

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:

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☐ 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.:

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(3) Filing Party:

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(4) Date Filed:

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## NOTICE OF 2017 ANNUAL MEETING OF STOCKHOLDERS

### **Important Notice Regarding the Availability of Proxy Materials for the Stockholder Meeting to Be Held on May 2, 2017**

To our Stockholders:

NOTICE IS HEREBY GIVEN that the 2017 Annual Meeting of Stockholders of Alnylam Pharmaceuticals, Inc. will be held on Tuesday, May 2, 2017 at 8:00 a.m., Eastern Time, at the offices of Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, Massachusetts. At the meeting, stockholders will consider and act on the following matters:

1. To elect four (4) members to our board of directors, as nominated by our board of directors, each to serve as a Class I director for a term ending in 2020, or until a successor has been duly elected and qualified;
2. To approve our proposed Second Amended and Restated 2009 Stock Incentive Plan, to, among other things, increase the number of shares authorized for issuance thereunder from 11,700,000 shares to 15,480,000 shares;
3. To approve our Amended and Restated 2004 Employee Stock Purchase Plan, to increase the number of shares authorized for issuance thereunder from 715,789 shares to 1,215,789 shares;
4. To approve, on a non-binding advisory basis, the compensation of our named executive officers, as described in the "Compensation Discussion and Analysis," executive compensation tables and accompanying narrative disclosures in this proxy statement;
5. To recommend, in a non-binding "say-on-frequency" vote, the frequency of future advisory "say-on-pay" votes;
6. To ratify the appointment of PricewaterhouseCoopers LLP, an independent registered public accounting firm, as our independent auditors for the fiscal year ending December 31, 2017; and
7. To transact any other business that may properly come before the annual meeting or any adjournment or postponement thereof.

## Your Vote Is Important

Proposal 1 relates solely to the election of four (4) Class I directors nominated by our board of directors and does not include any other matters relating to the election of directors, including without limitation, the election of directors nominated by any stockholder of the company.

Stockholders of record at the close of business on March 10, 2017, the record date for the annual meeting, are entitled to notice of, and to vote at, the annual meeting or any adjournment or postponement thereof. Your vote is important regardless of the number of shares you own. All stockholders are cordially invited to attend the annual meeting in person. However, to assure your representation at the annual meeting, 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 over the Internet or by 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. If you vote via the Internet or by telephone or mail your proxy in, you will not limit your right to vote in person at the annual meeting. 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  
March 17, 2017



# PROXY STATEMENT

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## PROXY STATEMENT SUMMARY

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 2017 Annual Meeting of Stockholders to be held on Tuesday, May 2, 2017 at 8:00 a.m., Eastern Time, at the offices of Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, Massachusetts, and at any adjournment or postponement 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, 2016 are being mailed with these proxy materials to all stockholders entitled to vote at the annual meeting. These proxy materials are expected to be first mailed to stockholders on or about March 21, 2017.

### **Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting of Stockholders to be Held on May 2, 2017**

This proxy statement, our Annual Report on Form 10-K and our 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, 2016, as filed with the Securities and Exchange Commission, or SEC, on February 15, 2017, 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, 2016 are also available on the SEC's website at [www.sec.gov](http://www.sec.gov).

## Voting Items and Board Recommendations

		Board Recommendation
Proposal 1	<b>Election of Four (4) Class I Directors</b>	FOR All Nominees
Proposal 2	<b>Approval of Second Amended and Restated 2009 Stock Incentive Plan</b>	FOR
Proposal 3	<b>Approval of Amended and Restated Employee Stock Purchase Plan</b>	FOR
Proposal 4	<b>Say-on-Pay—Advisory Vote on Approval of Executive Compensation</b>	FOR
Proposal 5	<b>Say-on-Frequency—Advisory Vote on Frequency of Future Executive Compensation Advisory Votes</b>	“CHOICE 1” (EVERY YEAR)
Proposal 6	<b>Ratification of Independent Auditors</b>	FOR

On any other matters properly brought before the annual meeting, the named proxies shall vote in accordance with their best judgment.

## IMPORTANT INFORMATION ABOUT THE ANNUAL MEETING AND VOTING

### Notice and Access

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 2017 annual meeting of stockholders to be held at our offices at 300 Third Street, Cambridge, Massachusetts on Tuesday, May 2, 2017 at 8:00 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.

### Who Can Vote

To be entitled to vote, you must be a stockholder of record at the close of business on March 10, 2017, the record date for our annual meeting. As of the record date, there were 86,052,558 shares of our common stock outstanding.

If you were a stockholder of record on March 10, 2017, you are entitled to vote all of the shares that you held on that date at the annual meeting and at any postponement or adjournment thereof.

### Voting Rights

Each outstanding share of our common stock will be entitled to one vote on each matter considered at the annual meeting.

### Voting by Proxy

Alnylam's stockholders may vote their shares by telephone, over the Internet, or at the annual meeting. If you vote by telephone or over the Internet, you do not need to return your proxy card. The instructions for voting can be found on the Notice, on the website listed in the Notice, and, if you received one, on your proxy card. If you requested a printed version of the proxy card, you may also vote by mail.

If your shares are held in "street name," meaning they are held for your account by a bank, broker or other nominee, you should receive a proxy card and voting instructions with these proxy materials from that organization rather than from Alnylam. You will receive instructions from your bank, broker or other nominee explaining how you can vote your shares and whether they permit Internet or telephone voting. Follow the instructions from your bank, broker or other nominee included with these proxy materials, or contact your bank, broker or other nominee to request a proxy form. To vote in person at the annual meeting, contact your bank, 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 bank, broker or other nominee issued in your name giving you the right to vote your shares.



## Revoking a Proxy

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:

- 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 May 1, 2017.
- Sign a new proxy and submit it as instructed above. Only your latest dated proxy, received by Computershare not later than May 1, 2017, will be counted.
- 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.

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

## Discretionary Voting Authority

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 bank, broker or other nominee may under certain circumstances vote your shares if you do not timely return your proxy. Banks, brokers and other nominees can vote customers’ unvoted shares on discretionary matters but cannot vote such shares on non-discretionary matters. If you do not timely return a proxy to your bank, broker or other nominee to vote your shares, your bank, broker or other nominee may, on discretionary matters, either vote your shares or leave your shares unvoted. Your bank, broker or other nominee cannot vote your shares on any non-discretionary matter.

## Effect of Broker Non-Votes and Abstentions

The election of directors (Proposal 1), the approval of the Second Amended and Restated 2009 Stock Incentive Plan (Proposal 2), the approval of the Amended and Restated 2004 Employee Stock Purchase Plan (Proposal 3), the non-binding advisory vote on executive compensation (Proposal 4) and the non-binding advisory vote on the frequency of future executive compensation votes (Proposal 5) are non-discretionary matters. The ratification of the appointment of our independent auditors (Proposal 6) is a discretionary matter. We encourage you to provide voting instructions to your bank, broker 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 bank, broker or other nominee about how to submit your proxy to them at the time you receive this proxy statement.

## Requirements for a Meeting Quorum

A majority of our outstanding shares of common stock must be present to hold the annual meeting and conduct business. This is called a quorum. For purposes of determining whether a

quorum exists, we count as present any shares that are voted over the Internet, by telephone, by completing and submitting a proxy, or that are represented in person at the meeting. Further, for purposes of establishing a quorum, we will count as present shares that a stockholder holds even if the stockholder votes to abstain or only votes on one of the proposals. In addition, we will count as present shares held in “street name” by banks, brokers or nominees who indicate on their proxies that they do not have authority to vote those shares on Proposals 1, 2, 3, 4 and 5. If a quorum is not present, we expect to adjourn the annual meeting until we obtain a quorum.

## **Vote Required to Approve Each Item on the Proxy**

### ***Proposal 1—Election of Four (4) Class I Directors***

With respect to the election of directors (Proposal 1), each nominee presented in Proposal 1 must be elected by a majority of the votes cast in person or by proxy at the annual meeting. Nominees are elected by a majority vote for non-contested director elections. Because the number of nominees properly nominated for the annual meeting is the same as the number of directors to be elected, the election of directors at this annual meeting is non-contested. If the number of votes FOR a nominee exceeds the number of votes AGAINST a nominee (among votes properly cast in person or by proxy), then the nominee will be elected.

**Proposal 1 is a non-discretionary matter.** Therefore, if your shares are held by your bank, broker or other nominee in “street name” and you do not vote your shares, your bank, broker or other nominee cannot vote your shares on Proposal 1. Shares held in “street name” by banks, 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 AGAINST any nominee and will be treated as “broker non-votes.” As a result, “broker non-votes” will have no effect on the voting on Proposal 1. Similarly, a vote to ABSTAIN with respect to any nominee will have no impact on the outcome of the vote because abstention does not count as a vote cast. With respect to Proposal 1, you may:

- vote FOR all nominees;
- vote FOR one or more nominee(s) and AGAINST one or more of the other nominee(s);
- vote AGAINST all nominees; or
- ABSTAIN from voting for or against one or more nominee(s).

### ***Proposal 2 – Approval of our Second Amended and Restated 2009 Stock Incentive Plan***

To approve Proposal 2 to, among other things, increase the authorized shares reserved for issuance under the Second Amended and Restated 2009 Stock Incentive Plan, which we also refer to as the Second Amended and Restated 2009 Plan, stockholders holding a majority of the votes cast on the matter in person or by proxy at the annual meeting must vote FOR the proposal.

**Proposal 2 is a non-discretionary matter.** Therefore, if your shares are held by your bank, broker or other nominee in “street name” and you do not vote your shares, your bank, broker or other nominee cannot vote your shares on Proposal 2, and your non-vote will have no effect on the outcome of this proposal. If you vote to ABSTAIN on this 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 Proposal 2. As a result, voting to ABSTAIN will have no effect on the voting on Proposal 2.

### ***Proposal 3 – Approval of our Amended and Restated 2004 Employee Stock Purchase Plan***

To approve Proposal 3 to increase the authorized shares reserved for issuance under the Amended and Restated 2004 Employee Stock Purchase Plan, which we also refer to as the Amended ESPP, stockholders holding a majority of the votes cast on the matter in person or by proxy at the annual meeting must vote FOR the proposal.

**Proposal 3 is a non-discretionary matter.** Therefore, if your shares are held by your bank, broker or other nominee in “street name” and you do not vote your shares, your bank, broker or other nominee cannot vote your shares on Proposal 3, and your non-vote will have no effect on the outcome of this proposal. If you vote to ABSTAIN on this 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 Proposal 3. As a result, voting to ABSTAIN will have no effect on the voting on Proposal 3.

### ***Proposal 4 – Non-binding Advisory Vote on the Compensation of Our Named Executive Officers***

To approve Proposal 4, stockholders holding a majority of the votes cast on the matter in person or by proxy at the annual meeting must vote FOR the approval of the compensation of our named executive officers, as described in the “Compensation Discussion and Analysis,” executive compensation tables and accompanying narrative disclosures in this proxy statement.

**Proposal 4 is a non-discretionary matter.** Therefore, if your shares are held by your bank, broker or other nominee in “street name” and you do not vote your shares, your bank, broker or other nominee cannot vote your shares on Proposal 4, and your non-vote will have no effect on the outcome of this proposal. If you vote to ABSTAIN on this Proposal 4, your shares will not be voted FOR or AGAINST the proposal and will also not be counted as votes cast or shares voting on Proposal 4. As a result, voting to ABSTAIN will have no effect on the voting on Proposal 4.

As an advisory vote, this proposal is not binding. The outcome of this advisory vote will not overrule any decision by us or our board of directors (or any committee thereof). However, our compensation committee and our board of directors value the opinions expressed by our stockholders in their vote on this proposal and will consider the outcome of the vote when making future compensation decisions for our named executive officers.

### ***Proposal 5 – Non-binding Advisory Vote on the Frequency of Future Executive Compensation Advisory Votes***

To recommend the frequency of future non-binding stockholder “Say-on-Pay” votes, you may:

- vote CHOICE 1 (every year);
- vote CHOICE 2 (every two years);
- vote CHOICE 3 (every three years); or
- ABSTAIN from voting on the non-binding resolution.

The frequency choice that receives the highest numbers of votes cast will be considered to be the preferred frequency of our stockholders with which we are to hold future non-binding stockholder advisory “say-on-pay” votes on executive compensation.

**Proposal 5 is a non-discretionary matter.** Therefore, if your shares are held by your bank, broker or other nominee in “street name” and you do not vote your shares, your bank, broker or other nominee cannot vote your shares on Proposal 5, and your non-vote will have no effect on the outcome of this proposal. If you vote to ABSTAIN on this Proposal 5, your shares will not be voted for any of the frequency choices and will also not be counted as votes cast or shares voting on Proposal 5. As a result, voting to ABSTAIN will have no effect on the voting on Proposal 5.

As an advisory vote, this proposal is not binding. Our board of directors will take into consideration the outcome of this vote in determining the frequency of future non-binding, advisory votes on the compensation of our named executive officers. However, because this vote is advisory and non-binding, our board of directors may decide that it is in our best interests and those of our stockholders to hold the advisory vote to approve the compensation of our named executive officers more or less frequently.

#### ***Proposal 6 – Ratification of Appointment of Independent Auditors***

To approve Proposal 6, stockholders holding a majority of the votes cast on the matter in person or by proxy at the annual meeting must vote FOR the proposal.

**Proposal 6 is a discretionary matter.** If your shares are held by your bank, broker or other nominee in “street name” and you do not vote your shares, your bank, broker or other nominee may vote your unvoted shares on Proposal 6. If you vote to ABSTAIN on Proposal 6, 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 6.

Although stockholder approval of our audit committee’s appointment of PricewaterhouseCoopers LLP as our independent auditors for the year ending December 31, 2017 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 ending December 31, 2017.

#### **Other Matters to be Voted On**

The board of directors is not aware of any other issue or matter that may come before the annual meeting other than the election of four (4) Class I directors, the approval of the Second Amended and Restated 2009 Plan, the approval of the Amended ESPP, the non-binding advisory vote on the compensation of our named executive officers, the non-binding advisory vote on the frequency of future votes to approve the compensation of our named executive officers 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 best judgment on the matter.

#### **Vote Results**

Preliminary voting results will be announced at the annual meeting. We expect to report the voting results in a Current Report on Form 8-K within four business days following the adjournment of our annual meeting. If final voting results are not available to us in time to file a Current Report on

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Form 8-K within four business days after the annual meeting, we intend to file a Current Report on Form 8-K to publish preliminary results and, within four business days after the final results are known to us, to file an additional Current Report on Form 8-K to publish the final results.

### **Inspector of Election**

The inspector of election and the tabulator of all proxies, ballots and voting tabulations that identify stockholders are independent and are not Alnylam employees.

### **Cost of Soliciting Proxies**

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 Alliance Advisors LLC 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 paid a fee of approximately \$20,000, 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 materials to beneficial owners.

### **Alnylam's 401(k) Savings Plan**

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 April 28, 2017, 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.

# 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.

## Corporate Governance Materials

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, our nominating and corporate governance committee, and our science and technology committee. We have also adopted 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 Select Market listing standards.

## Corporate Governance Guidelines

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

- our board's principal responsibility is to oversee the management of Alnylam;
- a majority of the members of our board shall be independent directors;
- the independent directors meet regularly in executive session;
- directors have full and free access to management and, as necessary and appropriate, independent advisors;
- periodically, our board and its committees will conduct a self-evaluation to determine whether they are functioning effectively;
- our nominating and corporate governance committee will review annually the external commitments of our board members to evaluate any potential conflicts of interest; and
- our nominating and corporate governance committee will review all proposed external commitments of our executive officers to evaluate any potential conflicts of interest and confirm that external time commitments are appropriate relative to the executive's responsibilities to the company.

## INFORMATION CONCERNING DIRECTOR NOMINEES – ELECTION OF CLASS I DIRECTORS (PROPOSAL 1)

We have three classes of directors, Class I, Class II and Class III. At each annual meeting, directors are elected for a term of three years to succeed those whose terms are expiring. The directors are divided as equally as possible among the three classes, and the terms of the three classes are staggered so that only one class is elected by stockholders annually.

At the annual meeting, we are proposing the election of four (4) Class I directors to hold office until the annual meeting of stockholders to be held in 2020, or until their respective successors have been duly elected and qualified. Upon the recommendation of the nominating and corporate governance committee of our board, the board has nominated Michael W. Bonney, John M. Maraganore, Ph.D., Paul R. Schimmel, Ph.D. and Phillip A. Sharp, Ph.D. for election to the board of directors as Class I directors. Mr. Bonney and Drs. Maraganore, Schimmel and Sharp are currently serving as Class I directors. Mr. Bonney has served as a director since 2014 and Drs. Maraganore, Schimmel and Sharp have each served as a director since 2002. The persons named in the enclosed proxy will vote to elect Mr. Bonney and Drs. Maraganore, Schimmel and Sharp as Class I directors unless the proxy is marked otherwise. Mr. Bonney and Drs. Maraganore, Schimmel and Sharp have indicated their willingness to serve on our board, but if any nominee should be unwilling or unable to serve, the person acting under the proxy may vote the proxy for a substitute nominee designated by our board, unless the board reduces the number of directors accordingly.

Each nominee for Class I director receiving a majority of the votes cast by stockholders entitled to vote thereon will be elected to serve on our board. As described more fully below under the heading “Majority Voting Policy,” we have adopted a resignation policy in the event a director nominee does not receive a majority of such votes. Abstentions and broker non-votes, if any, are not counted for purposes of this proposal. The Class I directors elected at this year’s annual meeting will serve as members of our board until the 2020 annual meeting of stockholders, or until their respective successors are duly elected and qualified.

### Board Recommendation

**Our board of directors unanimously recommends a vote “FOR” the election of each of Mr. Bonney and Drs. Maraganore, Schimmel and Sharp as a Class I director.**

Set forth below for each director, including the Class I director nominees, Mr. Bonney and Drs. Maraganore, Schimmel and Sharp, is information as of March 1, 2017 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.

We have also included information below regarding each director's specific experience, qualifications, attributes and skills that led the nominating and corporate governance committee and our board of directors to the conclusion that he or she should serve as a director in light of our business and structure. Our board has determined that each director serving on our board of directors, with the exception of Dr. Maraganore, is independent within the meaning of the director independence standards of the NASDAQ Global Select Market and the Securities Exchange Act of 1934, as amended, or the Exchange Act. There are no family relationships among any of our directors or executive officers.

#### **Class I—Directors/Nominees to be elected at the 2017 annual meeting (terms expiring in 2020)**

<b>Michael W. Bonney</b> Chair of the Board  <b>Committees:</b> <ul style="list-style-type: none"><li>• Audit Committee</li></ul> <b>Director since: 2014</b> <b>Age: 58</b>	<p>Mr. Bonney has served as a member of our board of directors since December 2014 and was appointed chair of our board in December 2015.</p> <p><b>Experience, Expertise and Qualifications</b></p> <p>Mr. Bonney was a Partner at Third Rock Ventures, a healthcare venture firm, from January to July 2016. Mr. Bonney previously served as the Chief Executive Officer and a member of the board of directors of Cubist Pharmaceuticals, Inc., a biopharmaceutical company (now a wholly-owned subsidiary of Merck &amp; Co., Inc.), from June 2003 until his retirement in December 2014. From January 2002 to June 2003, he served as Cubist's President and Chief Operating Officer. Mr. Bonney is also a trustee of the Tekla complex of life sciences and healthcare dedicated funds, publicly traded investment funds. In addition, Mr. Bonney serves as a director of Celgene Corporation and Global Blood Therapeutics, Inc., and formerly served as a director of NPS Pharmaceuticals, Inc. and Cubist.</p> <p><b>Key Contributions to the Board</b></p> <p>Mr. Bonney possesses over 30 years of operational, commercial and senior management experience in the biopharmaceutical industry, including his long tenure as the Chief Executive Officer and a director of Cubist. His breadth of experience and deep commercial background enable him to make significant contributions as chair of our board as we continue to advance our late stage clinical programs and build our commercial operations in preparation for the potential launch of our first product.</p>
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<p><b>John M. Maraganore, Ph.D.</b> Chief Executive Officer</p> <p><b>Director since: 2002</b> <b>Age: 54</b></p>	<p>Dr. Maraganore has served as our Chief Executive Officer and as a member of our board of directors since December 2002.</p> <p><b>Experience, Expertise and Qualifications</b> 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., a biopharmaceutical company (now a wholly-owned subsidiary of Takeda Pharmaceutical Company Limited). He also serves as the chair of the board of directors of Agios Pharmaceuticals, Inc., and as a director of bluebird bio, Inc. and the Biotechnology Industry Organization, a non-profit biotechnology trade organization. Dr. Maraganore formerly served as a director of Regulus Therapeutics Inc.</p> <p><b>Key Contributions to the Board</b> Dr. Maraganore has over 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®, 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 stockholder 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>
<p><b>Paul R. Schimmel, Ph.D.</b></p> <p><b>Committees:</b></p> <ul style="list-style-type: none"> <li>• Compensation Committee</li> <li>• Science and Technology Committee</li> </ul> <p><b>Director since: 2002</b> <b>Age: 76</b></p>	<p>Dr. Schimmel is a scientific founder of Alnylam and has served as a member of our board of directors since June 2002. As required by our Corporate Governance Guidelines, Dr. Schimmel offered his resignation to the board of directors upon reaching the age of 75. After considering Dr. Schimmel's many contributions to the board of directors and his specialized experience in areas critical to our company, our board of directors determined not to accept Dr. Schimmel's resignation and is recommending Dr. Schimmel for re-election as a director.</p> <p><b>Experience, Expertise and Qualifications</b> Dr. Schimmel has been the Ernest and Jean Hahn Professor of Molecular Biology and Chemistry and a member of the faculty of the Skaggs Institute for Chemical Biology at the Scripps Research Institute since 1997. Previously, he was the John D. and Catherine T. MacArthur Professor of Biochemistry and Biophysics at the Massachusetts Institute of Technology. Dr. Schimmel is a member of the National Academy of Sciences, the Institute of Medicine, the National Academy of Inventors and the American Academy of Arts and Sciences. Dr. Schimmel also serves as a director of aTyr Pharma, Inc.</p>

	<p><b>Key Contributions to the Board</b></p> <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 480 scientific papers, and has been active in many scientific and academic organizations and committees. 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 a number of biotechnology companies, of which seven, including Alnylam, became publicly traded. As one of our scientific founders, Dr. Schimmel's insight and scientific expertise are invaluable assets to our board when evaluating our strategy and unique challenges as one of the first companies focused on the discovery and development of therapeutics based on RNA interference, or RNAi.</p>
<p><b>Phillip A. Sharp, Ph.D.</b></p> <p><b>Committees:</b></p> <ul style="list-style-type: none"> <li>• Science and Technology Committee (Chair)</li> <li>• Nominating and Corporate Governance Committee</li> </ul> <p><b>Director since: 2002</b> <b>Age: 72</b></p>	<p>Dr. Sharp is a scientific founder of Alnylam and has served as a member of our board of directors since June 2002.</p> <p><b>Experience, Expertise and Qualifications</b></p> <p>Dr. Sharp is an Institute Professor at the David H. Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology (MIT), and was the Founding Director of the McGovern Institute for Brain Research at MIT. Dr. Sharp has been a professor at MIT since 1974. He is a member of the National Academy of Sciences, the Institute of Medicine and the American Academy of Arts and Sciences. Dr. Sharp also serves as a director of Syros Pharmaceuticals, Inc., and formerly served as a director of Biogen Inc., which he co-founded in 1978.</p> <p><b>Key Contributions to the Board</b></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. Dr. Sharp received the Nobel Prize for Physiology or Medicine in 1993, received numerous awards and honorary degrees for his scientific work, and served on many advisory boards for the government, academic institutions, scientific societies and companies. Dr. Sharp also has strategic expertise based upon his role as a co-founder and former director of Biogen. As one of our scientific founders, Dr. Sharp's insight and scientific expertise are invaluable assets to our board when evaluating our strategy and unique challenges as one of the first companies focused on the discovery and development of RNAi therapeutics, and he is uniquely qualified to serve as the chair of our science and technology committee.</p>

## Class II—Directors Whose Terms Expire in 2018

<p><b>Dennis A. Ausiello, M.D.</b></p> <p><b>Committees:</b></p> <ul style="list-style-type: none"> <li>• Nominating and Corporate Governance Committee</li> <li>• Science and Technology Committee</li> </ul> <p><b>Director since: 2012</b> <b>Age: 71</b></p>	<p>Dr. Ausiello has served as a member of our board of directors since April 2012.</p> <p><b>Experience, Expertise and Qualifications</b></p> <p>Dr. Ausiello serves as the Director of the Center for Assessment Technology and Continuous Health (CATCH), Jackson Distinguished Professor of Clinical Medicine at Harvard Medical School and Physician-in-Chief Emeritus at Massachusetts General Hospital, and served as the Chief of Medicine at Massachusetts General Hospital from 1996 to April 2013. Dr. Ausiello was the President of the Association of American Physicians in 2006. He is a member of the Institute of Medicine of the National Academy of Sciences and the American Academy of Arts and Sciences. Dr. Ausiello also serves as a director of Pfizer Inc. and Seres Therapeutics, Inc.</p> <p><b>Key Contributions to the Board</b></p> <p>Dr. Ausiello's experience as a practicing physician, a scientist and a nationally recognized leader in academic medicine enable him to bring valuable insights to our board, particularly as we advance our clinical development pipeline and initiate additional clinical trials. In addition, Dr. Ausiello oversees a large research portfolio and an extensive research and education budget at Massachusetts General Hospital, giving him a valuable perspective on drug discovery and development. Through his previous work as the Chief of Medicine at Massachusetts General Hospital, Dr. Ausiello also brings leadership, oversight and finance experience to our board.</p>
<p><b>John K. Clarke</b></p> <p><b>Committees:</b></p> <ul style="list-style-type: none"> <li>• Nominating and Corporate Governance Committee (Chair)</li> </ul> <p><b>Director since: 2002</b> <b>Age: 63</b></p>	<p>Mr. Clarke is a founder of Alnylam, has served as a member of our board of directors since June 2002 and served as the chair of our board until December 2015.</p> <p><b>Experience, Expertise and Qualifications</b></p> <p>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 the chair of the board of directors of aTyr Pharma, Inc., and formerly served as a director of Momena Pharmaceuticals, Inc. and Verastem, Inc.</p> <p><b>Key Contributions to the Board</b></p> <p>Mr. Clarke has over 30 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 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 chair of our nominating and corporate governance committee.</p>

<p><b>Marsha H. Fanucci</b></p> <p><b>Committees:</b></p> <ul style="list-style-type: none"> <li>• Audit Committee</li> <li>• Nominating and Corporate Governance Committee</li> </ul> <p><b>Director since: 2010</b> <b>Age: 63</b></p>	<p>Ms. Fanucci has served as a member of our board of directors since December 2010.</p> <p><b>Experience, Expertise and Qualifications</b></p> <p>Ms. Fanucci served as Senior Vice President and Chief Financial Officer of Millennium Pharmaceuticals, Inc., a biopharmaceutical company (now a wholly-owned subsidiary of Takeda Pharmaceutical Company Limited), from July 2004 to January 2009. While at Millennium, she also served as Vice President, Finance and Corporate Strategy from July 2003 to June 2004, and prior to that as Vice President of Corporate Development from 2000. Prior to joining Millennium, Ms. Fanucci served as Vice President of Corporate Development and Strategy at Genzyme Corporation, a biotechnology company (now Sanofi Genzyme, the specialty care global business unit of Sanofi), from 1998 to 2000. Ms. Fanucci also serves as a director of Ironwood Pharmaceuticals, Inc. and Syros Pharmaceuticals, Inc., and formerly served as a director of Momenta Pharmaceuticals, Inc.</p> <p><b>Key Contributions to the Board</b></p> <p>Ms. Fanucci has substantial expertise with respect to public company and financial accounting matters, including over 25 years of leadership and consulting experience in biotechnology and healthcare companies. Her leadership in the areas of corporate strategy, financial planning and reporting, and operations, are an asset to our board, and in particular, our audit committee, as we continue to grow our company, advance our late stage clinical programs, build our commercial operations in preparation for the potential launch of our first product, and partner additional programs and technologies.</p>
<p><b>David E.I. Pyott</b></p> <p><b>Committees:</b></p> <ul style="list-style-type: none"> <li>• Nominating and Corporate Governance Committee</li> </ul> <p><b>Director since: 2015</b> <b>Age: 63</b></p>	<p>Mr. Pyott has served as a member of our board of directors since December 2015.</p> <p><b>Experience, Expertise and Qualifications</b></p> <p>Mr. Pyott served as the Chief Executive Officer of Allergan, Inc., a global specialty pharmaceutical and medical device company, from January 1998 to March 2015 and as the Chair of Allergan's board of directors from March 2001 until March 2015. Prior to Allergan, Mr. Pyott served as the Head of the Novartis Nutrition Division and as a member of the Executive Committee of Switzerland-based Novartis AG. Mr. Pyott also serves as the lead independent director at Avery Dennison Corporation, a director of BioMarin Pharmaceutical Inc. and a member of the Supervisory Board of Royal Philips in the Netherlands. Mr. Pyott formerly served as a director of Edwards Lifesciences Corporation.</p>

	<p><b>Key Contributions to the Board</b></p> <p>Mr. Pyott possesses over 30 years of operational, commercial and senior management experience, including his successful tenure as the Chief Executive Officer and Chair of Allergan's board of directors, where he transformed the company from a small eye care business to a global specialty pharmaceutical and medical device company. His in-depth knowledge of pharmaceutical growth and commercial expansion, combined with his entrepreneurial leadership experience in the healthcare industry, position him well to serve as a member of our board and make significant contributions as we continue to advance our late stage clinical programs and build our commercial operations in preparation for the potential launch of our first product. Mr. Pyott's substantial public company governance experience from serving on the boards of several large public companies also makes him an asset to our board.</p>
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### Class III—Directors Whose Terms Expire in 2019

<p><b>Steven M. Paul, M.D.</b></p> <p><b>Committees:</b></p> <ul style="list-style-type: none"> <li>• Compensation Committee (Chair)</li> <li>• Science and Technology Committee</li> </ul> <p><b>Director since: 2010</b> <b>Age: 66</b></p>	<p>Dr. Paul has served as a member of our board of directors since September 2010.</p> <p><b>Experience, Expertise and Qualifications</b></p> <p>Dr. Paul has served as the President, Chief Executive Officer and a director of Voyager Therapeutics, Inc., a biotechnology company, since September 2014. Dr. Paul was the founding director of the Appel Alzheimer's Disease Research Institute, and is a Professor of Neurology (Neuroscience), Psychiatry and Pharmacology at Weill Cornell Medical College of Cornell University, and a Venture Partner at Third Rock Ventures, a healthcare venture firm. Dr. Paul served for 17 years at Eli Lilly and Company, a pharmaceutical company, most recently as the Executive Vice President for Science and Technology and President of the Lilly Research Laboratories, a division of Eli Lilly and Company, from July 2003 to his retirement in February 2010. He is a member of the Institute of Medicine of the National Academy of Sciences and a fellow of the American Association for the Advancement of Science. Prior to joining Lilly, Dr. Paul served in several senior roles at the National Institute of Mental Health, including serving as the Scientific Director of the Intramural Research Program. Dr. Paul also serves as a director of Voyager Therapeutics, Inc. and SAGE Therapeutics, Inc., and formerly served as a director of the Sigma-Aldrich Corporation (which was acquired by Merck KGaA).</p>
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	<p><b>Key Contributions to the Board</b></p> <p>Dr. Paul brings to our board more than 20 years of management experience in the pharmaceutical industry and 35 years of scientific research experience. He is widely recognized as a leader across many dimensions of medical research and drug development, and this expertise is important to our board as we continue to advance our clinical development pipeline and initiate additional late stage clinical programs.</p>
<p><b>Amy W. Schulman</b></p> <p><b>Committees:</b></p> <ul style="list-style-type: none"> <li>• Compensation Committee</li> <li>• Nominating and Corporate Governance Committee</li> </ul> <p><b>Director since: 2014</b> <b>Age: 56</b></p>	<p>Ms. Schulman has served as a member of our board of directors since July 2014.</p> <p><b>Experience, Expertise and Qualifications</b></p> <p>Ms. Schulman joined Polaris Partners, a venture capital firm, as a Venture Partner in August 2014. In July 2015, Ms. Schulman co-founded Lyndra, Inc., where she serves as the Chief Executive Officer and a director. Since July 2014, Ms. Schulman has also been a senior lecturer at Harvard Business School. Ms. Schulman served as Chief Executive Officer of Arsia Therapeutics, Inc. from August 2014 to November 2016, when Arsia was acquired by Eagle Pharmaceuticals, Inc. Ms. Schulman was previously the Executive Vice President and General Counsel of Pfizer Inc., a global pharmaceutical company, from May 2008 to July 2014, where she also served as the Business Unit Lead for Pfizer's Consumer Healthcare business from 2012 to 2013. Before joining Pfizer, she was a partner at DLA Piper. Ms. Schulman also serves as a director of Blue Buffalo Pet Products, Inc. and Ironwood Pharmaceuticals, Inc., and formerly served as a director of BIND Therapeutics, Inc.</p> <p><b>Key Contributions to the Board</b></p> <p>Ms. Schulman brings to our board a diverse background that includes legal, operational and commercial expertise. As our business grows and becomes more complex, Ms. Schulman's unique qualifications will enable her to counsel us in a number of critical areas, including commercial strategy and capability building, as well as legal, regulatory and transactional considerations. In addition, her experience at Pfizer as Executive Sponsor of Pfizer's Global Women's Council, where she helped shape efforts to increase diversity and expand opportunities for both women and men across the company, will be an important resource as we grow our workforce to support the advancement of our clinical development pipeline and build our commercial operations in preparation for the potential launch of our first product.</p>

<b>Kevin P. Starr</b>  <b>Committees:</b> <ul style="list-style-type: none"><li>• Audit Committee (Chair)</li></ul> <b>Director since: 2003</b> <b>Age: 54</b>	<p>Mr. Starr has served as a member of our board of directors since September 2003.</p> <p><b>Experience, Expertise and Qualifications</b></p> <p>Since April 2007, Mr. Starr has been a Partner of Third Rock Ventures, a healthcare venture firm. From January 2003 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., a biopharmaceutical company (now a wholly-owned subsidiary of Takeda Pharmaceutical Company Limited). He also served as Millennium's Chief Financial Officer from December 1998 to December 2002. Mr. Starr also serves as a director of SAGE Therapeutics, Inc. and MyoKardia Inc., and formerly served as a director of Agios Pharmaceuticals, Inc., Global Blood Therapeutics, Inc. and Zafgen, Inc.</p> <p><b>Key Contributions to the Board</b></p> <p>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 the chair and a financial expert of our audit committee.</p>
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## THE BOARD OF DIRECTORS AND ITS COMMITTEES

### Board of Directors Meetings and Attendance

Our board met six times during 2016 either in person or by teleconference. During 2016, 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.

Our directors are expected to attend the annual meeting of stockholders, unless they have a conflict that cannot be resolved. All but two of our then-current directors attended the 2016 annual meeting of stockholders.

### Board Determination of Independence

Under the NASDAQ Marketplace Rules, a director 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 Ms. Fanucci and Schulman, Drs. Ausiello, Paul, Schimmel and Sharp, and Messrs. Bonney, Clarke, Pyott and Starr 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). Furthermore, the board has determined that each member of our audit committee, compensation committee and nominating and corporate governance committee is independent within the meaning of the applicable director independence standards of the NASDAQ Global Select Market and the Exchange Act. In making such determination, our board considered relationships, if any, that each non-employee director or family member of such director has with Alnylam, their beneficial ownership of our outstanding common stock and other facts and circumstances our board deemed relevant in determining their independence.

### Role of the Board

Our business is managed under the direction of the board of directors. Management has primary responsibility for the day-to-day operations and affairs of our company and the role of our board is to provide independent oversight of management on behalf of our stockholders. In its oversight role, our board, as a whole and through its committees, is responsible for establishing broad corporate policies and reviewing our overall performance. Our board selects and provides for the succession of executive officers and, subject to stockholder election, directors. Our board also evaluates the performance of our chief executive officer. 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.



## **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; manufacturing; regulatory reviews, approvals, policies and oversight; growth and capability expansion in the United States and abroad; preparations for potential commercial operations and our ability to obtain reimbursement for the new drugs we are developing if, and when, they gain regulatory approval; intellectual property filings, prosecution, maintenance and challenges; the establishment and maintenance of strategic alliances; competition; litigation; and the ability to access additional funding for our business; as well as other risks. Our management is responsible for 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 four committees. Our chair 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 and succession planning for our executive officers. The nominating and corporate 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 corporate governance. The science and technology committee reviews and advises the board regarding risks arising from our discovery and development strategy and programs, and our regulatory and quality programs.

















## **Board Leadership Structure**

Our board has determined that the roles of chief executive officer and chair of the board should be separated at the current time. Mr. Bonney, an independent director, has served as our chair since December 2015. Prior to that time, Mr. Clarke, also an independent director, served as our chair from the founding of Alnylam in 2002. Dr. Maraganore 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 operations, while allowing the chair 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 chair, particularly as the board's oversight responsibilities continue to grow. While our bylaws and corporate governance guidelines do not require that our chair 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.

## Board Committees

Our board of directors has established four standing committees — audit, compensation, nominating and corporate governance, and science and technology — 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 the recommendation of our nominating and corporate governance committee.

Our board has determined that all of the members of each of the audit, compensation, and nominating and corporate governance 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. Current committee memberships are shown in the table below:

	Audit Committee	Compensation Committee	Nominating and Corporate Governance Committee	Science and Technology Committee
Dennis A. Ausiello, M.D.				
Michael W. Bonney ★				
John K. Clarke				
Marsha H. Fanucci				
John M. Maraganore, Ph.D.				
Steven M. Paul, M.D.				
David E.I. Pyott				
Paul R. Schimmel, Ph.D.				
Amy W. Schulman				
Phillip A. Sharp, Ph.D.				
Kevin P. Starr				

★ Chair of Board/Lead Outside Director    Committee Chair    Member

### Audit Committee

As described more fully in its charter, the audit committee oversees our accounting and financial reporting processes, internal controls and audit functions. In fulfilling its role, our audit committee is responsible for, among other things:

- appointing, evaluating, retaining, approving the compensation of and, when necessary, terminating the engagement of our independent auditors;
- taking appropriate action, or recommending that our board of directors take appropriate action, to oversee the independence of our independent auditors;

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- reviewing and discussing with management and the independent auditors our annual and quarterly financial statements and related disclosures;
- monitoring our internal control over financial reporting, disclosure controls and procedures, and code of business conduct and ethics;
- reviewing and discussing our financial risk management policies, including but not limited to our investment policy;
- reviewing and approving matters related to tax planning;
- 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 annual 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 person 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 current members of our audit committee are Messrs. Starr (Chair) and Bonney and Ms. Fanucci. We believe that each member of our audit committee satisfies the requirements for membership, including independence, under the NASDAQ Marketplace Rules and Rule 10A-3(b)(1) under the Exchange Act. Our board has determined that each member of the audit committee is an “audit committee financial expert” as defined in Item 407(d)(5) of Regulation S-K. No member of our audit committee is the beneficial owner of more than 10% of our common stock.

Our audit committee met six times during 2016, either in person or by teleconference.
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## ***Compensation Committee***

Our compensation committee’s responsibilities include, among other things:

- annually reviewing and making recommendations to our board with respect to corporate goals and objectives relevant to the 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;
- reviewing and making recommendations to our board with respect to management succession planning;

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- 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, and reviewing annually and updating our peer group for compensation purposes;
- reviewing and discussing any potential risks that could arise from our compensation policies and programs;
- reviewing and discussing annually with management our “Compensation Discussion and Analysis,” which is included beginning on page 36 of this proxy statement; and
- preparing the annual compensation committee report required by SEC rules, which is included immediately following the “Compensation Discussion and Analysis” section appearing below.

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

The members of our compensation committee are Drs. Paul (Chair) and Schimmel and Ms. Schulman. Ms. Schulman replaced Mr. Starr as a member of our Compensation Committee in April 2016. We believe that each member of our compensation committee is an independent director within the meaning of the director independence standards of the NASDAQ Marketplace Rules, a non-employee director as defined in Rule 16b-3 of the Exchange Act, and an outside director pursuant to Section 162(m) of the Internal Revenue Code.

Our compensation committee met seven times during 2016, either in person or by teleconference.
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### *Compensation Committee Interlocks and Insider Participation*

During fiscal year 2016, none of the members of our compensation committee was a current or former officer or employee of Alnylam and none had any related person transaction involving Alnylam.

During fiscal year 2016, no executive officer of our company served as: (i) a member of the compensation committee (or other committee of the board of directors performing equivalent functions or, in the absence of any such committee, the entire board of directors) of another entity, one of whose executive officers served on our compensation committee; (ii) a director of another entity, one of whose executive officers served on our compensation committee; or (iii) a member of the compensation committee (or other committee of the board of directors performing equivalent functions or, in the absence of any such committee, the entire board of directors) of another entity, one of whose executive officers served as a director of our company.

### *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 in order to attain our ultimate objective of increasing stockholder value. We have established, and our compensation committee endorses, several controls to address and mitigate compensation-related risk.

We engaged our outside consultant, Radford, to assist the compensation committee in evaluating whether our policies and practices create excessive risk in our compensation programs. In conducting its independent assessment, Radford reviewed all of our incentive compensation and other programs and determined there were no compensation policies or practices that encourage excessive or inappropriate risk-taking. Radford discussed the detailed findings of this review with management and the chair of the compensation committee in February 2017, and management presented the results of the review to the compensation committee. As a result, the compensation committee has concluded that our compensation policies and practices are not reasonably likely to have a material adverse effect on our company.

### ***Nominating and Corporate Governance Committee***

Our nominating and corporate governance committee is responsible for, among other things:

- advising our board on board organization, structure and appropriate size;
- 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 the external commitments of our directors and executive officers to evaluate potential conflicts of interest or time commitment concerns;
- developing and recommending to our board a set of corporate governance principles; and
- overseeing the annual evaluation of our board and its committees.

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), Drs. Ausiello and Sharp, Mr. Pyott, and Mses. Fanucci and Schulman. We believe that each member of our nominating and corporate governance committee satisfies the requirements for membership, including independence, as established under the NASDAQ Marketplace Rules.

Our nominating and corporate governance committee met three times during 2016, either in person or by teleconference.
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### ***Science and Technology Committee***

Our science and technology committee is responsible for, among other things:

- overseeing our scientific advisory board;
- reviewing our overall scientific and research and development strategy;
- reviewing our research and development strategy and programs;
- reviewing our regulatory and quality programs; and
- reviewing cognate external scientific research, discoveries and commercial developments, as appropriate.

The members of our science and technology committee are Drs. Sharp (Chair), Ausiello, Paul and Schimmel.

Our science and technology committee met four times during 2016, either in person or by teleconference.

### **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.

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 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 nominee biographies appearing above under the heading “Information Concerning Director Nominees – Election of Class I Directors (Proposal 1)” indicate each nominee’s experience, qualifications, attributes and skills that led our nominating and corporate governance committee and board to conclude that he should continue to serve as a member of our board. Our nominating and corporate governance committee and board believe 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 Mr. Bonney and Drs. Maraganore, Schimmel and Sharp, each of whom currently serves on our board of directors. Mr. Bonney and Drs. Maraganore, Schimmel and Sharp were proposed to our board by our nominating and corporate governance committee and our board determined to include them as its nominees.

### **Majority Voting Policy**

Our bylaws provide that the vote required for the election of a director by the stockholders shall, except in a contested election, be the affirmative vote of a majority of the votes cast with respect to the election of such director nominee at a meeting of stockholders. In order to receive a majority of the votes cast, the number of shares voted “FOR” must exceed the number of votes “AGAINST.” In any non-contested election of directors, any incumbent director nominee who receives a greater number of votes cast against his or her election than in favor of his or her election shall, promptly following the certification of the stockholder vote, tender his or her resignation to the board. The board shall then decide, through a process managed by our nominating and corporate governance committee, whether to accept the resignation, or take other action. The board expects

that a director whose resignation is under consideration shall abstain from participating in any decision regarding his or her resignation. In reaching its decision, the board may consider any factors deemed relevant, including the incumbent director nominee's qualifications, the incumbent director nominee's past and expected future contributions to the company, the overall composition of the board, and whether accepting the tendered resignation would cause us to fail to meet any applicable rule or regulation (including NASDAQ Global Select Market listing standards and federal securities laws). The board will publicly disclose its decision and rationale, within ninety (90) days following certification of the stockholder vote. If an incumbent director nominee's resignation is not accepted, he or she will continue to hold office until the next annual meeting and until his or her successor shall be duly elected and qualified. In such circumstances, the director will remain in his or her existing class and the election held at the next such annual meeting shall be whether to elect him or her to serve the remainder of his or her three-year term.

### **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.



## DIRECTOR COMPENSATION

### 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, with input from its independent compensation consultants. Our compensation committee compares our board compensation to compensation paid to non-employee directors of our peer group companies. Our compensation committee also considers the responsibilities we ask of our board members along with the amount of time required to perform those responsibilities. During 2015, our compensation committee, with the assistance of its independent compensation consultants, performed a comprehensive review of director compensation. Following this review, the compensation committee and our board of directors determined to adjust the cash compensation paid to our non-employee directors to be more competitive with our peer group and to align the compensation of our committees with the evolving scope of responsibilities and expectations for such committees. In addition, based on the results of this review and the significant increase in our stock price from 2012 through mid-2015, the compensation committee and our board of directors determined to reduce the initial and annual stock option awards for non-employee directors.

The table below reflects the director compensation that was approved during 2015. No changes to director compensation were made in 2016.

Compensation Type	Compensation Amount
Annual Retainer	\$50,000
Board Chair Fee	\$30,000
Committee Chair Fees:	
Audit	\$15,000
Compensation	\$10,000
Nominating and Corporate Governance	\$10,000
Science and Technology	\$10,000
Committee Member Fees:	
Audit	\$10,000
Compensation	\$7,500
Nominating and Corporate Governance	\$5,000
Science and Technology	\$5,000
Initial Stock Option Award (vests ratably in three annual installments)	25,000 shares
Annual Stock Option Award (vests on one-year anniversary)*	11,250 shares

\*Each non-employee director is generally eligible for an annual stock option award beginning in the sixth month following his or her election to our board.

Our board may, in its discretion, increase or decrease the size of the stock option award made to a non-employee director upon election or in connection with the annual stock option award or make other option awards to our non-employee directors, subject to the limitations contained in our Amended and Restated 2009 Stock Incentive Plan, as amended, which we also refer to as the Existing 2009 Plan, and described below. The exercise price of stock option awards 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.

In March 2016, based on the recommendation of our compensation committee, our board determined that it was in the best interests of the company and its stockholders to amend the Amended and Restated 2009 Stock Incentive Plan to add a limit on the maximum number of shares of common stock that may be subject to initial or annual awards granted to non-employee directors. Specifically, in addition to the aggregate limit on grants to non-employee directors contained in the Amended and Restated 2009 Stock Incentive Plan, the amendment provided the following:

- the maximum number of shares of common stock subject to an award of stock options granted in connection with an individual non-employee director's initial appointment or election to the board shall be 50,000 (or 33,333 in the case of restricted stock or other full value awards); and
- the maximum number of shares of common stock subject to an award of stock options granted in connection with an individual non-employee director's annual service on the board during any calendar year shall be 22,500 (or 15,000 in the case of restricted stock or other full value awards).

As indicated in the table above, our current practice is to make stock option awards covering fewer shares of common stock than permitted by these new limits, and the amendment of the Amended and Restated 2009 Plan to add these limits did not change our current practice. In Proposal 2 below, we are asking stockholders to approve a further amendment and restatement of the Existing 2009 Plan. The Second Amended and Restated 2009 Plan continues to include the limitations on initial and annual awards to our non-employee directors set forth above, and we are asking stockholders to approve these limits in connection with their approval of the Second Amended and Restated 2009 Plan.

The following table sets forth information concerning the compensation of our non-employee directors in 2016.

### Director Compensation

Name	Fees Earned or Paid in Cash (\$)	Option Awards (\$)(1)(2)(3)	All Other Compensation (\$)	Total (\$)
Dennis A. Ausiello, M.D.	60,000	453,713	—	513,713
Michael W. Bonney	90,000	453,713	—	543,713
John K. Clarke	60,000	453,713	—	513,713
Marsha H. Fanucci	65,000	453,713	—	518,713
Steven M. Paul, M.D.	65,000	453,713	—	518,713
David E.I. Pyott	53,750	453,713	—	507,463
Paul R. Schimmel, Ph.D.	62,500	453,713	—	516,213
Amy W. Schulman	60,625	453,713	—	514,338
Phillip A. Sharp, Ph.D.	65,000	453,713	25,000(4)	543,713
Kevin P. Starr	66,875	453,713	—	520,588

- (1) The amounts in this column reflect the aggregate grant date fair value for the fiscal year ended December 31, 2016, in accordance with Financial Accounting Standards Board, or FASB, Accounting Standards Codification, or 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. Whether, and to what extent, a non-employee director realizes value will depend on our actual operating performance, stock price fluctuations and the non-employee director's continued service on our board. 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, 2016 included in our Annual Report on Form 10-K, filed with the SEC on February 15, 2017.
- (2) At December 31, 2016, our non-employee directors held the following aggregate number of shares under outstanding stock options (representing unexercised option awards – both exercisable and unexercisable):

### Director Outstanding Stock Options for Service

Name	Number of Shares Underlying Outstanding Stock Options for Board Service(#)	Number of Shares Underlying Outstanding Stock Options for Non-Board Service(#)
Dennis A. Ausiello, M.D.	59,617	—
Michael W. Bonney	52,500	—
John K. Clarke	127,500	—
Marsha H. Fanucci	112,500	—
Steven M. Paul, M.D.	115,888	—
David E.I. Pyott	36,250	—
Paul R. Schimmel, Ph.D.	50,323	—
Amy W. Schulman	52,500	—
Phillip A. Sharp, Ph.D.	206,170	85,000(a)
Kevin P. Starr	101,170	—

- (a) Dr. Sharp received these stock options between 2007 and 2010 in connection with his service on our scientific advisory board.

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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 2016 and the grant date fair value of such stock options are as follows:

### Director Grants

Name	Date of Grant	Number of Shares Underlying Stock Option Grants in 2016(#)	Grant Date Fair Value of Stock Option Grants in 2016 (\$)(a)
Dennis A. Ausiello, M.D.	06/03/2016	11,250	453,713
Michael W. Bonney	06/03/2016	11,250	453,713
John K. Clarke	06/03/2016	11,250	453,713
Marsha H. Fanucci	06/03/2016	11,250	453,713
Steven M. Paul, M.D.	06/03/2016	11,250	453,713
David E.I. Pyott	06/03/2016	11,250	453,713
Paul R. Schimmel, Ph.D.	06/03/2016	11,250	453,713
Amy W. Schulman	06/03/2016	11,250	453,713
Phillip A. Sharp, Ph.D.	06/03/2016	11,250	453,713
Kevin P. Starr	06/03/2016	11,250	453,713

- (a) The grant date fair value computed in accordance with FASB ASC Topic 718 represents the value of stock options granted during 2016. The grant date fair value per option was \$40.33. There can be no assurance that the grant date fair value computed in accordance with FASB ASC Topic 718 will ever be realized. Whether, and to what extent, a non-employee director realizes value will depend on our actual operating performance, stock price fluctuations and the non-employee director's continued service on our board. The exercise price for the June 3, 2016 grants is \$70.20.

- (4) This amount reflects compensation paid to Dr. Sharp for service as the chair of our scientific advisory board during 2016.

# SECURITIES OWNERSHIP

## OWNERSHIP OF OUR COMMON STOCK

The following table sets forth information regarding beneficial ownership of our common stock as of January 31, 2017, except as otherwise set forth in the footnotes below, by:

- each person, or group of affiliated persons, known to us to be the beneficial owner of more than 5% of the outstanding shares of our common stock;
- each of our directors and director nominees;
- our principal executive officer, our principal financial officers during 2016 and our three other most highly compensated executive officers who were serving as executive officers on December 31, 2016, whom, collectively, we refer to as our named executive officers or NEOs; and
- all of our directors and current 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 of those shares by the person listed in the table.

Name and Address of Beneficial Owner(1)	Number of Shares Owned(2)	+	Number of Shares Acquirable Within 60 Days(2)(3)	=	Total Beneficial Ownership(4)	Percentage of Common Stock Beneficially Owned(5)(6)
<b>Holders of more than 5% of our common stock</b>						
FMR LLC(4)	12,872,080		—		12,872,080	15.0
Wellington Management Group LLP(5)	12,009,971		—		12,009,971	14.0
Sanofi(6)	10,256,633		—		10,256,633	11.9
Dodge & Cox(7)	9,204,950		—		9,204,950	10.7
Vanguard Specialized Funds-Vanguard Health Care Fund(8)	8,549,357		—		8,549,357	9.9
The Vanguard Group(9)	5,459,323		—		5,459,323	6.3
BlackRock, Inc.(10)	4,386,945		—		4,386,945	5.1

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Name and Address of Beneficial Owner(1)	Number of Shares Owned(2)	+	Number of Shares Acquirable Within 60 Days(2)	=	Total Beneficial Ownership(2)	Percentage of Common Stock Beneficially Owned(%) (3)
<b>Directors and Named Executive Officers</b>						
Dennis A. Ausiello, M.D.	3,500(11)		48,367		51,867	*
Michael W. Bonney	4,000(12)		31,250		35,250	*
John K. Clarke	8,891		116,250		125,141	*
Marsha H. Fanucci	—		101,250		101,250	*
John M. Maraganore, Ph.D.	152,551(13)		1,058,952		1,211,503	1.4
Steven M. Paul, M.D.	1,000		104,638		105,638	*
David E.I. Pyott	27,900(14)		8,334		36,234	*
Paul R. Schimmel, Ph.D.	306,996(15)		39,073		346,069	*
Amy W. Schulman	—		31,250		31,250	*
Phillip A. Sharp, Ph.D.	266,899(16)		249,920		516,819	*
Kevin P. Starr	—		89,920		89,920	*
Barry E. Greene	91,296(13)		655,791		747,087	*
Yvonne L. Greenstreet, MBChB**	106(13)		—		106	*
Akshay K. Vaishnav, M.D., Ph.D.	10,520(13)		266,719		277,239	*
David-Alexandre C. Gros, M.D.***	1,000		56,253		57,253	*
Michael P. Mason****	2,126(13)		31,516		33,642	*
<b>All directors and current executive officers as a group (16 persons)</b>	<b>875,924(13)</b>		<b>2,921,067</b>		<b>3,796,991</b>	<b>4.3</b>

- \* Less than 1% of our outstanding common stock.  
 \*\* Joined Alnylam as an executive officer in September 2016.  
 \*\*\* Resigned effective January 6, 2017.  
 \*\*\*\* Served as our principal financial officer for a portion of 2016.

- (1) Unless otherwise indicated, the address of each stockholder is c/o Alnylam Pharmaceuticals, Inc., 300 Third Street, Cambridge, MA 02142.
- (2) Reflects shares issuable upon the exercise of stock options that are exercisable or will become exercisable within 60 days after January 31, 2017.
- (3) Percentage of beneficial ownership is based on 86,013,785 shares of our common stock outstanding as of January 31, 2017. Shares of common stock subject to options currently exercisable, or exercisable within 60 days of January 31, 2017, 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. 12 to a Schedule 13G filed by FMR LLC (previously known as FMR Corp.) with the SEC on February 14, 2017, as of December 30, 2016, 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 12,872,080 shares of our common stock, as a result of acting as an investment adviser to various investment companies registered under Section 8 of the Investment Company Act of 1940. Abigail P. Johnson, Director, Chairman, Chief Executive Officer and President 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 12,872,080 shares of our common stock owned by such funds. The ownership of one investment company, Fidelity Growth Company Fund, amounted to 4,590,103 shares of our common stock. Neither FMR LLC nor Abigail P. Johnson

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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. 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 245 Summer Street, Boston, MA 02210.

- (5) According to Amendment No. 4 to a Schedule 13G filed by Wellington Management Group LLP (formerly Wellington Management Company, LLP), or Wellington Management, with the SEC on February 9, 2017, as of December 30, 2016, Wellington Management, in its capacity as an investment adviser, may be deemed to beneficially own 12,009,971 shares of our common stock which are held of record by clients of Wellington Management. Those clients have the right to receive, or the power to direct the receipt of, dividends from, or the proceeds from the sale of, such securities. Vanguard Health Care Fund is the only client known to have such right or power with respect to more than five percent of the reported shares. Wellington Management has shared power to vote or to direct the vote with respect to 2,854,928 shares of our common stock and shared power to dispose or to direct the disposition of 12,009,971 shares of our common stock. The address of Wellington Management is 280 Congress Street, Boston, MA 02210.
- (6) According to Amendment No. 2 to a Schedule 13G filed by Sanofi with the SEC on February 12, 2016, as of February 1, 2016, Sanofi was the record and beneficial owner of 10,256,633 shares of our common stock. Sanofi has shared power to vote or to direct the vote with respect to 10,256,633 shares of our common stock and shared power to dispose or to direct the disposition of 8,766,338 shares of our common stock. In January 2014, we entered into a global, strategic collaboration with Sanofi Genzyme (formerly Genzyme Corporation), the specialty care global business unit of Sanofi, to discover, develop and commercialize RNAi therapeutics as genetic medicines to treat orphan diseases. The address of Sanofi is 54 Rue La Boétie, 75008 Paris (France).
- (7) According to Amendment No. 1 to a Schedule 13G filed by Dodge & Cox with the SEC on February 14, 2017, as of December 31, 2016, Dodge & Cox has the sole power to vote or direct the voting of 8,794,650 of the shares owned. Dodge & Cox Stock Fund has an interest of 5,430,735 of the shares owned. The address of Dodge & Cox is 555 California Street, 40th Floor, San Francisco, CA 94104.
- (8) According to Amendment No. 3 to a Schedule 13G filed by Vanguard Specialized Funds – Vanguard Health Care Fund, or Vanguard, with the SEC on February 13, 2017, as of December 31, 2016, Vanguard has the sole power to vote the shares owned. The address of Vanguard is 100 Vanguard Blvd., Malvern, PA 19355.
- (9) According to Amendment No. 1 to a Schedule 13G filed by The Vanguard Group with the SEC on February 9, 2017, as of December 31, 2016, The Vanguard Group has the sole power to vote 43,246 of the shares owned, shared power to vote 8,800 of the shares owned, sole dispositive power for 5,411,200 of the shares owned and shared dispositive power for 48,123 of the shares owned. Vanguard Fiduciary Trust Company and Vanguard Investments Australia, Ltd., wholly-owned subsidiaries of The Vanguard Group, are the beneficial owners of 39,323 and 12,723 of the shares owned, respectively. The address of The Vanguard Group is 100 Vanguard Blvd., Malvern, PA 19355.
- (10) According to a Schedule 13G filed by BlackRock, Inc. with the SEC on January 30, 2017, as of December 31, 2016, BlackRock, Inc. has the sole power to vote or direct the voting of 4,068,223 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. The address of BlackRock, Inc. is 55 East 52nd Street, New York, NY 10055.
- (11) Represents shares held in a trust, of which Dr. Ausiello's spouse is the trustee.
- (12) Represents shares held in a trust, of which Mr. Bonney is the trustee and over which he has sole voting and investment power.
- (13) Includes shares of our common stock contributed by Alnylam to our 401(k) plan for the benefit of our executive officers as of January 31, 2017: Dr. Maraganore, 2,841 shares; Mr. Greene, 2,712 shares; Dr. Greenstreet, 106 shares; Dr. Vaishnav, 223 shares; Mr. Mason, 2,126 shares; and Laurie B. Keating, an executive officer who is not an NEO listed in the table above, 139 shares.

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- (14) Represents shares held in a trust, of which Mr. Pyott is the trustee and over which he has sole voting and investment power.
- (15) Includes shares of our common stock held by the Paul Schimmel Prototype PSP, of which Dr. Schimmel is the trustee and over which he has sole voting and investment power, and the Schimmel Revocable Trust U/A dated 9/6/2000, of which Dr. Schimmel and his spouse are trustees and share voting and investment power.
- (16) Includes shares of our common stock held by the Phillip A. Sharp 2009 Grantor Retained Annuity Trust No. 3 and the Phillip A. Sharp 2008 Grantor Retained Annuity Trust No. 2, both of which Dr. Sharp is the trustee and over which he has sole voting and investment power.

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

Section 16(a) of 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 such persons complied on a timely basis with the filing requirements of Section 16(a) during the fiscal year ended December 31, 2016.



## EXECUTIVE COMPENSATION

### COMPENSATION DISCUSSION AND ANALYSIS

#### Executive Summary

Our compensation committee is responsible for overseeing the total compensation of our senior management team, which is comprised of our named executive officers, or NEOs, our senior vice presidents and all of our vice presidents. Our compensation committee formally approves the compensation of our NEOs and our senior vice presidents. This Compensation Discussion and Analysis describes the pay philosophy established for Alnylam's NEOs, the design of our compensation programs, the process used to examine performance in the context of executive pay decisions, and the results for each NEO named below.

<b>John M. Maraganore, Ph.D.</b>	Chief Executive Officer (CEO)
<b>Barry E. Greene<sup>1</sup></b>	President
<b>Yvonne L. Greenstreet, MBChB<sup>1</sup></b>	Executive Vice President, Chief Operating Officer
<b>Akshay K. Vaishnaw, M.D., Ph.D. <sup>2</sup></b>	Executive Vice President, Research and Development
<b>David-Alexandre C. Gros, M.D.<sup>3</sup></b>	Former Senior Vice President, Chief Business Officer
<b>Michael P. Mason<sup>3</sup></b>	Vice President of Finance and Treasurer

- 1 Mr. Greene also served as our chief operating officer through September 19, 2016, at which time Dr. Greenstreet was appointed as our executive vice president and chief operating officer.
- 2 Dr. Vaishnaw also served as our chief medical officer through December 31, 2016, at which time Dr. Pushkal Garg, our senior vice president, clinical development, was appointed to serve in this position.
- 3 Mr. Mason served as our principal financial officer through June 30, 2016. Dr. Gros served as our principal financial officer from July 1, 2016 through January 6, 2017, the date of his resignation from Alnylam.

Although we describe our programs in the context of the NEOs, it is important to note that our programs generally have broad eligibility and therefore in most cases apply to employee populations outside the NEO group as well.

#### Stockholder Engagement and Feedback

##### 2016 Say-on-Pay Results

We pay careful attention to any feedback we receive from our stockholders about our executive compensation program. At our 2016 annual meeting, our say-on-pay proposal received support from 90% of the votes cast by our stockholders on the matter. Our compensation committee

believes that the stockholders, through this advisory vote, generally endorsed our compensation philosophy and principles, thus, our compensation committee maintained the basic structure and design of our executive compensation program for fiscal year 2016. Over the past five years, our annual say-on-pay proposal has received consistent, overwhelming support from our stockholders, receiving at least 90% of the votes cast by our stockholders on the matter each year. The board and the compensation committee are encouraged by the sustained level of stockholder support for our executive compensation program. Nevertheless, the company is committed to engagement with stockholders to ensure that we continue to understand stockholder feedback about our compensation programs and other key matters of interest to them, and to enable us to take that feedback into consideration for our compensation decisions.

Alnylam maintains an ongoing commitment to corporate governance principles and strong performance orientation in our compensation program by proactively reviewing our policies and program design. In 2016, this included an evaluation of our incentive compensation, including annual incentive targets under our short-term cash incentive program for non-executive employees, and an evaluation of on-hire and annual long-term incentive awards, including our overall strategy with respect to equity incentive awards in the context of our expected growth over the next several years. We also evaluated, with assistance from an independent compensation consultant, our peer group and made certain adjustments for 2016. In addition, we evaluated our total benefit offerings for all employees.

## Best Practices in Compensation Governance

In addition to our performance-sensitive direct compensation structure, Alnylam has strong compensation governance practices. Our compensation governance practices are rooted in our Compensation Philosophy, which is described below.

### Compensation Governance

#### Alnylam's Policies and Practices

- **Pay-for-performance**

Alnylam's executive compensation program reinforces our performance driven culture. A significant percentage of our executive officer compensation is at-risk and may not be realized if corporate goals are not achieved.

- **No automatic accelerated vesting of equity awards upon change-in-control**

Our Existing 2009 Plan does not allow, and our Second Amended and Restated 2009 Plan, if approved, will not allow, for the automatic accelerated vesting of outstanding equity awards upon a change-in-control event.

- **Emphasis on long-term performance**

Executive compensation should reflect alignment with the interests of stockholders. For 2016, and in each of the prior three years, 50% of our executive officer's annual equity awards were delivered in the form of performance-based stock option awards that vest in three or four equal installments based upon the achievement of pre-specified clinical development, regulatory and/or commercial events. The grant of annual performance-based stock option awards emphasizes the importance of long-term performance for value creation.

- **Clawback policy**

We have a clawback policy that covers our chief executive officer and our principal financial officer, as well as all of our officers at the level of vice president and above. The policy provides that covered executives who engage in misconduct, including embezzlement, fraud, willful misconduct or breach of fiduciary duty, resulting in a financial restatement, shall be required, upon the determination of our board of directors, to repay the company any excess proceeds from incentive compensation earned during the covered period.

<ul style="list-style-type: none"><li>• <b>No guaranteed annual bonus or guaranteed salary increase</b></li></ul> <p>We do not provide our executive officers with guaranteed annual salary increases or annual or multi-year guaranteed bonuses.</p>	<ul style="list-style-type: none"><li>• <b>No hedging</b></li></ul> <p>Alnylam's Insider Trading Policy expressly prohibits hedging company securities. Further, it does not permit waivers allowing for pre-clearance/pre-approval under certain situations.</p>
<ul style="list-style-type: none"><li>• <b>No executive employment agreements</b></li></ul> <p>We do not maintain employment agreements with any of our executive officers pursuant to which they would become eligible for potential severance payments upon termination or in connection with a change-in-control event.</p>	<ul style="list-style-type: none"><li>• <b>No pledging</b></li></ul> <p>Alnylam's Insider Trading Policy expressly prohibits pledging of company securities. Further, it does not permit waivers allowing for pre-clearance/pre-approval under certain situations.</p>
<ul style="list-style-type: none"><li>• <b>No excise tax or other tax gross-ups</b></li></ul> <p>We do not provide our executives with excise tax gross-up and we generally do not provide other regular tax gross-ups.</p>	<ul style="list-style-type: none"><li>• <b>Stock ownership guidelines</b></li></ul> <p>In 2015, we adopted stock ownership guidelines for our directors (including our CEO) and for our president. In 2016, we amended the stock ownership guidelines for our CEO and our president to increase the required ownership amounts.</p>
<ul style="list-style-type: none"><li>• <b>Limited perquisites</b></li></ul> <p>Consistent with our pay-for-performance philosophy, we provide very limited perquisites to our executives. We do not provide personal perquisites such as automobile leases, driver services or personal use of aircraft.</p>	<ul style="list-style-type: none"><li>• <b>Independent compensation consultant</b></li></ul> <p>Our compensation committee engages an independent consultant to advise it on topics related to board and executive compensation.</p>

## Select Business Highlights For 2016

We are a biopharmaceutical company developing novel therapeutics based on RNAi. RNAi is a naturally occurring biological pathway within cells for selectively silencing and regulating the expression of specific genes. We believe that drugs that work through RNAi have the potential to become a broad new class of innovative medicines, and that this potential new drug class is similar to the opportunity created with other major biological discoveries such as recombinant DNA and monoclonal antibodies. Using our intellectual property and expertise, we are developing what we believe to be a reproducible and modular platform to develop RNAi therapeutics for a variety of human diseases.

During 2016, we made significant progress on our clinical development and other corporate goals. Based on our performance in 2016, our board determined that we achieved 80% of our corporate goals for fiscal year 2016, including many of our pipeline goals and all of our strategic infrastructure, growth and growth management goals, which are critical for our company during this time of rapid growth as we move towards potential commercialization. It is important to note, however, that during 2016, we did experience an unfortunate setback in our clinical development

pipeline. We announced in October 2016 that we had discontinued development of revusiran, an investigational RNAi therapeutic that was in development for the treatment of patients with cardiomyopathy due to hereditary transthyretin-mediated amyloidosis, or hATTR amyloidosis. Despite the discontinuation of our revusiran clinical development program, we nevertheless made significant progress during 2016 in the balance of our efforts, allowing us to advance eight clinical-stage programs into 2017, including several programs into Phase 3 development. Our goal is to achieve, by the end of 2020, a company profile with three marketed products and ten RNAi therapeutic clinical programs, including four in late stages of development, across our three Strategic Therapeutic Areas (STAs), and we believe our achievements in 2016 advanced us towards fulfilling this strategy.

#### SELECT BUSINESS HIGHLIGHTS FOR 2016

##### CLINICAL & REGULATORY ACHIEVEMENTS

- Advanced robust pipeline ending 2016 with eight active clinical development programs
- Continued advancement of our APOLLO Phase 3 study of patisiran in patients with polyneuropathy due to hATTR amyloidosis, with an expected top-line data readout in mid-2017 and, if the data are positive, an anticipated filing of a new drug application, or NDA, in the United States by the end of 2017
- Continued advancement of our patisiran Phase 2 open-label extension, or OLE, study, reporting positive 24-month clinical data
- Completed enrollment of our ENDEAVOUR Phase 3 study with revusiran to evaluate the efficacy and safety of revusiran in patients with cardiomyopathy due to hATTR amyloidosis
- Reported additional positive results from our Phase 1 clinical trial and our Phase 2 OLE study of fitusiran, in development for the treatment of hemophilia and rare bleeding disorders
- Reported positive results from our ongoing Phase 1 study of givosiran in acute intermittent porphyria, or AIP, patients
- Positive results reported by our partner, The Medicines Company, from its ongoing ORION-1 Phase 2 trial of inclisiran in patients with hypercholesterolemia
- Initiated a Phase 1 trial of ALN-TTRsc02 for the treatment of hATTR amyloidosis and reported initial positive results on tolerability and clinical activity
- Initiated a Phase 1 trial of ALN-GO1 for the treatment of primary hyperoxaluria type 1 and reported initial positive results on tolerability and clinical activity

##### BUSINESS AND STRATEGIC INITIATIVES

- Achieved hiring and growth management goals

##### FINANCIAL RESULTS

- Exceeded our year-end cash guidance, ending the year with \$1.1 billion in cash, cash equivalents and marketable securities, and restricted investments

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**STOCKHOLDER RETURN**

- Achieved -16.50% three-year total stockholder return (TSR) for fiscal years 2014-2016 and 35.65% five-year TSR for fiscal years 2012-2016. Our one-year TSR for 2016 was -60.23%

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**CLINICAL & REGULATORY DISAPPOINTMENTS**

- Discontinued development of revusiran for the treatment of patients with cardiomyopathy due to hATTR amyloidosis following the recommendation of the revusiran ENDEAVOUR Phase 3 study Data Monitoring Committee to suspend dosing and the observation of an imbalance in mortality in revusiran-treated patients as compared to those on placebo
  - Did not initiate a Phase 3 clinical trial of ALN-CC5 in patients with paroxysmal nocturnal hemoglobinuria, or PNH, in early 2017 based on the results of our ALN-CC5 Phase 1/2 clinical trial reported in 2016
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## Compensation Philosophy

At Alnylam, our board believes a well-designed compensation program should align executive interests with the drivers of growth and stockholder returns, support achievement of the company's primary business goals, and attract and retain executives whose talents, expertise, leadership and contributions are expected to sustain growth in long-term stockholder value. Consequently, our board believes the substantial majority of NEO compensation should be performance-based and variable pay.

## Significant Compensation Decisions for 2017

As noted above, our compensation committee regularly reviews Alnylam's policies and program design. In 2016, this included an evaluation of our incentive compensation, including a reduction in certain target on-hire and annual award amounts under our long-term equity incentive program to reflect the increased value of the stock option awards granted to our employees, as well as to manage equity usage during a period of rapid growth. We expect to continue to evaluate our equity compensation strategy across the organization during 2017 to determine if additional adjustments are warranted. 2017 is expected to be a significant year for Alnylam as we progress closer towards our first regulatory filings for marketing approval and potential commercialization. Therefore, consistent with our values, goals and team-oriented strategy, for the 2016 annual equity incentive awards, based upon input and a strategic recommendation from our CEO, President, and Executive Vice President of Research and Development, our compensation committee made equity grants covering an equal number of shares to each of the members of our senior executive team after significantly reducing the amount of the CEO grant from the prior year, as well as reducing the amounts of the grants to our President and Executive Vice President of Research and Development. This allocation was made to support our team strategy, retain key executive officers and provide long-term incentives to support our growth, while remaining within aggregate equity issuance parameters authorized by our compensation committee. We also evaluated, with assistance from an independent compensation consultant, our peer group and made certain adjustments for 2016.

## Role of the Compensation Consultant

Pursuant to its charter, our compensation committee has the authority to select and retain independent advisors and counsel to assist it with carrying out its duties and responsibilities, and we

have provided appropriate funding to the compensation committee to do so. The compensation committee has exercised this authority to engage Radford as an independent compensation consultant. Radford serves as an advisor to our compensation committee on topics primarily related to our total compensation program, our equity compensation and our future equity compensation strategy, director and executive compensation, and peer group selection and evaluation. Radford reports directly to our compensation committee chair on the matters on which it has been retained. For 2016, we paid Radford approximately \$160,000 for advice and services provided to the compensation committee by Radford in its capacity as an independent compensation consultant.

Our compensation committee regularly reviews the services provided by its outside consultant and believes that Radford is independent from the company in providing executive compensation consulting services. Our compensation committee has assessed the independence of Radford consistent with NASDAQ Global Select Market listing standards and has concluded that the engagement of Radford does not raise any conflicts of interest. Our compensation committee continues to monitor the independence of its compensation consultant on a periodic basis.

In addition to their services with respect to compensation for the NEOs and other matters, described above, in 2016, Radford provided compensation consulting services to our management with respect to the compensation of employees outside the United States, as well as assistance with certain proxy-related matters. For 2016, we paid Radford approximately \$200,000 for advice and services that were not related to executive compensation. The decision to use Radford for advice and services not related to executive compensation was made by management. While the compensation committee does not pre-approve these non-executive compensation services, it does annually review Radford's internal guidelines and practices designed to guard against conflicts and ensure the objectivity of advice. The compensation committee believes that advice and services unrelated to executive compensation that Radford provided to the company in 2016 did not impact advice and services that Radford provided to the compensation committee on executive compensation matters or the independence of Radford with respect to management.

### **Compensation Risk Oversight**

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 in order to attain our ultimate objective of increasing stockholder value. In addition, we have established, and the compensation committee endorses, several controls to address and mitigate compensation-related risk, such as maintaining an anti-hedging and anti-pledging policy, stock ownership guidelines for directors (including our chief executive officer) and our president, and a clawback policy to recover incentive awards in the event that incentive plan award decisions are based on financial results that are subsequently restated.

We engaged our outside consultant, Radford, to assist the compensation committee in evaluating whether the company's policies and practices create excessive risk in the company's compensation programs. In conducting its independent assessment, Radford reviewed all of the company's incentive compensation and other programs and determined there were no compensation policies or practices that encourage excessive or inappropriate risk-taking. Radford discussed the detailed findings of this review with management and the chair of the compensation committee in February 2017, and management presented the results of the review to the compensation committee. As a result, the compensation committee has concluded that the

company's compensation policies and practices are not reasonably likely to have a material adverse effect on our company.

### **Committee Process for Setting Total Compensation**

Our compensation committee conducts an annual performance review of our NEOs and reviews the compensation of each member of our senior management team, approving compensation for our NEOs and senior vice presidents. During the first quarter of each year, annual corporate goals and individual performance objectives are determined and set forth in writing. Corporate goals are weighted and approved by our board. At the beginning of the second half of each year, senior management formally reviews performance against goals for the first half of the year and re-aligns key goals for the second half of the year if necessary and subject to board approval.

For 2016, the individual objectives for our executive officers were the same as the corporate goals for the purpose of determining annual cash incentive awards. The individual contributions of each executive officer towards the achievement of the corporate goals were considered for the purposes of determining other elements of compensation. Individual objectives for 2016 for the remaining members of our senior management team focused on contributions that were intended to drive achievement of the corporate goals and were proposed by each non-executive member of senior management, with review and input from our chief executive officer. In 2016, our compensation committee established the maximum cash bonus opportunity for each member of our senior management team under the 2016 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 the individual performance of employees, as compared to the corporate goals for that year. Our compensation committee, with input and recommendations from our chief executive officer, evaluates each of our NEO's individual performance and determines any increases in base salary and any annual stock option awards and/or, based solely on our performance against corporate goals, cash awards under our annual incentive program. Our compensation committee, with input from the chair 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. Through 2016, our compensation committee made grants of annual stock option awards, and determined changes in base salary and the amount of any annual cash incentive payments, at its last regularly scheduled meeting of the year. Our compensation committee may also review the compensation of our NEOs during the course of the year. Any changes in base salary of NEOs are generally effective at the beginning of the year. The cash incentive payments awarded under our 2016 annual incentive program were paid in January 2017. Our compensation committee may apply its discretion, as it deems appropriate, in determining executive compensation.

As we build our commercial organization and prepare for the potential launch of our first commercial product, our compensation committee will review annual performance and make annual compensation decisions for 2017 with respect to merit increases to base salary, annual cash incentive awards and annual equity awards during the first quarter of 2018. This change in timing of determinations and grants will be reflected in the information contained in the compensation tables for 2017 and the accompanying Compensation Discussion and Analysis included in our proxy statement for the 2018 annual meeting of stockholders.

Compensation Peer Group and Peer Selection Process

We develop our compensation programs after reviewing publicly available compensation data and subscription survey data for our peer group, provided by Radford.

In evaluating the total compensation of our NEOs, our compensation committee, using information provided by Radford, establishes a peer group of publicly traded, national and regional companies in the biopharmaceutical and biotechnology industries that is selected based on a balance of the following criteria:

Peer Selection Considerations	
Organizational Structure	<ul style="list-style-type: none"><li>Companies whose organizational structure, number of employees, stage of development, market capitalization, and research and development expenditures are similar to ours</li></ul>
Executive Positions	<ul style="list-style-type: none"><li>Companies with similar executive positions to ours</li></ul>
Executive Talent Pool	<ul style="list-style-type: none"><li>Companies against which we believe we compete for executive talent</li></ul>
Operations in U.S.	<ul style="list-style-type: none"><li>Public companies with substantial operations in the United States whose compensation and financial data are available in proxy statements or other public documents</li></ul>

In addition to the criteria above, our compensation committee also reviewed the peer selection criteria used by the proxy advisors and considered the specific peers identified independently by each advisor. Further, the compensation committee evaluated total stockholder return on a one-, three- and five-year basis to identify other high growth companies most similar to Alnylam. It is worth noting that there are limited companies with a comparable profile to Alnylam. As such, Radford identified four categories of companies that were all considered for purposes of selecting a balanced group of peers: Large Biopharma; Similarly Situated Commercial; Similarly Situated Pre-Commercial; and Governance Peers meeting at least two selection criteria.



## 2016 Peer Group

Our compensation committee periodically reviews the company's peer group to ensure that the peer companies continue to be appropriate peers for compensation benchmarking purposes. Alnylam's 2015 peer group consisted of 19 companies operating in the biopharmaceutical/biotechnology industry. From the 2015 set of 19 companies, the committee, in consultation with Radford, determined that 5 companies were no longer appropriate as peers on a go-forward basis for a variety of reasons, including corporate transactions due to mergers and acquisitions, size and other considerations, and also selected 3 companies to be added as peer companies. The 2016 peer group reflecting these changes and approved by our compensation committee is shown below, with the new peer companies identified in *italics*.

2016 Peer Group		
ACADIA Pharmaceuticals Inc.	Intercept Pharmaceuticals, Inc.	Neurocrine Biosciences, Inc.
Agios Pharmaceuticals, Inc.	Ionis Pharmaceuticals, Inc.	Seattle Genetics, Inc.
Alkermes plc	Jazz Pharmaceuticals plc	<i>TESARO, Inc.</i>
BioMarin Pharmaceutical Inc.	<i>Juno Therapeutics, Inc.</i>	Ultragenyx Pharmaceutical Inc.
bluebird bio, Inc.	<i>Kite Pharma, Inc.</i>	United Therapeutics Corporation
Incyte Corporation	Medivation, Inc. (now a subsidiary of Pfizer Inc.)	

From the 2015 peer group, the following companies were excluded as a peer for 2016: Anacor Pharmaceuticals, Inc., Clovis Oncology, Inc., Dyax Corp. (now a subsidiary of Shire plc), Regeneron Pharmaceuticals, Inc. and Vertex Pharmaceuticals Incorporated.

## Compensation Benchmarking

To provide the appropriate context for executive pay decisions, our compensation committee, in consultation with Radford, assessed the compensation practices and pay levels of our peer group. We believe that the compensation practices of our peer group provided us with appropriate compensation benchmarks for evaluating the compensation of our NEOs during 2016. In determining adjustments for base salaries for 2016 at the end of 2015, as well as target bonus amounts under our 2016 Annual Incentive Program, our compensation committee utilized data from our 2015 peer group. In determining adjustments for base salaries at the end of 2016, as well as the amount of long-term incentive awards granted at the end of 2016, our compensation committee utilized our 2016 peer group. Notwithstanding the similarities of our peer group to Alnylam, due to the nature of our business, we compete for executive talent with many companies that are larger and more established than we are or that possess greater resources than we do, as well as with prestigious academic and non-profit institutions. Accordingly, in 2016, our compensation committee generally targeted compensation for our executive officers as shown in the table below. In keeping with our pay-for-performance philosophy, actual compensation levels are correlated to the achievement of corporate goals. Moreover, our compensation committee may consider other criteria, including market factors, experience level of the executive, leadership, individual performance against established corporate

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goals, potential difficulties in replacing the executive and contributions to long-term strategic performance in determining variations to this general target range.

Compensation Component	Target Benchmark
Base Salary	Between 50 <sup>th</sup> to 60 <sup>th</sup> percentiles of the salaries in our peer group
Annual Cash Incentive Awards	At or below the 50 <sup>th</sup> percentile of our peer group
Annual Equity Incentive Awards	Between 50 <sup>th</sup> to 75 <sup>th</sup> percentile of our peer group
Total Compensation	Between 50 <sup>th</sup> and 75 <sup>th</sup> percentiles of compensation paid to similarly situated executives of the companies in our peer group

Because a significant portion of our total compensation is tied to equity incentive compensation, total compensation for our NEOs had been higher than the 75<sup>th</sup> percentile due to the significant appreciation in our stock price from 2012 through mid-2015. In light of this, our compensation committee reviewed our equity incentive compensation guidelines during 2015, with assistance from Radford, and made reductions in equity incentive awards at most levels of the organization. Our compensation committee continued to evaluate our equity incentive compensation and our long-term equity strategy in 2016, with continued assistance from Radford, and made further adjustments to equity incentive awards at certain levels of the organization. We expect to review our equity incentive compensation guidelines annually and to make further adjustments in 2017 and beyond, as needed and dependent on our stock price and peer position, particularly in light of our planned growth as we move towards potential commercialization.

### ***Other Key Performance Factors and Industry Specific Considerations***

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 a pre-commercial-stage biopharmaceutical company, such as Alnylam. Instead, the specific performance factors our compensation committee considers when determining the compensation of our NEOs include:

- key research and development achievements, including advances in RNAi delivery and technology;
- 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, success in hiring and growth management initiatives; and
- financial and operating performance.

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

## Compensation Objectives

Our compensation programs are designed to attract, motivate 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.

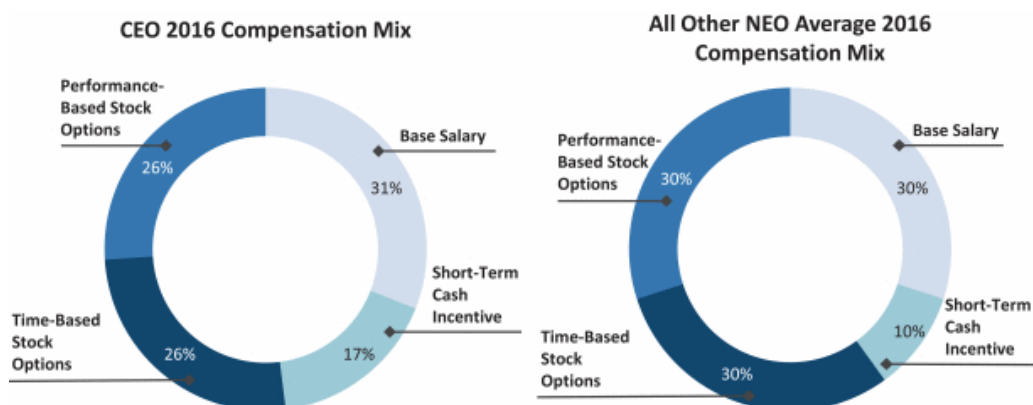
## Components of our Compensation Program

As discussed above, the guiding principle of our compensation program is to provide a compensation structure that allows Alnylam to attract and retain highly qualified executive talent and to motivate such executives to achieve clinical, business and financial goals that create value for stockholders in a manner consistent with our core business and leadership values. Three primary components make up Alnylam's executive pay program: base salary, short-term cash incentives and long-term equity incentives. We do not provide our executives with supplemental retirement benefits or personal perquisites.

## Each Compensation Element Serves a Unique Purpose

Compensation Element	Description	Strategic Role
<b>Base Salary</b>	<ul style="list-style-type: none"> <li>Fixed cash compensation</li> <li>Positioned within the range of the market median based on each NEO's individual performance, skills, experience and internal equity</li> </ul>	<ul style="list-style-type: none"> <li>Attracts and rewards high performing executives via market competitive pay and industry norms and reflects individual performance</li> </ul>
<b>Short-Term Cash Incentives—Variable Pay</b>	<ul style="list-style-type: none"> <li>Quantitative and qualitative performance objectives that are annually pre-determined and based on achievement of specific measures</li> <li>Cash incentives are awarded only if corporate performance against goals is at least 50%</li> <li>Awards capped at specified target percentage (130% for fiscal year 2016)</li> </ul>	<ul style="list-style-type: none"> <li>Drives company-wide and individual performance</li> <li>Rewards annual performance</li> <li>Motivates executives to achieve performance objectives that are key to our annual operating and strategic plans</li> <li>Aligns executive and stockholder interests</li> </ul>
<b>Long-Term Equity Incentives—Variable Pay</b>	<ul style="list-style-type: none"> <li>Primarily in the form of stock options</li> <li>Annual equity awards take the form of a 50/50 mix of multi-year time-and performance-based vesting upon achievement of clinical development, regulatory and/or commercial milestones</li> </ul>	<ul style="list-style-type: none"> <li>Encourages executives to achieve multi-year strategic objectives and clinical development, regulatory and commercial milestones</li> <li>Motivates executives to deliver sustained long-term growth</li> <li>Unique position within our peer group focused on significant use of performance-based vesting for stock option awards to align executive and stockholder interests through long-term value creation</li> <li>Enhances retention of key talent</li> </ul>

The compensation committee is committed to ensuring that a substantial portion of executive compensation is "at-risk" and variable. As such, 69% of our CEO's total direct compensation for 2016 and, on average, 70% of our other NEOs' total direct compensation for 2016, is variable and directly affected by both the company's and each NEO's performance. In addition, for both our CEO and our other NEOs, 50% of annual equity compensation was made up of performance-based stock options beginning in 2013 and continuing through 2016.



Note: For purposes of the calculation of "All Other NEO Average 2016 Compensation Mix," we annualized Dr. Greenstreet's base salary for 2016 and assumed an annual short-term cash incentive payout at 80% of her target award for 2016. The figures above exclude (i) Dr. Vaishnav's one-time ten-year anniversary stock option award, (ii) Dr. Greenstreet's \$100,000 one-time, initial sign-on bonus and her on-hire stock option award, (iii) Dr. Gros' \$100,000 supplemental sign-on bonus, (iv) Mr. Mason's one-time time-based restricted stock unit award, and (v) the one-time award of performance-based restricted stock units to certain NEOs, excluding Dr. Maraganore and Mr. Greene, in January 2016. With respect to the performance-based stock option awards reflected above, we assumed that as of the grant date it was probable that 100% of the performance conditions would be achieved. See Note 10 of the Summary Compensation Table below for additional information regarding the treatment of these performance-based stock option awards.

### Base Salary

Our compensation committee typically determines the base salary for each new executive based on the executive's responsibilities, experience and, if applicable, the base salary level of the executive prior to joining Alnylam. In addition, our compensation committee reviews and considers the level of base salary paid by companies in our peer group for similar positions.

Merit-based increases in base salary for all of our continuing executive officers, other than our chief executive officer, are approved by our compensation committee based upon 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 chair of our board and a review by our compensation committee of the base salaries of chief executive officers in our peer group.

For fiscal year 2016, our CEO and each of our remaining NEOs received a salary increase of 3.0% (with the exception of Dr. Gros, who received a pro-rated base salary increase due to his June 2015 start date).

At the end of 2016, our compensation committee approved increases for fiscal year 2017 base salary for our CEO and each of our other NEOs in the amount of 3.0% for each NEO (with the exception of Dr. Greenstreet, who received a pro-rated base salary increase due to her September 2016 start date), based upon the company's performance against the corporate goals, as well as each NEO's individual contribution to the achievement of those corporate goals, and a review by our compensation committee of the base salaries of comparable NEOs in our 2016 peer group.

The table below sets forth the 2017 and 2016 base salaries, in dollars, and the adjustment to base salaries, as a percentage, for each of our NEOs:

#### Base Salary Adjustments

Name	2017 Base Salary(\$)	2016 Base Salary(\$)	Increase(%)
John M. Maraganore, Ph.D.	753,548	731,600	3.0
Barry E. Greene	562,792	546,400	3.0
Yvonne L. Greenstreet, MBChB*	504,200	500,000	0.8
Akshay K. Vaishnaw, M.D., Ph.D.	542,141	526,350	3.0
David-Alexandre C. Gros, M.D.**	N/A	432,300	N/A
Michael P. Mason	318,322	309,050	3.0

\* Dr. Greenstreet joined the company in September 2016 and received a pro-rated base salary adjustment at the end of 2016.

\*\* Dr. Gros resigned from the company in January 2017.

#### Short-Term Incentives—2016 Annual Incentive Program

Annual cash incentives are paid to our NEOs through Alnylam's Annual Incentive Program, or AIP. Our short-term incentive structure is intended to align NEOs' interests directly with Alnylam's corporate goals. In making its determination regarding awards under the 2016 AIP, our compensation committee considered our success against pre-established 2016 corporate goals. Based on our performance in 2016, our board determined that we achieved 80% of our corporate goals for fiscal year 2016, including many of our pipeline goals and all of our strategic infrastructure, growth and growth management goals, which are critical for our company during this time of rapid growth as we move towards potential commercialization.

## Annual Metrics and Goal Assessment

The 2016 corporate goals approved by our board, the relative weightings assigned to each goal, our actual achievement during the performance period as a percentage of target and the weighted performance against these corporate goals for 2016, as approved by our compensation committee and our full board, were as follows:

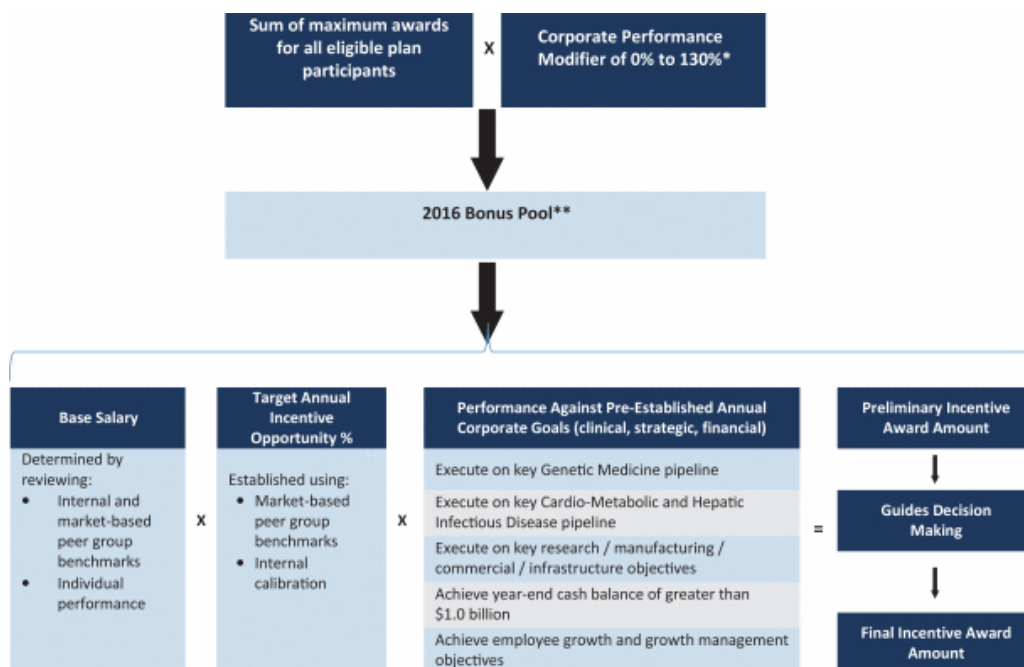
### Annual Incentive Payout Matrix

2016 Corporate Goals	Relative Weighting(%)	Actual Achievement For 2016 (As % of Target)	Weighted Performance(%)
<ul style="list-style-type: none"> <li>Execute on key Genetic Medicine pipeline objectives, including: <ul style="list-style-type: none"> <li>Complete enrollment in ENDEAVOUR Phase 3 pivotal clinical trial of revusiran;</li> <li>Present data from revusiran Phase 2 OLE study in mid-2016;</li> <li>File clinical trial application, or CTA, initiate Phase 1 clinical trial and report initial clinical data for ALN-TTRsc02;</li> <li>Initiate two Phase 3 trials for fitusiran in mid- and late-2016;</li> <li>Report data from Part C of Phase 1/2 clinical trial of ALN-CC5 and, if positive, enable initiation of Phase 3 trial in 2017;</li> <li>Report additional data from ongoing givosiran Phase 1 trial;</li> <li>Initiate Phase 1 trial of ALN-GO1 and report initial results; and</li> <li>Prepare additional program for CTA filing in 2016.</li> <li>Stretch Goals - Exceed certain specified pipeline advancement timelines and metrics.</li> </ul> </li> </ul>	10 5 10 15 10 7.5 5 2.5 +30	100 0 100 33 25 100 100 100 0	10 0 10 5 2.5 7.5 5 2.5 0
<ul style="list-style-type: none"> <li>Execute on key Cardio-Metabolic and Hepatic Infectious Disease pipeline objectives, including: <ul style="list-style-type: none"> <li>File CTA and initiate Phase 1 trial for ALN-HBV.</li> </ul> </li> </ul>	5	100	5
<ul style="list-style-type: none"> <li>Advance key research/platform objectives.</li> </ul>	5	100	5
<ul style="list-style-type: none"> <li>Advance key manufacturing, commercial and infrastructure objectives.</li> </ul>	15	83	12.5
<ul style="list-style-type: none"> <li>Achieve a year-end cash balance of greater than \$1.0 billion, including \$150.0 million of restricted investments.</li> </ul>	5	100	5
<ul style="list-style-type: none"> <li>Achieve employee growth and growth management objectives.</li> </ul>	5	100	5
<b>Approved 2016 Corporate Performance Level</b>	<b>130</b>		<b>80*</b>

\* Includes an additional 5% allocated by our board for exceeding performance on certain goals that were not allocated additional weighting as stretch goals.

## Calculation of Annual Cash Incentives

Annual cash incentives were calculated as shown below.



\* If the 2016 corporate performance level is determined to be below 50%, then the corporate performance modifier would be 0% and no awards would be granted under the AIP.

\*\* Board of directors and/or compensation committee has the discretion to make adjustments in connection with the AIP as it deems appropriate. Our board of directors exercised such discretion to increase the performance level proposed by management from 75% to 80% for exceeding certain goals in 2016 that were not allocated additional weighting as stretch goals.

Our compensation committee aims to determine an appropriate mix of cash incentive opportunities and equity incentive grants to meet short- and long-term goals and objectives. In March 2016, our compensation committee approved the 2016 AIP, including the opportunity for eligible participants to achieve incentive awards above established bonus targets based on the company's performance against 2016 corporate goals. Each potential bonus award for 2016 ranged from 0% to 130% of the individual's target award, thus making 130% of each individual's target award the maximum bonus award achievable in 2016 in the event the company met all of its corporate goals (100%) plus its stretch goals (30%).

The table below shows the target award under the 2016 AIP as a percentage of each NEO's annual base salary in 2016, assuming (1) all of the corporate goals were met but not providing additional credit for the achievement of any stretch goals, (2) the maximum cash award opportunity in dollars for 2016 that would be paid if all of the corporate goals were met and certain goals were exceeded (stretch goals), (3) the actual cash bonus payments to our NEOs under the AIP for 2016 performance, which were paid in January 2017, and (4) the actual bonus payment as a percentage of the target award opportunity.

## 2016 Annual Incentive Program Awards

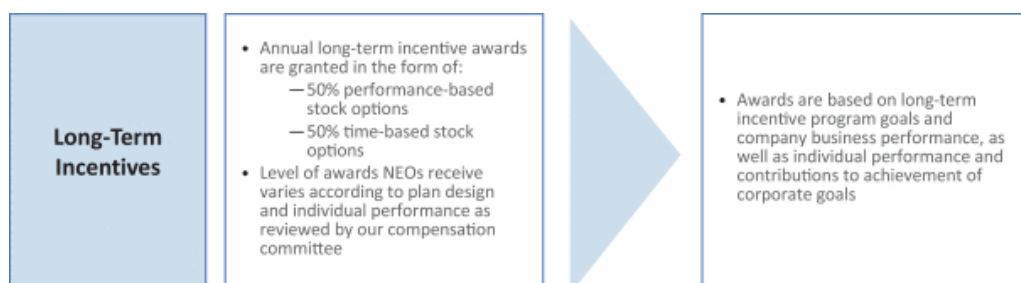
Name	2016 Target Award (% of Base Salary)	2016 Target Award Opportunity(\$)	2016 Maximum Award Opportunity(\$)**	2016 Actual AIP Payout(\$)	2016 Actual AIP Payout (% of Target Award Opportunity)
John M. Maraganore, Ph.D.	65	475,540	618,202	380,432	80
Barry E. Greene	50	273,200	355,160	218,560	80
Yvonne L. Greenstreet, MBChB*	50	70,000	91,000	56,000	80
Akshay K. Vaishnaw, M.D., Ph.D.	50	263,175	342,128	210,540	80
David-Alexandre C. Gros, M.D.	40	172,920	224,796	138,336	80
Michael P. Mason	30	92,715	120,530	74,172	80

\* Dr. Greenstreet's award opportunity was pro-rated based on her September 2016 hire date.

\*\* Assuming 130% corporate performance modifier to account for stretch goals.

### Long-Term Incentives – 2016 Equity Awards

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.



Our equity awards program is designed to:

- reward demonstrated leadership and performance;
- align our executive officers' interests with those of our stockholders through long-term value creation;
- affect pay-for-performance achievement;



- retain our executive officers through the vesting period of the awards;
- maintain competitive levels of executive compensation; and
- motivate our executive officers for outstanding future performance.

Historically, our equity awards have taken the form of stock options, which we believe further strengthens the long-term alignment between our executives and stockholders. 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.

Also historically, all stock option awards to our executive officers are approved by our compensation committee and, other than stock option awards to new hires, were typically granted at our compensation committee's regularly scheduled meeting at the end of the year. This was the case in 2016. However, with respect to 2017, the compensation committee intends to evaluate 2017 performance and determine new annual incentive plan amounts and long-term equity incentive plan grants at a meeting in the first quarter of 2018.

Stock option awards typically vary among our executive officers based on their positions and annual performance assessments. In addition, our compensation committee reviews all components of the executive's compensation to ensure that his or her total compensation is aligned with our overall philosophy and objectives. As noted above, 2017 is expected to be a significant year for Alnylam as we progress closer towards our first regulatory filings for marketing approval and potential commercialization. Therefore, consistent with our values, goals and team-oriented strategy, for the 2016 annual equity incentive awards, based upon input and a strategic recommendation from our CEO, President, and Executive Vice President of Research and Development, our compensation committee made equity grants covering an equal number of shares to each of the members of our senior executive team after significantly reducing the amount of the CEO grant from the prior year, as well as reducing the amounts of the grants to our President and Executive Vice President of Research and Development. This allocation was made to support our team strategy, retain key executive officers and provide long-term incentives to support our growth, while remaining within aggregate equity issuance parameters authorized by our compensation committee.

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 stock options unless our stock price increases above the value on the date of grant. Accordingly, this portion of our executive officers' compensation is "at risk" and is directly aligned with stockholder value creation.

Stock options granted to our executive officers upon commencement of employment 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.

### **Performance-Based Stock Option Awards.**

Beginning in 2013, our compensation committee began granting annual stock option awards with both time-based and performance-based vesting terms. Generally, annual stock options will include a vesting schedule whereby 50% of the grant has time-based vesting over four years, while the remaining 50% of the grant will vest in thirds or fourths upon the achievement of certain pre-determined performance milestones that are generally expected to occur in a staggered fashion over a three- to four-year period. We are not aware of any other company in our current peer group that has adopted a similar approach to emphasizing long-term performance through the grant of annual performance-based stock option awards.

More specifically, time-based stock options generally 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. With respect to the performance-based portion of the annual stock option awards, a portion of the shares subject to the performance-based option will vest upon the later of the one-year anniversary of the date of grant and the achievement of specific clinical development, regulatory and/or commercial events, as approved by our compensation committee. Set forth below is a summary of the performance-based vesting events for the performance-based portion of the annual stock option awards made from 2013 through 2016, together with the status of the achievement of such events:

Year	Performance Milestone (% of Award)	Date Achieved	Status of Potential Achievement*
2013	• Start of Second Phase 3 Clinical Trial (33%)	✓ December 2014	
	• Achievement of Positive Phase 3 Clinical Data (33%)		• APOLLO Phase 3 topline clinical data expected Mid-2017
	• Receipt of First Regulatory Approval for an Alynkam Product (33%)		• Patisiran NDA filing expected Late-2017 assuming APOLLO Phase 3 data positive, regulatory response expected in 2018
2014	• Completion of Patient Enrollment in APOLLO Phase 3 Clinical Trial (33%)	✓ February 2016	
	• Start of Third Phase 3 Clinical Trial (33%)		• Initiation of fitusiran ATLAS Phase 3 program expected Early-2017 • Initiation of givosiran Phase 3 clinical trial expected Late-2017
	• Receipt of First Regulatory Approval for an Alynkam Product (33%)		• Patisiran NDA filing expected Late-2017 assuming APOLLO Phase 3 data positive, regulatory response expected in 2018
2015	• Completion of Patient Enrollment in Third Phase 3 Clinical Trial (25%)		• Achievement possible in 2018 timeframe depending on progress of Phase 3 programs
	• Start of Fourth Phase 3 Clinical Trial (25%)		• Initiation of fitusiran ATLAS Phase 3 program expected Early-2017 • Initiation of givosiran Phase 3 clinical trial expected Late-2017
	• Achievement of Positive Phase 3 Clinical Data in Second Clinical Program (25%)		• Achievement possible in 2018-2019 timeframe depending on progress of Phase 3 programs
	• Achievement of First \$100.0 Million in Cumulative Gross Product Sales (25%)		• Timing of achievement depends on the success of regulatory filing(s) and potential product launch(es)
2016	• Filing of First NDA for Regulatory Approval With the FDA (25%)		• Patisiran NDA filing expected Late-2017 assuming APOLLO Phase 3 data positive
	• Achievement of Positive Phase 3 Clinical Data in Second Clinical Program (25%)		• Achievement possible in 2018-2019 timeframe depending on progress of Phase 3 programs
	• Filing of Second NDA for Regulatory Approval With the FDA (25%)		• Achievement possible in 2019 timeframe depending on progress and results of Phase 3 programs
	• Achievement of First \$100.0 Million in Cumulative Gross Product Sales (25%)		• Timing of achievement depends on the success of regulatory filing(s) and potential product launch(es)

\* Timing of actual achievement, if at all, will depend on the progress of our clinical trials and the timing and success of regulatory filing(s) and potential product launch(es).

Any determination as to whether or not a vesting event has been met shall be approved by our compensation committee and the date of vesting shall be the later of the date of such determination by the committee and the one-year anniversary of the date of grant.

Stock option awards typically have a term of ten years. Vesting of option grants to employees typically ceases upon termination of employment and exercise rights typically cease three months following termination of employment, except in the case of death or disability. Prior to the exercise of an option, the stock option 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.

In connection with the annual review of each executive officer's individual performance and consistent with our compensation philosophy, our compensation committee approved annual equity incentive awards for our executive officers. As noted above, for the 2016 annual equity incentive awards, based upon input and a strategic recommendation from our CEO, President, and Executive Vice President of Research and Development, our compensation committee made equity grants covering an equal number of shares to each of the members of our senior executive team after significantly reducing the amount of the CEO grant from the prior year, as well as reducing the amounts of the grants to our President and Executive Vice President of Research and Development. This allocation was made to support our team strategy, retain key executive officers and provide long-term incentives to support our growth, while remaining within aggregate equity issuance parameters authorized by our compensation committee.

We view equity incentive compensation as a critical component of our compensation strategy and therefore to date we have maintained a broad-based program for all employees to have an opportunity to participate as owners of the company. This program is consistent with the description above for our NEOs and includes equity incentive awards upon the commencement of employment and annual equity incentive awards for all employees. Annual awards are structured in the same way for all employees, with 50% vesting over time and 50% vesting only upon the achievement of specified performance milestones.

The annual equity incentive awards granted to our NEOs for 2016 and 2015 performance, and the percentage reduction year-over-year, are set forth in the table below:

#### Annual Equity Incentive Awards

Name	Number of Shares Granted		Year-over-Year Change(%)
	2016 Annual Stock Option Award(#)	2015 Annual Stock Option Award(#)	
John M. Maraganore, Ph.D.	50,000	130,000	-62
Barry E. Greene	50,000	80,000	-38
Yvonne L. Greenstreet, MBChB*	50,000	N/A	N/A
Akshay K. Vaishnaw, M.D., Ph.D.**	50,000	60,000	-17
David-Alexandre C. Gros, M.D.***	50,000	30,023	N/A
Michael P. Mason****	11,100	14,400	-23

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- \* Dr. Greenstreet joined the company in September 2016 and also received a stock option award upon the commencement of her employment to purchase an aggregate of 150,000 shares of common stock.
- \*\* In recognition of ten years of service with Alnylam and consistent with our past practice, Dr. Vaishnaw also received a fully-vested stock option award to purchase 10,000 shares of common stock in February 2016 in connection with his ten-year employment anniversary. Continuation of the ten-year service awards is subject to annual review by our compensation committee.
- \*\*\* Dr. Gros resigned from the company in January 2017 and, as a result, his annual stock option award for 2016 was cancelled. Dr. Gros joined the company in June 2015 and received a pro-rated stock option award for 2015, of which the unvested portion was also cancelled upon his resignation.
- \*\*\*\* Excludes a one-time award of 8,502 restricted stock units made to Mr. Mason on December 30, 2016, which vests in full on December 30, 2017.

In January 2016, we granted a one-time award of shares of performance-based restricted stock units, or RSUs, to all employees who were employed with the company as of December 31, 2015, excluding our chief executive officer and our president. The vesting of these performance-based RSUs is predicated on the launch of our first internally developed product, but in no event will the awards vest in less than one year from the date of grant. Under this one-time grant, Drs. Vaishnaw and Gros and Mr. Mason received awards of 1,724, 1,434 and 1,012 RSUs, respectively. Dr. Gros' award was cancelled upon his resignation in January 2017.

The number of stock options granted to our named executive officers during 2016, and the value of those awards determined in accordance with FASB ASC Topic 718, are shown in the 2016 Grants of Plan-Based Awards table below. However, it is important to note that the amounts reported may not represent the amounts our NEOs will actually realize. Whether, and to what extent, a NEO realizes value will depend on our actual operating performance, stock price fluctuations and the NEO's continued employment.

## **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 for 2016. During 2016, in connection with the review of our total benefit offerings for all employees, we increased our matching contribution under the 401(k) plan to an annual maximum number of shares with a value of \$8,000 for each participant beginning in 2017. 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.

## **Employment Arrangements**

Each executive officer has signed a nondisclosure, non-competition and assignment of intellectual property 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 18 months after termination of employment.

Pursuant to the terms of her letter of employment, we paid Dr. Greenstreet an initial, one-time sign-on bonus of \$100,000 in September 2016. In the event that Dr. Greenstreet voluntarily terminates her employment with us, other than for good reason, or is terminated by us for cause, within the first 12 months of her employment with us, she will be required to repay the full amount of this initial sign-on bonus. Pursuant to the terms of her letter of employment, Dr. Greenstreet is also entitled to receive reimbursement for certain expenses related to her relocation to the Boston area, as well as a tax-gross up for certain taxable relocation payments.

Pursuant to the terms of his letter of employment, we paid Dr. Gros a supplemental sign-on bonus of \$100,000 in June 2016. Pursuant to the terms of his letter of employment, due to his resignation in January 2017, Dr. Gros repaid the full amount of this supplemental sign-on bonus.

### **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.

### **Stock Ownership Guidelines**

In March 2015, our compensation committee adopted share ownership guidelines for our directors (including our chief executive officer) and our president. Under these guidelines, covered individuals are required to hold equity securities having a minimum value of \$150,000. Newly appointed/elected persons have five years to achieve the guideline. The following forms of equity will count toward the ownership guideline: shares owned outright; unvested restricted stock, RSUs and deferred stock units to be settled in shares; and vested but unexercised “in-the-money” stock options. The company reviews compliance annually, valuing stock at the higher of the fair market value on date of review or the trailing 90-day average. In December 2016, our board adopted modified ownership requirements of six times base salary for our CEO and three times base salary for our president.

### **Anti-Hedging and Anti-Pledging Policy**

Our insider trading policy expressly prohibits all of our employees, including our NEOs, as well as our directors, from engaging in speculative transactions in our stock, including short sales, puts/calls, hedging transactions and margin accounts or pledges. Waivers of these prohibitions are also not permitted under the policy.

### **Clawback Policy**

We have a clawback policy that covers our chief executive officer and our principal financial officer, as well as all of our officers at the level of vice president and above. The policy provides that covered executives who engage in misconduct, including embezzlement, fraud, willful misconduct or breach of fiduciary duty, resulting in a financial restatement shall be required, upon the determination of our board of directors, to repay the company any excess proceeds from incentive compensation earned during the covered period.

## **Compliance with IRS Code Section 162(m)**

Section 162(m) of the Internal Revenue Code of 1986, as amended, also referred to as the Code, generally disallows a tax deduction to public companies for compensation in excess of \$1 million per person paid to a company's chief executive officer and its three other officers (other than the chief/principal 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, motivate and retain executive talent and are in our best interest and that of our stockholders.

## **Compensation Committee Report 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, 2016, which was filed with the SEC on February 15, 2017.

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

Steven M. Paul, M.D., Chair  
Paul R. Schimmel, Ph.D.  
Amy W. Schulman

## Executive Compensation

The following table sets forth the total compensation paid or accrued for the years ended December 31, 2016, 2015 and 2014 to our named executive officers.

**Summary Compensation Table**

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards \$(6)(7)	Option Awards \$(8)(9)	Non-Equity Incentive Plan Compensation \$(11)	All Other Compensation \$(12)	Total (\$)
John M. Maraganore, Ph.D. <i>Chief Executive Officer (principal executive officer)</i>	2016	731,600	—	—	620,958(10)	380,432	11,852	1,744,842
	2015	710,273	—	—	7,123,547(10)	419,772	7,566	8,261,158
	2014	689,585	—	—	—	444,000	7,596	1,141,181
Barry E. Greene (1) <i>President</i>	2016	546,400	—	—	620,958(10)	218,560	10,195	1,396,113
	2015	530,450	—	—	4,465,293(10)	261,247	7,896	5,264,886
	2014	515,000	—	—	—	276,000	7,956	798,956
Yvonne L. Greenstreet, MBChB (1) <i>Executive Vice President, Chief Operating Officer</i>	2016	144,231	100,000(4)	—	5,646,746(10)	56,000	40,379	5,987,356
Akshay K. Vaishnav, M.D., Ph.D. (2) <i>Executive Vice President, Research and Development</i>	2016	526,350	—	—	787,825(10)	210,540	10,119	1,534,834
	2015	500,148	—	—	3,316,048(10)	251,668	7,566	4,075,430
	2014	463,500	—	—	—	249,000	7,596	720,096
David-Alexandre C. Gros, M.D. (3) <i>Former Senior Vice President, Chief Business Officer (former principal financial officer)</i>	2016	432,300	100,000(5)	—	620,958(10)	138,336	1,610	1,293,204
	2015	241,106	200,000(5)	—	9,630,797(10)	95,819	508	10,168,230
Michael P. Mason <i>Vice President of Finance and Treasurer (principal financial officer)</i>	2016	309,050	—	318,315	137,853(10)	74,172	6,704	846,094
	2015	300,021	—	—	1,211,050(10)	88,657	6,261	1,605,989
	2014	257,187	—	—	—	82,000	6,167	345,354

- (1) Mr. Greene also served as our chief operating officer through September 19, 2016, at which time Dr. Greenstreet joined Alnylam as our executive vice president, chief operating officer. The amount reported as salary for 2016 for Dr. Greenstreet represents the total salary earned during 2016 and is based upon an annual salary of \$500,000. Dr. Greenstreet was eligible to participate in the 2016 annual cash incentive program with a pro-rated award. In addition, Dr. Greenstreet received a stock option award upon commencement of her employment and an annual stock option award in December 2016.
- (2) Dr. Vaishnav also served as our chief medical officer through December 31, 2016, at which time Dr. Pushkal Garg, our senior vice president, clinical development, was appointed to serve in this position.
- (3) Dr. Gros joined Alnylam as our senior vice president, chief business officer in June 2015 and was appointed as our principal financial officer in July 2016. The amount reported as salary for 2015 represents the total salary earned by Dr. Gros during 2015 and is based upon an annual salary of \$425,000. Dr. Gros was eligible to participate in the 2015 annual cash incentive program with a pro-rated award. In addition, Dr. Gros received a stock option award upon commencement of his employment and a pro-rated annual stock option award in December 2015.
- (4) Pursuant to the terms of her letter of employment, we paid Dr. Greenstreet an initial, one-time sign-on bonus of \$100,000 in September 2016. In the event that Dr. Greenstreet either voluntarily terminates her employment with us, other than for good reason, or is terminated by us for cause, within the first 12 months of her employment with us, she will be required to repay the full amount of this initial sign-on bonus.
- (5) Pursuant to the terms of his letter of employment, we paid Dr. Gros an initial sign-on bonus of \$200,000 in June 2015. Dr. Gros received a supplemental sign-on bonus of \$100,000 in June 2016. As a result of his resignation in January 2017, Dr. Gros repaid the full amount of this supplemental sign-on bonus.
- (6) The amount reported in the Stock Awards column represents the aggregate grant date fair value of a one-time award of time-based RSUs made in 2016, calculated in accordance with the provisions of FASB ASC Topic 718. The assumptions we used in

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calculating this amount are included in Note 9 of our audited consolidated financial statements for the year ended December 31, 2016 included in our Annual Report on Form 10-K, filed with the SEC on February 15, 2017. The grant date fair value for time-based RSUs is measured based on the closing fair market value of our common stock on the date of grant. On December 30, 2016, Mr. Mason received a one-time award of 8,502 time-based RSUs, which will vest in full on December 30, 2017, assuming Mr. Mason continues to be employed with us through the vesting date. We did not grant any time-based RSUs to any of our named executive officers in 2014 or 2015.

The amount reported in the Summary Compensation Table for this RSU award may not represent the amount that Mr. Mason will actually realize from the award. Whether, and to what extent, Mr. Mason realizes value will depend on our actual operating performance, stock price fluctuations and Mr. Mason's continued employment.

- (7) In January 2016, we granted performance-based RSUs to our employees, excluding our chief executive officer and our president. The vesting of these performance-based RSUs is predicated on the launch of our first internally developed product, but in no event will the awards vest in less than one year from the date of grant, assuming, in each case, the employee remains continuously employed by us as of the vesting date. In accordance with SEC rules, the grant date fair value to be reported for performance-based RSUs in the Stock Awards column is calculated based on the probable outcome of the performance condition as of the grant date. We determined that as of the date of the grant it was not probable, as defined under applicable accounting guidance, that this performance condition would be achieved and assigned a grant date fair value of \$0 in the Stock Awards column based on this evaluation. If we had determined that as of the date of the grant it was probable that the performance condition would be achieved, we would have assigned the following grant date fair value for the performance-based RSU awards in the Stock Awards column, measured based on the closing fair market value of our common stock on the date of grant, made to each NEO, excluding our chief executive officer and our president, as follows: Dr. Vaishnav, \$160,384; Dr. Gros, \$133,405; and Mr. Mason, \$94,146. Dr. Greenstreet was not employed by the company at the time of grant. We did not grant any performance-based RSUs to any of our named executive officers in 2014 or 2015.
- (8) The amounts reported in the Option Awards column represent the aggregate grant date fair value for the fiscal years ended December 31, 2016, 2015 and 2014 of grants of time-based stock options to each of the NEOs, 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, 2016 included in our Annual Report on Form 10-K, filed with the SEC on February 15, 2017. To see the value actually realized by the NEO from stock option exercises in 2016, see the 2016 Option Exercises and Stock Vested table appearing below.

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

- (9) The amounts reported in the Option Awards column for 2015 also include the grant date fair value of the time-based portion of the 2014 Contingent Option Awards that were approved by the compensation committee of our board on December 17, 2014 subject to and contingent upon approval by our stockholders at the 2015 annual meeting of the Amended and Restated 2009 Stock Incentive Plan, which approval was obtained on May 1, 2015. Accordingly, the table shows a value of \$0 for the grant date fair value of Option Awards for 2014, since the value is instead captured in 2015. The grant date fair value of the time-based portion of 2014 Contingent Option Awards is based on a Black-Scholes valuation model based on the fair market value of the stock on May 1, 2015, the date of such stockholder approval. No stock-based compensation expense was recorded in 2014 relating to the 2014 Contingent Option Awards. It is important to note that the 2014 Contingent Option Awards were made as part of the NEOs' compensation for 2014, and do not represent compensation awarded for 2015 performance.



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- (10) Each of the 2014 Contingent Option Award granted, for accounting purposes, on May 1, 2015, the December 18, 2015 annual stock option award, the on-hire grant to Dr. Greenstreet on September 19, 2016, and the December 20, 2016 annual stock option award included certain stock options that are subject to vesting upon the achievement of specific performance conditions. See the 2016 Grants of Plan-Based Awards table for additional information regarding the on-hire grant to Dr. Greenstreet in September 2016 and the December 20, 2016 annual stock option award. In accordance with SEC rules, the grant date fair value to be reported for performance-based stock options in the Option Awards column is calculated based on the probable outcome of the performance conditions as of the grant date. We determined that as of the date of the grant it was not probable, as defined under applicable accounting guidance, that any of the performance conditions would be achieved and assigned a grant date fair value of \$0 in the Options Awards column based on this evaluation. If we had determined that as of the date of the grant it was probable that 100% of the performance conditions would be achieved, we would have assigned the following grant date fair value for the performance-based stock option awards made to each NEO in the Options Awards column as follows:

Name	Date of Grant	Performance Year Associated with Grant	Date of Compensation Committee Approval	Grant Date Fair Value of Performance-Based Option Awards if 100% Achievement Probable(\$)
John M. Maraganore, Ph.D.	12/20/16	2016	12/20/16	620,958
	12/18/15	2015	12/18/15	2,964,962(a)
	05/01/15	2014	12/17/14	4,158,585
Barry E. Greene	12/20/16	2016	12/20/16	620,958
	12/18/15	2015	12/18/15	1,824,592(a)
	05/01/15	2014	12/17/14	2,640,701
Yvonne L. Greenstreet, MBChB	12/20/16	2016	12/20/16	620,958
	09/19/16	N/A	09/14/16	1,005,158
Akshay K. Vaishnaw, M.D., Ph.D.	12/20/16	2016	12/20/16	620,958
	12/18/15	2015	12/18/15	1,368,444(a)
	05/01/15	2014	12/17/14	1,947,604
David-Alexandre C. Gros, M.D.	12/20/16	2016	12/20/16	620,958
	12/18/15	2015	12/18/15	684,724(a)
Michael P. Mason	12/20/16	2016	12/20/16	137,853
	12/18/15	2015	12/18/15	328,427(a)
	05/01/15	2014	12/17/14	457,444

- (a) In December 2016, our Compensation Committee approved a modification to a performance condition of the December 18, 2015 annual stock option award, relating to 25% of the performance-based portion of the award, to remove the reference to a specific clinical program and provide that vesting would occur upon the completion of patient enrollment in our third Phase 3 study. We determined as of the date of grant and as of the date of modification it was not probable, as defined under applicable accounting guidance, that the original performance condition would be achieved and assigned a fair value of \$0 based on this evaluation. We also determined as of the date of modification it was not probable, as defined under applicable accounting guidance, that the modified performance condition would be achieved and assigned a modification date fair value of \$0 based on this evaluation. Under the applicable accounting guidance, any options that vest under the modified performance condition will be based on the modification date value instead of the grant date fair value. As a result of this modification, the fair value of the December 18, 2015 annual stock option award subject to performance-based vesting if 100% achievement is probable, would be reduced from the amount included above by the following amounts: Dr. Maraganore, \$482,040; Mr. Greene, \$296,640; Dr. Vaishnaw, \$222,480; Dr. Gros, \$111,329; and Mr. Mason, \$53,395.
- (11) The amounts reported in the Non-Equity Incentive Plan Compensation column reflect the annual cash incentive bonus earned by the NEOs for each respective year. The annual cash incentive bonuses were paid in January of the calendar year following the year to which the cash bonus relates.

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- (12) The amounts reported in the All Other Compensation column reflect, for each NEO, the sum of (i) the dollar value of life insurance premiums we paid; (ii) the amount we contributed to the 401(k) plan in respect of such executive officer; and (iii) the incremental cost to us of all perquisites and other personal benefits. Specifically, the All Other Compensation column above includes:

Name	Year	Term Life Insurance Premiums Paid by Alnylam (\$)	Dollar Value of Alnylam Common Stock Contributed by Alnylam to the Executive's Account Under 401(k) Plan (\$)	Incremental Cost to Alnylam of All Perquisites and Other Personal Benefits (\$)
John M. Maraganore, Ph.D.	2016	6,602	5,250	—
	2015	2,316	5,250	—
	2014	2,346	5,250	—
Barry E. Greene	2016	4,633	5,250	312(a)
	2015	2,316	5,250	330(a)
	2014	2,346	5,250	360(a)
Yvonne L. Greenstreet, MBChB	2016	4,408	—	35,971(b)
Akshay K. Vaishnav, M.D., Ph.D.	2016	4,658	5,250	211(a)
	2015	2,316	5,250	—
	2014	2,346	5,250	—
David-Alexandre C. Gros, M.D.	2016	1,610	—	—
	2015	508	—	—
Michael P. Mason	2016	1,094	5,250	360(a)
	2015	651	5,250	360(a)
	2014	557	5,250	360(a)

- (a) Represents amounts for an employee fitness benefit, paid by Alnylam.
- (b) Represents amounts paid to Dr. Greenstreet in 2016 for relocation assistance pursuant to her letter of employment, including \$24,402 in reimbursement for relocation expenses and \$11,569 for a gross-up related to taxable relocation benefits.

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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, 2016 under any plan, contract, authorization or arrangement pursuant to which cash, securities, similar instruments or other property may be received:

**2016 Grants of Plan-Based Awards**

Name	Award Type	Date of Grant(1)	Estimated Future Payouts Under Non-Equity Incentive Plan Awards(7)			Estimated Future Payouts Under Equity Incentive Plan Awards(8)			All Other Stock Awards: Number of Shares of Stock or Units(9)	All Other Option Awards: Number of Securities Underlying Options(9)	Exercise or Base Price of Option Awards (\$)	Grant Date Fair Value of Stock and Option Awards (\$)(10)
			Threshold (\$)	Target (\$)	Maximum (\$)	Threshold (#)	Target (#)	Maximum (#)				
John M. Maraganore, Ph.D.	Cash incentive	12/20/16	0	475,540	618,202							
	Time-based stock options	12/20/16								25,000(9)	42.22	620,958
	Performance-based stock options	12/20/16				—	25,000	25,000			42.22	—(11)
Barry E. Greene	Cash incentive	12/20/16	0	273,200	355,160							
	Time-based stock options	12/20/16								25,000(9)	42.22	620,958
	Performance-based stock options	12/20/16				—	25,000	25,000			42.22	—(11)
Yvonne L. Greenstreet, MBChB	Cash incentive	12/20/16	0	70,000	91,000							
	Time-based stock options	12/20/16								25,000(9)	42.22	620,958
	Performance-based stock options	12/20/16				—	25,000	25,000			42.22	—(11)
	Time-based stock options	09/19/16(2)								125,000(2)	77.10	5,025,788
	Performance-based stock options	09/19/16(2)				—	25,000(2)	25,000(2)			77.10	—(11)
Akshay K. Vaishnav, M.D., Ph.D.	Cash incentive	12/20/16	0	263,175	342,128							
	Time-based stock options	12/20/16								25,000(9)	42.22	620,958
	Performance-based stock options	12/20/16				—	25,000	25,000			42.22	—(11)
	Time-based stock options	02/23/16(3)								10,000(3)	94.14(3)	166,867
	Performance-based RSUs	01/04/16(4)				—	1,724	1,724				—(11)
David-Alexandre C. Gros, M.D.	Cash incentive	12/20/16	0	172,920	224,796							
	Time-based stock options	12/20/16(5)								25,000(9)	42.22	620,958
	Performance-based stock options	12/20/16(5)				—	25,000	25,000			42.22	—(11)
	Performance-based RSUs	01/04/16(4)(5)				—	1,434	1,434				—(11)
	Time-based RSUs	12/30/16(6)							8,502			318,315
Michael P. Mason	Cash incentive	12/20/16	0	92,715	120,530							
	Time-based stock options	12/20/16								5,550(9)	42.22	137,853
	Performance-based stock options	12/20/16				—	5,550	5,550			42.22	—(11)
	Performance-based RSUs	01/04/16(4)				—	1,012	1,012				—(11)

- (1) The stock option awards reported in the 2016 Grants of Plan-Based Awards table were granted pursuant to the Existing 2009 Plan, except for the September 19, 2016 grants to Dr. Greenstreet described below. Our Existing 2009 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. The option exercise price of any inducement award granted also will not be less than 100% of the fair market value of our common stock on the date of grant.
- (2) Our compensation committee approved an on-hire grant, effective as of September 19, 2016, to Dr. Greenstreet of non-qualified stock options to purchase an aggregate of 150,000 shares of common stock. This was granted as an inducement grant outside of our stockholder approved stock plans in accordance with NASDAQ Listing Rule 5635(c)(4). Stock options to purchase 125,000 shares of common stock 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. Stock options to purchase 25,000 shares of common stock will vest upon the later of the one-year anniversary of the date of grant and the launch of our first internally developed product, assuming in each case Dr. Greenstreet remains continuously employed by us as of such dates.
- (3) In September 2013, our compensation committee approved a ten-year service award for employees pursuant to which each individual employed by the company for ten consecutive years received a fully vested stock option award to purchase 10,000 shares of our common stock, subject to annual review by our compensation committee. Dr. Vaishnav received a ten-year service award in February 2016. The exercise price approved by our compensation committee for this stock option award was the closing price of our common stock on the NASDAQ Global Select Market on the last business day prior to the date of Dr. Vaishnav's ten-year anniversary of January 3, 2016, which price was required to be higher than the closing price of the common stock on the NASDAQ Global Select Market on the date of grant.

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- (4) Our compensation committee approved the award of performance-based RSUs to our employees, excluding our chief executive officer and our president, to be granted as of January 4, 2016. The vesting of these performance-based RSUs is predicated on the launch of our first internally developed product, but in no event will the awards vest in less than one year from the date of grant, assuming, in each case, the employee remains continuously employed by us as of the vesting date. Dr. Greenstreet was not employed by us at the time of grant.
- (5) Dr. Gros resigned effective January 6, 2017 and as a result, these equity awards were cancelled.
- (6) On December 30, 2016, our compensation committee granted Mr. Mason an award of RSUs that vest in full on December 30, 2017, assuming Mr. Mason continues to be employed with us through the vesting date.
- (7) The amounts shown in the threshold, target and maximum columns reflect the minimum, target and maximum amounts payable, respectively, under our 2016 annual cash incentive program, which is described above in the "Compensation Discussion and Analysis" under the heading "Short-Term Incentives—2016 Annual Incentive Program." The actual amounts paid to each NEO can be found above in the Summary Compensation Table under the column entitled Non-Equity Incentive Plan Compensation.
- (8) The amounts shown in the threshold, target and maximum columns reflect the minimum, target and maximum potential future payout range for equity awards granted with performance-based vesting milestones.
- (9) The time-based portion of the option awards 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, assuming the employee continues to be employed by us through each vesting date.
- (10) The grant date fair value, computed in accordance with FASB ASC Topic 718, represents the value of RSUs and stock options granted during the year. In accordance with SEC rules, the grant date fair value to be reported for performance-based equity awards in the Grant Date Fair Value of Stock and Option Awards column is calculated based on the probable outcome of the performance condition(s) as of the grant date. The amounts reported in the 2016 Grants of Plan-Based Awards table for the time-based RSUs and time-based stock option awards reflect our accounting expense, excluding the effect of estimated forfeitures, and may not represent the amounts our NEOs will actually realize from the awards. Whether, and to what extent, a NEO realizes value will depend on our actual operating performance, stock price fluctuations and the NEO's continued employment.
- (11) We determined that as of the date of the grant it was not probable, as defined under applicable accounting guidance, that any of the performance-based vesting conditions for these equity awards would be achieved and assigned a grant date fair value of \$0 in the Grant Date Fair Value of Stock and Option Awards column based on this determination.

## Information Relating to Equity Awards and Holdings

The following table sets forth information concerning outstanding equity awards held by each of our named executive officers on December 31, 2016.

### Outstanding Equity Awards at Fiscal Year-End for 2016

Name	Grant Date	Option Awards(1)					Stock Awards(2)				
		Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price (\$)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units That Have Not Vested (\$)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Rights That Have Not Vested (#)	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Rights That Have Not Vested (\$)	
John M. Maraganore, Ph.D.	12/12/2007	147,415	—		31.39	12/12/2017					
	12/09/2008	148,636	—		21.35	12/09/2018					
	12/10/2009	98,913	—		16.43	12/10/2019					
	12/08/2010	139,060	—		9.14	12/08/2020					
	11/30/2011	135,915	—		7.10	11/30/2021					
	12/20/2012	145,981	—		18.66	12/20/2022					
	09/11/2013	10,000(3)			55.96	09/11/2023					
	12/18/2013	112,500	37,500		63.00	12/18/2023					
	12/18/2013	25,000(4)	—	50,000(4)	63.00	12/18/2023					
	05/01/2015	37,500(5)	37,500(5)		96.45	12/17/2024					
	05/01/2015	25,000(6)	—	50,000(6)	96.45	12/17/2024					
	12/18/2015	16,250	48,750		88.95	12/18/2025					
	12/18/2015	—	—	65,000(7)	88.95	12/18/2025					
	12/20/2016	—	25,000		42.22	12/20/2026					
	12/20/2016	—	—	25,000(8)	42.22	12/20/2026					
Barry E. Greene	12/12/2007	76,815	—		31.39	12/12/2017					
	12/09/2008	85,316	—		21.35	12/09/2018					
	12/10/2009	58,913	—		16.43	12/10/2019					
	12/08/2010	89,060	—		9.14	12/08/2020					
	11/30/2011	92,400	—		7.10	11/30/2021					
	12/20/2012	100,000	—		18.66	12/20/2022					
	10/21/2013	10,000(3)	—		59.31	10/21/2023					
	12/18/2013	67,500	22,500		63.00	12/18/2023					
	12/18/2013	15,000(4)	—	30,000(4)	63.00	12/18/2023					
	05/01/2015	23,813(5)	23,812(5)		96.45	12/17/2024					
	05/01/2015	15,875(6)	—	31,750(6)	96.45	12/17/2024					
	12/18/2015	10,000	30,000		88.95	12/18/2025					
	12/18/2015	—	—	40,000(7)	88.95	12/18/2025					
	12/20/2016	—	25,000		42.22	12/20/2026					
	12/20/2016	—	—	25,000(8)	42.22	12/20/2026					
Yvonne L. Greenstreet, MBChB	09/19/2016	—	125,000		77.10	09/19/2026					
	09/19/2016	—	—	25,000(9)	77.10	09/19/2026					
	12/20/2016	—	25,000		42.22	12/20/2026					
	12/20/2016	—	—	25,000(8)	42.22	12/20/2026					

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Option Awards(1)							Stock Awards(2)			
				Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price (\$)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units That Have Not Vested (\$)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested (\$)
Name	Grant Date	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Options (#)						
Akshay K. Vaishnaw, M.D., Ph.D.	12/12/2007	32,750	—		31.39	12/12/2017				
	12/09/2008	55,994	—		21.35	12/09/2018				
	12/10/2009	38,913	—		16.43	12/10/2019				
	11/30/2011	5,000	—		7.10	11/30/2021				
	12/20/2012	45,981	—		18.66	12/20/2022				
	12/18/2013	24,375	8,125		63.00	12/18/2023				
	12/18/2013	10,834(4)	—	21,666(4)	63.00	12/18/2023				
	05/01/2015	17,563(5)	17,562(5)		96.45	12/17/2024				
	05/01/2015	11,709(6)	—	23,416(6)	96.45	12/17/2024				
	12/18/2015	7,500	22,500		88.95	12/18/2025				
	12/18/2015	—	—	30,000(7)	88.95	12/18/2025				
	01/04/2016								1,724(10)	64,547
	02/23/2016	10,000(3)	—		94.14	02/23/2026				
	12/20/2016	—	25,000		42.22	12/20/2026				
	12/20/2016	—		25,000(8)	42.22	12/20/2026				
David-Alexandre C. Gros, M.D.(11)	06/08/2015	52,500	87,500		129.97	06/08/2025				
	12/18/2015	3,753	11,259		88.95	12/18/2025				
	12/18/2015	—	—	15,011(7)	88.95	12/18/2025				
	01/04/2016								1,434(10)	53,689
	12/20/2016	—	25,000		42.22	12/20/2026				
Michael P. Mason	12/20/2016	—	—	25,000(8)	42.22	12/20/2026				
	11/30/2011	3,750	—		7.10	11/30/2021				
	12/20/2012	5,625	—		18.66	12/20/2022				
	12/18/2013	2,189	1,250		63.00	12/18/2023				
	12/18/2013	—	—	3,333(4)	63.00	12/18/2023				
	05/01/2015	4,125(5)	4,125(5)		96.45	12/17/2024				
	05/01/2015	2,750(6)	—	5,500(6)	96.45	12/17/2024				
	12/07/2015	10,000(3)	—		97.72	12/07/2025				
	12/18/2015	1,800	5,400		88.95	12/18/2025				
	12/18/2015	—	—	7,200(7)	88.95	12/18/2025				
	01/04/2016								1,012(10)	37,889
	12/20/2016	—	5,550		42.22	12/20/2026				
	12/20/2016			5,550(8)	42.22	12/20/2026				
	12/30/2016						8,502(12)	318,315		

- (1) All stock option awards were granted with a ten-year term and typically 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, unless otherwise noted, assuming the NEO continues to be employed with us through each vesting date.
- (2) The market value of RSUs that have not vested is based on the number of unvested RSUs outstanding times the closing price of our common stock on the NASDAQ Global Select Market on December 30, 2016, the last trading day of 2016.
- (3) These options were granted in recognition of ten years of service by the employee and were fully vested on the date of grant.
- (4) These options were granted on December 18, 2013 and will vest in three equal installments upon the achievement of each of three specific clinical development or regulatory events. One-third of these options vested in December 2014 based on the start of a second Phase 3 clinical trial of an "Alnylam 5x15" program.
- (5) On December 17, 2014, our compensation committee approved the grant of the 2014 Contingent Option Awards to members of our management team, including our NEOs, in connection with their performance and compensation review for 2014. These 2014 Contingent Option Awards were approved subject to and contingent upon approval by our stockholders at the 2015 annual meeting of the Amended

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and Restated 2009 Stock Incentive Plan, which approval was obtained on May 1, 2015. These options represent the half of the 2014 Contingent Option Award subject to time-based vesting.

- (6) These options represent the half of the 2014 Contingent Option Award described in Note 5 above subject to performance-based vesting. These options will vest in three equal installments upon the achievement of each of three specific clinical development or regulatory events, assuming the NEO continues to be employed with us through each vesting date. One-third of these options vested in February 2016 based upon the completion of patient enrollment in our Phase 3 APOLLO study.
- (7) These options were granted on December 18, 2015 and will vest in four equal installments upon the later of one year from the date of grant and the achievement of each of four specific clinical development or commercial events, assuming the NEO continues to be employed with us through each vesting date.
- (8) These options were granted on December 20, 2016 and will vest in four equal installments upon the later of one year from the date of grant and the achievement of each of four specific clinical development, regulatory or commercial events, assuming the NEO continues to be employed with us through each vesting date.
- (9) These options were granted on September 19, 2016 and will vest upon the later of the one-year anniversary of the grant date and the launch of our first internally developed product, assuming Dr. Greenstreet continues to be employed with us through the vesting date.
- (10) These performance-based RSU awards were granted on January 4, 2016 and will vest upon the launch of our first internally developed product, but in no event will the awards vest in less than one year from the date of grant, assuming each NEO continues to be employed with us through the vesting date.
- (11) Upon Dr. Gros' resignation from Alnylam in January 2017, all unvested stock options and RSUs were cancelled. Dr. Gros has three months following the date of his resignation to exercise any vested stock options, after which time all such outstanding stock options will be cancelled.
- (12) This time-based RSU award was granted on December 30, 2016 to Mr. Mason and will vest in full on December 30, 2017, assuming Mr. Mason continues to be employed with us through the vesting date.

The following table sets forth information concerning the exercise of stock options during 2016 for each of our named executive officers.

### 2016 Option Exercises and Stock Vested

Name	Option Awards	
	Number of Shares Acquired on Exercise(#)	Value Realized on Exercise (\$)(1)
John M. Maraganore, Ph.D.(2)	128,145	4,859,386
Barry E. Greene	72,145	1,953,246(3)
Yvonne L. Greenstreet, MBChB	—	—
Akshay K. Vaishnav, M.D., Ph.D.	38,712	818,684(3)
David-Alexandre C. Gros, M.D.	—	—
Michael P. Mason	—	—

- (1) The value realized on exercise is based on the sales price of the shares less the applicable option exercise price.
- (2) The value realized includes the value realized for a "net exercise" of outstanding stock options to purchase 30,151 shares of common stock, due to expire on December 14, 2016. 22,710 of the 30,151 shares were withheld by us for payment of the option exercise price and applicable tax withholding, based on the closing price of our common stock on December 12, 2016. This amount also includes the value realized for exercise and hold transactions. The value realized on these transactions is based on the market price of the shares on the date of exercise less the applicable option exercise price.
- (3) This amount also includes the value realized for exercise and hold transactions. The value realized on exercise and hold transactions is based on the market price of the shares on the date of exercise less the applicable option exercise price.

## APPROVAL OF SECOND AMENDED AND RESTATED 2009 STOCK INCENTIVE PLAN (PROPOSAL 2)

### Proposal

Our board of directors believes that stock options and other stock-based incentive awards can play an important role in the success of Alnylam by encouraging and enabling the employees, officers, non-employee directors and other key persons of Alnylam and its global subsidiaries upon whose judgment, initiative and efforts we largely depend for the successful conduct of our business to acquire a proprietary interest in Alnylam. Our board of directors anticipates that providing these people with a direct stake in Alnylam will assure a closer identification of the interests of these individuals with those of Alnylam and its stockholders, thereby stimulating their efforts on our behalf for long-term value creation and strengthening their desire to remain with Alnylam. Our board of directors views equity incentive compensation as a critical component of our compensation strategy and therefore to date we have maintained a broad-based program for all employees to have an opportunity to participate as owners of the company.

As of January 31, 2017, there were 541,889 shares of common stock available for future grants under the Alnylam Pharmaceuticals, Inc. Amended and Restated 2009 Stock Incentive Plan, as amended, also referred to herein as the Existing 2009 Plan. On March 6, 2017, upon recommendation of our compensation committee, our board of directors approved, subject to stockholder approval, the second amendment and restatement of the Existing 2009 Plan, or the Second Amended and Restated 2009 Plan, to, among other things, increase the aggregate number of shares authorized for issuance under the Existing 2009 Plan by 3,780,000 shares to 15,480,000 shares of common stock.

Stockholder approval of the Second Amended and Restated 2009 Plan under this Proposal 2 will also serve to approve the performance measures set forth in the Second Amended and Restated 2009 Plan, as further described below under the section entitled “—Qualified Performance-Based Compensation under Code Section 162(m).”

Adding additional shares to the Second Amended and Restated 2009 Plan is designed to enhance the flexibility to grant stock options and other equity awards to our officers, employees, non-employee directors and other key persons and to ensure that we can continue to grant stock options and other equity awards to eligible recipients at levels determined to be appropriate by our board of directors and/or our compensation committee. We are focused on advancement of our “*Alnylam 2020*” strategy for the development and commercialization of RNAi therapeutics as a potential new class of innovative medicines. Specifically, our goal is to achieve, by the end of 2020, a company profile with three marketed products and ten RNAi therapeutic clinical programs, including four in late stages of development, across our three STAr: Genetic Medicines; Cardio-Metabolic Disease; and Hepatic Infectious Disease. In order to achieve our goals for 2020, we expect to grow our company significantly over the next several years. During 2016, we added 200 new employees in the United States and abroad. We expect 2017 to be a significant year for Alnylam as we advance eight programs in clinical development and progress closer towards our first regulatory filings for



marketing approval and potential commercialization. As we focus on growing our company and expanding our manufacturing, commercial and medical affairs capabilities to support our transition from a development-stage company toward a multi-product, commercial-stage biopharmaceutical company, we expect to continue to hire a significant number of employees.

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

A copy of the Second Amended and Restated 2009 Plan is attached as [Appendix A](#) to this proxy statement and is incorporated herein by reference.

As of January 31, 2017, there were stock options to acquire 12,000,835 shares of common stock outstanding under our equity compensation plans, as well as equity awards granted outside of our equity compensation plans to new hires as inducement grants made in accordance with NASDAQ Listing Rule 5635(c)(4), including stock options to acquire 2,310,276 shares of common stock subject to performance vesting. These stock options have a weighted-average exercise price of \$58.14 and a weighted-average remaining contractual term of 7.06 years. In addition, as of January 31, 2017, there were 167,400 unvested full-value awards, including 147,699 unvested full-value awards with performance-based vesting outstanding under our equity compensation plans. Other than the foregoing, no other equity awards were outstanding as of January 31, 2017.

At January 31, 2017, the number of remaining securities available for future issuance under equity compensation plans of 683,812 shares consists of 141,923 shares of our common stock available for future issuance under our Amended and Restated 2004 Equity Incentive Plan, or the 2004 Plan, and 541,889 shares of our common stock available for future issuance under our Existing 2009 Plan. This amount does not reflect the proposed increase in shares reserved for issuance under our Second Amended and Restated 2009 Plan, as set forth in this Proposal 2.

## Summary of Material Features

The material features of the Second Amended and Restated 2009 Plan are:

- The maximum number of shares of common stock available for awards under the Second Amended and Restated 2009 Plan is increased by 3,780,000 shares from 11,700,000 shares to 15,480,000 shares.
- Grants of “full-value” awards are deemed for purposes of determining the number of shares available for future grants under the Second Amended and Restated 2009 Plan as an award for 1.5 shares for each share of common stock subject to the award. Grants of stock options or stock appreciation rights are deemed to be an award of one share for each share of common stock subject to the award.
- Shares tendered or held back for taxes will not be added back to the reserved pool under the Second Amended and Restated 2009 Plan. Upon the exercise of a stock appreciation right that is settled in shares of common stock, the full number of shares underlying the award will be

charged to the reserved pool. Additionally, shares we reacquire on the open market or otherwise using cash proceeds of option exercises will not be added to the reserved pool.

- The maximum number of shares with respect to which awards may be granted to non-employee directors, in the aggregate, is 10% of the maximum number of authorized shares under the Second Amended and Restated 2009 Plan. Additionally, the maximum number of shares with respect to which awards may be granted to an individual non-employee director in connection with his or her initial appointment or election is 50,000 shares, and the maximum number of shares with respect to which awards may be granted to any non-employee director in any calendar year is 22,500 shares (excluding any awards granted in connection with a non-employee director's initial appointment or election).
- Stock options and stock appreciation rights will not be repriced in any manner without stockholder approval.
- The award of stock options (both incentive and non-qualified options), stock appreciation rights, restricted stock, restricted stock units and other stock-based awards is permitted.
- Minimum vesting periods are required for awards granted under the Second Amended and Restated 2009 Plan, with certain exceptions described below.
- During the vesting period, restricted stock may be credited with dividends and restricted stock unit awards may be credited with dividend equivalent rights (but no dividends shall be paid unless and until such restricted stock or restricted stock units have vested).
- Any material amendment to the Second Amended and Restated 2009 Plan is subject to approval by our stockholders.

Based solely on the closing price of our common stock as reported by the NASDAQ Global Select Market on January 31, 2017 and the maximum number of shares that would have been available for awards as of such date taking into account the proposed increase described herein, the maximum aggregate market value of the common stock that could potentially be issued under the Second Amended and Restated 2009 Plan is \$172,832,341. The shares we issue under the Second Amended and Restated 2009 Plan will be authorized but unissued shares or treasury shares. The shares of common stock underlying any awards that are forfeited, canceled or otherwise terminated, other than by exercise, under the Second Amended and Restated 2009 Plan are added back to the shares of common stock available for issuance under the Second Amended and Restated 2009 Plan. Shares tendered or held back upon exercise of a stock option or settlement of an award under the Second Amended and Restated 2009 Plan to cover the exercise price or tax withholding, shares subject to a stock appreciation right that are not issued in connection with the stock settlement of the stock appreciation right upon exercise thereof and shares repurchased by us on the open market, are not added back to the shares of common stock available for issuance under the Second Amended and Restated 2009 Plan.

#### **Qualified Performance-Based Compensation under Code Section 162(m)**

To ensure that certain awards granted under the Second Amended and Restated 2009 Plan to "Covered Employees" (as defined in the Code) qualify as "performance-based compensation" under Section 162(m) of the Code, the Second Amended and Restated 2009 Plan provides that the compensation committee may require that the vesting of such awards be conditioned on the

satisfaction of performance criteria that may include any or all of the following: (1) net income; (2) earnings before or after discontinued operations, interest, taxes, depreciation and/or amortization; (3) operating profit before or after discontinued operations and/or taxes; (4) sales; (5) sales growth; (6) earnings growth; (7) cash flow or cash position; (8) gross margins; (9) stock price; (10) market share; (11) return on sales, assets, equity or investment; (12) improvement of financial ratings; (13) achievement of balance sheet or income statement objectives; (14) total shareholder return; (15) market penetration goals; (16) unit volume; (17) geographic business expansion goals; (18) drug discovery or other scientific goals; (19) pre-clinical or clinical goals; (20) organizational goals; (21) regulatory approvals; (22) cost targets; and (23) goals relating to acquisitions, divestitures and/or strategic partnerships. Subject to adjustments for stock splits and similar events, the maximum number of shares of common stock with respect to which awards may be granted to any participant under the Second Amended and Restated 2009 Plan will not exceed 500,000 shares of common stock in any calendar year, except the calendar year in which a participant is hired, in which case the maximum number of shares will not exceed 1,000,000 shares. The maximum number of shares with respect to which awards may be granted to non-employee directors in the aggregate is 10% of the total number of shares reserved for issuance under the Second Amended and Restated 2009 Plan.

### **Rationale for Share Increase**

The Second Amended and Restated 2009 Plan is a key component to our ongoing effort to build stockholder value. Equity incentive awards are a critical aspect of our executive and non-executive employees' compensation. Our compensation committee and our board of directors believe that we must continue to offer a broad-based, competitive equity compensation program in order to attract, retain and motivate the talented and qualified employees necessary for our continued growth and success. Adding additional shares to the Second Amended and Restated 2009 Plan is designed to enhance the flexibility to grant stock options and other equity awards to our officers, employees, non-employee directors and other key persons and to ensure that we can continue to grant stock options and other equity awards to eligible recipients at levels determined to be appropriate by our board of directors and/or our compensation committee. As noted above, we are focused on the advancement of our "*Alnylam 2020*" strategy for the development and commercialization of RNAi therapeutics as a potential new class of innovative medicines. In order to achieve our goals for 2020, we expect to grow our company significantly over the next several years. During 2016, we added 200 new employees in the United States and abroad. We expect 2017 to be a significant year for Alnylam as we advance eight programs in clinical development and progress closer towards our first regulatory filings for marketing approval and potential commercialization. As we focus on growing our company and expanding our manufacturing, commercial and medical affairs capabilities to support our transition from a development-stage company toward a multi-product, commercial-stage biopharmaceutical company, we expect to continue to hire a significant number of employees in 2017 and beyond.

Our board believes that approval of the Second Amended and Restated 2009 Plan and the authorization of the additional shares for issuance thereunder is appropriate and in the best interests of our stockholders given our current expectations on hiring, the highly competitive environment in which we recruit and retain employees and our historical burn rate. Our management will carefully consider all proposed grants under the Second Amended and Restated 2009 Plan.

We manage our long-term stockholder dilution by limiting the number of equity incentive awards granted annually. Our compensation committee carefully reviews our annual net burn rate and total dilution in order to maximize stockholder value by granting only the number of equity

incentive awards that it believes are necessary and appropriate to attract, reward and retain our employees. Our compensation philosophy reflects broad-based eligibility for equity incentive awards for all of our employees. By doing so, we link the interests of our employees with those of our stockholders and motivate our employees to act as owners of the business.

### **Burn Rate**

The following table sets forth information regarding historical awards granted and earned for the 2014 through 2016 period, and the corresponding burn rate, which is defined as the number of shares subject to time-based equity awards granted and performance-based equity awards earned in a year divided by the weighted-average number of shares of common stock outstanding for that year, for each of the last three fiscal years:

Share Element	2016	Year 2015	2014
Time-Based Stock Options Granted	2,548,411	2,402,974(1)	1,351,764
Performance-Based Stock Options Earned	159,122	—	154,351
Time-Based Full-Value Awards Granted	17,273	—	29,166
Performance-Based Full-Value Awards Earned	—	—	—
<b>Total Time-Based Awards Granted and Performance-Based Awards Earned</b>	<b>2,724,806</b>	<b>2,402,974</b>	<b>1,535,281</b>
Weighted-Average Common Shares Outstanding During the Fiscal Year	85,596,082	83,991,788	74,277,658
<b>Annual Burn Rate</b>	<b>3.18%</b>	<b>2.86%</b>	<b>2.07%</b>
<b>Three Year Average Burn Rate(2)</b>	<b>2.70%</b>		

(1) On December 17, 2014, our compensation committee approved the grant of stock options to purchase 612,085 shares of our common stock, at an exercise price of \$96.45 per share, to members of our management team, including our NEOs in connection with their performance and compensation review for 2014. These stock option grants, referred to as the 2014 Contingent Option Awards, were approved subject to and contingent upon approval by our stockholders at the 2015 annual meeting of the Amended and Restated 2009 Stock Incentive Plan, to, among other things, increase the shares authorized for issuance thereunder. In May 2015, our stockholders approved the Amended and Restated 2009 Stock Incentive Plan. One-half of the 2014 Contingent Option Awards granted are time-based stock options and one-half are performance-based stock options. These 2014 Contingent Option Awards are included in 2015 grant amounts.

(2) As illustrated in the table above, our three-year average burn rate for the 2014-2016 period was 2.70%, which is below the ISS industry category burn rate threshold of 6.53%.

If our request to increase the share reserve of the Second Amended and Restated 2009 Plan by an additional 3,780,000 shares is approved by stockholders, we will have approximately 4,463,812 shares available for grant after the 2017 annual meeting, which is based on 141,923 shares available for future issuance under our 2004 Plan and 541,889 shares available for issuance under our Existing 2009 Plan as of January 31, 2017, together with the 3,780,000 shares subject to this proposal. Our compensation committee determined the size of the requested share increase based on projected equity awards to anticipated new hires, projected annual equity awards to existing employees and an assessment of the magnitude of increase that our institutional investors and the firms that advise them would likely find acceptable. We anticipate that if our request to increase the share reserve is approved by our stockholders, it will be sufficient to provide equity incentives to attract, retain and motivate employees through our 2018 annual meeting of stockholders.

## Summary of the Second Amended and Restated 2009 Plan

The following description of certain features of the Second Amended and Restated 2009 Plan is intended to be a summary only. The summary is qualified in its entirety by the full text of the Second Amended and Restated 2009 Plan, which is attached hereto as [Appendix A](#).

*Plan Administration.* The Second Amended and Restated 2009 Plan is administered by our compensation committee. The compensation committee has full power to select, from among the individuals eligible for awards, the individuals to whom awards will be granted, to make any combination of awards to participants, and to determine the specific terms and conditions of each award, subject to the provisions of the Second Amended and Restated 2009 Plan. The compensation committee may delegate to one or more officers of the company the authority to grant equity awards to employees who are not “executive officers” (as defined by Rule 3b-7 under the Exchange Act ) and who are not “officers” (as defined by Rule 16a-1 under the Exchange Act), subject to certain limitations and guidelines.

*Eligibility.* Persons eligible to participate in the Second Amended and Restated 2009 Plan are employees, officers, directors, consultants and advisors of Alnylam as selected from time to time by the compensation committee in its discretion. As of January 31, 2017, 533 individuals are currently eligible to participate in the Second Amended and Restated 2009 Plan, which includes six executive officers, 508 employees who are not executive officers, nine non-employee/director members of our scientific advisory board and ten non-employee directors.

*Plan Limits.* The maximum award of shares with respect to which awards may be granted to any one participant will not exceed 500,000 shares of common stock (subject to adjustment for stock splits and similar events) for any calendar year period, except in the calendar year in which a participant is hired, in which case the maximum number of shares will not exceed 1,000,000 shares of common stock per calendar year.

*Effect of Awards.* For purposes of determining the number of shares of common stock available for issuance under the Second Amended and Restated 2009 Plan, the grant of any “full-value” award, such as a restricted stock, restricted stock unit or other stock-based award will be counted as 1.5 shares for each share of common stock actually subject to the award. The grant of any stock option or stock appreciation right will be counted for this purpose as one share from each share of common stock actually subject to the award.

*Minimum Vesting.* Awards granted under the Second Amended and Restated 2009 Plan shall not become exercisable and/or vested (as applicable) prior to the first anniversary of the date of grant. This minimum vesting restriction does not apply to awards granted for up to an aggregate of 5% of the maximum number of shares authorized for issuance under the Second Amended and Restated 2009 Plan. In addition, the compensation committee may accelerate the vesting schedule in the event of death or disability of the participant or a change in control of Alnylam.

*Stock Options.* The Second Amended and Restated 2009 Plan permits the granting of (1) options to purchase common stock intended to qualify as incentive stock options under Section 422 of the Code and (2) options that do not so qualify. Options granted under the Second Amended and Restated 2009 Plan will be non-qualified options if they fail to qualify as incentive options or exceed the annual limit on incentive stock options. Incentive stock options may only be

granted to employees of Alnylam and its subsidiaries. Non-qualified options may be granted to any persons eligible to receive incentive options and to non-employee directors, consultants and advisors. The option exercise price of each option will be determined by the compensation committee but may not be less than 100% of the fair market value of the common stock on the date of grant. Fair market value for this purpose will be the closing price of the shares of common stock on the NASDAQ Global Select Market on the grant date. The exercise price of an option may not be reduced after the date of the option grant, other than to appropriately reflect changes in our capital structure.

The term of each option will be fixed by the compensation committee and may not exceed ten years from the date of grant. The compensation committee will determine at what time or times each option may be exercised. Options may be made exercisable in installments and the exercisability of options may be accelerated by the compensation committee.

Upon the exercise of an option, the option exercise price must be paid in full by (i) cash or check, (ii) by delivery of an irrevocable and unconditional undertaking by a creditworthy broker to deliver promptly to Alnylam sufficient funds to pay the exercise price and any required tax withholding or by delivery by the participant of a copy of irrevocable and unconditional instructions to a creditworthy broker to deliver promptly to Alnylam cash or check sufficient to pay the exercise price and any required tax withholding, (iii) by delivery (either by actual delivery or attestation) of shares of common stock owned by the participant valued at the fair market value, subject to certain restrictions and subject to the prior approval by the compensation committee with respect to any executive officer, (iv) with respect to non-qualified options, by a “net exercise” arrangement, as a result of which the participant would receive the number of shares of common stock underlying the option reduced by the number of shares equal to the aggregate exercise price of the option divided by the fair market value on the date of exercise, subject to the prior approval by the compensation committee with respect to any executive officer, (v) to the extent provided in the applicable option agreement or approved by the compensation committee and subject to applicable law, by payment of such other lawful consideration as the compensation committee may determine or (vi) a combination of the above permitted forms of payment.

To qualify as incentive options, options must meet additional federal tax requirements, including a \$100,000 limit on the value of shares subject to incentive options that first become exercisable by a participant in any one calendar year.

*Stock Appreciation Rights.* The compensation committee may award stock appreciation rights subject to such conditions and restrictions as the compensation committee may determine. Stock appreciation rights entitle the recipient to shares of common stock equal to the value of the appreciation in the stock price over the exercise price. The exercise price may not be less than the fair market value of the common stock on the date of grant. The maximum term of a stock appreciation right is ten years.

*Restricted Stock and Restricted Stock Units.* The compensation committee may award shares of common stock and restricted stock units to participants subject to such conditions and restrictions as the compensation committee may determine. These conditions and restrictions may include the achievement of certain performance goals (as summarized above) and/or continued employment with us through a specified restricted period. Restricted stock units are ultimately payable in the form of shares of common stock. During the vesting period, restricted stock may be credited with

dividends and restricted stock unit awards may be credited with dividend equivalent rights (but no dividends shall be paid unless and until such restricted stock or restricted stock units have vested).

*Other Stock-Based Awards.* The compensation committee may award shares of common stock or other awards that are valued, in whole or in part, by reference to, or are otherwise based on, shares of our common stock or other property.

*Change of Control Provisions.* The Second Amended and Restated 2009 Plan provides that, in connection with a “reorganization event,” as defined in the Second Amended and Restated 2009 Plan, the compensation committee may take any one or more of the following actions as to all or any outstanding awards other than restricted stock and restricted stock units: (i) provide that awards shall be assumed, or substantially equivalent awards shall be substituted, by the acquiring or succeeding corporation (or affiliate thereof), (ii) upon written notice to a participant, provide that the participant’s unexercised awards will terminate immediately prior to the consummation of such reorganization event unless exercised by the participant within a specified period of time following the date of such notice, (iii) provide that outstanding awards shall become exercisable, realizable, or deliverable, or restrictions applicable to an award shall lapse, in whole or in part, prior to the reorganization event, (iv) in the event of a reorganization event in which holders of common stock will receive, upon the consummation thereof, a cash payment for each share surrendered in the reorganization event, make or provide for a cash payment to a participant, in exchange for the cancellation of such awards, equal to the excess, if any, of (a) the price paid to the holders of common stock in the reorganization event times the number of shares subject to the participant’s awards over (b) the aggregate exercise price of all such outstanding awards and any applicable tax withholdings, (v) provide that, in connection with a liquidation or dissolution of Alnylam, awards shall convert into the right to receive liquidation proceeds (if applicable, net of the exercise price thereof and any applicable tax withholdings), and (vi) any combination of the foregoing.

Upon the occurrence of a reorganization event other than a liquidation or dissolution, our repurchase and other rights with respect to outstanding restricted stock and restricted stock units shall inure to the benefit of the successor entity and shall, unless the board of directors determines otherwise, apply to the cash, securities or other property into which the common stock was converted or exchanged for pursuant to such reorganization event in the same manner and to the same extent they applied to the common stock subject to the restricted stock or restricted stock unit. However, the compensation committee may provide for termination or deemed satisfaction of such repurchase or other rights under the instrument evidencing the restricted stock or restricted stock units or other agreement between the participant and us. Upon the occurrence of a reorganization right involving the liquidation or dissolution of Alnylam, except to the extent specifically provided to the contrary in the instrument evidencing the award or any other agreement between the participant and us, all restrictions and conditions on all restricted stock and restricted stock units then outstanding shall automatically be deemed terminated or satisfied.

*Adjustments for Stock Dividends, Stock Splits, Etc.* The Second Amended and Restated 2009 Plan requires the compensation committee to make appropriate adjustments to the number of shares of common stock that are subject to the Second Amended and Restated 2009 Plan, subject to certain limits in the Second Amended and Restated 2009 Plan, and to any outstanding awards to reflect stock dividends, stock splits, recapitalization and similar events.



*Tax Withholding.* Participants in the Second Amended and Restated 2009 Plan are responsible for the payment of any federal, state or local taxes that we are required by law to withhold upon the exercise of options or stock appreciation rights or vesting of other awards. Participants may elect to have the tax withholding obligations satisfied by delivery of shares of common stock, subject to the prior approval by the compensation committee for any of our executive officers.

*Clawback Policy.* All awards made under the Second Amended and Restated 2009 Plan will be subject to our clawback policy.

*Amendments and Termination.* Our board may at any time amend or discontinue the Second Amended and Restated 2009 Plan. However, no such action may materially adversely affect any rights under any outstanding award without the holder's consent. To the extent required under NASDAQ rules, any amendments that materially change the terms of the Second Amended and Restated 2009 Plan will be subject to approval by our stockholders. Amendments shall also be subject to approval by our stockholders if and to the extent determined to be required by the Code to preserve the qualified status of incentive options or to ensure that compensation earned under the Second Amended and Restated 2009 Plan qualifies as performance-based compensation under Section 162(m) of the Code.

*Effective Date of the Second Amended and Restated 2009 Plan.* Our board initially adopted the Alnylam Pharmaceuticals, Inc. 2009 Stock Incentive Plan on April 16, 2009, which became effective on the date it was approved by stockholders in June 2009. The board adopted the Amended and Restated 2009 Stock Incentive Plan on December 17, 2014, and the Amended and Restated 2009 Stock Incentive Plan became effective on the date it was approved by stockholders in May 2015. The board approved an amendment to the Amended and Restated 2009 Stock Incentive Plan in March 2016 providing for limits on on-hire and annual awards to individual non-employee directors. The board adopted the Second Amended and Restated 2009 Plan on March 6, 2017 which will become effective upon approval by our stockholders. Awards of incentive options may be granted under the Second Amended and Restated 2009 Plan until March 6, 2027. No other awards may be granted under the Second Amended and Restated 2009 Plan after the date that is ten years from the date of stockholder approval. If the Second Amended and Restated 2009 Plan is not approved by our stockholders, the Existing 2009 Plan will continue in effect until it expires, and awards may be granted thereunder, in accordance with its terms.



## Plan Benefits

Because the grant of awards under the Second Amended and Restated 2009 Plan is within the discretion of our compensation committee, we cannot determine the dollar value or number of shares of common stock that will in the future be received by or allocated to any participant in the Second Amended and Restated 2009 Plan. Accordingly, in lieu of providing information regarding benefits that will be received under the Second Amended and Restated 2009 Plan, the following table provides information concerning the benefits that were received by the following persons and groups during fiscal year 2016: each named executive officer; all current executive officers, as a group; all current directors who are not executive officers, as a group; and all current employees who are not executive officers, as a group.

Name and Position	Options Awards		Restricted Stock Awards	
	Weighted-Average Exercise Price (\$)	Number of Awards (#)	Dollar Value (\$)(1)	Number of Awards (#)
John M. Maraganore, Ph.D., <i>Chief Executive Officer</i>	42.22	50,000	—	—
Barry E. Greene, <i>President</i>	42.22	50,000	—	—
Yvonne L. Greenstreet, MBChB, <i>Executive Vice President, Chief Operating Officer</i>	68.38	200,000	—	—
Akshay K. Vaishnav, M.D., Ph.D., <i>Executive Vice President, Research and Development</i>	50.87	60,000	160,384	1,724
David-Alexandre C. Gros, M.D., <i>Former Senior Vice President, Chief Business Officer</i>	42.22	50,000	133,405	1,434
Michael P. Mason, <i>Vice President of Finance and Treasurer</i>	42.22	11,100	412,461	9,514
All current executive officers, as a group	55.88	421,100	699,645	12,601
All current directors who are not executive officers, as a group	70.20	112,500	—	—
All current employees who are not executive officers, as a group	54.37	2,802,865	16,031,857	175,956

- (1) The dollar value of restricted stock awards is based on the number of shares of restricted stock or RSUs granted, as applicable, times the closing price of our common stock on the NASDAQ Global Select Market on the applicable date of grant for such restricted stock or RSUs.

## Tax Aspects under the Code

The following is a summary of the principal U.S. federal income tax consequences of certain transactions under the Second Amended and Restated 2009 Plan. It does not describe all federal tax consequences under the Second Amended and Restated 2009 Plan, nor does it describe state or local tax consequences.

*Incentive Options.* No taxable income is generally realized by the optionee upon the grant or exercise of an incentive option. If shares of common stock issued to an optionee pursuant to the exercise of an incentive option are sold or transferred after two years from the date of grant and after one year from the date of exercise, then, (i) upon sale of such shares, any amount realized in excess of the option price (the amount paid for the shares) will be taxed to the optionee as a long-term capital gain, and any loss sustained will be a long-term capital loss, and (ii) we will not be entitled to any deduction for federal income tax purposes. The exercise of an incentive option will give rise to an item of tax preference that may result in alternative minimum tax liability for the optionee.

If shares of common stock acquired upon the exercise of an incentive option are disposed of prior to the expiration of the two-year and one-year holding periods described above, which is referred to as a “disqualifying disposition,” generally (i) the optionee will realize ordinary income in the year of disposition in an amount equal to the excess (if any) of the fair market value of the shares of common stock at exercise (or, if less, the amount realized on a sale of such shares of common stock) over the exercise price thereof, and (ii) we will be entitled to deduct such amount. Special rules will apply where all or a portion of the exercise price of the incentive option is paid by tendering shares of common stock.

If an incentive option is exercised at a time when it no longer qualifies for the tax treatment described above, the option is treated as a non-qualified option. Generally, an incentive option will not be eligible for the tax treatment described above if it is exercised more than three months following termination of employment (or one year in the case of termination of employment by reason of disability). In the case of termination of employment by reason of death, the three-month rule does not apply.

*Non-Qualified Options.* No income is realized by the optionee at the time the option is granted. Generally (i) at exercise, ordinary income is realized by the optionee in an amount equal to the difference between the exercise price and the fair market value of the shares of common stock on the date of exercise, and we receive a tax deduction for the same amount, and (ii) at disposition, appreciation or depreciation after the date of exercise is treated as either short-term or long-term capital gain or loss depending on how long the shares of common stock have been held. Special rules will apply where all or a portion of the exercise price of the non-qualified option is paid by tendering shares of common stock. Upon exercise, the optionee will also be subject to Social Security taxes on the excess of the fair market value over the exercise price of the option.

*Other Awards.* We will generally be entitled to a tax deduction in connection with an award under the Second Amended and Restated 2009 Plan in an amount equal to the ordinary income realized by the participant at the time the participant recognizes such income. Participants typically are subject to income tax and recognize that tax at the time that an award is exercised, vests or becomes non-forfeitable, unless the award provides for a further deferral.

**Parachute Payments.** The vesting of any portion of an option or other award that is accelerated due to the occurrence of a change in control (such as a reorganization event) may cause a portion of the payments with respect to such accelerated awards to be treated as “parachute payments” as defined in the Code. Any such parachute payments may be non-deductible by us, in whole or in part, and may subject the recipient to a non-deductible 20% federal excise tax on all or a portion of such payment (in addition to other taxes ordinarily payable).

**Limitation on Deductions.** Under Section 162(m) of the Code, our deduction for certain awards under the Second Amended 2009 Plan may be limited to the extent that the chief executive officer or other executive officer whose compensation is required to be reported in the summary compensation table (other than the principal financial officer) receives compensation in excess of \$1.0 million a year (other than performance-based compensation that otherwise meets the requirements of Section 162(m) of the Code). The Second Amended and Restated 2009 Plan is structured to allow certain awards to qualify as performance-based compensation.

## Vote Required

A majority of the votes cast is required for the approval of the Second Amended and Restated 2009 Plan.

## Securities Authorized for Issuance Under Equity Compensation Plans

The following table provides information as of December 31, 2016 about the securities authorized for issuance under our stockholder approved equity compensation plans, consisting of our 2002 Employee, Director and Consultant Stock Option Plan, or the 2002 Plan, our 2003 Employee, Director and Consultant Stock Option Plan, or the 2003 Plan, our 2004 Plan, our Existing 2009 Plan and our 2004 Employee Stock Purchase Plan, as amended, or the Existing ESPP, as well as equity awards granted outside of such stockholder approved plans to new hires as inducement grants made in accordance with NASDAQ Listing Rule 5635(c) (4).

### Equity Compensation Plan Information as of December 31, 2016

	Number of Securities to Be Issued Upon Exercise of Outstanding Options and Rights(#)	Weighted-Average Exercise Price of Outstanding Options and Rights\$(1)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans(#)
Equity compensation plans approved by stockholders	12,290,874(2)	58.43	605,330(3)
Equity compensation plans not approved by stockholders(4)	150,000	77.10	—
<b>Total</b>	<b>12,440,874</b>	<b>58.66</b>	<b>605,330(3)</b>

(1) Since RSUs do not have any exercise price, such units are not included in the weighted-average exercise price calculation.

(2) Includes 12,119,686 shares of common stock issuable upon the exercise of outstanding options and 171,188 shares of common stock issuable upon the vesting of outstanding RSUs.

(3) Consists of 123,173 shares of our common stock available for future issuance under our 2004 Plan, 351,264 shares of our common stock available for future issuance under our Existing 2009 Plan and 130,893 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, 2016.

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- (4) Our compensation committee approved a grant, effective as of September 19, 2016, of non-qualified stock options to purchase an aggregate of 150,000 shares of common stock with an exercise price per share of \$77.10 as a material inducement for Dr. Greenstreet to commence employment with us. This was granted as an inducement grant outside of our stockholder approved stock plans in accordance with NASDAQ Listing Rule 5635(c)(4).

The following table provides the information presented in the table above as of January 31, 2017.

**Equity Compensation Plan Information  
as of January 31, 2017**

	Number of Securities to Be Issued Upon Exercise of Outstanding Options and Rights(#)	Weighted-Average Exercise Price of Outstanding Options and Rights\$(1)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans(#)
Equity compensation plans approved by stockholders	12,018,235(2)	57.90	814,705(4)
Equity compensation plans not approved by stockholders(5)	150,000	77.10	—
<b>Total</b>	<b>12,168,235(3)</b>	<b>58.14</b>	<b>814,705(4)</b>

- (1) Since RSUs do not have any exercise price, such units are not included in the weighted-average exercise price calculation.
- (2) Includes 11,850,835 shares of common stock issuable upon the exercise of outstanding options and 167,400 shares of common stock issuable upon the vesting of outstanding RSUs.
- (3) The weighted-average remaining contractual life for options outstanding as of January 31, 2017 was 7.06 years.
- (4) Consists of 141,923 shares of our common stock available for future issuance under our 2004 Plan, 541,889 shares of our common stock available for future issuance under our Existing 2009 Plan and 130,893 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 January 31, 2017. This amount does not reflect the proposed increase in shares reserved for issuance under our Second Amended and Restated 2009 Plan, as set forth in Proposal 2.
- (5) See Note 4 in the December 31, 2016 table above.

**BOARD RECOMMENDATION**

**Our board of directors believes that our future success depends, in large part, upon our ability to maintain a competitive position in attracting, retaining and motivating key personnel. Accordingly, our board believes approval of the Alnylam Pharmaceuticals, Inc. Second Amended and Restated 2009 Equity Incentive Plan is in the best interests of Alnylam and our stockholders and unanimously recommends that you vote “FOR” Proposal 2.**

## APPROVAL OF AMENDED AND RESTATED 2004 EMPLOYEE STOCK PURCHASE PLAN (PROPOSAL 3)

### Overview

On March 6, 2017, upon the recommendation of our compensation committee, our board of directors approved the amendment and restatement of our 2004 Employee Stock Purchase Plan, as amended, or the Existing ESPP, which, as amended by this proposal, we refer to as the Amended ESPP, to increase the number of shares of common stock authorized for issuance thereunder from 715,789 shares to 1,215,789 shares (subject to adjustment in the event of stock splits and other similar events).

The Amended 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 or exercise date, whichever is lower. Our board of directors believes that it is in our best interests to encourage stock ownership by our employees and the Amended ESPP is an important benefit in recruiting and retaining employees. As of January 31, 2017, there were an aggregate of 130,893 shares available for future awards under the Existing ESPP. Our board of directors believes that it is necessary to adopt the amendment and restatement of the Existing ESPP to increase the number of shares available in order to ensure that there are sufficient shares for all stock purchases under the Amended ESPP through approximately 2020.

Our board of directors is submitting the Amended ESPP for approval by our stockholders and has specifically conditioned its effectiveness on such approval. If our stockholders do not approve the Amended ESPP, the Existing ESPP 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 Amended ESPP is in the best interests of our company and our stockholders and recommends a vote “FOR” this proposal.**

### Description of the Amended ESPP

A copy of the Amended ESPP is attached as [Appendix B](#) to this proxy statement and is incorporated herein by reference.

#### *Eligibility*

Generally, our employees or the employees of a Designated Subsidiary of ours (as defined in the Amended 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 30 days prior to enrolling in the Amended 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 Amended ESPP) are eligible to participate in the Amended ESPP; provided however,

any employee who, immediately after the grant of an option under the Amended 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 Amended ESPP. In addition, any executive officer considered a “highly compensated individual” as defined by the Code shall not be eligible to participate in the Amended ESPP.

### ***Administration, Delegation and Termination***

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

### ***Offerings***

Under the Amended 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 Amended ESPP also provides that our compensation committee may, at its discretion, choose a different plan period of 12 months or less for any offering.

### ***Participation***

Participation in the Amended 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 Amended ESPP) during the plan period. Unless an employee files a new form or withdraws from the Amended ESPP, his or her deductions and purchases may be continued at the same rate for future offerings under the Amended 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 Amended 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 Amended 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 Amended ESPP as does not exceed the number of shares determined by dividing \$25,000 by 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 Amended 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 Amended 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 Amended 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 Amended 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.

### ***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 Amended 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 Amended 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

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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 Amended 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 Amended ESPP to fail to comply with Section 423 of the Code.

### ***Plan Benefits***

As of January 31, 2017, 473 employees were eligible to participate in the Existing ESPP and would be eligible to participate in the Amended ESPP. Because participation in the stock purchase plan is voluntary and our stock price is variable, 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 19,035 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 Amended ESPP and with respect to the sale of shares of our common stock acquired under the Amended 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 Amended 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 Amended 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 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 Amended 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 Amended ESPP is in the best interests of our company and our stockholders and unanimously recommends that you vote "FOR" Proposal 3 to approve the amendment and restatement of the Existing ESPP to increase the number of shares authorized for issuance from 715,789 shares to 1,215,789 shares.**

## SAY-ON-PAY – ADVISORY VOTE ON EXECUTIVE COMPENSATION (PROPOSAL 4)

We are providing our stockholders with the opportunity to vote to approve, on an advisory, non-binding basis, the compensation of our named executive officers as disclosed in this proxy statement in accordance with the SEC's rules. This proposal, which is commonly referred to as "say-on-pay," is required by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, which added Section 14A to the Exchange Act.

We encourage stockholders to read closely the "Executive Compensation" section of this proxy statement beginning with the "Compensation Discussion and Analysis" on page 36, which describes in detail our executive compensation programs and the decisions made by our compensation committee and our board with respect to the fiscal year ended December 31, 2016.

As we describe in the "Compensation Discussion and Analysis," we maintain straight-forward executive compensation programs that generally consist of base salary, an annual cash incentive award and equity incentive awards upon the commencement of employment and annually thereafter. These elements of compensation have been selected by our compensation committee because the committee believes that they effectively achieve the fundamental goals of our compensation program, which are to attract, motivate and retain qualified and talented executives, who are critical to our success, motivating them to achieve our business goals and rewarding them for superior short- and long-term performance. The goal of our compensation committee is to ensure that our compensation programs are aligned with the interests of our stockholders and our business goals in order to attain our ultimate objective of increasing stockholder value. We believe that, consistent with these goals, the total compensation paid to each of our named executive officers is fair, reasonable and competitive. Further, we believe our programs do not encourage excessive risk-taking by management, as supported by the assessment described above conducted in 2016 by Radford, an independent compensation consultant to the compensation committee.

With very limited exceptions, we do not provide any compensation or benefit plans to executive officers that are not also available to other employees. We generally differentiate among executive officers primarily based on size of annual cash incentive awards and annual equity incentive awards and, to a lesser extent, base salary. Annual compensation decisions for executive officers are made by our compensation committee based on the achievement of specified corporate performance goals, and with respect to base salary and annual equity incentive awards, consideration of the executive officer's individual contributions to the achievement of the corporate goals, as described above under "Compensation Discussion and Analysis."

Our board of directors is asking stockholders to approve, on a non-binding advisory basis, the following resolution:

RESOLVED, that the compensation paid to the named executive officers of Alnylam Pharmaceuticals, Inc., as disclosed pursuant to the compensation disclosure rules of the SEC, including the compensation discussion and analysis, the compensation tables and any related material disclosed in the proxy statement of Alnylam Pharmaceuticals, Inc., is hereby approved.

As an advisory vote, this proposal is not binding. The outcome of this advisory vote will not overrule any decision by us or our board of directors (or any committee thereof). However, our compensation committee and board of directors value the opinions expressed by our stockholders in their vote on this proposal and will consider the outcome of the vote when making future compensation decisions for named executive officers.

## **BOARD RECOMMENDATION**

**Our board of directors unanimously recommends that you vote to approve the compensation of our named executive officers by voting “FOR” Proposal 4.**

## **SAY-ON-FREQUENCY – ADVISORY VOTE ON FREQUENCY OF FUTURE EXECUTIVE COMPENSATION ADVISORY VOTES (PROPOSAL 5)**

In Proposal 4, we are providing our stockholders the opportunity to vote to approve, on an advisory, non-binding basis, the compensation of our named executive officers. In this Proposal 5, we are asking our stockholders to cast a non-binding, advisory vote regarding the frequency of future advisory votes on the compensation of our named executive officers. Under Section 14A(a) (2) of the Exchange Act, generally, each public company must submit this proposal to its stockholders not less than every six years and this proposal was last submitted to our stockholders at our 2011 annual meeting of stockholders. Stockholders may vote for a frequency of every one, two or three years, or may abstain.

Stockholders are not voting to approve or disapprove the recommendation of our board of directors. Stockholders may choose among the four choices available.

After careful consideration, our board believes that a non-binding, advisory vote on the compensation of our named executive officers should continue to be held every year. Our board believes that continuing to hold an annual advisory vote on the compensation of our named executive officers will facilitate more direct stockholder input about executive compensation. An annual advisory vote on the compensation of our named executive officers is consistent with our policy of reviewing our compensation programs annually, as well as seeking regular input from our stockholders on corporate governance and executive compensation matters. We believe the continuation of an annual vote would be the best governance practice for our company at this time.

The frequency choice that receives the highest number of votes cast will be considered to be the preferred frequency of our stockholders with which we are to hold future non-binding stockholder advisory “say-on-pay” votes on the compensation of our named executive officers.

Our board of directors will take into consideration the outcome of this vote in determining the frequency of future non-binding, advisory votes on the compensation of our named executive officers. However, because this vote is advisory and non-binding, our board of directors may decide that it is in our best interests and those of our stockholders to hold the advisory vote to approve the compensation of our named executive officers more or less frequently.

### **BOARD RECOMMENDATION**

**Our board of directors unanimously recommends that you vote to “FOR” a frequency of every “ONE YEAR” on Proposal 5 for future non-binding, advisory votes on the compensation of our named executive officers.**

## **RATIFICATION OF APPOINTMENT OF INDEPENDENT AUDITORS (PROPOSAL 6)**

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, 2017. 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 unanimously recommends a vote “FOR” the ratification of the appointment of PricewaterhouseCoopers LLP as our independent auditors for the fiscal year ending December 31, 2017.**

## AUDIT INFORMATION

### 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. A complete copy of the current audit committee charter 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, 2016, 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, or PCAOB, Auditing Standard No. 1301, *Communications with Audit Committees*, 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, *Communication 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.

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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, 2016. 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, 2017.

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

Kevin P. Starr, Chair  
Michael W. Bonney  
Marsha H. Fanucci

## Principal Accountant Fees and Services

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

Fee Category	2016(\$)	2015(\$)
Audit Fees(1)	860,195	729,400
Audit-Related Fees	—	—
Tax Fees(2)	15,000	110,000
All Other Fees(3)	85,641	1,800
<b>Total Fees</b>	<b>960,836</b>	<b>841,200</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 audit engagements. In 2015, this amount also includes \$105,000 for a comfort letter and associated fees in connection with our equity offering, as well as \$39,000 billed for accounting consultations.
- (2) "Tax Fees" in 2016 and 2015 consist of fees for procedures completed in connection with a research and development tax credit study.
- (3) "All Other Fees" in 2016 represent fees of \$83,841 related to a pre-implementation assessment on an enterprise resource planning system implementation and, in each of 2016 and 2015, \$1,800 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.

## ADDITIONAL INFORMATION AND OTHER MATTERS

### 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 chief legal officer. The policy calls for the proposed related person transaction to be reviewed by our chief legal officer and, if deemed appropriate, approved by our audit committee. Whenever practicable, the reporting, review and approval will occur prior to entry into the transaction. If advance review and approval is not practicable, our audit committee will review, and, in its discretion, may ratify the related person transaction. The policy also permits the chair of our audit committee to review and, if deemed appropriate, approve proposed related person transactions that arise between committee meetings, subject to ratification by our audit committee at its next meeting. Any related person transactions that are ongoing in nature will be reviewed annually.

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

- the related person’s interest in the related person transaction;
- the approximate dollar value of the amount involved in the related person transaction;
- the approximate dollar value of the amount of the related person’s interest in the transaction without regard to the amount of any profit or loss;
- whether the transaction was undertaken in the ordinary course of our business;
- whether the terms of the transaction are no less favorable to us than terms that could have been reached with an unrelated third party;
- the purpose of, and the potential benefits to us of, the transaction; and
- any other information regarding the related person transaction or the related person in the context of the proposed transaction that would be material to investors in light of the circumstances of the particular transaction.

Our audit committee may approve or ratify the transaction 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 related person 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 the compensation of our executive officers shall be reviewed and approved by our compensation committee in the manner specified in its charter.

In addition to the policy described above, we have adopted a number of internal procedures to assist with the identification and approval of any related person transactions, including annual questionnaires to our directors and officers, quarterly questionnaires to certain legal, human resource and finance personnel, and quarterly review with our audit committee and independent registered public accounting firm.

### **Related Person Transactions**

As part of its rights under our investor agreement with Sanofi Genzyme, Sanofi Genzyme has the right at the beginning of each year to purchase a number of shares of our common stock based on the number of shares we issued during the previous year for compensation-related purposes. Sanofi Genzyme exercised this right to purchase directly from us 196,251 shares of our common stock on January 22, 2015 for \$18.3 million and an additional 205,030 shares of our common stock on February 1, 2016 for \$14.3 million. Also in January 2015, in connection with our public offering, Sanofi Genzyme exercised its right to purchase directly from us, in concurrent private placements, 744,566 shares of common stock at the public offering price resulting in \$70.7 million in proceeds to us. In January 2017, Sanofi Genzyme elected not to exercise its compensation-related right for 2016. In each instance, the purchases by Sanofi Genzyme allowed Sanofi Genzyme to maintain its ownership level of our common stock of approximately 12%.

The purchases by Sanofi Genzyme were approved in advance by our board of directors.

Other than the sales of shares to Sanofi Genzyme described above, we have not been a participant in any transaction, nor is there any currently proposed transaction, that is currently reportable under Item 404(a) of Regulation S-K.

### **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 the proxy materials for the 2018 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 November 21, 2017. 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 February 1, 2018 (90 days prior to the first anniversary of our 2017 annual meeting of stockholders) and not before January 3, 2018 (120 days prior to the first anniversary of our 2017 annual meeting of stockholders). However, if the 2018 annual meeting of stockholders is advanced by more than 20 days, or delayed by more than 60 days, from the first anniversary of the 2017 annual meeting of stockholders, notice must be received not earlier than the 120<sup>th</sup> day prior to such annual meeting and not later than the close of business on the later of (1) the 90<sup>th</sup> day prior to such annual meeting and (2) the 10<sup>th</sup> 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 2018 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.**

**ALNYLAM PHARMACEUTICALS, INC.****SECOND AMENDED AND RESTATED  
2009 STOCK INCENTIVE PLAN****1. Purpose**

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

**2. Eligibility**

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

**3. Administration and Delegation**

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

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

(c) Delegation to Officers. To the extent permitted by applicable law, the Board may delegate to one or more officers of the Company the power to grant Options and other Awards that constitute rights under Delaware law (subject to any limitations under the Plan) to employees or officers of the

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

(d) Awards to Non-employee Directors. Discretionary Awards to directors who are not employees of the Company at the time of grant (“**Non-employee Directors**”) will only be granted and administered by a Committee, all of the members of which are independent as defined by the rules of the NASDAQ Stock Market (“NASDAQ”).

#### 4. Stock Available for Awards

##### (a) Number of Shares: Share Counting

(1) Authorized Number of Shares. Subject to adjustment under Section 10, Awards may be made under the Plan for up to 15,480,000 shares of common stock, \$0.01 par value per share, of the Company (the “**Common Stock**”), any or all of which Awards may be in the form of Incentive Stock Options (as hereinafter defined). Shares issued under the Plan may consist in whole or in part of authorized but unissued shares or treasury shares.

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

(3) Share Counting. For purposes of counting the number of shares available for the grant of Awards under the Plan and under the sub-limits contained in Section 4(b)(2), (i) all shares of Common Stock covered by independent SARs shall be counted against the number of shares available for the grant of Awards; *provided, however*, that independent SARs that may be settled only in cash shall not be so counted; (ii) if any Award (A) expires or is terminated, surrendered or canceled without having been fully exercised or is forfeited in whole or in part (including as the result of shares of Common Stock subject to such Award being repurchased by the Company at the original issuance price pursuant to a contractual repurchase right) or (B) results in any Common Stock not being issued (including as a result of an independent SAR that was settleable either in cash or in stock actually being settled in cash), the unused Common Stock covered by such Award shall again be available for the grant of Awards; *provided, however*, in the case of Incentive Stock Options (as hereinafter

defined), the foregoing shall be subject to any limitations under the Code; and provided further, in the case of independent SARs, that the full number of shares subject to any stock-settled SAR shall be counted against the shares available under the Plan and against the sub-limits listed in the first clause of this Section in proportion to the portion of the SAR actually exercised regardless of the number of shares actually used to settle such SAR upon exercise; (iii) shares of Common Stock delivered (by actual delivery, attestation, or net exercise) to the Company by a Participant to (A) purchase shares of Common Stock upon the exercise of an Award or (B) satisfy tax withholding obligations (including shares retained from the Award creating the tax obligation) shall not be added back to the number of shares available for the future grant of Awards; and (iv) shares of Common Stock repurchased by the Company on the open market using the proceeds from the exercise of an Award shall not increase the number of shares available for future grant of Awards.

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

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

(2) Limits on Awards to Non-employee Directors. The maximum number of shares with respect to which Awards may be granted, in the aggregate, to Non-employee Directors shall be 10% of the maximum number of authorized shares set forth in Section 4(a)(1). The maximum number of shares subject to Awards granted to an individual in connection with such individual's initial appointment or election as a Non-employee Director shall be 50,000. The maximum number of shares subject to Awards granted to a Non-employee Director in any calendar year in connection with such individual's service on the Board (excluding for this purpose any shares subject to Awards granted under the preceding sentence) shall be 22,500.

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

(d) Minimum Vesting. Except as provided in the following sentence, and notwithstanding anything in the Plan to the contrary, Awards granted to Participants shall not become exercisable and/or vested (as applicable) prior to the first year anniversary of the date of grant. Notwithstanding the foregoing, (i) the Board may, in its discretion, either at the time of grant or at any time thereafter, impose a faster vesting schedule than the schedule prescribed by the preceding sentence in the following extraordinary circumstances: death or disability of the Participant, or a change in control of

the Company, and (ii) the vesting schedule prescribed by the preceding sentence shall not apply to Awards granted, in the aggregate, for up to 5% of the maximum number of authorized shares set forth in Section 4(a)(1).

## 5. Stock Options

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(4) with respect to Nonstatutory Options, and except as may otherwise be provided in the applicable option agreement, by delivery of a notice of "net exercise" to the Company, as a result of which the Participant would receive the number of shares of Common Stock underlying the Option so exercised reduced by the number of shares of Common Stock equal to the aggregate exercise price of the Option divided by the Fair Market Value on the date of exercise; provided, if the Participant is an Executive Officer, prior approval is obtained from the Board;

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

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

(g) Limitation on Repricing. Unless such action is approved by the Company's stockholders: (1) no outstanding Option granted under the Plan may be amended to provide an exercise price per



share that is lower than the then-current exercise price per share of such outstanding Option (other than adjustments pursuant to Section 10) and (2) the Board may not cancel any outstanding option (whether or not granted under the Plan) and grant in substitution therefor new Awards under the Plan covering the same or a different number of shares of Common Stock and having an exercise price per share lower than the then-current exercise price per share of the cancelled option or effect repricing by cancellation in exchange for cash.

## 6. Director Options

(a) Board Discretion. The Board retains the specific authority to, from time to time, determine the number of shares subject to Options granted to Non-employee Directors under this Section 6, subject to the aggregate and individual limitations on the number of shares issuable to Non-employee Directors contained in Section 4(b)(2). All Options granted to Non-employee Directors shall be Nonstatutory Stock Options. The Board also retains the specific authority to issue SARs, Restricted Stock Awards or Other Stock-Based Awards in lieu of Options, subject to the aggregate and individual limitations on the number of shares issuable to Non-employee Directors contained in Section 4(b)(2).

(b) Terms of Director Options. Options granted under this Section 6 shall (i) have an exercise price equal to the Fair Market Value on the date of grant, (ii) subject to Section 4(d) and except as otherwise set forth in an option agreement, vest in full on the first anniversary of the date of grant provided that the individual is serving on the Board on such date (or, in the case of Options granted under Section 6(a) to a newly elected or appointed director, as to one-third of the shares subject to the Option on each of the first, second and third anniversaries of the date of grant); provided that no additional vesting shall take place after the Participant ceases to serve as a director and further provided that the Board may provide for accelerated vesting in the case of death, disability or change in control, (iii) expire on the earlier of 10 years from the date of grant or three months following cessation of service on the Board, provided that such three month period shall be extended to five years following cessation of service on the Board for any director with five or more years of continuous service on the Board, and (iv) contain such other terms and conditions as the Board shall determine.

## 7. Stock Appreciation Rights

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

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

(1) Tandem Awards. When SARs are expressly granted in tandem with Options, (i) the SAR will be exercisable only at such time or times, and to the extent, that the related Option is exercisable (except to the extent designated by the Board in connection with a Reorganization Event and will be exercisable in accordance with the procedure required for exercise of the related Option; (ii) the SAR will terminate and no longer be exercisable upon the termination or exercise of the related Option,



except to the extent designated by the Board in connection with a Reorganization Event and except that a SAR granted with respect to less than the full number of shares covered by an Option will not be reduced until the number of shares as to which the related Option has been exercised or has terminated exceeds the number of shares not covered by the SAR; (iii) the Option will terminate and no longer be exercisable upon the exercise of the related SAR; and (iv) the SAR will be transferable only with the related Option.

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

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

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

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

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

## 8. Restricted Stock; Restricted Stock Units

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

(b) Terms and Conditions for All Restricted Stock Awards. Subject to the provisions of the Plan (including, without limitation, Section 4(d)), the Board shall determine the terms and conditions of a Restricted Stock Award, including the conditions for vesting and repurchase (or forfeiture) and the issue price, if any.

(c) Additional Provisions Relating to Restricted Stock.

(1) Dividends. Participants holding shares of Restricted Stock will be entitled to dividends paid with respect to such shares; provided, however, with respect to any unvested share of Restricted Stock, dividends shall accrue during the vesting period but shall not be paid unless and until such share of Restricted Stock has vested. Any such accrued dividends that are attributable to a share of Restricted Stock shall be paid to the Participant in cash or, in the sole discretion of the Board, in shares of Common Stock having a Fair Market Value (on the date of distribution) equal to the amount of such dividends, upon the vesting of such share and, if such share is forfeited, the Participant shall have no right to such dividends.

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

(d) Additional Provisions Relating to Restricted Stock Units.

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

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

(3) Dividend Equivalents. To the extent provided by the Board, in its sole discretion, a grant of Restricted Stock Units may provide Participants with the right to receive an amount equal to any dividends or other distributions declared and paid on an equal number of outstanding shares of Common Stock ("**Dividend Equivalents**"). Dividend Equivalents shall be credited to an account for the Participants, may be settled in cash and/or shares of Common Stock and shall be subject to the same restrictions on transfer and forfeitability as the Restricted Stock Units with respect to which paid, as determined by the Board in its sole discretion, subject in each case to such terms and conditions as the Board shall establish, in each case to be set forth in the applicable Award agreement. Notwithstanding the foregoing, with respect to any unvested Restricted Stock Unit, Dividend Equivalents shall accrue during the vesting period but shall not be paid unless and until such Restricted Stock Unit has vested. Any such Dividend Equivalents that have accrued and are attributable to a Restricted Stock Unit shall be paid to the Participant in cash or, in the sole discretion of the Board, in shares of Common Stock having a Fair Market Value (on the date of distribution) equal to the amount of such Dividend Equivalents, upon the vesting of such Restricted Stock Unit and, if such Restricted Stock Unit is forfeited, the Participant shall have no right to such Dividend Equivalents.

9. Other Stock-Based Awards

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

(b) Terms and Conditions. Subject to the provisions of the Plan (including, without limitation, Section 4(d)), the Board shall determine the terms and conditions of each Other Stock-Based Award, including any purchase price applicable thereto.

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

(a) Changes in Capitalization. In the event of any stock split, reverse stock split, stock dividend, recapitalization, combination of shares, reclassification of shares, spin-off or other similar change in capitalization or event, or any dividend or distribution to holders of Common Stock other than an ordinary cash dividend, (i) the number and class of securities available under the Plan, (ii) the sub-limits, fungible pool and share counting rules set forth in Sections 4(a) and 4(b), (iii) the minimum vesting provisions set forth in Section 4(d), (iv) the number and class of securities and exercise price per share of each outstanding Option and each Option issuable under Section 6, (v) the share- and per-share provisions and the measurement price of each SAR, (vi) the number of shares subject to and the repurchase price per share subject to each outstanding Restricted Stock Award and (vii) the share- and per-share-related provisions and the purchase price, if any, of each outstanding Other Stock-Based Award, shall be equitably adjusted by the Company (or substituted Awards may be made, if applicable) in the manner determined by the Board. Without limiting the generality of the foregoing, in the event the Company effects a split of the Common Stock by means of a stock dividend and the exercise price of and the number of shares subject to an outstanding Option are adjusted as of the date of the distribution of the dividend (rather than as of the record date for such dividend), then an optionee who exercises an Option between the record date and the distribution date for such stock dividend shall be entitled to receive, on the distribution date, the stock dividend with respect to the shares of Common Stock acquired upon such Option exercise, notwithstanding the fact that such shares were not outstanding as of the close of business on the record date for such stock dividend.

(b) Reorganization Events.

(1) Definition. A "**Reorganization Event**" shall mean: (a) any merger or consolidation of the Company with or into another entity where the stockholders of the Company immediately before the merger or consolidation would not, immediately after the merger or consolidation, beneficially own, directly or indirectly, shares representing a majority of the outstanding voting shares of the resulting or successor entity (or its ultimate parent, if applicable), (b) any transfer or disposition of all of the Common Stock of the Company for cash, securities or other property pursuant to a share exchange or other transaction or (c) any liquidation or dissolution of the Company.

(2) Consequences of a Reorganization Event on Awards Other than Restricted Stock Awards. In connection with a Reorganization Event, the Board may take any one or more of the following

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

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

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

other agreement between a Participant and the Company, all restrictions and conditions on all Restricted Stock Awards then outstanding shall automatically be deemed terminated or satisfied.

#### 11. General Provisions Applicable to Awards

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

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

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

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

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

where stock is being used to satisfy such tax obligations, the total tax withholding cannot exceed the Company's minimum statutory withholding obligations (based on minimum statutory withholding rates for federal and state tax purposes, including payroll taxes, that are applicable to such supplemental taxable income), unless withholding at a higher rate would not result in adverse accounting treatment (in which case such withholding shall not exceed maximum statutory withholding rates). Shares used to satisfy tax withholding requirements cannot be subject to any repurchase, forfeiture, unfulfilled vesting or other similar requirements.

(f) Amendment of Award. Except as otherwise provided in Section 4(d) with respect to the vesting of Awards, Section 11(i) with respect to Performance Awards or Section 12(d) with respect to actions requiring shareholder approval, the Board may amend, modify or terminate any outstanding Award, including but not limited to, substituting therefor another Award of the same or a different type, changing the date of exercise or realization, and converting an Incentive Stock Option to a Nonstatutory Stock Option. The Participant's consent to such action shall be required unless (i) the Board determines that the action, taking into account any related action, would not materially and adversely affect the Participant's rights under the Plan or (ii) the change is permitted under Section 10 hereof.

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

(h) Acceleration. Except as otherwise provided in Sections 4(d) and 11(i), the Board may at any time provide that any Award shall become immediately exercisable in full or in part, free of some or all restrictions or conditions, or otherwise realizable in full or in part, as the case may be.

(i) Performance Awards.

(1) Grants. Restricted Stock Awards and Other Stock-Based Awards under the Plan may be made subject to the achievement of performance goals pursuant to this Section 11(i) ("**Performance Awards**"), subject to the limit in Section 4(b)(1) on shares covered by such grants and the terms of Section 4(d) related to minimum vesting requirements.

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

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

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

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

## 12. Miscellaneous

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

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

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

(d) Amendment of Plan. The Board may amend, suspend or terminate the Plan or any portion thereof at any time provided that (i) to the extent required by Section 162(m), no Award granted to a Participant that is intended to comply with Section 162(m) after the date of such amendment shall become exercisable, realizable or vested, as applicable to such Award, unless and until the Company's stockholders approve such amendment if required by Section 162(m) (including the vote required under Section 162(m)); (ii) no amendment that would require stockholder approval under the NASDAQ rules may be made effective unless and until the Company's stockholders approve such



amendment; and (iii) if NASDAQ amends its corporate governance rules so that such rules no longer require stockholder approval of “material amendments” to equity compensation plans, then, from and after the effective date of such amendment to the NASDAQ rules, no amendment to the Plan (A) materially increasing the number of shares authorized under the Plan (other than pursuant to Sections 4(c) or 10), (B) expanding the types of Awards that may be granted under the Plan, or (C) materially expanding the class of participants eligible to participate in the Plan shall be effective unless and until the Company’s stockholders approve such amendment. In addition, if at any time the approval of the Company’s stockholders is required as to any other modification or amendment under Section 422 of the Code or any successor provision with respect to Incentive Stock Options, the Board may not effect such modification or amendment without such approval. Unless otherwise specified in the amendment, any amendment to the Plan adopted in accordance with this Section 12(d) shall apply to, and be binding on the holders of, all Awards outstanding under the Plan at the time the amendment is adopted, provided the Board determines that such amendment does not materially and adversely affect the rights of Participants under the Plan. Options may be granted that are conditioned upon stockholder approval of any amendment adding shares of Common Stock to the Plan, but no such conditioned Options may be exercised until stockholder approval is obtained. If stockholder approval is not obtained, all such conditioned Option grants shall be cancelled and be of no further force or effect.

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

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

(g) Compliance with Section 409A of the Code. Except as provided in individual Award agreements initially or by amendment, if and to the extent any portion of any payment, compensation or other benefit provided to a Participant in connection with his or her employment termination is determined to constitute “nonqualified deferred compensation” within the meaning of Section 409A of the Code and the Participant is a specified employee as defined in Section 409A(a)(2)(B)(i) of the Code, as determined by the Company in accordance with its procedures, by which determination the Participant (through accepting the Award) agrees that he or



she is bound, such portion of the payment, compensation or other benefit shall not be paid before the day that is six months plus one day after the date of “separation from service” (as determined under Section 409A of the Code) (the “**New Payment Date**”), except as Section 409A of the Code may then permit. The aggregate of any payments that otherwise would have been paid to the Participant during the period between the date of separation from service and the New Payment Date shall be paid to the Participant in a lump sum on such New Payment Date, and any remaining payments will be paid on their original schedule.

The Company makes no representations or warranty and shall have no liability to the Participant or any other person if any provisions of or payments, compensation or other benefits under the Plan are determined to constitute nonqualified deferred compensation subject to Section 409A of the Code but do not to satisfy the conditions of that section. The Company intends that any Award determined to constitute “nonqualified deferred compensation” within the meaning of Section 409A of the Code complies with Section 409A of the Code. To the extent that any provision of the Plan or of any Award agreement is ambiguous as to its compliance with Section 409A of the Code, the provision shall be read in such a manner so that the Plan and such Award complies with Section 409A of the Code. Accordingly, to the extent that any Award is determined to constitute “nonqualified deferred compensation” within the meaning of Section 409A of the Code, the Award shall be subject to such additional rules and requirements as specified by the Board from time to time in order to comply with Section 409A of the Code.

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

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

(j) Clawback. Grants made under this Plan shall be subject to the Company’s clawback policies in effect from time to time.

## ALNYLAM PHARMACEUTICALS, INC.

## AMENDED AND RESTATED 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, \$0.01 par value (the “Common Stock”). An aggregate of 1,215,789 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) 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 thirty (30) days 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 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.

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 dividing \$25,000 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 Stock Market ("NASDAQ") 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 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 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 (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.

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 originally took effect on the IPO Date. The Board amended and restated the Plan on March 6, 2017. The amended and restated Plan shall, in accordance with applicable law, the Company's by-laws and certificate of incorporation, become effective upon approval by the shareholders of the Company as required by Section 423 of the Code, which approval must occur within twelve months of the amendment and restatement of the Plan by the Board.







**Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting of Stockholders to be Held on MAY 2, 2017:**

**The Proxy Statement, our Annual Report on Form 10-K and our Annual Report to Stockholders are available for viewing, printing and downloading at [www.alnylam.com/AnnualMeeting](http://www.alnylam.com/AnnualMeeting).**

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



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**Proxy — ALNYLAM PHARMACEUTICALS, INC.**

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**ANNUAL MEETING OF STOCKHOLDERS**

**To be held on May 2, 2017 at 8:00 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., Laurie B. Keating and Michael P. Mason (each with full power of substitution), as Proxies of the undersigned, to attend the annual meeting of stockholders of Alnylam to be held at 8:00 a.m., Eastern Time, on Tuesday, May 2, 2017, 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 a proposal specified herein, this proxy will be voted in accordance with the recommendation of the Board of Directors. 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**