years, and Other Specific Experience, Qualifications, Attributes and Skills
<b>Class II directors (terms expiring in 2012)</b>			
John K. Clarke <i>Chairman of the Board Audit Committee Nominating and Corporate Governance Committee (Chair)</i>	56	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. and formerly served as a director of Sirtris Pharmaceuticals, Inc. and Visicu, Inc.
Mr. Clarke has over 28 years of experience as a venture capitalist in the life sciences and healthcare industries, bringing a deep understanding to our board of the challenges of building a successful biotechnology company. He has co-founded and served as interim chief executive officer of numerous successful private and publicly traded biotechnology companies. Mr. Clarke has a keen understanding of the interplay between management and the board and is well-versed in the current best practices in corporate governance, making him well-suited to serve as the chairman of our board and our nominating and corporate governance committee.			
Vicki L. Sato, Ph.D. <i>Compensation Committee (Chair)</i>	61	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.). Dr. Sato also serves as a director of PerkinElmer, Inc. and Bristol-Myers Squibb Company, and formerly served as a director of Infinity Pharmaceuticals, Inc.

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Name	Age	Director Since	Principal Occupation, Other Business Experience and Other Directorships During the Past Five Years, and Other Specific Experience, Qualifications, Attributes and Skills
James L. Vincent <i>Compensation Committee</i>	70	2005	<p data-bbox="660 394 1492 772">Dr. Sato's extensive and distinctive experience in business, academia and science over more than 25 years, brings to our board a valuable perspective on the biotechnology industry. Dr. Sato has a strong background in research and drug development, making her an invaluable asset as we continue to advance our clinical development pipeline and initiate additional clinical trials. She also brings a seasoned perspective to the evaluation of strategic business opportunities. Her service as a member of the compensation and management development committee of a global biotechnology company also makes Dr. Sato a well-qualified chair of our compensation committee.</p> <p data-bbox="660 814 1492 949">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.</p> <p data-bbox="660 1024 1492 1369">Mr. Vincent's many years serving as both a senior executive and a director of large publicly traded corporations, including his 17 years of service at Biogen, Inc. (now Biogen Idec Inc.), acting as the chairman and chief executive officer, as well as his prior service as an executive and director of Abbott Laboratories, Inc. and an executive at Texas Instruments, Inc., provides a breadth of relevant management, operational and financial qualifications to serve as a member of our board. He has overseen the successful growth and evolution of a significant biotechnology business and understands the challenges of doing so.</p>

**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 these documents on the Corporate Governance page of the Investors section of our website, [www.alnylam.com](http://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;

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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](http://www.alnylam.com).

## **Board Determination of Independence**

Under The NASDAQ Stock Market, or 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 5605(a)(2). 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 is responsible 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 Leadership Structure**

Our board has determined that the roles of chief executive officer and chairman of the board should be separated at the current time. John K. Clarke, an independent director, has served as our chairman since the founding of Alnylam in 2002, and John M. Maraganore, Ph.D. has served as our chief executive officer and a director since 2002. Separating these positions allows our chief executive officer to focus on our day-to-day business, while allowing the chairman to lead the board in its fundamental role of providing advice to and independent oversight of management. The board recognizes the time, effort, and energy that the chief executive officer is required to devote to his position in the current business environment, as well as the commitment required to serve as our chairman, particularly as the board's oversight responsibilities continue to grow. While our bylaws and corporate governance guidelines do not require that our chairman and chief executive officer positions be separate, our board believes that our current leadership structure is appropriate because it provides an effective balance between strategy development and independent leadership and management oversight.

### **The Board's Role in Risk Oversight**

We face a number of risks in our business, including risks related to: pre-clinical and clinical research and development; regulatory reviews, approvals and oversight; intellectual property filings, prosecution, maintenance and challenges; the establishment and maintenance of strategic alliances; competition; and the ability to access additional funding for our business; as well as other risks. Our management is responsible for

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the day-to-day management of the risks that we face, while our board of directors, as a whole and through its committees, has responsibility for the oversight of risk management.

Our board administers its risk oversight function directly and through its three committees. Our chairman meets regularly with our chief executive officer and other executive officers to discuss strategy and risks facing the company. Members of senior management attend the quarterly board meetings and are available to address any questions or concerns raised by the board on risk management-related and any other matters. Each quarter, the board of directors receives presentations from members of senior management on strategic matters involving our business. In addition, as part of its charter, the audit committee regularly discusses with management our risk exposures in the areas of financial reporting, internal controls and compliance with legal and financial regulatory requirements, their potential impact on our company and the steps we take to manage them. The compensation committee assists the board in fulfilling its oversight responsibilities with respect to the management of risks arising from our compensation policies and programs. The nominating and governance committee assists the board in fulfilling its oversight responsibilities with respect to the management of risks associated with board organization, membership and structure, succession planning for our directors and executive officers, and corporate governance.

### **Board of Directors Meetings and Attendance**

Our board met seven times during 2009, either in person or by teleconference, and acted by written consent once. During 2009, 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 did not serve on any board committees.

Our directors are expected to attend the annual meeting of stockholders. All of our directors attended the 2009 annual meeting of stockholders. We expect substantially all of our directors to attend the 2010 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](http://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;

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;

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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 below under the heading Report of the Audit Committee.

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 below.

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 four times during 2009.

***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 23 of this proxy statement; and

preparing the compensation committee report required by SEC rules, which is included immediately following the Compensation Discussion and Analysis section appearing below.

Our compensation committee has retained Towers Watson (previously known as Towers, Perrin, Forster & Crosby, Inc.), an independent, nationally recognized compensation consultant, to provide assistance from time to time in reviewing the compensation paid to our senior management team, which is comprised of our named executive officers

and all of our vice presidents, and our non-employee directors, and to review our compensation programs and practices generally. In 2009, our compensation committee engaged Towers Watson to assist it in: assessing competitive compensation levels (cash and equity) for non-employee directors relative to our peer group, which peer group is described below under the heading Compensation Discussion and Analysis; evaluating the market practice and trends for merit increases, adjustments and promotions based upon market survey and peer group data and trend analysis; reviewing 2010 incentive compensation program structure; reviewing equity utilization and annual stock option awards as compared to our peer group; and assessing competitive compensation levels and pay mix (base salary, target annual incentive award and long-term incentive compensation) for our named executive officers based upon comparison with our peer group and market survey data. In connection with its work for the compensation committee during 2009, Towers Watson prepared reports for the compensation committee, met with the Chair of the committee as necessary and attended certain committee meetings to present its findings and recommendations.

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The processes and procedures followed by our compensation committee in considering and determining executive compensation is 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 eight times during 2009.

### ***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 four times during 2009.

### **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.

### ***Criteria and Diversity***

Our corporate governance guidelines specify that diversity on the board should be considered by the nominating and corporate governance committee in the director identification and nomination process. 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. Our nominating and corporate governance committee also considers issues of diversity, such as diversity of gender, race and national origin, education, professional experience and differences in viewpoints and skills. While our nominating and corporate governance committee does not have a formal policy with respect to diversity, our board and nominating and corporate governance committee believe that it is essential that the board members represent diverse viewpoints. 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

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our directors, considered as a group, should provide a composite mix of experience, knowledge and abilities that will allow our board to promote our strategic objectives and fulfill its responsibilities to our stockholders.

The director biographies appearing above under Proposal 1 Election of Class III Directors indicate each nominee's experience, qualifications, attributes and skills that led our board to conclude that he should continue to serve as a member of our board. Our board believes that each of the nominees has had substantial achievement in his professional and personal pursuits, and possesses the background, talents and experience that our board desires and that will contribute to the best interests of our company and to long-term stockholder value.

### ***Stockholder Nominations***

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, by following the procedures set forth below under the heading Stockholder Proposals.

At the annual meeting, stockholders will be asked to consider the election of Dr. Dzau and Mr. Starr, each of whom currently serves on our board of directors. Dr. Dzau and Mr. Starr 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.

### **Risk Considerations in Executive Compensation**

Our compensation committee has discussed the concept of risk as it relates to our executive compensation program and our compensation committee does not believe our executive compensation program encourages excessive or inappropriate risk taking. As described more fully below in Compensation Discussion and Analysis, we structure our pay to consist of both fixed and variable compensation to motivate our executives to produce superior short- and long-term results that are in the best interests of our company and stockholders

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in order to attain our ultimate objective of increasing stockholder value. We believe that any risks that may arise from our compensation policies and practices for our employees are not reasonably likely to have a material adverse effect on our company.

### **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](http://www.alnylam.com).

Our audit committee has reviewed our audited financial statements for the fiscal year ended December 31, 2009, 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 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, 2009. 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, 2010.

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

Kevin P. Starr, Chair

John K. Clarke

Paul R. Schimmel, Ph.D.

**Table of Contents****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:

<b>Fee Category</b>	<b>2009</b>	<b>2008</b>
Audit Fees(1)	\$ 452,700	\$ 566,700
Audit-Related Fees(2)	109,200	75,000
Tax Fees(3)	119,250	116,000
All Other Fees(4)	1,500	1,500
<b>Total Fees</b>	<b>\$ 682,650</b>	<b>\$ 759,200</b>

- (1) **Audit Fees** consist of fees for the audit of our annual 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 accountant services and fees were pre-approved by our audit committee in accordance with the Pre-Approval Policies and Procedures described below.

**Pre-Approval Policies and Procedures**

Our audit committee is required to pre-approve all audit services to be provided to us by our principal independent auditors, as well as all other services to be provided to us by such 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.

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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, 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, 2010, Novartis owned approximately 13.3% of our

common stock and pursuant to the terms of the investor rights agreement, Novartis has the right until April 30, 2010 to purchase up to an additional 55,223 shares of our common stock at a purchase price of \$17.99 per share, which, if purchased, would result in Novartis owning approximately 13.4% of our outstanding common stock.

*Severance Agreement*

On August 21, 2009, Dr. Schmidt confirmed his resignation as our senior vice president and chief scientific officer, effective as of September 30, 2009. In connection with Dr. Schmidt's resignation, in

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consideration for his continued service through September 30, 2009 and his agreement to a general release and certain other standard terms and conditions, we agreed to provide Dr. Schmidt with the following severance pay and benefits: (i) severance in the gross amount of \$212,500 (an amount equal to six months of Dr. Schmidt's gross base salary); (ii) the full cost of any COBRA premiums until the earlier of March 31, 2010 and the date Dr. Schmidt becomes eligible for coverage under the group health plan of another employer; and (iii) reimbursement of outplacement services up to a maximum amount of \$10,000. In addition, we waived our right to repayment by Dr. Schmidt of a sign-on bonus and certain relocation and related expenses provided pursuant to the terms of Dr. Schmidt's offer of employment.

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 pre-determined 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;

an annual incentive program, under which, in 2009, awards were made in cash and, prior to 2009, were made in the form of stock options; and

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

We award annual merit-based increases in base salary based upon an assessment of each executive's performance and the scope of his or her responsibilities. Consistent with our compensation philosophy, we target salaries between the 50<sup>th</sup> and 60<sup>th</sup> percentile of the range of salaries in our peer group. Our annual incentive program is 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. We awarded cash incentive payments to our named executive officers and the other members of our senior management team under our 2009 annual incentive program, which is described in more detail below. In 2010, our named executive officers and the other members of our senior management team will be eligible to receive cash awards under our 2010 annual incentive program. Prior to 2009, awards under our annual incentive program were made in the form of stock options only. We typically grant stock options to our executive officers upon commencement of their

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employment and annually in conjunction with a review of individual performance. With the exception of our annual 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 create stockholder value.

***Determining and Setting Executive Compensation***

We develop our compensation programs after reviewing publicly available compensation data and subscription survey data for a peer group of national and regional companies in the biopharmaceutical and biotechnology industries, as described below.

***Defining and Comparing Compensation to Market Benchmarks***

During 2009, our compensation committee engaged Towers Watson for assistance with its review of the compensation of our senior management team. In evaluating the total compensation of our named executive officers, our compensation committee, with the assistance of Towers Watson, established a peer group of 20 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 against which we believe we compete for executive 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 2009, referred to as our 2009 peer group, was comprised of the following:

Acorda Therapeutics, Inc.	Isis Pharmaceuticals, Inc.	Rigel Pharmaceuticals, Inc.
Alexion Pharmaceuticals, Inc.	Lexicon Pharmaceuticals, Inc.	Seattle Genetics, Inc.
Alkermes, Inc.	Medarex, Inc.	Theravance, Inc.
Cubist Pharmaceuticals, Inc.	Momenta Pharmaceuticals, Inc.	The Medicines Company
Exelixis, Inc.	Onyx Pharmaceuticals, Inc.	XenoPort, Inc.
Human Genome Sciences, Inc.	PDL BioPharma, Inc.	ZymoGenetics, Inc.
Incyte Corporation	Regeneron Pharmaceuticals, Inc.	

Our compensation committee also compared the total compensation of our senior management team to a broader biotechnology industry group, which, for 2009, consisted of 50 biotechnology and biopharmaceutical companies listed in the 2009 Radford Global Life Sciences Survey, with a focus on companies with 150 to 499 employees. This larger survey group included 18 of the companies in our 2009 peer group, among other companies. When conducting its review of our executive compensation programs, our compensation committee considered the compensation of our 2009 peer group and the larger survey group described above. The peer group for our named executive officers is approved by our compensation committee annually.

We believe that the compensation practices of our 2009 peer group provide us with appropriate compensation benchmarks for evaluating the compensation of our named executive officers. Notwithstanding the similarities of the 2009 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 prestigious academic and non-profit institutions. Accordingly, our compensation committee generally targets the base salaries of our executives between the 50<sup>th</sup> and 60<sup>th</sup> percentile of the range of salaries in our peer group, annual cash incentive award opportunities, which commenced in 2009, at or below the 25<sup>th</sup> percentile, and total annual equity incentive awards at or above the 75<sup>th</sup> percentile, resulting in total compensation for our executives between the 50<sup>th</sup> and 75<sup>th</sup> percentile of

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compensation paid to similarly situated executives of the companies in our 2009 peer group. Other considerations, including market factors, the experience level of the executive and the executive's performance against established corporate goals and individual objectives, may dictate variations to this general target range.

### ***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 executive officers include:

- key research and development achievements, including advances in drug delivery;
- initiation and progress of clinical trials;
- achievement of regulatory milestones;
- establishment and maintenance of key strategic relationships and new business initiatives;
- filing, prosecution, defense and enforcement of key intellectual property rights;
- development of organizational capabilities; and
- financial and operating performance.

These factors are considered by our compensation committee in connection with our annual performance reviews described below and are a critical component in the evaluation of annual cash and equity incentive awards for our executives.

### ***Annual Performance Reviews***

Our compensation committee conducts an annual performance review of our senior management team. During the first quarter of each year, annual corporate goals and individual performance objectives are determined and set forth in writing. At the end of each year, our compensation committee determines executive compensation levels after carefully reviewing overall corporate performance and performing a detailed evaluation of each named executive officer's annual performance against established corporate goals and individual objectives. In addition, our compensation committee applies its discretion, 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. Any increases in base salary, annual stock option awards or cash awards under our annual incentive program are tied to the achievement of these corporate and individual performance goals and objectives. In 2009, our compensation committee established the maximum cash bonus opportunity for each member of our senior management team under the 2009 annual incentive program, representing a percentage of each individual's base salary.

During the last quarter of each 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 and the amounts of any annual stock option awards and/or cash awards under our annual incentive program. Our compensation committee, with input from the chairman of our board, evaluates our chief executive officer's individual performance and determines whether to change his base salary, grant him an annual stock option award and/or grant him a cash award under our annual incentive program. Our

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board typically grants annual stock option awards at its last meeting of the year. Any changes in base salary are effective at the beginning of the following year. The cash incentive payments awarded under our 2009 annual incentive program were paid in January 2010 and we expect any cash incentive payments awarded under our 2010 annual incentive program will be paid in January 2011.

***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 50<sup>th</sup> and 60<sup>th</sup> 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 increase in base salary for our chief executive officer is based upon an assessment of his performance by our compensation committee, 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.

***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 Watson to assist it 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 Watson indicated that the executive compensation programs of our peer group companies all included a cash-based annual incentive component. Based upon this analysis, in February 2009, our compensation committee authorized the implementation of an annual cash incentive program for 2009.

Under the 2009 annual incentive program, specified employees, including our named executive officers and the other members of our senior management team, were eligible to receive an annual cash incentive award 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 for 2009 were focused on contributions that would 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 incentive program were determined by first establishing a participant's individual award, which was based upon that individual's performance against individual objectives for 2009. Each participant had an established maximum cash award opportunity under the incentive program, as set forth in the table below, representing a percentage of the participant's base salary for 2009. Each individual

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award ranged from 0% to 100% of the participant's maximum cash award opportunity based upon the participant's individual performance against his or her 2009 objectives.

<b>Band</b>	<b>Title</b>	<b>2009 Annual Incentive Program Maximum Opportunities</b>	<b>Maximum Opportunity</b>
	Chief Executive Officer		50%
	President and Chief Operating Officer		30%
	Senior Vice President/Vice President		20%
	Senior Director/Director		12%
	Associate Director		7%

A corporate performance modifier was then applied to the individual award. The corporate performance modifier could range from 0% to 100% and was based upon our performance against the 2009 corporate goals approved by our board. The 2009 annual cash incentive program provided that in the event overall corporate performance for 2009 fell below a threshold of 50%, the corporate performance modifier would be 0%. Our compensation committee retained the discretion under the 2009 annual incentive program to adjust an award higher or lower as it deemed appropriate under the specific circumstances. At the end of 2009, our compensation committee evaluated individual and corporate performance against the established goals and objectives and determined the amount of the annual cash incentive award, if any, to be paid under the program to each of our named executive officers. For 2009, our compensation committee determined that the company achieved 60% of its corporate goals for that year, based primarily on the advancement of our clinical pipeline, major advances in our therapeutic delivery platform and the completion of our strategic alliance with Cubist Pharmaceuticals, Inc., or Cubist, for our ALN-RSV program. The annual cash incentive awards approved for each named executive officer and the basis for determining each such award are discussed below. Cash awards made under the 2009 annual incentive program were paid in January 2010.

In February 2010, our compensation committee authorized the implementation of an annual cash incentive program for 2010. The terms of the 2010 annual incentive program are the same as the terms of the 2009 annual incentive program described above. Any cash awards made under the 2010 annual incentive program will be paid in January 2011.

***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 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.

All stock option awards to our executive officers are approved by our compensation committee and, other than stock option awards to new hires, are typically granted at our compensation committee's regularly scheduled meeting at the end of the year. Stock option awards vary among our executive officers based on their positions and annual performance assessments. In addition, our compensation committee reviews all

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components of the executive's compensation to ensure that his or her total compensation is aligned with our overall philosophy and objectives. 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 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. 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 during 2009, and the value of those awards determined in accordance with Financial Accounting Standards Board ( FASB ) Accounting Standard Codification ( ASC ) Topic 718 (formerly SFAS 123R), are shown in the 2009 Grants of Plan-Based Awards table below. We do not have any equity ownership guidelines for our executives.

In 2007 and 2008, each of our named executive officers and other members of our senior management team was also eligible to receive an annual incentive award in the form of stock options based upon the achievement of individual and corporate goals and objectives under our executive stock option bonus plan. As described above, in February 2009, following a review of our executive compensation programs, our compensation committee authorized the implementation of an annual incentive program beginning in 2009, pursuant to which executives were eligible to receive cash only awards.

### ***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 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 50% vested after the employee has been employed by us for one year and fully vested after the employee has been employed by us for two years.

### ***Compensation for Our Named Executive Officers in 2009***

#### ***Chief Executive Officer Compensation***

In determining the 2009 compensation and annual incentive award for our chief executive officer, John M. Maraganore, Ph.D., our compensation committee reviewed the performance of our company during 2009 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 a cash incentive award, our compensation committee determined that Dr. Maraganore successfully achieved certain of his goals and objectives, including: partnering our

ALN-RSV program with Cubist and successfully completing separate Phase II studies in naturally infected patients and in lung transplant patients; advancing our ALN-VSP program into a Phase I study and advancing our ALN-TTR program through the filing of regulatory applications to initiate a clinical trial; building our 2010 clinical pipeline by transitioning an additional program into development; achieving major advances in our therapeutic delivery platform; managing key financial goals; building and developing the organization; advancing new, longer-range business opportunities, including Alynlam Biotherapeutics; and leading our external interface with investors, academic and industry leaders. Our

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compensation committee reviewed the company's performance against corporate goals, which was weighted at 60% achievement, and Dr. Maraganore's performance against his objectives. Our compensation committee determined that under the 2009 annual incentive program, Dr. Maraganore was entitled to a cash incentive award of \$86,625, representing 33% of his target cash award opportunity. In addition, 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 consistent with our compensation philosophy, Dr. Maraganore received an annual stock option award to purchase 105,000 shares of common stock.

Notwithstanding the company's and Dr. Maraganore's accomplishments in 2009, as reflected by the cash incentive and annual equity award granted by the compensation committee to Dr. Maraganore, our compensation committee decided to accept the request by Dr. Maraganore that he forego a merit increase in his base salary in 2010. Accordingly, Dr. Maraganore's annual base salary for 2010 remains \$525,000.

***Compensation for Our Other Named Executive Officers***

*2010 Base Salary.* With respect to Barry E. Greene, our president and chief operating officer, notwithstanding the company's and Mr. Greene's accomplishments in 2009, as described below, and as reflected by the cash incentive and annual equity awards granted by the compensation committee to Mr. Greene, our compensation committee decided to accept the request by Mr. Greene that he forego a merit increase in his base salary in 2010. Accordingly, Mr. Greene's annual base salary for 2010 remains \$390,000. For the remaining named executive officers, our compensation committee approved a merit increase for 2010 based upon each individual's performance against his or her 2009 objectives. Our senior vice president of clinical research, Akshay K. Vaishnav, M.D., Ph.D., received a merit increase of 3.8%, and his 2010 salary increased from \$340,000 to \$352,750. Our vice president of finance and treasurer, Patricia L. Allen, received a 2010 merit increase and an additional base pay market adjustment to better align her base pay with our compensation philosophy. As a result, the 2010 salary for Ms. Allen increased 7.8%, from \$227,830 to \$245,487.

*2009 Annual Cash Incentive and Stock Awards.* In determining the 2009 annual cash incentive awards for Mr. Greene, Dr. Vaishnav and Ms. Allen, our compensation committee reviewed the performance of the company during 2009 and their individual performances as compared to their individual corporate, financial, strategic and operational objectives for 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; organizational growth; and operating performance. Our compensation committee also considered Dr. Maraganore's recommendations with respect to Mr. Greene's performance. For the cash incentive award, our compensation committee determined that Mr. Greene successfully achieved certain key objectives for the year, including: providing leadership, planning and executing key alliance management initiatives; achieving key pipeline objectives specific to advancing our clinical programs; and building and developing the organization for long-term growth. Our compensation committee reviewed the company's performance against corporate goals, which was weighted at 60% achievement, and Mr. Greene's performance against his objectives. Our compensation committee determined that under the 2009 annual incentive program, Mr. Greene was entitled to receive a cash incentive award of \$38,610, representing 33% of his target cash award opportunity. 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 consistent with our compensation philosophy, Mr. Greene received an annual stock option award to purchase 65,000 shares of common stock.

The individual objectives for Dr. Vaishnav involved meeting specified targets in the following areas: advancing our ALN-RSV, ALN-VSP and ALN-TTR programs in the clinic; developing our discovery pipeline programs; and

continuing to work on advances in our therapeutic delivery platform. Our compensation committee also considered both Dr. Maraganore's and Mr. Greene's recommendations with respect to Dr. Vaishnav's performance. For the cash incentive award, our compensation committee determined that Dr. Vaishnav successfully achieved many objectives for the year, including meeting our goals for building a

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sustainable clinical pipeline, advancing our ALN-VSP program into a Phase I study and advancing our ALN-TTR program towards the clinic through the filing of regulatory applications to initiate a clinical trial, transitioning our discovery pipeline programs into development, and achieving major advances in our therapeutic delivery platform. Our compensation committee reviewed the company's performance against corporate goals, which was weighted at 60% achievement, and Dr. Vaishnav's performance against his objectives. Our compensation committee determined that under the 2009 annual incentive program, Dr. Vaishnav was entitled to an incentive cash award of \$35,700, representing 52.5% of his target cash award opportunity. In addition, as a result of our compensation committee's determination regarding the company's performance and Dr. Vaishnav's performance against his objectives, and its desire to provide an annual equity award consistent with our compensation philosophy, Dr. Vaishnav received an annual stock option award to purchase 45,000 shares of common stock.

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 cash incentive award, our compensation committee determined that Ms. Allen successfully achieved certain key objectives for the year, including: meeting our goals for year-end cash and operating budget; providing financial leadership in support of our 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, which was weighted at 60% achievement, and Ms. Allen's performance against her objectives. Our compensation committee determined that under the 2009 annual incentive program, Ms. Allen was entitled to receive a cash incentive award of \$19,138, representing 42% of her target cash award opportunity. In addition, as a result of our compensation committee's determination regarding the company's performance and Ms. Allen's performance against her objectives, and its desire to provide an annual equity award consistent with our compensation philosophy, Ms. Allen received an annual stock option award to purchase 25,000 shares of common stock.

In September 2009, Dr. John Schmidt resigned from his position as our senior vice president and chief scientific officer and his employment terminated. In connection with the termination of Dr. Schmidt's employment with the company, he received certain severance payments, which are described in more detail above under the section entitled "Related Person Transactions - Severance Agreement." Dr. Schmidt was not eligible to receive an award under our 2009 annual incentive program.

***Cash Incentive Compensation for Our Named Executive Officers in 2010***

In determining the 2010 cash incentive compensation for our named executive officers under the 2010 annual incentive program, our compensation committee will review the performance of the company during 2010 and the individual performance of each 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: advancing ALN-RSV01 in a Phase IIb clinical study for the treatment of RSV infection in adult lung transplant patients; continuing Phase I clinical development of ALN-VSP for the treatment of liver cancers; advancing the development of ALN-TTR01 through initiation of a Phase I clinical study in patients with transthyretin-mediated amyloidosis; advancing ALN-PCS for the treatment of hypercholesterolemia towards clinical development; advancing additional pre-clinical RNAi and microRNAi-based therapeutic programs; expanding our therapeutic delivery platform through the advancement of novel delivery solutions; continuing scientific leadership with multiple peer reviewed papers; funding our business with the formation of additional strategic alliances and new business ventures; continuing to advance our intellectual property portfolio; and maintaining solid financial performance, including ending the year with a specified minimum cash balance. In addition, the compensation committee will evaluate the performance of each named executive officer

as compared to his or her individual objectives for 2010. Dr. Maraganore's individual objectives are heavily weighted toward achieving corporate goals, but also include specific targets with respect to achieving

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human proof of concept in our clinical programs, maintaining a strong cash position and developing organizational capabilities. Mr. Greene's individual objectives are also heavily weighted toward achieving corporate goals, but also include specific targets with respect to aligning our research and development capabilities with alliance management, and business development goals. Dr. Vaishnav's individual objectives focus on continuing to advance our discovery programs and our clinical development programs with focus on human proof of concept. Ms. Allen's individual objectives focus on meeting specified financial goals, managing our investment portfolio and providing support to our business development team.

## **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 employees, including our named executive officers, are eligible to participate in our Amended and Restated 2004 Stock Incentive Plan and our 2009 Stock Incentive Plan. All new full-time employees are granted stock options when they start employment and all continuing employees are eligible for stock option awards 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 awards under our Amended and Restated 2004 Stock Incentive Plan and our 2009 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 awards. 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 awards to new hires other than vice presidents and executive officers, Dr. Maraganore approves the award 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 Amended and Restated 2004 Stock Incentive Plan or the 2009 Stock Incentive Plan) on the first day of regular employment. Dr. Maraganore is required to maintain a list of stock options granted pursuant to such delegated authority and report to our compensation committee regarding such awards.

## **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, 2009, which was filed with the SEC on February 26, 2010.

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, 2009, 2008 and 2007 to our named executive officers.

**Summary Compensation Table**

Name	Year	Salary (\$)	Bonus (\$)	Non-Equity Incentive			Total (\$)
				Option Awards(4) (\$)	Plan Compensation(5) (\$)	All Other Compensation(7) (\$)	
John M. Maraganore, Ph.D. <i>Chief Executive Officer</i>	2009	525,000		924,483	86,625	11,288	1,547,396
	2008	525,000		2,014,931		8,073	2,548,004
	2007	431,600		2,885,647		17,324	3,334,571
Barry E. Greene <i>President and Chief Operating Officer</i>	2009	390,000		572,299	38,610	5,992	1,006,901
	2008	350,000		1,182,780		30,701	1,563,481
	2007	309,000		1,532,880		26,218	1,868,098
Akshay K. Vaishnav, M.D., Ph.D.(1) <i>Senior Vice President, Clinical Research</i>	2009	340,000		396,207	35,700	6,037	777,944
	2008						
	2007						
Patricia L. Allen <i>Vice President of Finance and Treasurer</i>	2009	227,830		220,115	19,138	5,797	472,880
	2008	227,830		416,115		5,797	649,742
	2007	217,069		625,128		5,797	847,994
John A. Schmidt, Jr., M.D.(2) <i>Former Senior Vice President and Chief Scientific Officer</i>	2009	318,750				177,999(8)	496,749
	2008	109,470	175,000(3)	3,861,450		15,708	4,161,628

(1) Dr. Vaishnav has served as our senior vice president, clinical research since December 2008, and was designated as an executive officer by our board of directors in March 2009.

(2) Dr. Schmidt resigned from his position as senior vice president and chief scientific officer and his employment with us terminated as of September 30, 2009. The amount reported for 2009 represents the total salary earned by Dr. Schmidt during 2009 and is based upon an annual base salary of \$425,000. The amount reported for 2008 represents the total salary earned by Dr. Schmidt during 2008 and is based upon an annual base salary of \$425,000 and a start date of September 29, 2008. Dr. Schmidt was not eligible to participate in our annual cash incentive program for 2009 or our executive stock option bonus plan for 2008. Dr. Schmidt received an on-hire stock option award and a pro-rated annual stock option award in 2008.

- (3) Pursuant to the terms of his offer of employment, we paid Dr. Schmidt a sign-on bonus of \$175,000 in September 2008.
- (4) We did not grant any restricted stock awards or stock appreciation rights to our named executive officers in 2009, 2008 or 2007.
- (5) The amounts reported in the Option Awards column represent the aggregate grant date fair value for the fiscal years ended December 31, 2009, 2008 and 2007 of grants of stock options to each of the named executive officers, calculated in accordance with the provisions of FASB ASC Topic 718. 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, 2009 included in our Annual Report on Form 10-K, filed with the SEC on February 26, 2010. To see the value actually received by the named executive officer in 2009, see the 2009 Option Exercises and Stock Vested table appearing below.

Details of each of the stock option awards reflected above can be found in the Outstanding Equity Awards at Fiscal Year-End for 2009 table appearing below.

The amounts reported in the Summary Compensation Table for these stock 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.

- (6) In February 2009, following a review of our executive compensation programs, our compensation committee authorized the implementation of the annual cash incentive program beginning in fiscal 2009. The 2009 annual cash incentive program is described above in the Compensation Discussion and

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Analysis under the heading 2009 Annual Incentive Program. We did not award cash bonuses to our named executive officers in 2008 or 2007. In each of 2008 and 2007, our compensation committee authorized the implementation of an executive stock option bonus plan, pursuant to which each of our vice presidents and named 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 that were approved by our compensation committee for each of 2008 and 2007.

- (7) The amounts reported in the All Other Compensation column reflect, for each named executive officer, with the exception of Dr. Schmidt for 2009, the sum of (i) the incremental cost to us of all perquisites and other personal benefits; (ii) the amount we 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	Dollar Value of Alnylam	Incremental Cost to
		Insurance	Common	Alnylam
		Premiums	Stock Contributed by	of All Perquisites and
		Paid	Alnylam to the	Other
		by Alnylam	Executive's Account Under	Personal Benefits
		(\$)	401(k) Plan	(\$)
			(\$)	
John M. Maraganore, Ph.D.	2009	600	5,250	5,438(b)
<i>Chief Executive Officer</i>	2008	600	5,250	2,223(b)
	2007	600	5,250	11,474(b)
Barry E. Greene	2009	742	5,250	
<i>President and Chief Operating</i>	2008	742	5,250	24,709(c)
<i>Officer</i>	2007	742	5,250	20,226(c)
Akshay K. Vaishnav, M.D., Ph.D.	2009	787	5,250	
<i>Senior Vice President, Clinical</i>	2008			
<i>Research</i>	2007			
Patricia L. Allen	2009	547	5,250	
<i>Vice President of Finance and</i>	2008	547	5,250	
<i>Treasurer</i>	2007	547	5,250	
John A. Schmidt, Jr., M.D.	2009	765	2,625(a)	64,384(d)
<i>Former Senior Vice President and</i>	2008	600		15,108(d)
<i>Chief Scientific Officer</i>				

- (a) As a result of Dr. Schmidt's resignation in September 2009, we recouped 50% of the amount we contributed to Dr. Schmidt's 401(k) plan, which represented the unvested portion of our matching contribution.
- (b) Represents amounts for travel and related expenses, paid by Alnylam, including \$1,727 in 2009, \$819 in 2008 and \$3,643 in 2007, 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 travel and related expenses, paid by Alnylam, including \$9,097 in 2008 and \$6,799 in 2007, 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.

- (d) Represents amounts for relocation and related expenses, paid by Alnylam, including \$19,672 in 2009 and \$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.
- (8) The amount reported in the All Other Compensation column for Dr. Schmidt for 2009 also includes severance payments in the amount of \$106,250, as well as COBRA premium payments in the amount of \$3,975, paid in 2009 in connection with Dr. Schmidt's September 2009 resignation. Dr. Schmidt's severance agreement and the total severance payments he was entitled to receive are described in more detail above under the section entitled Related Person Transactions - Severance Agreement.

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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, 2009 under any plan, contract, authorization or arrangement pursuant to which cash, securities, similar instruments or other property may be received:

**2009 Grants of Plan-Based Awards**

Name	Date of Grant(1)	Estimated Possible Payouts			Option Awards:	Exercise or Base	Grant Date
		Threshold (\$)	Target (\$)	Maximum (\$)	Number of Securities Underlying Options	Price of Option Awards (\$)	Fair Value of Option Awards (\$)(3)
John M. Maraganore, Ph.D. <i>Chief Executive Officer</i>	12/10/09	0	262,500	262,500	105,000	16.43	924,483
Barry E. Greene <i>President and Chief Operating Officer</i>	12/10/09	0	117,000	117,000	65,000	16.43	572,299
Akshay K. Vaishnaw, M.D., Ph.D. <i>Senior Vice President, Clinical Research</i>	12/10/09	0	68,000	68,000	45,000	16.43	396,207
Patricia L. Allen <i>Vice President of Finance and Treasurer</i>	12/10/09	0	45,566	45,566	25,000	16.43	220,115
John A. Schmidt, Jr., M.D. <i>Former Senior Vice President and Chief Scientific Officer</i>							

(1) None of our named executive officers received restricted stock awards or stock appreciation rights in 2009. The stock option awards reported in the 2009 Grants of Plan-Based Awards table were granted pursuant to our Amended and Restated 2004 Stock Incentive Plan. Dr. Schmidt resigned from his position as senior vice president and chief scientific officer and his employment with us terminated as of September 30, 2009 and, accordingly, he was not eligible to receive an annual stock option award in 2009. Our Amended and Restated 2004 Stock Incentive Plan 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 Amended and Restated 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 thereafter until the fourth anniversary of the grant date.

(2) The amounts shown in the threshold, target and maximum columns reflect the minimum, target and maximum amounts payable, respectively, under our 2009 annual cash incentive program, which is described above in the

Compensation Discussion and Analysis under the heading 2009 Annual Incentive Program. The actual amounts paid to each named executive officer can be found above in the Summary Compensation Table under the column entitled Non-Equity Incentive Plan Compensation.

- (3) The Grant Date Fair Value, computed in accordance with FASB ASC Topic 718, represents the value of stock options granted during the year.

The amounts reported in the 2009 Grants of Plan-Based Awards table for these stock 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.

**Table of Contents****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, 2009.

**Outstanding Equity Awards at Fiscal Year-End for 2009**

Name	Number of Securities Underlying Unexercised Options Exercisable	Option Awards		Option Expiration Date
		Number of Securities Underlying Unexercised Options Unexercisable	Option Exercise Price (\$)	
John M. Maraganore, Ph.D. <i>Chief Executive Officer</i>	64,102(1)		0.475	02/26/2013
	4,515(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
	125,000(7)		13.12	12/07/2015
	93,750(8)	31,250(8)	22.75	12/14/2016
	75,300(9)	75,300(9)	31.39	12/12/2017
	38,330(10)	114,990(10)	21.35	12/09/2018
Barry E. Greene <i>President and Chief Operating Officer</i>		105,000(16)	16.43	12/10/2019
	48,058(11)		0.95	11/06/2013
	7,894(3)		0.95	01/06/2014
	14,928(12)		0.95	04/26/2014
	75,000(5)		6.78	12/07/2014
	75,000(7)		13.12	12/07/2015
	45,000(8)	15,000(8)	22.75	12/14/2016
	40,000(9)	40,000(9)	31.39	12/12/2017
	22,500(10)	67,500(10)	21.35	12/09/2018
		65,000(16)	16.43	12/10/2019
Akshay K. Vaishnav, M.D., Ph.D. <i>Senior Vice President, Clinical Research</i>	34,375(13)	6,250(13)	12.96	01/03/2016
	22,500(8)	7,500(8)	22.75	12/14/2016
	16,375(9)	16,375(9)	31.39	12/12/2017
	15,088(10)	45,262(10)	21.35	12/09/2018
		45,000(16)	16.43	12/10/2019
Patricia L. Allen <i>Vice President of Finance and Treasurer</i>	33,947(14)		0.95	05/04/2014
	16,750(5)		6.78	12/07/2014
	32,000(7)		13.12	12/07/2015
	15,000(8)	5,000(8)	22.75	12/14/2016
	16,313(9)	16,312(9)	31.39	12/12/2017
	7,916(10)	23,747(10)	21.35	12/09/2018
		25,000(16)	16.43	12/10/2019

John A. Schmidt, Jr., M.D.

(15)

(15)

*Former Senior Vice President and  
Chief Scientific Officer*

- (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 vested 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 thereafter until January 6, 2008.
- (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 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 thereafter until December 7, 2008.
- (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 Related Person Transactions Agreements with Novartis.
- (7) These options were granted on December 7, 2005. 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 thereafter until December 7, 2009.
- (8) These options were granted on December 14, 2006. The options vested as to 25% of the shares on the first anniversary of the grant date and vest as to an additional 6.25% at the end of each successive three-month period thereafter until the fourth anniversary.
- (9) These options were granted on December 12, 2007. The options vested as to 25% of the shares on the first anniversary of the grant date and vest as to an additional 6.25% at the end of each successive three-month period thereafter until the fourth anniversary.
- (10) These options were granted on December 9, 2008. The options vested as to 25% of the shares on the first anniversary of the grant date and vest as to an additional 6.25% at the end of each successive three-month period thereafter until the fourth anniversary
- (11) These options were granted on November 6, 2003. 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 thereafter until November 6, 2007.
- (12) These options were granted on April 26, 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 thereafter until April 26, 2008.
- (13) These options were granted on January 3, 2006. The options vested as to 25% of the shares on the first anniversary of the grant date and vest as to an additional 6.25% at the end of each successive three-month period thereafter until the fourth anniversary
- (14) These options were granted on May 4, 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 thereafter until

May 4, 2008.

- (15) Dr. Schmidt resigned from his position as senior vice president and chief scientific officer and his employment with us terminated as of September 30, 2009. Pursuant to the terms of his stock option agreement, all of his unvested options were cancelled as of his date of termination and, as Dr. Schmidt did not exercise any of his vested options, his vested options were cancelled on December 30, 2009.
- (16) These options were granted on December 10, 2009. 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 thereafter until the fourth anniversary.

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The following table sets forth information concerning the exercise of stock options during 2009 for each of our named executive officers.

**2009 Option Exercises and Stock Vested**

<b>Name</b>	<b>Option Awards</b>	
	<b>Number of Shares Acquired on Exercise</b>	<b>Value Realized on Exercise (\$)(1)</b>
John M. Maraganore, Ph.D. <i>Chief Executive Officer</i>	120,000	2,511,078
Barry E. Greene <i>President and Chief Operating Officer</i>		
Akshay K. Vaishnav, M.D., Ph.D. <i>Senior Vice President, Clinical Research</i>		
Patricia L. Allen <i>Vice President of Finance and Treasurer</i>	25,000	416,995
John A. Schmidt, Jr., M.D. <i>Former 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.

As described above in Related Person Transactions, in connection with Dr. Schmidt's resignation, we agreed to provide Dr. Schmidt with the following severance pay and benefits: (i) severance in the gross amount of \$212,500 (an amount equal to six months of Dr. Schmidt's gross base salary); (ii) the full cost of any COBRA premiums until the earlier of March 31, 2010 and the date Dr. Schmidt becomes eligible for coverage under the group health plan of another employer; and (iii) reimbursement of outplacement services up to a maximum amount of \$10,000. In addition, we waived our right to repayment by Dr. Schmidt of a sign-on bonus and certain relocation and related expenses provided pursuant to the terms of Dr. Schmidt's offer of employment.

**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.

**Table of Contents****Securities Authorized for Issuance Under Equity Compensation Plans**

The following table provides information as of December 31, 2009 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 Amended and Restated 2004 Stock Incentive Plan, our 2009 Stock Incentive Plan and our Existing ESPP. All of our equity compensation plans were adopted with the approval of our stockholders.

**Equity Compensation Plan Information**

	<b>Number of Securities to Be Issued</b>	<b>Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights</b>	<b>Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans(1)(2)</b>
	<b>Upon Exercise of Outstanding Options, Warrants and Rights</b>	<b>(\$)</b>	
Equity compensation plans approved by stockholders	7,926,653	19.44	3,727,840
Equity compensation plans not approved by stockholders			
Total	7,926,653	19.44	3,727,840

(1) Consists of 1,558,428 shares of our common stock available for future issuance under our Amended and Restated 2004 Stock Incentive Plan, 2,070,000 shares of our common stock available for future issuance under our 2009 Stock Incentive Plan and 99,412 shares of our common stock available for future issuance under our Existing ESPP. No shares of our common stock were available for issuance under our 2002 Plan or our 2003 Plan as of December 31, 2009.

(2) At March 31, 2010, options to purchase 7,645,931 shares of common stock were outstanding under our 2009 Stock Incentive Plan, our Amended and Restated 2004 Stock Incentive Plan, our 2002 Plan and our 2003 Plan, and an additional 2,070,000 shares and 1,795,456 shares were available for future awards under our 2009 Stock Incentive Plan and our Amended and Restated 2004 Stock Incentive Plan, respectively. The weighted average remaining contractual life for options outstanding at March 31, 2010 was 7.4 years and the weighted average exercise price for such options was \$17.60. In addition, at March 31, 2010, there were no shares of restricted stock outstanding.

**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. In addition, during 2009, our compensation committee engaged Towers Watson for assistance with its review of the compensation we pay to our non-employee directors. Based on this review and the ongoing review of board compensation by the compensation committee, in September 2009, our compensation committee recommended, and our board approved, certain changes to such compensation, effective as of September 2009. These changes are reflected below.

Prior to September 2009, each non-employee director was eligible to receive a cash fee of \$20,000 per year. In September 2009, our board approved an increase in the annual cash fee paid to non-employee directors to \$50,000 per year, beginning on a pro-rated basis at the September 2009 board meeting. The chairs of our board and our nominating and corporate governance committee are each entitled to receive an additional \$5,000 per year. In September 2009, our board approved an increase in the additional amount payable to the chair of our compensation committee from \$5,000 to \$10,000 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

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receive upon his or her initial election to our board a stock option award for 30,000 shares of common stock, vesting annually over three years, and an additional stock option award 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 award 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 award or make other option awards 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 2009.

**Director Compensation**

Name	Fees Earned or		All Other	Total (\$)
	Paid in Cash (\$)	Option Awards (\$)(1)(2)(3)	Compensation (\$)	
John K. Clarke	45,000	199,443		244,443
Victor J. Dzau, M.D.	35,000	199,443		234,443
Vicki L. Sato, Ph.D.	42,500	199,443		241,943
Paul R. Schimmel, Ph.D.	35,000	199,443		234,443
Edward M. Scolnick, M.D.	35,000	199,443		234,443
Phillip A. Sharp, Ph.D.	35,000	199,443	217,259(4)	451,702
Kevin P. Starr	50,000	332,405		382,405
James L. Vincent	35,000	199,443		234,443

- (1) The amounts in this column reflect the aggregate grant date fair value for the fiscal year ended December 31, 2009, in accordance with FASB ASC Topic 718 of stock options granted under our equity plans for service on our board and treated for accounting purposes as employee awards. There can be no assurance that these 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, 2009 included in our Annual Report on Form 10-K, filed with the SEC on February 26, 2010. See footnote 4 below for the compensation expense of stock options granted under our equity plans to a director for non-board services and treated for accounting purposes as non-employee awards.
- (2) As of December 31, 2009, our non-employee directors held the following aggregate number of shares under outstanding stock options (representing unexercised option awards both exercisable and unexercisable):

Number of Shares Underlying	Number of Shares Underlying Outstanding
--------------------------------	---

<b>Name</b>	<b>Outstanding Stock Options for Board Service</b>	<b>Stock Options for Non-Board Service</b>
John K. Clarke	65,000	
Victor J. Dzau, M.D.	60,000	
Vicki L. Sato, Ph.D.	70,000	
Paul R. Schimmel, Ph.D.	45,000	
Edward M. Scolnick, M.D.	60,000	
Phillip A. Sharp, Ph.D.	65,000	190,000
Kevin P. Starr	167,631	
James L. Vincent	130,000	

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- (3) The number of shares underlying stock options granted to our non-employee directors for their service on our board during 2009 and the grant date fair value of such stock options are as follows:

Name	Date of Grant	Number of Shares Underlying Stock Option Grants in 2009	Grant Date Fair Value of Stock Option Grants in 2009 \$(a)
John K. Clarke	06/11/2009	15,000	199,443
Victor J. Dzau, M.D.	06/11/2009	15,000	199,443
Vicki L. Sato, Ph.D.	06/11/2009	15,000	199,443
Paul R. Schimmel, Ph.D.	06/11/2009	15,000	199,443
Edward M. Scolnick, M.D.	06/11/2009	15,000	199,443
Phillip A. Sharp, Ph.D.	06/11/2009	15,000	199,443
Kevin P. Starr	06/11/2009	25,000	332,405
James L. Vincent	06/11/2009	15,000	199,443

- (a) The Grant Date Fair Value computed in accordance with FASB ASC Topic 718 represents the value of stock options granted during 2009. The weighted-average grant date fair value per option was \$13.30. There can be no assurance that the Grant Date Fair Value computed in accordance with FASB ASC Topic 718 will ever be realized.
- (4) This amount reflects compensation paid to Dr. Sharp for service on our scientific advisory board and includes (A) a cash payment of \$36,000 paid to Dr. Sharp during 2009 and (B) the aggregate fair value, as measured on December 31, 2009, for stock options granted to him in 2009 for an aggregate of 15,000 shares. Because these stock options were compensation for service on our scientific advisory board, they are non-employee awards and, therefore, are accounted for using the fair value method in accordance with FASB ASC Topic 718, 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 stock 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, 2009 included in our Annual Report on Form 10-K, filed with the SEC on February 26, 2010.

**Compensation Committee Interlocks and Insider Participation**

During 2009, 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.

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**PROPOSAL 2 AMENDMENT TO 2004 EMPLOYEE STOCK PURCHASE PLAN, AS AMENDED**

**Overview**

On March 3, 2010, upon the recommendation of our compensation committee, our board of directors approved the amendment of our 2004 Employee Stock Purchase Plan, as amended, or the Existing ESPP, which, as amended by this proposal, we refer to as the ESPP, to increase the number of shares of common stock authorized for issuance thereunder from 315,789 shares to 715,789 shares (subject to adjustment in the event of stock splits and other similar events).

The ESPP permits eligible employees the option to purchase shares of our common stock through payroll deductions at 85% of the fair market value of the common stock as of the applicable grant date. Our board of directors believes that it is in our best interests to encourage stock ownership by our employees and the ESPP is an important benefit in recruiting and retaining employees. As of March 31, 2010, there were an aggregate of 99,412 shares available for future awards under the Existing ESPP. Our board of directors believes that it is necessary to adopt the amendment to the Existing ESPP in order to ensure that there are sufficient shares for all stock purchases under the ESPP through approximately 2012.

Our board of directors is submitting the ESPP for approval by our stockholders and has specifically conditioned its effectiveness on such approval. If our stockholders do not approve the ESPP, the Existing ESPP, excluding the proposed increase in shares available for issuance thereunder, will remain in effect. In such event, our board of directors will consider whether to adopt alternative arrangements based on its assessment of our needs.

**Our Board believes that the adoption of the ESPP is in the best interests of our company and our stockholders and recommends a vote FOR this proposal.**

**Description of the ESPP**

The following summary is qualified in its entirety by reference to the ESPP, a copy of which is attached as Appendix A 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](http://www.sec.gov). In addition, a copy of the ESPP may be obtained by writing 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 ESPP.

**Eligibility**

Generally, our employees or the employees of a Designated Subsidiary of ours (as defined in the ESPP) who are customarily employed by us or our subsidiary for more than 20 hours a week and for more than five months in a calendar year, who have been employed by us or a Designated Subsidiary for at least three months prior to enrolling in the ESPP and who are our employees or those of a Designated Subsidiary on the first day of the applicable Plan Period (as defined in the ESPP) are eligible to participate in the ESPP; provided however, any employee who, immediately after the grant of an option under the ESPP would own stock or hold outstanding options to purchase stock constituting five percent or more of the total combined voting power of our capital stock or that of our subsidiary shall not be eligible to participate in the ESPP. In addition, any executive officer considered a highly compensated individual as defined by the Code shall not be eligible to participate in the ESPP.

*Administration, Delegation and Termination*

The ESPP is administered by our board of directors. Our board of directors has authority to make rules and regulations for the administration of the ESPP and its interpretation and decisions with regard thereto shall be final and conclusive. Our board of directors may terminate the ESPP at any time.

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### ***Offerings***

Under the ESPP, we will make offerings to employees to purchase common stock beginning each November 1 and May 1, or on the first business day thereafter, and each offering commencement date will begin a six-month plan period during which payroll deductions will be made and held for the purchase of common stock at the end of the plan period. The ESPP also provides that our board of directors may, at its discretion, choose a different plan period of 12 months or less for any offering.

### ***Participation***

Participation in the ESPP is voluntary. An eligible employee on the offering commencement date of any offering may participate in the offering by enrolling at least five business days prior to the applicable offering commencement date by completing and forwarding a payroll deduction authorization form, which will authorize a regular payroll deduction from the employee's compensation (as defined in the ESPP) during the plan period. Unless an employee files a new form or withdraws from the ESPP, his or her deductions and purchases may be continued at the same rate for future offerings under the ESPP as long as it remains in effect.

### ***Deductions***

We maintain payroll deduction accounts for all participants. With respect to any offering made under the ESPP, a participant may authorize a payroll deduction equal in any dollar amount up to a maximum of 15% of the compensation he or she receives during the plan period or such shorter period during which deductions from payroll are made.

### ***Purchase of Shares***

On each offering commencement date, we grant to each participant in the ESPP an option to purchase on the last business day of the plan period, at the option price described below, the largest number of whole shares of our common stock reserved for purposes of the ESPP as does not exceed the number of shares determined by dividing (1) the product of \$2,083 times the number of full months in the plan period by (2) the closing price (as defined below) on the offering commencement date of the plan period.

Notwithstanding the foregoing, no employee may be granted an option to purchase common stock under the ESPP and any other employee stock purchase plan of ours or our subsidiaries, to accrue at a rate which exceeds \$25,000 of the fair market value of such common stock (determined at the offering commencement date of the plan period) for each calendar year in which the option is outstanding at any time.

The purchase price for each share purchased will be 85% of the lower of the closing price of our common stock on (1) the offering commencement date of the plan period or (2) the last business day of the plan period. If no sales of our common stock were made on a date referred to above, the price of the common stock for purposes of clauses (1) and (2) above shall be the reported price for the next preceding day on which sales were made.

Each employee who continues to be a participant in the ESPP on the exercise date will be deemed to have exercised his or her option at the option price on that date and will be deemed to have purchased from us the number of full shares of common stock reserved for purposes of the ESPP that his or her accumulated payroll deductions on that date will pay for, up to the maximum number determined in the manner set forth above.

### ***Adjustment in Case of Changes Affecting Common Stock***

In the event of a subdivision of outstanding shares of our common stock, the payment of a dividend in common stock or any other change affecting the common stock, the number of shares approved for the ESPP, and the share limitation described above, shall be adjusted proportionately, and such other adjustment shall be made as may be deemed equitable by the board of directors to give proper effect to such event.

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### ***Merger***

If we, at any time, merge or consolidate with another corporation and the holders of our capital stock immediately prior to the merger or consolidation continue to hold at least a majority by voting power of the capital stock of the surviving corporation, which we refer to as continuity of control, the holder of each option then outstanding will thereafter be entitled to receive, at the next exercise date, upon the exercise of the option for each share as to which the option shall be exercised, the securities or property which a holder of one share of our common stock was entitled to upon and at the time of the merger or consolidation, and our board of directors will take such steps in connection with the merger or consolidation to make the adjustments under the ESPP as it shall deem equitable.

In the event of our merger or consolidation with or into another corporation which does not involve continuity of control, or if we sell all, or substantially all, of our assets while unexercised options remain outstanding under the ESPP,

1. subject to the provisions of clauses (2) and (3) below, after the effective date of such transaction, each holder of an outstanding option shall be entitled, upon exercise of such option, to receive instead of shares of common stock, shares of such stock or other securities as the holders of shares of common stock received pursuant to the terms of such transaction; or
2. all outstanding options may be cancelled by our board of directors as of a date prior to the effective date of any such transaction and all payroll deductions shall be paid out to the participants; or
3. all outstanding options may be cancelled by our board of directors as of the effective date of any such transaction, provided that notice of such cancellation shall be given to each holder of an option, and each holder of an option shall have the right to exercise such option in full based on payroll deductions then credited to his or her account as of a date determined by our board of directors, which date shall not be less than ten days preceding the effective date of such transaction.

### ***Amendment***

Our board of directors may at any time, and from time to time, amend the ESPP in any respect, except that (a) if the approval of any such amendment by our stockholders is required by Section 423 of the Code, such amendment shall not be effected without such approval, and (b) in no event may any amendment be made which would cause the ESPP to fail to comply with Section 423 of the Code.

### ***Plan Benefits***

As of March 31, 2010, approximately 174 employees were eligible to participate in the Existing ESPP and would be eligible to participate in the ESPP. Because participation in the stock purchase plan is voluntary, we cannot determine the number of shares of common stock to be purchased in the future by non-executive employees as a group. However, during the last four semi-annual offering periods, we have issued an average of 25,000 shares per offering period under the Existing ESPP.

### **Federal Income Tax Consequences**

The following generally summarizes the United States federal income tax consequences that will arise with respect to participation in the ESPP and with respect to the sale of shares of our common stock acquired under the ESPP. This summary is based on the tax laws in effect as of the date of this proxy statement. Changes to these laws could alter the tax consequences described below.

*Tax Consequences to Participants.* A participant will not have income upon enrolling in the ESPP or upon purchasing stock at the end of an offering.

A participant may have both compensation income and capital gain income if the participant sells stock that was acquired under the ESPP at a profit (if sales proceeds exceed the purchase price). The amount of each type of income will depend on when the participant sells the stock. If the participant sells the stock more than two years after the commencement of the offering during which the stock was purchased and more than

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one year after the date that the participant purchased the stock, then the participant will have compensation income equal to the lesser of:

15% of the value of the stock on the day the offering commenced; and

the participant's profit.

Any excess profit will be long-term capital gain.

If the participant sells the stock prior to satisfying these waiting periods, then he or she will have engaged in a disqualifying disposition. Upon a disqualifying disposition, the participant will have compensation income equal to the value of the stock on the day he or she purchased the stock less the purchase price. If the participant's profit exceeds the compensation income, then the excess profit will be a capital gain. If the participant's profit is less than the compensation income, the participant will have a capital loss equal to the value of the stock on the day he or she purchased the stock less the sales proceeds. 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.

If the participant sells the stock at a loss (if sales proceeds are less than the purchase price), then the loss will be a capital loss. This capital loss will be long-term if the participant has held the stock for more than one year and otherwise will be short-term.

*Withholding.* Each employee shall, no later than the date of the event creating the tax liability, make provision satisfactory to the board of directors for payment of any taxes required by law to be withheld in connection with any transaction related to options granted to or shares acquired by such employee pursuant to the ESPP. We may, to the extent permitted by law, deduct any such taxes from any payment of any kind otherwise due to an employee.

*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 upon a disqualifying disposition. Any such deduction will be subject to the limitations of Section 162(m) of the Code.

## **Board Recommendation**

**Our board of directors believes that the adoption of the ESPP is in the best interests of our company and our stockholders and recommends that you vote FOR the approval of the amendment to increase the number of shares authorized for issuance under the 2004 Employee Stock Purchase Plan, as amended, from 315,789 shares to 715,789 shares.**

## **PROPOSAL 3 RATIFICATION OF APPOINTMENT OF INDEPENDENT AUDITORS**

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, 2010. 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.

## **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, 2010.**

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**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.

**STOCKHOLDER PROPOSALS**

In order to be included in proxy material for the 2011 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 21, 2010. 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 4, 2011 (90 days prior to the first anniversary of our 2010 annual meeting of stockholders) and not before February 2, 2011 (120 days prior to the first anniversary of our 2010 annual meeting of stockholders). However, if the 2011 annual meeting of stockholders is advanced by more than 20 days, or delayed by more than 60 days, from the first anniversary of the 2010 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 2011 annual meeting of stockholders.

**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

**ALNYLAM PHARMACEUTICALS, INC.  
2004 EMPLOYEE STOCK PURCHASE PLAN**

The purpose of this Plan is to provide eligible employees of Alnylam Pharmaceuticals, Inc., a Delaware corporation (the **Company**), and certain of its subsidiaries with opportunities to purchase shares of the Company's common stock, \$.0001 par value (the **Common Stock**). An aggregate of 315,789 shares of Common Stock have been approved for this purpose. This Plan is intended to qualify as an employee stock purchase plan as defined in Section 423 of the Internal Revenue Code of 1986, as amended (the **Code**), and the regulations promulgated thereunder, and shall be interpreted consistent therewith.

1. **Administration.** The Plan will be administered by the Company's Board of Directors (the **Board**) or by a Committee appointed by the Board (the **Committee**). The Board or the Committee has authority to make rules and regulations for the administration of the Plan and its interpretation and decisions with regard thereto shall be final and conclusive.

2. **Eligibility.** All employees of the Company and all employees of any subsidiary of the Company (as defined in Section 424(f) of the Code) designated by the Board or the Committee from time to time (a **Designated Subsidiary**), are eligible to participate in any one or more of the offerings of Options (as defined in Section 9) to purchase Common Stock under the Plan provided that:

(a) they are customarily employed by the Company or a Designated Subsidiary for more than twenty (20) hours a week and for more than five (5) months in a calendar year; and

(b) they have been employed by the Company or a Designated Subsidiary for at least six (6) months prior to enrolling in the Plan;

(c) they are employees of the Company or a Designated Subsidiary on the first day of the applicable Plan Period (as defined below); and

(d) in the case of an executive officer of the Company or a Designated Subsidiary, they are not considered a highly compensated individual within the meaning of Section 414(q) of the Code.

No employee may be granted an option hereunder if such employee, immediately after the option is granted, owns 5% or more of the total combined voting power or value of the stock of the Company or any subsidiary. For purposes of the preceding sentence, the attribution rules of Section 424(d) of the Code shall apply in determining the stock ownership of an employee, and all stock which the employee has a contractual right to purchase shall be treated as stock owned by the employee.

3. **Offerings.** The Company will make one or more offerings (**Offerings**) to employees to purchase stock under this Plan. Offerings will begin each November 1 or the first business day thereafter (the **Offering Commencement Dates**). Each Offering Commencement Date will begin a twelve-month period (a **Plan Period**) during which payroll deductions will be

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made and held for the purchase of Common Stock at the end of the Plan Period. The Board or the Committee may, at its discretion, choose a different Plan Period of twelve (12) months or less for subsequent Offerings. Notwithstanding anything to the contrary, the first Plan Period shall begin on the later of November 1, 2004 or the first date that the Common Stock is publicly traded following the Company's IPO (the IPO Date), and shall end on October 31, 2005.

4. **Participation.** An employee eligible on the Offering Commencement Date of any Offering may participate in such Offering by completing and forwarding a payroll deduction authorization form to the employee's appropriate payroll office at least five (5) business days prior to the applicable Offering Commencement Date. The form will authorize a regular payroll deduction from the Compensation received by the employee during the Plan Period. Unless an employee files a new form or withdraws from the Plan, his deductions and purchases will continue at the same rate for future Offerings under the Plan as long as the Plan remains in effect. The term "Compensation" means the amount of money reportable on the employee's Federal Income Tax Withholding Statement, excluding overtime, shift premium, incentive or bonus awards, allowances and reimbursements for expenses such as relocation allowances for travel expenses, income or gains on the exercise of Company stock options or stock appreciation rights, amounts imputed in respect of benefit programs and similar items, whether or not shown on the employee's Federal Income Tax Withholding Statement, but including, in the case of salespersons, sales commissions to the extent determined by the Board or the Committee.

5. **Deductions.** The Company will maintain payroll deduction accounts for all participating employees. With respect to any Offering made under this Plan, an employee may authorize a payroll deduction in any dollar amount up to a maximum of 15% of the Compensation he or she receives during the Plan Period or such shorter period during which deductions from payroll are made. Payroll deductions may be at the rate of 1%, 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14% or 15% of Compensation with any change in compensation during the Plan Period to result in an automatic corresponding change in the dollar amount withheld. The minimum payroll deduction is such percentage of compensation as may be established from time to time by the Board or the Committee.

6. **Deduction Changes.** An employee may decrease or discontinue his payroll deduction once during any Plan Period, by filing a new payroll deduction authorization form. However, an employee may not increase his payroll deduction during a Plan Period. If an employee elects to discontinue his payroll deductions during a Plan Period, but does not elect to withdraw his funds pursuant to Section 8 hereof, funds deducted prior to his election to discontinue will be applied to the purchase of Common Stock on the Exercise Date (as defined below).

7. **Interest.** Interest will not be paid on any employee accounts.

8. **Withdrawal of Funds.** An employee may at any time prior to the close of business on the last business day in a Plan Period and for any reason permanently draw out the balance accumulated in the employee's account and thereby withdraw from participation in an Offering. Partial withdrawals are not permitted. The employee may not begin participation again during the remainder of the Plan Period. The employee may participate in any subsequent Offering in accordance with terms and conditions established by the Board or the Committee.

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9. Purchase of Shares. On the Offering Commencement Date of each Plan Period, the Company will grant to each eligible employee who is then a participant in the Plan an option ( Option ) to purchase on the last business day of such Plan Period (the Exercise Date ), at the Option Price hereinafter provided for, the largest number of whole shares of Common Stock of the Company as does not exceed the number of shares determined by multiplying \$2,083 by the number of full months in the Offering Period and dividing the result by the closing price (as defined below) on the Offering Commencement Date of such Plan Period.

Notwithstanding the above, no employee may be granted an Option which permits his rights to purchase Common Stock under this Plan and any other employee stock purchase plan (as defined in Section 423(b) of the Code) of the Company and its subsidiaries, to accrue at a rate which exceeds \$25,000 of the fair market value of such Common Stock (determined at the Offering Commencement Date of the Plan Period) for each calendar year in which the Option is outstanding at any time.

The purchase price for each share purchased will be 85% of the closing price of the Common Stock on (i) the Offering Commencement Date of such Plan Period or (ii) the Exercise Date, whichever closing price shall be less. Such closing price shall be (a) the closing price on any national securities exchange on which the Common Stock is listed, (b) the closing price of the Common Stock on the Nasdaq National Market or (c) the average of the closing bid and asked prices in the over-the-counter-market, whichever is applicable, as published in The Wall Street Journal; provided that, with respect to the first Plan Period, if the first day of such Plan Period is the IPO Date, the closing price of the Common Stock on the first business day of such Plan Period shall be deemed to be the initial public offering price for the Common Stock, as set forth in the final prospectus relating to the IPO. If no sales of Common Stock were made on such a day, the price of the Common Stock for purposes of clauses (a) and (b) above shall be the reported price for the next preceding day on which sales were made.

Each employee who continues to be a participant in the Plan on the Exercise Date shall be deemed to have exercised his Option at the Option Price on such date and shall be deemed to have purchased from the Company the number of full shares of Common Stock reserved for the purpose of the Plan that his accumulated payroll deductions on such date will pay for, but not in excess of the maximum number determined in the manner set forth above.

Any balance remaining in an employee's payroll deduction account at the end of a Plan Period will be automatically refunded to the employee, except that any balance which is less than the purchase price of one share of Common Stock will be carried forward into the employee's payroll deduction account for the following Offering, unless the employee elects not to participate in the following Offering under the Plan, in which case the balance in the employee's account shall be refunded.

10. Issuance of Certificates. Certificates representing shares of Common Stock purchased under the Plan may be issued only in the name of the employee, in the name of the employee and another person of legal age as joint tenants with rights of survivorship, or (in the Company's sole discretion) in the name of a brokerage firm, bank or other nominee holder designated by the employee. The Company may, in its sole discretion and in compliance with

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applicable laws, authorize the use of book entry registration of shares in lieu of issuing stock certificates.

11. Rights on Retirement, Death or Termination of Employment. In the event of a participating employee's termination of employment prior to the last business day of a Plan Period, no payroll deduction shall be taken from any pay due and owing to an employee and the balance in the employee's account shall be paid to the employee or, in the event of the employee's death, (a) to a beneficiary previously designated in a revocable notice signed by the employee (with any spousal consent required under state law) or (b) in the absence of such a designated beneficiary, to the executor or administrator of the employee's estate or (c) if no such executor or administrator has been appointed to the knowledge of the Company, to such other person(s) as the Company may, in its discretion, designate. If, prior to the last business day of the Plan Period, the Designated Subsidiary by which an employee is employed shall cease to be a subsidiary of the Company, or if the employee is transferred to a subsidiary of the Company that is not a Designated Subsidiary, the employee shall be deemed to have terminated employment for the purposes of this Plan.

12. Optionees Not Stockholders. Neither the granting of an Option to an employee nor the deductions from his pay shall constitute such employee a stockholder of the shares of Common Stock covered by an Option under this Plan until such shares have been purchased by and issued to him.

13. Rights Not Transferable. Rights under this Plan are not transferable by a participating employee other than by will or the laws of descent and distribution, and are exercisable during the employee's lifetime only by the employee.

14. Application of Funds. All funds received or held by the Company under this Plan may be combined with other corporate funds and may be used for any corporate purpose.

15. Adjustment in Case of Changes Affecting Common Stock. In the event of a subdivision of outstanding shares of Common Stock, or the payment of a dividend in Common Stock, the number of shares approved for this Plan, and the share limitation set forth in Section 9, shall be increased proportionately, and such other adjustment shall be made as may be deemed equitable by the Board or the Committee. In the event of any other change affecting the Common Stock, such adjustment shall be made as may be deemed equitable by the Board or the Committee to give proper effect to such event.

16. Merger. If the Company shall at any time merge or consolidate with another corporation and the holders of the capital stock of the Company immediately prior to such merger or consolidation continue to hold at least a majority by voting power of the capital stock of the surviving corporation (Continuity of Control), the holder of each Option then outstanding will thereafter be entitled to receive at the next Exercise Date upon the exercise of such Option for each share as to which such Option shall be exercised the securities or property which a holder of one share of the Common Stock was entitled to upon and at the time of such merger or consolidation, and the Board or the Committee shall take such steps in connection with such merger or consolidation as the Board or the Committee shall deem necessary to assure that the provisions of Section 15 shall thereafter be applicable, as nearly as reasonably may be, in

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relation to the said securities or property as to which such holder of such Option might thereafter be entitled to receive thereunder.

In the event of a merger or consolidation of the Company with or into another corporation which does not involve Continuity of Control, or of a sale of all or substantially all of the assets of the Company while unexercised Options remain outstanding under the Plan, (a) subject to the provisions of clauses (b) and (c), after the effective date of such transaction, each holder of an outstanding Option shall be entitled, upon exercise of such Option, to receive in lieu of shares of Common Stock, shares of such stock or other securities as the holders of shares of Common Stock received pursuant to the terms of such transaction; or (b) all outstanding Options may be cancelled by the Board or the Committee as of a date prior to the effective date of any such transaction and all payroll deductions shall be paid out to the participating employees; or (c) all outstanding Options may be cancelled by the Board or the Committee as of the effective date of any such transaction, provided that notice of such cancellation shall be given to each holder of an Option, and each holder of an Option shall have the right to exercise such Option in full based on payroll deductions then credited to his account as of a date determined by the Board or the Committee, which date shall not be less than ten (10) days preceding the effective date of such transaction.

17. Amendment of the Plan. The Board may at any time, and from time to time, amend this Plan in any respect, except that (a) if the approval of any such amendment by the shareholders of the Company is required by Section 423 of the Code, such amendment shall not be effected without such approval, and (b) in no event may any amendment be made which would cause the Plan to fail to comply with Section 423 of the Code.

18. Insufficient Shares. In the event that the total number of shares of Common Stock specified in elections to be purchased under any Offering plus the number of shares purchased under previous Offerings under this Plan exceeds the maximum number of shares issuable under this Plan, the Board or the Committee will allot the shares then available on a pro rata basis.

19. Termination of the Plan. This Plan may be terminated at any time by the Board. Upon termination of this Plan all amounts in the accounts of participating employees shall be promptly refunded.

20. Governmental Regulations. The Company's obligation to sell and deliver Common Stock under this Plan is subject to listing on a national stock exchange or quotation on the Nasdaq National Market (to the extent the Common Stock is then so listed or quoted) and the approval of all governmental authorities required in connection with the authorization, issuance or sale of such stock.

21. Governing Law. The Plan shall be governed by Delaware law except to the extent that such law is preempted by federal law.

22. Issuance of Shares. Shares may be issued upon exercise of an Option from authorized but unissued Common Stock, from shares held in the treasury of the Company, or from any other proper source.

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23. Notification upon Sale of Shares. Each employee agrees, by entering the Plan, to promptly give the Company notice of any disposition of shares purchased under the Plan where such disposition occurs within two (2) years after the date of grant of the Option pursuant to which such shares were purchased.

24. Special Provisions for First Plan Period. If the first day of the first Plan Period is the IPO Date, the following provisions of this Section 24 shall apply with respect to the first Plan Period notwithstanding any provision of the Plan to the contrary:

(a) Every eligible employee shall automatically become a participant in the Plan for the first Plan Period at the highest percentage of Compensation permitted under Section 5. No payroll deductions shall be required for the first Plan Period; however, a participant may, at any time after the effectiveness of the Plan's Registration Statement on Form S-8, elect to have payroll deductions up to the aggregate amount which would have been credited to his or her account if a deduction of fifteen percent (15%) of the Compensation which he or she received on each pay day during the first Plan Period had been made (the Maximum Amount) or decline to participate by filing an appropriate subscription agreement.

(b) Upon the automatic exercise of a participant's option on the Exercise Date for the first Plan Period, a participant shall be permitted to purchase shares with (i) the accumulated payroll deductions in his or her account, if any, (ii) a direct payment from the participant, or (iii) a combination thereof; provided, however that the total amount applied to the purchase may not exceed the Maximum Amount.

25. Withholding. Each employee shall, no later than the date of the event creating the tax liability, make provision satisfactory to the Board for payment of any taxes required by law to be withheld in connection with any transaction related to Options granted to or shares acquired by such employee pursuant to the Plan. The Company may, to the extent permitted by law, deduct any such taxes from any payment of any kind otherwise due to an employee.

26. Effective Date and Approval of Shareholders. The Plan shall take effect on the IPO Date, subject to approval by the shareholders of the Company as required by Section 423 of the Code, which approval must occur within twelve months of the adoption of the Plan by the Board.

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**AMENDMENT NO. 1 TO  
2004 EMPLOYEE STOCK PURCHASE PLAN  
OF  
ALNYLAM PHARMACEUTICALS, INC.**

The 2004 Employee Stock Purchase Plan (the Plan ) of Alnylam Pharmaceuticals, Inc. is hereby amended as follows:

Section 2(b) is deleted in its entirety and the following is substituted in its place:

(b) they have been employed by the Company or a Designated Subsidiary for at least three (3) months prior to enrolling in the Plan;

Except as set forth above, the remainder of the Plan remains in full force and effect.

Adopted by the Compensation Committee of  
the Board of Directors on June 1, 2007.

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**AMENDMENT NO. 2 TO  
2004 EMPLOYEE STOCK PURCHASE PLAN  
OF  
ALNYLAM PHARMACEUTICALS, INC.**

The 2004 Employee Stock Purchase Plan, as amended (the Plan ), of Alnylam Pharmaceuticals, Inc. is hereby amended as follows:

The preamble of the Plan is deleted in its entirety and the following is substituted in its place:

The purpose of this Plan is to provide eligible employees of Alnylam Pharmaceuticals, Inc., a Delaware corporation (the Company ), and certain of its subsidiaries with opportunities to purchase shares of the Company s common stock, \$.0001 par value (the Common Stock ). An aggregate of 715,789 shares of Common Stock have been approved for this purpose. This Plan is intended to qualify as an employee stock purchase plan as defined in Section 423 of the Internal Revenue Code of 1986, as amended (the Code ), and the regulations promulgated thereunder, and shall be interpreted consistent therewith.

Except as set forth above, the remainder of the Plan remains in full force and effect.

Adopted by the Board of Directors on March 3, 2010

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Using a **black ink** pen, mark your votes with an **X** as shown in this example. Please do not write outside the designated areas. x

**Electronic Voting Instructions**

**You can vote by Internet or telephone!**

**Available 24 hours a day, 7 days a week!**

Instead of mailing your proxy, you may choose one of the two voting 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 1, 2010**

**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 USA, US territories & Canada any time on a touch tone telephone. There is **NO CHARGE** to you for the call.

Follow the instructions provided by the recorded message.

**Annual Meeting Proxy Card**

IF YOU HAVE NOT VOTED VIA THE INTERNET OR TELEPHONE, FOLD ALONG THE PERFORATION, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE.

**A Proposals The Board of Directors recommends a vote FOR the listed nominees to serve for a term ending in 2013 and FOR Proposals 2 and 3.**

1. To elect the following nominees as Class III directors of Alnylam:

	<b>For</b>	<b>Withhold</b>		<b>For</b>	<b>Withhold</b>
01 - Victor J. Dzau, M.D.	<b>c</b>	<b>c</b>	02 - Kevin P. Starr	<b>c</b>	<b>c</b>

**For Against Abstain**

2. To approve an amendment to Alnylam's 2004 Employee Stock Purchase Plan, as amended.	<b>c</b>	<b>c</b>	<b>c</b>
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3. To ratify the appointment of **c c c**  
PricewaterhouseCoopers LLP, an  
independent registered public  
accounting firm, as Alnylam's  
independent auditors for the fiscal  
year ending December 31, 2010.

In their discretion, the Proxies are authorized to vote upon any other business that may properly come before the annual meeting or at any adjournment(s) thereof.

**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.

h/dd/yyyy) Please print date below. Signature 1 Please keep signature within the box. Signature 2 Please keep signature within

**1UPX**  
**016GMB**

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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 2, 2010 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 Wednesday, June 2, 2010, 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 you 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(s) 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**