



LETTER FROM OUR CEO

March 23, 2020

To our Stockholders:

We invite you to attend the 2020 Annual Meeting of Stockholders of Alnylam Pharmaceuticals, Inc., which will be held online on Wednesday, May 6, 2020, beginning at 12:00 p.m., Eastern Time. You may attend the meeting virtually via the Internet at www.virtualshareholdermeeting.com/ALNY2020, where you will be able to vote electronically and submit questions. You will need the 16-digit control number included with these proxy materials to attend the annual meeting.

The following notice of our annual meeting of stockholders contains details of the business to be conducted at the meeting. Only stockholders of record at the close of business on March 9, 2020 will be entitled to notice of, and to vote at, the annual meeting.

On behalf of our Board of Directors, thank you for your continued support and investment in Alnylam.

Very truly yours,

A handwritten signature in black ink, appearing to read 'J. Maraganore', with a long horizontal line extending to the right.

John M. Maraganore, Ph.D.
Chief Executive Officer and Director
On behalf of the Board of Directors of
Alnylam Pharmaceuticals, Inc.



NOTICE OF 2020 ANNUAL MEETING OF STOCKHOLDERS

Date:	Wednesday, May 6, 2020
Time:	12:00 p.m., Eastern Time
Place:	Online at www.virtualshareholdermeeting.com/ALNY2020
Record Date:	March 9, 2020. Only Alnylam stockholders of record at the close of business on 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.
Items of Business:	<ol style="list-style-type: none">1. To elect three (3) 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 2023, or until a successor has been duly elected and qualified;2. To approve an amendment to our 2018 Stock Incentive Plan, as amended, to, among other things, increase the number of shares authorized for issuance thereunder by 7,000,000 shares;3. To approve an amendment to our Amended and Restated 2004 Employee Stock Purchase Plan, as amended, to increase the number of shares authorized for issuance thereunder from 1,215,789 shares to 1,965,789 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 ratify the appointment of PricewaterhouseCoopers LLP, an independent registered public accounting firm, as our independent auditors for the fiscal year ending December 31, 2020; and6. To transact any other business that may properly come before the annual meeting or any adjournment or postponement thereof.
Virtual Meeting:	To participate in the annual meeting virtually via the Internet, please visit www.virtualshareholdermeeting.com/ALNY2020 . You will need the 16-digit control number included on your proxy card or the instructions that accompanied your proxy materials. Stockholders will be able to vote and submit questions during the annual meeting. You will not be able to attend the annual meeting in person.
Voting:	Proposal 1 relates solely to the election of three (3) 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.

Your vote is important regardless of the number of shares you own. Whether or not you plan to participate in the annual meeting online, we hope you will take the time to vote your shares. 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 www.proxyvote.com and entering the 16-digit control number provided on your proxy card or voting instruction form;

Vote by Telephone, by calling 1-800-690-6903 or the number on your proxy card or voting instruction form. You will need the 16-digit control number provided on your proxy card or voting instruction form; or

Vote by Mail, if you received printed proxy materials, by completing, signing and dating the proxy card or voting instruction form and mailing it in the accompanying pre-addressed envelope. If you vote over the Internet or by telephone, please do not mail your proxy.

If you vote via the Internet or by telephone or mail your proxy in, you will not limit your right to vote online at the annual meeting.

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.

**Important Notice Regarding the Internet Availability of Proxy Materials
for the Stockholder Meeting to Be Held on May 6, 2020**

This Notice of 2020 Annual Meeting, Proxy Statement, 2019 Annual Report on Form 10-K and Annual Report to Stockholders are available for viewing, printing and downloading at www.proxyvote.com.

By Order of the Board of Directors,



Laurie B. Keating
Executive Vice President, Chief Legal Officer and Secretary

Cambridge, Massachusetts
March 23, 2020



PROXY STATEMENT

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PROXY STATEMENT SUMMARY

This summary highlights important information you will find in this Proxy Statement. As it is only a summary, please review the complete Proxy Statement before you vote.

Virtual Annual Meeting Information





Date: Wednesday, May 6, 2020
Time: 12:00 p.m., Eastern Time
Location: Online at www.virtualshareholdermeeting.com/ALNY2020
You will not be able to attend the annual meeting in person.
Record Date: March 9, 2020

Voting Items and Board Recommendations

		Board Recommendation
Proposal 1	Election of Three (3) Class I Directors	FOR All Nominees
Proposal 2	Approval of an Amendment to 2018 Stock Incentive Plan, as Amended	FOR
Proposal 3	Approval of an Amendment to Amended and Restated 2004 Employee Stock Purchase Plan, as Amended	FOR
Proposal 4	Say-on-Pay—Advisory Vote on Approval of Executive Compensation	FOR
Proposal 5	Ratification of Independent Auditors	FOR

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

How to Vote

Vote Right Away Through Advance Voting Methods			Vote During Meeting
Vote by Internet Using Your Computer  <p>Go to www.proxyvote.com and enter the 16-digit control number provided on your proxy card or voting instruction form.</p>	Vote by Telephone  <p>Call 1-800-690-6903 or the number on your proxy card or voting instruction form. You will need the 16-digit control number provided on your proxy card or voting instruction form.</p>	Vote by Mail  <p>If you received printed proxy materials, complete, sign and date the proxy card or voting instruction form and mail it in the accompanying pre-addressed envelope.</p>	Vote During the Meeting  <p>See “Important Information About the Annual Meeting and Voting – Voting” for details on how to vote during the Annual Meeting.</p>

Important Notice Regarding the Internet Availability of Proxy Materials for the Annual Meeting of Stockholders to be Held on May 6, 2020

We are furnishing proxy materials to our stockholders primarily via the Internet. On or about March 26, 2020, we will mail to our stockholders a Notice of Internet Availability containing instructions on how to access our proxy materials, including our proxy statement and our 2019 Annual Report. The Notice of Internet Availability also instructs you on how to submit your proxy or voting instructions through the Internet or to request a paper copy of our proxy materials, including a proxy card or voting instruction form that includes instructions on how to submit your proxy or voting instructions by mail or telephone. Other stockholders, in accordance with their prior requests, have received e-mail access to our proxy materials and instructions to submit their vote via the Internet, or have been mailed paper copies of our proxy materials and a proxy card or voting instruction form.

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.proxyvote.com.

A copy of our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, as filed with the Securities and Exchange Commission, or SEC, on February 13, 2020, will be furnished without charge to any stockholder upon written request to Alnylam Pharmaceuticals, Inc., 675 West Kendall Street, Henri A. Termeer Square, 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, 2019 are also available on the SEC’s website at www.sec.gov.

IMPORTANT INFORMATION ABOUT THE ANNUAL MEETING AND VOTING

Notice and Access

We have made these proxy materials available to you on the Internet in connection with the solicitation by our board of directors of proxies to be voted at our 2020 annual meeting of stockholders to be held online on Wednesday, May 6, 2020 at 12:00 p.m., Eastern Time (ET). We have elected to provide access to our proxy materials over the Internet under the SEC's "notice and access" rules. On or about March 26, 2020, we will mail to our stockholders a Notice of Internet Availability containing instructions on how to access our proxy materials, including our proxy statement and our 2019 Annual Report. We believe that providing our proxy materials over the Internet expedites stockholders' receipt of proxy materials, lowers costs and reduces the environmental impact of our annual meeting. As a stockholder of Alnylam, you are invited to participate in our annual meeting virtually via the Internet, and are entitled and requested to vote on the proposals described in this proxy statement. The Notice of Internet Availability instructs you on how to submit your proxy or voting instructions through the Internet.

In accordance with the SEC rules, we may furnish proxy materials, including this proxy statement and our 2019 Annual Report, to our stockholders by providing access to such documents on the Internet instead of mailing printed copies. If you would like to receive a paper copy of our proxy materials, the Notice of Internet Availability instructs you on how to request a paper copy of our proxy materials, including a proxy card or voting instruction form that includes instructions on how to submit your proxy or voting instructions by mail or telephone. Other stockholders, in accordance with their prior requests, have received e-mail access to our proxy materials and instructions to submit their vote via the Internet, or have been mailed paper copies of our proxy materials and a proxy card or voting instruction form.

Who Can Vote

To be entitled to vote, you must be a stockholder of record at the close of business on March 9, 2020, the record date for our annual meeting. As of the record date, there were 113,072,381 shares of our common stock outstanding.

If you were a stockholder of record on March 9, 2020, 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

Alnylam's stockholders may vote their shares over the Internet, by telephone or during the annual meeting by going to www.virtualshareholdermeeting.com/ALNY2020. If you requested and/or received a printed version of the proxy card, you may also vote by mail.

- **By Internet.** You may vote at www.proxyvote.com, 24 hours a day, seven days a week. You will need the 16-digit control number included on your proxy card or voting instruction form. Votes submitted through the Internet must be received by 11:59 p.m. ET on May 5, 2020.
- **By Telephone.** You may vote using a touch-tone telephone by calling 1-800-690-6903, 24 hours a day, seven days a week. You will need the 16-digit control number included on your proxy card or voting instruction form. Votes submitted by telephone must be received by 11:59 p.m. ET on May 5, 2020.
- **By Mail.** If you received printed proxy materials, you may submit your vote by completing, signing and dating each proxy card received and returning it in the prepaid envelope. Sign your name exactly as it appears on the proxy card. Proxy cards submitted by mail must be received no later than May 5, 2020 to be voted at the annual meeting.
- **During the Annual Meeting.** You may vote during the annual meeting by going to www.virtualshareholdermeeting.com/ALNY2020. You will need the 16-digit control number included on your proxy card or voting instruction form. If you previously voted via the Internet (or by telephone or mail), you will not limit your right to vote online at the annual meeting.

If you vote via the Internet or by telephone, your electronic vote authorizes the named proxies in the same manner as if you signed, dated and returned your proxy card. If you vote via the Internet or by telephone, do not return your proxy card.

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. ET on May 5, 2020.
- Sign a new proxy and submit it as instructed above. Only your latest dated proxy, received by no later than May 5, 2020, will be counted.
- Participate in the annual meeting virtually via the Internet and vote again. Participating in the annual meeting will not revoke your Internet vote, telephone vote or proxy, unless you vote again.

Note that if your shares are held in "street name," you may submit new voting instructions by contacting your bank, broker or other nominee.

Discretionary Voting Authority

If your shares are registered directly in your name, you are a "stockholder of record" who may vote at the meeting. As the stockholder of record, you have the right to direct the voting of your

shares by voting over the Internet, by telephone, by returning your proxy or by voting online during the annual meeting at www.virtualshareholdermeeting.com/ALNY2020.

If your shares are held in an account at a bank or at a brokerage firm or other nominee holder, you are considered the beneficial owner of shares held in “street name,” and these proxy materials are being forwarded to you by your bank, broker or other nominee who is considered the stockholder of record for purposes of voting at the annual meeting. As the beneficial owner, you have the right to direct your bank, broker or other nominee on how to vote your shares and to participate in the virtual annual meeting. 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. 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 will not be able to vote shares you hold in “street name” at the annual meeting; instead you must instruct your bank, broker or other nominee in advance of the meeting.**

Note that under New York Stock Exchange, or NYSE, rules, if you hold shares through a bank, broker or other institution and you do not provide your voting instructions to them at least ten days before the annual meeting, that firm has the discretion to vote your shares on proposals that the NYSE has determined are routine. Such firm will not have the discretion to vote your shares on proposals that the NYSE has determined are non-routine. A “broker non-vote” refers to a share represented at the meeting held by a broker, as to which instructions have not been received from the beneficial owner or person entitled to vote such shares and with respect to which, on one or more but not all matters, the broker does not have discretionary voting power to vote such share.

Participating in the Virtual Annual Meeting

This year our annual meeting will be a completely virtual meeting. There will be no physical meeting location. The meeting will only be conducted via live webcast.

To participate in the virtual meeting, visit www.virtualshareholdermeeting.com/ALNY2020 and enter the 16-digit control number included on your proxy card or on the instructions that accompanied your proxy materials. You may begin to log into the meeting platform beginning at 11:45 a.m. ET on May 6, 2020. The meeting will begin promptly at 12:00 p.m. ET on May 6, 2020.

If you wish to submit a question, you may do so in two ways. If you want to ask a question before the meeting, then beginning on March 23, 2020 and until 11:59 p.m. ET on May 5, 2020, you may log into www.proxyvote.com and enter your 16-digit control number. Once past the login screen, click on “Questions for Management,” type in your question, and click “Submit.” Alternatively, if you want to submit your question during the meeting, log into the virtual meeting platform at www.virtualshareholdermeeting.com/ALNY2020, type your question into the “Ask a Question” field, and click “Submit.”

Questions pertinent to meeting matters will be answered during the meeting, subject to time constraints. The meeting is not to be used as a forum to present personal matters, or general economic, political or other views that are not directly related to the business of Alnylam and the matters properly before the meeting, and therefore questions on such matters will not be answered.

Any questions pertinent to meeting matters that cannot be answered during the meeting due to time constraints will be posted online and answered at <http://investors.alnylam.com/shareholder-services/annual-meeting>. The questions and answers will be available as soon as practical after the meeting and will remain available until one week after posting.

If you encounter any technical difficulties with the virtual meeting platform on the meeting day, please call 1-855-449-0991 (Toll Free) or 1-720-378-5962 (International Toll). Technical support will be available starting at 11:30 a.m. ET on May 6, 2020 and will remain available until thirty minutes after the meeting has finished.

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 online at the meeting, as well as any abstentions and broker non-votes. 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

You may vote “for,” “against” or “abstain” on each of the proposals being placed before our stockholders. Abstentions and broker non-votes are included in the determination of the number of shares present at the annual meeting for determining a quorum at the meeting, but they are not counted as shares cast. Accordingly, abstentions and broker non-votes, if any, would have no effect on the vote for any of the Proposals to be considered at the annual meeting, because these Proposals are based on a percentage of the votes that are actually cast at the annual meeting.

Proposal 1 – Election of Three (3) 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 either cast online 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 by stockholders who are either present online or represented by proxy), then the nominee will be elected.

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 an Amendment to our 2018 Stock Incentive Plan, as Amended

To approve Proposal 2, the amendment to our 2018 Stock Incentive Plan, as amended, which we refer to as the 2018 Plan, stockholders holding a majority of the votes either cast on the matter online or by proxy at the annual meeting must vote FOR the proposal.

Proposal 3 – Approval of an Amendment to our Amended and Restated 2004 Employee Stock Purchase Plan, as Amended

To approve Proposal 3 relating to the amendment to our Amended and Restated 2004 Employee Stock Purchase Plan, as amended, which we also refer to as the Existing 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 4 – Non-binding Advisory Vote on the Compensation of Our Named Executive Officers

To approve Proposal 4, stockholders holding a majority of the votes either cast on the matter online 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.

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 – Ratification of Appointment of Independent Auditors

To approve Proposal 5, stockholders holding a majority of the votes either cast on the matter online or by proxy at the annual meeting must vote FOR the proposal.

Although stockholder approval of our audit committee’s appointment of PricewaterhouseCoopers LLP as our independent auditors for the year ending December 31, 2020 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, 2020.

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 three (3) Class I directors, the approval of the amendment to our 2018 Plan, the approval of the amendment to our Existing ESPP, the non-binding advisory vote on 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

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 \$25,000, 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 the proxy card to Broadridge Financial Solutions, Inc. The 401(k) plan trustee will vote your shares according to your instructions. Only Broadridge 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 Broadridge before 11:59 p.m. ET on May 1, 2020, 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., 675 West Kendall Street, Henri A. Termeer Square, 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 Strengths

We are committed to exercising good corporate governance practices. We believe that good governance promotes the long-term interests of our stockholders and strengthens the accountability of our board of directors and management. The highlights of our corporate governance practices include the following:

- 11 out of 12 of our current directors are independent and following the annual meeting, ten out of 11 of our directors will be independent;
- Independent directors hold regular executive sessions;
- All board committees are comprised solely of independent committee members;
- Our board of directors is diverse in terms of tenure, gender, experience and skills;
- We conduct annual board and committee self-evaluations;
- Our full board of directors and its committees participate in risk oversight;
- Our board of directors and its committees may engage outside advisors independently of management;
- Our independent compensation consultant reports directly to our compensation committee;
- We have a clawback policy for recoupment of excess proceeds from cash and equity incentive compensation;
- We have majority voting in the election of directors in uncontested elections, with a director resignation policy;
- Stock ownership guidelines for directors (including our chief executive officer) and our president help to align directors and officers with stockholder interests;
- We have a strict policy of no pledging or hedging of company shares; and
- We seek annual advisory approval of executive compensation by stockholders.

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. 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 of directors' principal responsibility is to oversee the management of Alnylam;
- a majority of the members of our board shall be independent directors;
- at least annually, our board shall make an affirmative determination regarding the independence of each director;
- the independent directors meet regularly in executive session;
- directors have full and free access to management and, as necessary and appropriate, independent advisors;
- annually, our board and its committees will conduct a self-evaluation to determine whether they are functioning effectively;
- our nominating and corporate governance committee will evaluate the composition, organization and governance of our board of directors and its committees and identify individuals qualified to become board members;
- 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.

Our Environmental Sustainability and Social Responsibility Efforts

For patients and society to benefit from the therapies we develop, we believe they must be available to those who will benefit from them. We are committed to assisting patients with no or limited drug coverage to access the medicines they need. We provide patient support and education programs and help patients in financial need access ONPATTRO® (patisiran) and GIVLAARI® (givosiran), our two currently marketed drugs. In 2017, we announced our Patient Access Philosophy, which focuses our commercial objectives on being proactive about patient access while delivering value to patients, physicians, and insurers. This philosophy commits us to act with urgency for patients, pursue value-based agreements where price is linked to product performance in the real world, and to not increase the annualized price of our medicines above the consumer price index unless valuable new innovation has been achieved. We believe we have also been at the forefront of developing innovative agreements and partnerships designed to improve population health and patient access, as well as outcomes-based and risk-sharing approaches that directly link the price of our therapeutics to their effectiveness. As we expand our global footprint, we intend to continue to price our medicines responsibly, commensurate with the value delivered, and proportional to the rare and ultra-rare diseases they treat. We also intend to continue to actively engage with stakeholders across the global healthcare community to address financial barriers to patient access to appropriate treatment and pursue innovative solutions to the significant healthcare system challenges we face as a society.

In addition, as the leading RNAi therapeutics company, the way we operate, the work we do, and the support we provide to our local communities is tied to our desire to extend and improve the

lives of our patients. We are committed to patient advocacy and community endeavors that promote and improve the understanding of rare disease and wellness. Our company participates in charitable activities relevant to our business and linked to our mission, vision and values. For example, we provide, support and sponsor diversity and inclusion efforts both within our company and in our communities. We support educational and cultural institutions in our communities, and we also encourage employee volunteerism, partnering with community service organizations to provide opportunities for employees to donate time and talents to assist neighbors in need.

On top of our commitments to patient access and social responsibility, we believe that we have a responsibility to monitor and control our ecological impact and adopt best practices on environmental and social issues that may have a material effect on corporate strategy, risks, opportunities or performance. We continue to implement initiatives that exemplify our commitment to the environment and are completing construction of a state-of-the-art manufacturing facility in Norton, Massachusetts with these beliefs in mind.

We also believe that our commitment to responsible corporate citizenship is reflected through our corporate culture and, ultimately, through our actions. Our culture – which was founded on passion for excellence, innovation and discovery in science, commitment to people, openness, and sense of urgency – has served us incredibly well for over 17 years. We have maintained this level of commitment to our people and focus on our culture which landed us on the Boston Globe's Top Places to Work list for five years in a row – all while driving rapid, global growth. We also recently received recognition by Science magazine as the biopharma industry's No. 1 top employer. We believe this is a remarkable recognition by over 7,500 respondents who identified our culture as the best in the industry.

As we continue to grow and our employee population changes, we believe it is critically important for us to stay in tune with what employees need and want so we make it a priority to listen. Like many other high-performing organizations, we conduct an annual culture survey to evaluate our successes and challenges. Translating those insights into tangible actions to benefit our employees and the company overall is the greatest challenge. Surveys like these provide us another opportunity to learn from our people and ensure we stay ahead of what's important to them. It's also very helpful in building our career development, total rewards, and retention strategies. In 2019, similar to most years, our employees rated us highest on the attributes that have shaped us since day one: our mission, our vision, and our commitment to patients and each other.

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. In October 2018, John K. Clarke resigned from our board of directors, effective January 10, 2019. Mr. Clarke was a co-founder of Alnylam and had served on our board of directors since 2002. Mr. Clarke had served as a Class II director. On October 9, 2018, our board of directors elected Margaret A. Hamburg, M.D. as a Class III director effective January 10, 2019 to fill the vacancy created by the resignation of Mr. Clarke. In April 2019, Dr. Hamburg was re-elected by stockholders as a Class III director for a term that expires at the 2022 annual meeting. In February 2020, our board of directors expanded the size of our board from eleven to twelve directors and elected Dr. Olivier Brandicourt as a Class II director to fill the vacancy, effective March 2, 2020. Dr. Brandicourt's term expires at the 2021 annual meeting. As required by our Corporate Governance Guidelines, Dr. Paul Schimmel offered his resignation, effective at the end of his current term, which will be at this year's annual meeting. Our board of directors accepted Dr. Schimmel's resignation, at the recommendation of our nominating and corporate governance committee, in February 2020. Dr. Schimmel had previously offered his resignation in 2017 upon reaching the age of 75, which our board of directors declined to accept at such time. Dr. Schimmel was a scientific founder of Alnylam and was elected to our board of directors in 2002. Most recently, Dr. Schimmel served as a Class I director. In February 2020, the board also approved a reduction in the size of the board from twelve to eleven members, effective upon Dr. Schimmel's resignation.

At the annual meeting, we are proposing the election of three (3) Class I directors to hold office until the annual meeting of stockholders to be held in 2023, or until their respective successors have been duly elected and qualified. Upon the recommendation of the nominating and corporate governance committee of our board, our board has nominated Michael W. Bonney, John M. Maraganore, Ph.D. and Phillip A. Sharp, Ph.D. for election to the board of directors as Class I directors. Mr. Bonney and Drs. Maraganore and Sharp are currently serving as Class I directors. Mr. Bonney has served as a director since 2014 and Drs. Maraganore and Sharp have each served as a director since 2002. The persons named in the enclosed proxy will vote to elect each nominee for Class I director unless the proxy is marked otherwise. Mr. Bonney and Drs. Maraganore 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 2023 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 and Sharp as a Class I director.

Set forth below for each continuing director, including the Class I director nominees, is information as of March 2, 2020 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 continuing 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 2020 annual meeting (terms expiring in 2023)

<p>Michael W. Bonney Chair of the Board</p> <p>Committees:</p> <ul style="list-style-type: none"> • Audit Committee • Nominating and Corporate Governance Committee <p>Director since: 2014 Age: 61</p>	<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>Experience, Expertise and Qualifications</p> <p>Mr. Bonney has served as the Executive Chair of Kaleido Biosciences, Inc., a biotechnology company, since June 2017. From June 2017 until August 2018, he also served as Kaleido’s Chief Executive Officer. 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 & 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. In addition, Mr. Bonney is the Chair of the board of directors of Magenta Therapeutics, Inc. and serves as a director of Bristol-Myers Squibb Company. Mr. Bonney formerly served as a director of Celgene Corporation (which was acquired by Bristol-Myers Squibb), Syros Pharmaceuticals, Inc., Sarepta Therapeutics, Inc. and Global Blood Therapeutics, Inc.</p> <p>Key Contributions to the Board</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. Mr. Bonney also has a keen understanding of the interplay between management and the board and is well-versed in the current best practices in corporate governance. 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 development pipeline and build our global commercial operations following the approval and launch of our first two commercial products.</p>
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**John M. Maraganore,
Ph.D.**

Chief Executive Officer

Director since: 2002

Age: 57

Dr. Maraganore has served as our Chief Executive Officer and as a member of our board of directors since December 2002.

Experience, Expertise and Qualifications

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 at Millennium Pharmaceuticals, Inc., a biopharmaceutical company (now Millennium: The Takeda Oncology Company). Dr. Maraganore serves as a director of Agios Pharmaceuticals, Inc. and as a member of the Board of the Biotechnology Innovation Organization, a non-profit biotechnology trade organization, of which he was previously Chair. Dr. Maraganore formerly served as a director of bluebird bio, Inc.

Key Contributions to the Board

Dr. Maraganore has over 30 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.

Class II—Directors Whose Terms Expire in 2021

Dennis A. Ausiello, M.D.

Committees:

- Nominating and Corporate Governance Committee
- Science and Technology Committee

Director since: 2012

Age: 74

Dr. Ausiello has served as a member of our board of directors since April 2012.

Experience, Expertise and Qualifications

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. He also serves as a director of Seres Therapeutics, Inc. and formerly served as a director of Pfizer Inc.

Key Contributions to the Board

Dr. Ausiello's experience as a practicing physician, a scientist and a nationally recognized leader in academic medicine enables him to bring valuable insights to our board, particularly as we advance our late stage clinical development pipeline, initiate additional clinical trials and continue to build our global commercial operations following the approval and launch of our first two commercial products. In addition, Dr. Ausiello oversaw a large research portfolio and an extensive research and education budget at Massachusetts General Hospital for nearly 20 years, 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.

Olivier Brandicourt, M.D.**Director since: 2020****Age: 64**

Dr. Brandicourt has served as a member of our board of directors since March 2020.

Experience, Expertise and Qualifications

Dr. Brandicourt has served as a Senior Advisor at Blackstone, a leading global investment firm, since December 2019. From April 2015 to August 2019, Dr. Brandicourt served as Chief Executive Officer and a member of the board of directors of Sanofi, a global biopharmaceutical company. Prior to Sanofi, he was Chief Executive Officer and Chair of Bayer HealthCare AG from November 2013 to March 2015. Between 2000 and 2013, Dr. Brandicourt served in various operational and managerial positions at Pfizer Inc., a global pharmaceutical company, including as a member of the Executive Leadership Team and President and General Manager of the Emerging Markets and Established Products business units, amongst other roles.

Key Contributions to the Board

Dr. Brandicourt has over 30 years of global commercial experience in the biopharmaceutical industry, including as a senior leader of three pharmaceutical companies. Dr. Brandicourt's operational, global commercial and senior management experience will provide an invaluable perspective to our board as we continue to build our global commercial operations following the approval and launches of our first two commercial products, advance additional late-stage development programs and partner additional programs and technologies.

<p>Marsha H. Fanucci</p> <p>Committees:</p> <ul style="list-style-type: none"> • Audit Committee (Chair) • Nominating and Corporate Governance Committee <p>Director since: 2010 Age: 66</p>	<p>Ms. Fanucci has served as a member of our board of directors since December 2010.</p> <p>Experience, Expertise and Qualifications</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 to 2003. 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 is Chair of the board of directors of Cycleron Therapeutics, Inc. and serves as a director of Syros Pharmaceuticals, Inc., and formerly served as a director of Ironwood Pharmaceuticals, Inc. and Momenta Pharmaceuticals, Inc.</p> <p>Key Contributions to the Board</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 to our audit committee which she chairs, as we continue to grow our company, advance our late stage clinical development pipeline, build our global commercial operations following the approval and launch of our first two commercial products, and partner additional programs and technologies.</p>
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<p>David E.I. Pyott</p> <p>Committees:</p> <ul style="list-style-type: none"> • Nominating and Corporate Governance Committee (Chair) <p>Director since: 2015</p> <p>Age: 66</p>	<p>Mr. Pyott has served as a member of our board of directors since December 2015.</p> <p>Experience, Expertise and Qualifications</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 (until the expiration of his term in April 2020), 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>Key Contributions to the Board</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 development pipeline and build our global commercial operations following the approval and launch of our first two commercial products. 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 and to our nominating and corporate governance committee, which he chairs.</p>
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Class III—Directors Whose Terms Expire in 2022

**Margaret A. Hamburg,
M.D.**

**Director since: 2019
Age: 64**

Dr. Hamburg has served as a member of our board of directors since January 2019.

Experience, Expertise and Qualifications

Dr. Hamburg currently serves as Foreign Secretary of the National Academy of Medicine and as Chair of the Board of the American Association for the Advancement of Science (AAAS). From May 2009 to April 2015, Dr. Hamburg served as the Commissioner of the U.S. Food and Drug Administration (FDA). From January 2001 to May 2009, Dr. Hamburg worked for the Nuclear Threat Initiative, first as Vice President for biological programs, then as Senior Scientist. From November 1997 to January 2001, Dr. Hamburg served as the Assistant Secretary for Planning and Evaluation in the Department of Health and Human Services. Prior to that, she was New York City's health commissioner. Dr. Hamburg currently serves on a number of non-profit boards. She is also a fellow of the American College of Physicians and the AAAS, and a member of Harvard University Global Advisory Council, the Harvard Medical School Board of Fellows, the World Dementia Council, the Global Health Scientific Advisory Committee for the Bill and Melinda Gates Foundation, the Dean's Advisory Council for the George Washington School of Public Health and the Saw See Hock School of Public Health International Advisory Panel. Dr. Hamburg chairs the Joint Coordinating Group for the Coalition for Epidemic Preparedness Initiative (CEPI) and is co-Chair of the World Health Organization (WHO) Expert Advisory Committee on Human Genome Editing.

Key Contributions to the Board

Dr. Hamburg has an extensive background in matters of science, medicine, public health and regulatory issues, having held policy positions in the Obama, Clinton and Reagan administrations, including serving as the Commissioner of the FDA from May 2009 to April 2015. She has done basic and clinical research at the National Institutes of Health and Rockefeller University. Dr. Hamburg's distinguished career and expertise in the field brings a unique regulatory and policy perspective, as well as valuable scientific and operational expertise, to our board as we continue to advance our late stage clinical development pipeline, initiate additional clinical programs, and build our global commercial operations following the approval and launch of our first two commercial products.

<p>Steven M. Paul, M.D.</p> <p>Committees:</p> <ul style="list-style-type: none"> • Compensation Committee • Science and Technology Committee <p>Director since: 2010</p> <p>Age: 69</p>	<p>Dr. Paul has served as a member of our board of directors since September 2010.</p> <p>Experience, Expertise and Qualifications</p> <p>Dr. Paul has served as the Chief Executive Officer and Chair of the Board of Karuna Pharmaceuticals, Inc., a clinical-stage biopharmaceutical company, since August 2018. From September 2014 to July 2018, Dr. Paul served as the President, Chief Executive Officer of Voyager Therapeutics, Inc., a biotechnology company. Dr. Paul has also served as a professor of Psychiatry and Neurology at Washington University of St. Louis School of Medicine since September 2017. Dr. Paul was the founding director of the Appel Alzheimer’s Disease Research Institute, and was a Professor of Neurology (Neuroscience), Psychiatry and Pharmacology at Weill Cornell Medical College of Cornell University from September 2010 to 2014. Since 2018, Dr. Paul has served as a Venture Partner at Third Rock Ventures, a healthcare venture firm, where he previously served as a Venture Partner from 2010 to 2014. 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 National Academy of Medicine of the National Academy of Sciences and a fellow of the AAAS. 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> <p>Key Contributions to the Board</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 early research, including in the CNS, and late stage clinical development pipeline, initiate additional clinical programs and build our global commercial operations following the approval and launch of our first two commercial products.</p>
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<p>Colleen F. Reitan</p> <p>Committees:</p> <ul style="list-style-type: none"> • Audit Committee <p>Director since: 2018</p> <p>Age: 60</p>	<p>Ms. Reitan has served as a member of our board of directors since June 2018.</p> <p>Experience, Expertise and Qualifications</p> <p>Ms. Reitan served as President of Plan Operations of Health Care Service Corporation, or HCSC, the largest customer-owned health insurer in the United States and an independent licensee of Blue Cross and Blue Shield Association from October 2015 to April 2018. While at HCSC, she also served as the company’s Chief Operating Officer from January 2009 to January 2015. Previously, Ms. Reitan served as President and Chief Operating Officer of Blue Cross Blue Shield of Minnesota from 2006 to 2008. Ms. Reitan also serves as a director of Myriad Genetics, Inc.</p> <p>Key Contributions to the Board</p> <p>Ms. Reitan brings to our board over 30 years of experience in the healthcare payer and reimbursement market, including most recently as President of Plan Operations of HCSC. As we continue to advance our late stage clinical development pipeline and build our global commercial operations following the approval and launch of our first two commercial products, Ms. Reitan’s experience with provider network management, strategic planning and business development will provide valuable insight to our board. Ms. Reitan’s extensive background in business management also makes her an asset to our audit committee on which she serves.</p>
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Amy W. Schulman

Committees:

- Compensation Committee (Chair)
- Nominating and Corporate Governance Committee

Director since: 2014

Age: 59

Ms. Schulman has served as a member of our board of directors since July 2014.

Experience, Expertise and Qualifications

Ms. Schulman joined Polaris Partners, a venture capital firm, in August 2014 where she is currently a managing partner.

Ms. Schulman currently serves as Executive Chair of SQZ Biotech, as well as Lyndra Therapeutics, Inc., where she was co-founder and the company's initial Chief Executive Officer from 2015 to 2019. She also manages the LS Polaris Innovation Fund which was formed in 2017. 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 Cycleron Therapeutics, Inc., and formerly served as a director of Ironwood Pharmaceuticals, Inc., Arsanis, Inc., Blue Buffalo Pet Products, Inc. and BIND Therapeutics, Inc.

Key Contributions to the Board

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, has been an important resource as we continue to grow our workforce to support the advancement of our late stage clinical development pipeline and build our global commercial operations following the approval and launch of our first two commercial products, and provides a unique and critical perspective for Ms. Schulman in her role as the chair of our compensation committee.

THE BOARD OF DIRECTORS AND ITS COMMITTEES

Board of Directors Meetings and Attendance

Our board met seven times during 2019 either in person or by teleconference. During 2019, 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 participate in the virtual annual meeting of stockholders, unless they have a conflict that cannot be resolved. All of our then-current directors attended the 2019 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 Mses. Fanucci, Reitan and Schulman, Drs. Ausiello, Brandicourt, Hamburg, Paul, Schimmel (who has resigned, effective as of May 6, 2020) and Sharp, and Messrs. Bonney and Pyott 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, our board of directors 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. 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, and, beginning with 2019 year-end compensation decisions, approves the compensation of our chief executive officer after considering the recommendations of our compensation committee. Our board reviews and approves corporate objectives, strategies and annual investment plans, 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, as well as through regular informal updates between meetings with all or a subset of board members.

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 and clinical and commercial drug supply; regulatory reviews, approvals, policies and oversight; global growth and capability expansion; preparations for and execution of commercial operations; our ability to obtain reimbursement for approved drugs and the 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 government investigations; and the ability to manage our expenses, access additional funding for our business and advance towards self-sustainability; as well as other risks, such as the potential risks to our business resulting from the coronavirus pandemic. 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. Our chair and the chair of our nominating and corporate governance committee also meet with our global head of ethics and compliance individually and with our chief legal officer to discuss the risks facing our business and our global compliance initiatives. Members of senior management attend the quarterly board meetings and are available to address any questions or concerns raised by our board on risk management-related and any other matters. Each quarter, our board of directors receives presentations from members of senior management on strategic matters involving our business. Annually, our board reviews and discusses with management an enterprise risk assessment focused on the key risks facing 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 regulatory requirements with potential impact on our financial statements, and the steps we take to manage them. Our audit committee also oversees our internal audit function, which was established in 2019. The primary purpose of the internal audit function is to provide independent, objective assurance to senior management and the audit committee regarding the adequacy, efficiency and effectiveness of internal controls, which are designed to add value and strengthen our business operations. The compensation committee assists our 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, and evaluates potential risks associated with independent director compensation for consideration by the full board. The nominating and corporate governance committee assists our 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, corporate governance, cybersecurity and our compliance programs with respect to non-financial compliance matters, including commercial compliance and quality programs. Our global head of ethics and compliance, individually and with our chief legal officer, our chief information officer and our head of quality provide the committee with regular updates. The science and technology committee reviews and advises our board regarding risks arising from our discovery and development strategy and programs.

Board Leadership Structure

Our board has determined that the roles of chief executive officer and chair of our board of directors 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, a co-founder of Alnylam and former 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. 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(b)(1) under the Exchange Act. Committee memberships as of March 2, 2020 are shown in the table below:

	Audit Committee	Compensation Committee	Nominating and Corporate Governance Committee	Science and Technology Committee
Dennis A. Ausiello, M.D.			Member	Member
Michael W. Bonney ★	Chair		Member	
Olivier Brandicourt, M.D.				
Marsha H. Fanucci	Committee Chair		Member	
Margaret A. Hamburg, M.D.				
John M. Maraganore, Ph.D.				
Steven M. Paul, M.D.		Member		Member
David E.I. Pyott			Committee Chair	
Colleen F. Reitan	Member			
Paul R. Schimmel, Ph.D.		Member		Member
Amy W. Schulman		Committee Chair	Member	
Phillip A. Sharp, Ph.D.				Committee Chair

★ Chair of Board ◐ 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;
- reviewing and discussing with management and the independent auditors our annual and quarterly financial statements and related disclosures, including earnings releases, financial guidance and disclosure of non-GAAP financial measures;
- monitoring our internal control over financial reporting, disclosure controls and procedures, and compliance with financial corporate securities, tax and similar regulatory or legal requirements relating to financial matters;
- overseeing the performance of internal audit activities carried out by our internal audit function;
- 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 Ms. Fanucci (Chair) and Reitan and Mr. Bonney. In October 2018, Mr. Clarke resigned from our board, effective January 10, 2019, at which time Ms. Reitan was appointed as a member of the committee. 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 of Ms. Fanucci and Mr. Bonney 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 five times during 2019, either in person or by teleconference.

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;
- 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, including compensation under any equity-based plans;
- 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 48 of this proxy statement;
- preparing the annual compensation committee report required by SEC rules, which is included immediately following the "Compensation Discussion and Analysis" section appearing below;
- reviewing the results of any say-on-pay votes and considering whether to make or recommend adjustments to the executive compensation policies as a result of such votes;
- overseeing engagement with stockholders and proxy advisory firms on executive compensation matters; and
- performing an annual evaluation of the committee's performance.

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 current members of our compensation committee are Ms. Schulman (Chair) and Drs. Paul and Schimmel. Dr. Schimmel announced his intention to resign from our board and as a member of our compensation committee effective upon the conclusion of his current term at this year's annual meeting. 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 of 1986, as amended, also referred to as the Code.

Our compensation committee met five times during 2019, either in person or by teleconference.

Compensation Committee Interlocks and Insider Participation

During fiscal year 2019, 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 2019, 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 and other compensation 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 concluded that our compensation policies and practices are not reasonably likely to have a material adverse effect on our company. The compensation committee continues to evaluate on an ongoing basis the potential risks associated with our compensation policies and

practices with input from its compensation consultant and internal and external counsel, and intends to engage Radford to conduct an updated formal assessment of our compensation policies and practices during 2020. As a result of the establishment of our global commercial organization to market and sell our products approved in 2018 and 2019, this evaluation will include the potential risks associated with field-based incentive compensation and commercial-related goals and targets, as well as any other changes to our compensation policies and practices since the last assessment was conducted.

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 and evaluating candidates recommended by stockholders for election to our board and stockholder proposals submitted for inclusion in our proxy materials;
- 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 making recommendations to our board regarding corporate governance matters;
- developing and recommending to our board, as appropriate, policies and programs with respect to environmental, health, safety and social responsibility matters;
- overseeing the annual evaluation of our board and its committees;
- overseeing management's implementation of information technology policies;
- monitoring the risks associated with information systems, including reviewing and discussing with management the programs used to identify, assess, manage and monitor cybersecurity risks; and
- overseeing management's implementation of compliance programs with respect to non-financial matters and our quality programs.

As noted above, the nominating and corporate governance committee facilitates the annual board self-evaluation to determine whether our board of directors and its committees are functioning effectively. The nominating and corporate governance committee determines the nature of the evaluation, supervises the conduct of the evaluation, and prepares an assessment of our board performance, to be discussed with the full board of directors. The evaluation is aligned to board best practices and focuses on four key areas: board structure and composition; board process and focus; committee structure and performance; and culture and overall health.

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 current members of our nominating and corporate governance committee are Mr. Pyott (Chair), Dr. Ausiello, Mr. Bonney, 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 four times during 2019, either in person or by teleconference.

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; and
- reviewing our regulatory and quality programs.

The current members of our science and technology committee are Drs. Sharp (Chair), Ausiello, Paul and Schimmel. Mr. Clarke resigned from our board and as a member of our science and technology committee effective January 10, 2019. Dr. Schimmel has resigned from our board and as a member of our science and technology committee effective upon the conclusion of his current term at this year's annual meeting.

Our science and technology committee met one time by teleconference during 2019.

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, engagement of third-party recruiting companies focused on identifying top-tier director candidates, 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 our board of directors 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 the following criteria that it believes must be met by all directors:

- a reputation for integrity, honesty and adherence to high ethical standards;
- a demonstration of business acumen, experience and the ability to appreciate the operational challenges and complexities faced by public biopharmaceutical companies of a size and operational scope similar to our company and to exercise sound judgment in matters that relate to the current and long-term objectives of our company and a willingness and ability to contribute positively to the decision-making process of our company;
- a commitment to understand our company and the industry and to regularly attend and participate in meetings of our board of directors and its committees;
- an interest in and ability to understand the sometimes conflicting interests of the various constituencies of our company, which include stockholders, employees, customers, governmental bodies and the general public, and to act in the interests of all stockholders;
- no actual or apparent conflict of interest (as determined by the nominating and corporate governance committee or the board) that would impair the director's ability to represent the interests of all of our company's stockholders and to fulfill the responsibilities of a director; and
- the ability to serve for at least five years before reaching the age of 75.

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 our board members represent diverse viewpoints with broad experience in areas important to the operation of our company such as business, science, medicine, and finance and accounting. 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. In this context, the nominating and corporate governance committee, in addition to the qualifications set forth above, also considers a variety of attributes in selecting nominees to our board, such as:

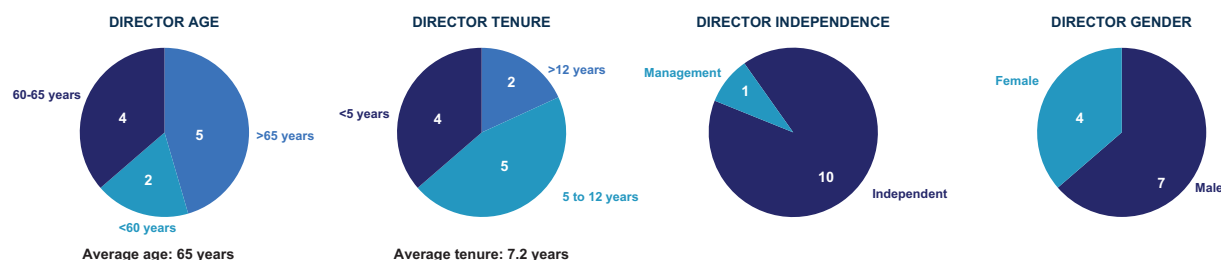
- an understanding of, and experience in, the biotechnology and pharmaceutical industries, and the regulatory landscape in which such companies operate;
- an understanding of, and experience in, accounting oversight and governance, finance, sales and marketing, and complex business transactions;

- leadership experience with public companies or other significant organizations;
- international experience; and
- diversity of age, gender, race and national origin, education, professional experience and differences in viewpoints and skills.

These factors and others are considered useful by our board of directors and are reviewed in the context of an assessment of the perceived needs of our board at a particular point in time.

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 or she 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 or her 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.

Below we highlight the composition of our continuing directors and our director nominees*:



* The tables above do not include Dr. Schimmel, who resigned from our board of directors effective upon the conclusion of his current term at this year’s annual meeting.

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., 675 West Kendall Street, Henri A. Termeer Square, 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 our board of directors, 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 and Sharp, each of whom currently serves on our board of directors. Mr. Bonney and Drs. Maraganore 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 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.

Stockholder Engagement and Communications with the Independent Directors

We regularly engage with our stockholders through open dialogue and direct individual communication to solicit their feedback on our executive compensation, corporate governance and disclosure practices in order to gain a better understanding of the practices they most value. Stockholder feedback is important, and the information we glean from these engagements is highly valued. Our stockholder engagement team has consisted of certain independent directors and members of our legal, investor relations and human resources expertise areas. Stockholders also regularly meet with members of our senior management team to discuss our strategy and review our business, goals and performance.

In addition, 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., 675 West Kendall Street, Henri A. Termeer Square, 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. In February 2020, our compensation committee, with the assistance of Radford, performed a comprehensive review of director compensation. Following this review, the compensation committee and our board of directors determined to adjust certain elements of the cash compensation paid to our non-employee directors, to be more competitive with our peer group. In addition, based on the results of this review and consistent with our broader equity strategy to transition from a unit-based to a value-based approach for determining equity awards, the compensation committee and our board of directors determined to transition to a value-based equity approach and reduce the initial and annual stock option award value for non-employee directors to align with our peer group.

The table below reflects the non-employee director compensation that was in effect throughout 2019 as well as the changes (in italics) to non-employee director compensation that were approved in February 2020, and were effective as of April 1, 2020 with respect to fees and as of March 2, 2020 with respect to initial and annual stock option awards. Increases in fees will be pro-rated for 2020 based upon the date of approval and each non-employee director's committee appointments, if applicable.

Compensation Type	Compensation Amount Before April 1, 2020	Compensation Amount as of April 1, 2020
Annual Retainer	\$50,000	<i>\$55,000</i>
Board Chair Fee	\$30,000	<i>\$35,000</i>
Committee Chair Fees:		
Audit	\$25,000	\$25,000
Compensation	\$20,000	\$20,000
Nominating and Corporate Governance	\$10,000	<i>\$15,000</i>
Science and Technology	\$10,000	<i>\$15,000</i>
Committee Member Fees:		
Audit	\$10,000	<i>\$12,500</i>
Compensation	\$10,000	\$10,000
Nominating and Corporate Governance	\$5,000	<i>\$7,500</i>
Science and Technology	\$5,000	<i>\$7,500</i>
Initial Stock Option Award (vests ratably in three annual installments)	18,000 shares**	<i>\$600,000 grant-date fair value**</i>
Annual Stock Option Award (vests on one-year anniversary)*	9,000 shares**	<i>\$400,000 grant-date fair value**</i>

- * 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.
- ** Effective March 2, 2020, our board of directors approved a value-based approach for determining equity awards for non-employee directors. These values reflect a reduction in value transferred relative to prior unit-based award amounts.

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 current limitations contained in our 2018 Plan. 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.

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 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 in our stock incentive plan. In March 2018, in connection with the reduction in initial and annual stock option awards, our board of directors approved a reduction to these maximum limits. Accordingly, in 2018, our stockholders approved new limits in connection with their approval of the 2018 Plan. Specifically, in addition to the aggregate limit on grants to non-employee directors contained in the 2018 Plan, the 2018 Plan included the following limits on initial and annual awards which were effective as of April 1, 2018 through March 2, 2020:

- 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 36,000 (or 24,000 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 18,000 (or 12,000 in the case of restricted stock or other full value awards).

As noted above, in February 2020, our board of directors, following the recommendation of our compensation committee, adjusted certain elements of compensation for non-employee directors. In connection with these changes, our board of directors approved a maximum aggregate value for initial and annual non-employee director compensation, including the value of the shares of common stock that may be subject to initial or annual equity awards to non-employee directors, equal to \$1.5 million and \$1.0 million, respectively. The aggregate value limits replace the previous limits in the 2018 Plan that only related to equity awards. In Proposal 2 below, we are asking stockholders to approve a second amendment to our 2018 Plan, which includes these maximum aggregate values for initial and annual non-employee director compensation, and we are asking stockholders to approve these aggregate limits in connection with their approval of the second amendment to our 2018 Plan.

As indicated in the table above, our current practice is to deliver aggregate compensation to our non-employee directors in amounts well under these aggregate limits, and the second amendment to the 2018 Plan included in Proposal 2 below that reflects these revised aggregate limits is not expected to change our current practice.

The following table sets forth information concerning the compensation of our non-employee directors in 2019.

Director Compensation

Name*	Fees Earned or Paid in Cash (\$)	Option Awards (\$)(3)(4)(5)	All Other Compensation (\$)	Total (\$)
Dennis A. Ausiello, M.D.	60,000	410,707	—	470,707
Michael W. Bonney	95,000	410,707	—	505,707
Marsha H. Fanucci	80,000	410,707	—	490,707
Margaret A. Hamburg, M.D.(1)	50,000	1,449,338	—	1,499,338
Steven M. Paul, M.D.	65,000	410,707	—	475,707
David E.I. Pyott	60,000	410,707	—	470,707
Colleen F. Reitan	60,000	410,707	—	470,707
Paul R. Schimmel, Ph.D.(2)	65,000	410,707	—	475,707
Amy W. Schulman	75,000	410,707	—	485,707
Phillip A. Sharp, Ph.D.	60,000	410,707	25,000(6)	495,707

* Mr. Clarke resigned from our board of directors, effective January 10, 2019, and did not receive any compensation for his service as a member of our board of directors in 2019.

(1) Dr. Hamburg was elected to our board of directors, effective January 10, 2019.

(2) Dr. Schimmel resigned from our board of directors, effective upon the conclusion of his current term at this year's annual meeting.

(3) The amounts in this column reflect the aggregate grant date fair value for the fiscal year ended December 31, 2019, 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 11 to our audited consolidated financial statements for the fiscal year ended December 31, 2019 included in our Annual Report on Form 10-K, filed with the SEC on February 13, 2020.

- (4) At December 31, 2019, 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.	51,750	—
Michael W. Bonney	81,750	—
John K. Clarke(a)	117,750	—
Marsha H. Fanucci	66,750	—
Margaret A. Hamburg, M.D.	27,000	—
Steven M. Paul, M.D.	145,138	—
David E.I. Pyott	65,500	—
Colleen F. Reitan	27,000	—
Paul R. Schimmel, Ph.D.(b)	51,750	—
Amy W. Schulman	81,750	—
Phillip A. Sharp, Ph.D.	190,420	15,000(c)

- (a) In connection with Mr. Clarke's resignation and in recognition of his 16 years of service on our board, on December 22, 2018, our compensation committee approved the acceleration of vesting, effective January 10, 2019, of Mr. Clarke's 2018 annual non-employee director stock option to purchase 9,000 shares of common stock, at an exercise price of \$105.26 per share, which stock option was due to vest in full on June 20, 2019. Mr. Clarke has the lesser of five years and the remainder of the stock option term following the effective date of his resignation to exercise any vested stock options, after which time all such outstanding stock options will be cancelled.
- (b) Upon Dr. Schimmel's resignation from our board, effective upon the conclusion of his current term at this year's annual meeting, all unvested stock options will be cancelled. Dr. Schimmel has the lesser of five years and the remainder of the stock option term following the effective date of his resignation to exercise any vested stock options, after which time all such outstanding stock options will be cancelled.
- (c) Dr. Sharp received these stock options in 2010 in connection with his service on our scientific advisory board.
- (5) The number of shares underlying stock options granted to our non-employee directors for their service on our board during 2019 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 2019(#)	Grant Date Fair Value of Stock Option Grants in 2019 (\$)(c)
Dennis A. Ausiello, M.D.	07/01/2019	9,000	410,707
Michael W. Bonney	07/01/2019	9,000	410,707
Marsha H. Fanucci	07/01/2019	9,000	410,707
Margaret A. Hamburg, M.D.	01/10/2019(a)	18,000	1,038,631
	07/01/2019	9,000	410,707
Steven M. Paul, M.D.	07/01/2019	9,000	410,707
David E.I. Pyott	07/01/2019	9,000	410,707
Colleen F. Reitan	07/01/2019	9,000	410,707
Paul R. Schimmel, Ph.D.(b)	07/01/2019	9,000	410,707
Amy W. Schulman	07/01/2019	9,000	410,707
Phillip A. Sharp, Ph.D.	07/01/2019	9,000	410,707

- * Mr. Clarke resigned from our board of directors, effective January 10, 2019, and did not receive any compensation for his service as a member of our board of directors in 2019.
- (a) Dr. Hamburg was granted a stock option award upon the effective date of her election to our board.
- (b) In connection with Dr. Schimmel's resignation from our board, effective upon the conclusion of his current term at this year's annual meeting, and in recognition of his nearly 18 years of service on our board, our compensation committee approved the acceleration of vesting of this award, effective May 6, 2020. As noted above, Dr. Schimmel has the lesser of five years and the remainder of the stock option term following the effective date of his resignation to exercise any vested stock options, after which time all such outstanding stock options will be cancelled.
- (c) The grant date fair value computed in accordance with FASB ASC Topic 718 represents the value of stock options granted during 2019. The grant date fair value per option was \$45.63, with the exception of the initial board grant to Dr. Hamburg, for which the grant date fair value per option was \$57.70. 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 July 1, 2019 grants and January 10, 2019 grant is \$72.01 and \$89.16, respectively.
- (6) This amount reflects compensation paid to Dr. Sharp for service as the chair of our scientific advisory board during 2019.

SECURITIES OWNERSHIP

OWNERSHIP OF OUR COMMON STOCK

The following table sets forth information regarding beneficial ownership of our common stock as of January 31, 2020, 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 2019 and our three other most highly compensated executive officers who were serving as executive officers on December 31, 2019, whom, collectively, we refer to as our named executive officers, or NEOs; and
- all of our current 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)	=	Total Beneficial Ownership(2)	Percentage of Common Stock Beneficially Owned(3)
Holders of more than 5% of our common stock						
FMR LLC(4)	16,720,375		—		16,720,375	14.9
Wellington Management Group LLP(5)	14,286,474		—		14,286,474	12.7
The Vanguard Group(6)	10,287,472		—		10,287,472	9.1
Baillie Gifford & Co.(7)	8,186,723		—		8,186,723	7.3
BlackRock, Inc.(8)	8,033,256		—		8,033,256	7.1

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)
Directors and Named Executive Officers						
Dennis A. Ausiello, M.D.	3,500(9)		42,750		46,250	*
Michael W. Bonney	4,000(10)		72,750		76,750	*
Marsha H. Fanucci	—		57,750		57,750	*
Margaret A. Hamburg, M.D.**	—		6,000		6,000	*
John M. Maraganore, Ph.D.	193,126(11)		1,062,030		1,255,156	1.1
Steven M. Paul, M.D.	1,000		136,138		137,138	*
David E.I. Pyott	27,900(12)		56,500		84,400	*
Colleen F. Reitan	—		6,000		6,000	*
Paul R. Schimmel, Ph.D.	306,996(13)		42,750		349,746	*
Amy W. Schulman	—		72,750		72,750	*
Phillip A. Sharp, Ph.D.	266,899(14)		196,420		463,319	*
Barry E. Greene	64,971(11)(15)		678,982		743,953	*
Yvonne L. Greenstreet, MBChB, MBA	6,615(11)		201,921		208,536	*
Akshay K. Vaishnav, M.D., Ph.D.	12,688(11)		288,421		301,109	*
Jeffrey V. Poulton***	57(11)		—		57	*
Manmeet S. Soni****	192(11)		24,086		24,278	*
All current directors and current executive officers as a group (17 persons)	900,636		3,071,332		3,971,968	3.5

* Less than 1% of our outstanding common stock.

** Joined as a director in January 2019.

*** Joined in July 2019 and became an executive officer in August 2019.

**** Served as our principal financial officer for a portion of 2019, resigned in August 2019.

- (1) Unless otherwise indicated, the address of each stockholder is c/o Alnylam Pharmaceuticals, Inc., 675 West Kendall Street, Henri A. Termeer Square, 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, 2020.
- (3) Percentage of beneficial ownership is based on 112,440,148 shares of our common stock outstanding as of January 31, 2020. Shares of common stock subject to options currently exercisable, or exercisable within 60 days of January 31, 2020, 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. 15 to a Schedule 13G filed by FMR LLC (previously known as FMR Corp.) with the SEC on February 7, 2020, as of December 31, 2019, 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 16,720,375 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 and Chief Executive Officer 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 16,720,375 shares of our common stock owned by such funds. 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. 8 to a Schedule 13G filed by Wellington Management Group LLP (formerly Wellington Management Company, LLP), or Wellington Management, with the SEC on January 28, 2020, as of December 31, 2019, Wellington Management, in its capacity as an investment adviser, may be deemed to beneficially own 14,286,474 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. Wellington Management has shared power to vote or to direct the vote with respect to 13,752,718 shares of our common stock and shared power to dispose or to direct the disposition of 14,286,474 shares of our common stock. The address of Wellington Management is 280 Congress Street, Boston, MA 02210.
- (6) According to Amendment No. 4 to a Schedule 13G filed by The Vanguard Group with the SEC on February 12, 2020, as of December 31, 2019, The Vanguard Group has the sole power to vote 85,355 of the shares owned, shared power to vote 28,210 of the shares owned, sole dispositive power for 10,182,015 of the shares owned and shared dispositive power for 105,457 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 47,511 and 93,666 of the shares owned, respectively. The address of The Vanguard Group is 100 Vanguard Blvd., Malvern, PA 19355.
- (7) According to a Schedule 13G filed by Baillie Gifford & Co. with the SEC on February 3, 2020, as of December 31, 2019, Baillie Gifford & Co. and/or one or more of its investment adviser subsidiaries, which may include Baillie Gifford Overseas Limited, on behalf of investment advisory clients, which may include investment companies registered under the Investment Company Act, employee benefit plans, pension funds or other institutional clients has the sole power to vote 7,364,579 of the shares owned, and sole dispositive power for 8,186,723 of the shares owned. The address of Baillie Gifford & Co. is Calton Square, 1 Greenside Row, Edinburgh EH1 3AN, Scotland, UK.
- (8) According to Amendment No. 3 to a Schedule 13G filed by BlackRock, Inc. with the SEC on February 5, 2020, as of December 31, 2019, BlackRock, Inc. has the sole power to vote or direct the voting of 8,033,256 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.
- (9) Represents shares held in a trust, of which Dr. Ausiello's spouse is the trustee.
- (10) Represents shares held in a trust, of which Mr. Bonney is the trustee and over which he has sole voting and investment power.
- (11) Includes shares of our common stock contributed by Alynlyam to our 401(k) plan for the benefit of our NEOs as of December 31, 2019: Dr. Maraganore, 3,133 shares; Mr. Greene, 3,002 shares; Dr. Greenstreet, 406 shares; Dr. Vaishnaw, 514 shares; Mr. Poulton, 57 shares; and Mr. Soni, 192 shares.
- (12) Represents shares held in a trust, of which Mr. Pyott is the trustee and over which he has sole voting and investment power.
- (13) 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.
- (14) Includes shares of our common stock held by the Phillip A. Sharp Revocable Trust, of which Dr. Sharp is the trustee and over which he has sole voting and investment power. Also includes shares held in trusts for the benefit of Dr. Sharp's children, of which Dr. Sharp's spouse and children are the trustees.
- (15) Includes shares of our common stock held by the Barry E. Greene Qualified Annuity Interest Trust (GRAT), of which Mr. Greene is the sole trustee.

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, 2019.

EXECUTIVE OFFICERS

All executive officers of the company are appointed annually and serve at the pleasure of our board of directors. Set forth below with respect to each executive officer is information as of March 1, 2020 with respect to his or her (a) name and age, (b) positions and offices at Alnylam, (c) principal occupation and business experience during at least the past five years, and (d) directorships, if any, of other publicly-held companies, held currently or during the past five years. There are no family relationships between any of our directors and executive officers. None of the corporations or other organizations referred to below with which an executive officer has previously been employed or otherwise associated is a parent, subsidiary or affiliate of Alnylam.

John M. Maraganore, Ph.D., 57, has served as our Chief Executive Officer and as a member of our board of directors since December 2002. Dr. Maraganore also served as our President from December 2002 to December 2007. From April 2000 to December 2002, Dr. Maraganore served as Senior Vice President, Strategic Product Development at Millennium Pharmaceuticals, Inc., a biopharmaceutical company (now Millennium: The Takeda Oncology Company). Dr. Maraganore serves as a director of Agios Pharmaceuticals, Inc. and as a member of the Board of the Biotechnology Innovation Organization, a non-profit biotechnology trade organization, of which he was previously Chair. Dr. Maraganore formerly served as a director of bluebird bio, Inc.

Barry E. Greene, 56, has served as our President since December 2007, as our Chief Operating Officer from the time he joined us in October 2003 through September 2016, and from February 2004 through December 2005, as our Treasurer. From February 2001 to September 2003, Mr. Greene served as General Manager of Oncology at Millennium Pharmaceuticals, Inc., a biopharmaceutical company (now Millennium: The Takeda Oncology Company). Mr. Greene serves as a director of Acorda Therapeutics, Inc. and as the lead independent director of Karyopharm Therapeutics Inc.

Akshay K. Vaishnaw, M.D., Ph.D., 57, has served as our President, Research and Development since March 2018 and was our Executive Vice President of Research and Development from December 2014 to March 2018 and our Chief Medical Officer from June 2011 to December 2016. He served as our Executive Vice President from June 2012 to December 2014 and prior to that as our Senior Vice President from June 2011 to June 2012. He served as our Senior Vice President, Clinical Research from December 2008 to June 2011, and prior to that served as our Vice President, Clinical Research from the time he joined us in January 2006. From December 1998 through December 2005, Dr. Vaishnaw held various positions at Biogen Inc., a biopharmaceutical company. Dr. Vaishnaw serves as a director of Editas Medicine, Inc. and Scholar Rock Holding Corporation.

Yvonne L. Greenstreet, MBChB, MBA, 57, has served as our Chief Operating Officer since September 2016. Prior to joining Alnylam, Dr. Greenstreet most recently served as the founder and Managing Director of Highgate LLC, from January 2014 to August 2016. Prior to that time, Dr. Greenstreet served as the Senior Vice President and Head of Medicines Development at Pfizer Inc., a multinational pharmaceutical company, from December 2010 to November 2013. Prior to joining Pfizer, Dr. Greenstreet worked for 18 years at GlaxoSmithKline plc, or GSK, a multinational pharmaceutical, biologics, vaccines and consumer healthcare company, where she served in various

positions, most recently as Senior Vice President and Chief of Strategy for Research and Development and as a member of GSK's Product Management Board. Dr. Greenstreet currently serves on the Scientific Advisory Committee of the Bill and Melinda Gates Foundation and serves as a director of Pacira Pharmaceuticals and American Funds. Dr. Greenstreet formerly served as a director of Indivior PLC and Moelis & Company.

Laurie B. Keating, J.D., 66, has served as our Executive Vice President, Chief Legal Officer and Secretary since March 2019 and was our Senior Vice President, General Counsel and Secretary from September 2014 to March 2019. Prior to joining Alnylam, Ms. Keating served as Senior Vice President, General Counsel and Secretary of Millennium: The Takeda Oncology Company, a biopharmaceutical company, from September 2004 to January 2014. Prior to Millennium, Ms. Keating was co-founder and the first Chief Executive Officer of Hydra Biosciences, Inc. Before co-founding Hydra, she served as an executive at several high growth technology companies. Upon graduating from law school, Ms. Keating practiced law at McCutchen, Doyle, Brown and Enersen (which became Bingham McCutchen and is now a part of Morgan, Lewis & Bockius).

Jeffrey V. Poulton, 52, has served as our Executive Vice President and Chief Financial Officer since August 2019. Prior to joining Alnylam, Mr. Poulton served as Chief Financial Officer of Indigo Agriculture, a plant microbiome company, from January 2018 to April 2019, where he supported the initial commercial scale-up of the business, including expansion outside the U.S. Between 2003 and December 2017, Mr. Poulton held various roles of increasing responsibility at Shire Plc, most recently as Chief Financial Officer and a member of Shire's Executive Committee and Board of Directors from January 2015 to December 2017. During his tenure at Shire, Mr. Poulton also led Shire's rare disease U.S., LATAM and Asia Pacific commercial operations, as well as Shire's global rare disease business unit. Prior to Shire, Mr. Poulton led corporate finance and business development initiatives in both the gas and electric utilities industry and the materials manufacturing sector, serving in financial leadership positions at Cinergy Corp. and PPG Industries. Mr. Poulton also served in the United States Navy as a Commissioned Officer.

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 executive vice presidents and our senior vice presidents. Our compensation committee formally approves the compensation of our NEOs (with the exception of our chief executive officer, or CEO), executive vice presidents and senior vice presidents. Our compensation committee reviews the compensation of our CEO and recommends any changes to our board for approval. 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. Our NEOs for 2019 are named below.

Name	Title
John M. Maraganore, Ph.D.	Chief Executive Officer
Barry E. Greene	President
Yvonne L. Greenstreet, MBChB, MBA(1)	Chief Operating Officer
Akshay K. Vaishnaw, M.D., Ph.D.	President, Research and Development
Jeffrey V. Poulton(2)	Executive Vice President, Chief Financial Officer
Manmeet S. Soni(3)	Former Senior Vice President, Chief Financial Officer

(1) Effective March 1, 2019, Dr. Greenstreet is considered a president level employee for compensation purposes.

(2) Mr. Poulton joined Alnylam on July 11, 2019 and was appointed as our executive vice president, chief financial officer and principal financial and accounting officer as of August 13, 2019.

(3) Mr. Soni served as our principal financial and accounting officer through August 12, 2019, 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

2019 Say-on-Pay Results

We pay careful attention to any feedback we receive from our stockholders about our executive compensation program. At our 2019 annual meeting, our say-on-pay proposal received support from 98% 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 2019, except as described below. 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. Our board of directors and our 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 2019, this included an evaluation of our incentive compensation programs. With respect to our long-term equity incentive program, beginning with awards for 2018 (that were made in February 2019), we adjusted the mix of equity for our annual awards to include performance-based stock units, or PSUs, and continued to manage award amounts, with a goal of maintaining broad-based equity participation, delivering value that is aligned with our compensation philosophy and proactively managing our share usage as well as dilution during a period of rapid growth. In further support of these goals, beginning with annual awards for 2019 (that were made in February 2020) and new hire awards in 2020, we transitioned from a unit-based to a value-based approach for determining equity awards for all employees, including our NEOs. We expect to continue to evaluate our equity compensation strategy across the organization during 2020 to manage our equity utilization during 2020 and beyond. We also evaluated the target award percentages under our short-term incentive program, resulting in an increase in the CEO's and president level employees' target award percentages for 2019. Finally, we evaluated, with assistance from Radford, our peer group and determined no changes were made to the existing peer group for the purpose of 2019 compensation decisions.

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 default single-trigger equity acceleration**

Our change-in-control, or CIC, agreements for executives, adopted in 2017, and both our 2018 Plan and our Amended and Restated 2009 Stock Incentive Plan do not allow for the automatic accelerated vesting of outstanding equity awards upon a CIC event.

<ul style="list-style-type: none"> • Emphasis on long-term performance Executive compensation should reflect alignment with the interests of stockholders. For 2019, and in each of the prior five years, 50% of our executive officers' annual equity awards were delivered in the form of performance-based equity 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 equity awards emphasizes the importance of long-term performance for value creation. 	<ul style="list-style-type: none"> • 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 cash and equity incentive compensation earned during the covered period.
<ul style="list-style-type: none"> • No guaranteed annual bonus or guaranteed salary increase We do not provide our executive officers with guaranteed annual salary increases or annual or multi-year guaranteed bonuses. 	<ul style="list-style-type: none"> • No hedging 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.
<ul style="list-style-type: none"> • Good standing requirement We require our executive officers and all other employees to be in good standing in order to be eligible for awards under our short-term cash incentive programs. 	<ul style="list-style-type: none"> • No pledging 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.
<ul style="list-style-type: none"> • Limited perquisites 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. 	<ul style="list-style-type: none"> • Stock ownership guidelines We maintain stock ownership guidelines for our directors (including our CEO) and for the president of the company.
<ul style="list-style-type: none"> • Independent compensation consultant Our compensation committee engages an independent consultant to advise it on topics related to board and executive compensation. 	<ul style="list-style-type: none"> • No excise tax and generally no other tax gross-ups We do not provide our executives with excise tax gross-ups and we generally do not provide other recurring tax gross-ups.

Select Business Highlights For 2019

We are a global commercial-stage biopharmaceutical company developing novel therapeutics based on RNAi. RNAi is a naturally occurring biological pathway within cells for sequence-specific silencing and regulation of gene expression. By harnessing the RNAi pathway, we have developed a new class of innovative medicines, known as RNAi therapeutics. RNAi therapeutics are comprised of small interfering RNA and function upstream of today's medicines by silencing messenger RNA that encode

for proteins implicated in causing disease, thus preventing them from being made. We believe this is a revolutionary approach with the potential to transform the care of patients with genetic and other diseases.

We believe 2019 was a year of strong performance for Alnylam, as we continued to make significant progress on our commercial, clinical development and other corporate goals, moving us closer toward fulfilling our *Alnylam 2020* strategy of building a multi-product global commercial company with a deep clinical pipeline to fuel future growth and a robust product engine for sustainable and organic innovation, a company profile rarely achieved in our industry. Most importantly, in 2019 we saw continued and steady growth of patients on our first commercial product, ONPATTRO, driven by new patient finding, geographic expansion and evidence-generating activities. In addition, we achieved early approval in the U.S. during the fourth quarter of 2019 for our second product, GIVLAARI (givosiran). We also reported positive topline Phase 3 results for lumasiran, our third program to achieve positive Phase 3 results, and initiated a rolling submission of a new drug application, or NDA, with the U.S. Food and Drug Administration, or FDA. In addition, we, together with our partners, advanced six other late-stage clinical development programs, and we continued to advance earlier stage candidates and optimize our product platform. We also continued to execute on our business objectives, including by forming a landmark strategic alliance with Regeneron Pharmaceuticals, Inc., or Regeneron, further strengthening our financial position and building our global commercial infrastructure. Based on our performance in 2019, our board determined that we achieved 107.5% of our corporate goals for fiscal year 2019, including the majority of our commercial execution and early- and mid-stage pipeline goals, along with all of our late-stage pipeline goals, strategic infrastructure, growth and growth management goals, and our research platform goals.

SELECT BUSINESS HIGHLIGHTS FOR 2019

COMMERCIAL ACHIEVEMENTS

- Recognized ONPATTRO net revenue of \$166.4 million for the year ended December 31, 2019, the first full year of ONPATTRO commercial sales since launch in August 2018
- Attained over 750 patients worldwide on commercial ONPATTRO treatment since launch
- Launched GIVLAARI in the U.S. in December 2019, with 13 Start Forms received in first six weeks after FDA approval

CLINICAL & REGULATORY ACHIEVEMENTS

- Advanced robust clinical pipeline ending 2019 with 11 programs, six of which are in late-stage development, including several in development with partners
- Received regulatory approval of ONPATTRO in Canada, Japan and Switzerland, and filed for regulatory approval in Brazil
- Reported positive topline and complete results from ENVISION Phase 3 study and received approval of GIVLAARI from FDA for the treatment of adults with acute hepatic porphyria, or AHP, in U.S.
- Filed a marketing authorisation application, or MAA, for givosiran in Brazil and received positive opinion for givosiran for the treatment of AHP in adolescents and adults from the Committee for Medicinal Products for Human Use in EU, after receiving Priority Medicines Designation and Orphan Drug Designation from European Medicines Agency, or EMA
- Initiated HELIOS-B Phase 3 study for vutrisiran, for the treatment of ATTR amyloidosis, in patients with hereditary and wild-type ATTR amyloidosis with cardiomyopathy, and continued enrollment in the HELIOS-A Phase 3 study in hATTR amyloidosis with polyneuropathy, with study over 85% enrolled
- Reported positive topline results for ILLUMINATE-A Phase 3 pivotal study of lumasiran for the treatment of primary hyperoxaluria Type 1, or PH1, initiated NDA rolling submission to the FDA, completed enrollment in ILLUMINATE-B Phase 3 study of lumasiran in PH1 patients less than six years of age with preserved renal function, initiated ILLUMINATE-C Phase 3 study of lumasiran for the treatment of advanced PH1 in patients of all ages with advanced renal disease, and received a pediatric rare disease designation from FDA for lumasiran for the treatment of PH1
- Our partner, Sanofi Genzyme, continued enrollment in ATLAS Phase 3 program for fitusiran in patients with hemophilia A or B with and without inhibitors
- Our partner, The Medicines Company, acquired by Novartis in January 2020, reported positive topline and complete results from ORION-11 Phase 3 study in patients with atherosclerotic cardiovascular disease, or ASCVD, ORION-9 Phase 3 study in patients with heterozygous familial hypercholesterolemia and ORION-10 Phase 3 study in patients with ASCVD, and submitted NDA and MAA for inclisiran to FDA and EMA, respectively
- Advanced early-stage pipeline, including ALN-AGT for the treatment of hypertension; ALN-AAT02 for the treatment of alpha-1 liver disease; and ALN-HBV02 (VIR-2218) for the treatment of chronic hepatitis B virus infection in collaboration with our partner, Vir Biotechnology, Inc.

BUSINESS AND STRATEGIC INITIATIVES

- Formed broad collaboration with Regeneron to discover, develop and commercialize RNAi therapeutics for broad range of diseases by addressing disease targets expressed in eye and central nervous system, or CNS, in addition to select number of targets expressed in liver
- As part of our broader human capital management strategy, achieved hiring and growth management goals
- Named to Boston Globe's list of Top Places to Work for 2019 marking fifth year in a row on the list
- Received recognition as world's No. 1 biopharma employer from Science magazine based on more than 7,500 responses to its annual survey of the biotech and pharmaceutical industry
- Ranked No. 3 in gender parity and No. 1 in fair representation for Women of Color at the leadership level among the top 25 employers in Massachusetts by the Eos Foundation's inaugural Women's Power Gap in Corporate Massachusetts Survey and Rankings

FINANCIAL RESULTS

- Ended 2019 with \$1.55 billion in cash, cash equivalents, marketable debt and equity securities, and restricted investments
- Completed successful public offering raising approximately \$382 million in net proceeds

DISAPPOINTMENTS

- Did not meet all commercial objectives for ONPATTRO commercialization activities
- Did not meet enrollment goals for Phase 2 study of cemdisiran in IgA neuropathy

STOCKHOLDER RETURN

- Our three-year total stockholder return (TSR) for fiscal years 2017-2019 was 45.43% and our five-year TSR for fiscal years 2015-2019 was 3.49%. Our one-year TSR for 2019 was 57.96%
-

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 strategy and primary business goals, and attract and retain executives whose talents, expertise, leadership and contributions are expected to create sustained 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 in 2019

As noted above, our compensation committee regularly reviews Alnylam's policies and program design for both our NEOs and all employees. In 2019, this included an evaluation of our incentive compensation programs. With respect to our long-term equity incentive program, beginning with awards for 2018 (that were made in February 2019), we adjusted the mix of equity for our annual awards to include PSUs. We also continued to manage award amounts with a goal of

maintaining broad-based equity participation, delivering value that is aligned with our compensation philosophy and proactively managing our share usage and dilution during a period of rapid growth, which included headcount growth at the rate of 40% a year over the last two years. In further support of these goals, beginning with annual awards for 2019 (that were made in February 2020) and new hire awards in 2020, we transitioned from a unit-based to a value-based approach for determining equity awards for all employees, including our NEOs. We expect to continue to evaluate our equity compensation strategy across the organization during 2020 to manage our equity utilization during 2020 and beyond and determine if additional adjustments are warranted. We also evaluated the target award percentages under our short-term incentive program, resulting in an increase in the CEO's target award percentage for 2019 from 75% to 100% and an increase in the target award for employees at the level of president from 50% to 60%, in each case to bring the target award more in line with comparable executives in our peer group. Finally, we evaluated, with assistance from Radford, our peer group and no changes were made to the existing peer group for the purpose of 2019 compensation decisions.

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 2019, we paid Radford approximately \$159,336 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 2019, 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 2019, we paid Radford approximately \$284,327 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 the advice and services unrelated to executive compensation that Radford provided to the company in 2019 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 CEO) and the president of the company, good standing requirements under cash incentive programs for eligibility to receive an award, and a clawback policy to recover cash and equity 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 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 concluded that our compensation policies and practices are not reasonably likely to have a material adverse effect on the company. The compensation committee continues to evaluate on an ongoing basis the potential risks associated with our compensation policies and practices with input from its compensation consultant and internal and external counsel, and intends to engage Radford to conduct an updated formal assessment of our compensation policies and practices during 2020. As a result of the establishment of our global commercial organization to market and sell our products approved in 2018 and 2019, this evaluation will include the potential risks associated with field-based incentive compensation and commercial-related goals and targets, as well as any other changes to our compensation policies and practices made since Radford's prior independent assessment.

Committee Process for Setting Total Compensation

Our CEO conducts an annual performance review of our NEOs (other than the CEO) and our compensation committee conducts an annual performance review of our CEO, with the participation of our board chair. Our compensation committee reviews the compensation of each member of our senior management team, approving compensation for our NEOs (with the exception of our CEO) and senior vice presidents and above. Beginning with year-end compensation decisions for 2019, our compensation committee reviews the compensation of our CEO and recommends any changes to our board for approval. Our compensation committee may also review the compensation of our NEOs during the course of the year. Our compensation committee may apply its discretion, as it deems appropriate, in determining executive compensation.

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 compensation committee and our full 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 2019, 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 2019 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 2019, our compensation committee established the maximum cash bonus opportunity for each member of our senior management team for 2019 under the annual incentive program, representing a percentage of each individual's base salary.

In 2017, in connection with the continued build-out of our global commercial organization and preparations for the launch of our first commercial product in 2018, our compensation committee shifted the timing of annual performance reviews and the determination of base salary merit increases, annual cash incentive awards and annual equity awards to the first quarter of the following year. Accordingly, with respect to year-end 2019 compensation matters, our senior management team evaluated our corporate performance at the end of 2019 and the individual performance of employees, as compared to the corporate goals for that year, during the first quarter of 2020. During the first quarter of 2020, our CEO reviewed the performance of our NEOs (other than the CEO), our compensation committee, with input and recommendations from our chief executive officer, evaluated each of these NEO's compensation and determined any increases in base salary and any annual equity awards and/or, based solely on our performance against corporate goals, cash awards under our annual incentive program. Our compensation committee evaluated our chief executive officer's individual performance and determined whether to recommend to the full board for approval any change to the CEO's base salary, as well as the grant of an annual equity award and/or a cash award under our annual incentive program. Consistent with our year-end compensation process, our compensation committee made grants of annual equity awards, and determined changes in base salary and the amount of any annual cash incentive payments, in February 2020. Accordingly, equity awards made with respect to 2019 performance were not granted until 2020, and therefore, are not reflected in the executive compensation tables for 2019. Rather, the awards reflected in the executive compensation tables for 2019 were granted in respect of 2018 performance. The 2019 awards, granted in February 2020, are reflected in the tables included in this Compensation Discussion and Analysis to provide all details of compensation related to 2019 performance. Changes in base salary of our NEOs approved in February 2020 were effective as of March 1, 2020. The cash incentive payments awarded under our annual incentive program for 2019 were paid in March 2020.

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

In addition to the criteria above, our compensation committee also reviewed the peer selection criteria used by proxy advisors and considered the specific peers identified independently by each advisor. There are limited companies with a comparable profile to Alnylam, in light of our market capitalization, the recency of our first commercial launches, the depth of our pipeline for the continued development of a new class of medicines and our rapid global growth. 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.

2019 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 2018 peer group consisted of 18 companies operating in the biopharmaceutical/biotechnology industry. After consultation with Radford, the compensation committee determined that no changes to the 2018 peer group were warranted for 2019 and that the same group should continue to be used as a benchmark for compensation decisions going forward. The 2019 peer group, which is the same as the peer group utilized for 2018, is reflected below.

2019 Peer Group		
Agios Pharmaceuticals, Inc.	Incyte Corporation	Sage Therapeutics, Inc.
Alexion Pharmaceuticals, Inc.	Intercept Pharmaceuticals, Inc.	Sarepta Therapeutics, Inc.
Alkermes plc	Ionis Pharmaceuticals, Inc.	Seattle Genetics, Inc.
BioMarin Pharmaceutical Inc.	Jazz Pharmaceuticals plc	Ultragenyx Pharmaceutical Inc.
bluebird bio, Inc.	Nektar Therapeutics	United Therapeutics Corporation
Exelixis, Inc.	Neurocrine Biosciences, Inc.	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 2019.

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. In keeping with our pay-for-performance philosophy, actual compensation levels are correlated to the achievement of corporate goals. In addition, our compensation committee uses competitive compensation data from the annual total compensation study of peer companies to inform its decisions about overall compensation opportunities and specific compensation elements. Additionally, the committee uses multiple reference points when establishing targeted compensation levels. The committee does not benchmark specific compensation elements or total compensation to any specific percentile relative to the peer companies or the broader U.S. market. Instead, the committee applies judgment and discretion in establishing targeted pay levels, taking into account not only competitive market data, but also factors such as experience level of the executive, scope of responsibility, critical needs and skill sets, leadership potential and succession planning, individual performance against established corporate goals, and contributions to the achievement of long-term strategic objectives.

Our compensation committee continues to evaluate our equity incentive compensation and our long-term equity strategy, with continued assistance from Radford, and to make adjustments to

equity incentive awards at certain levels of the organization based upon our stock price and peer position. As noted above, beginning with annual awards for 2019 (that were made in February 2020) and new hire awards in 2020, we transitioned from a unit-based to a value-based approach for determining equity awards for all employees, including our NEOs. We expect to continue to review our equity incentive compensation guidelines annually and to make further adjustments in 2020 and beyond, as needed and dependent on our stock price and peer position, particularly in light of our continued global growth as we advance our commercialization efforts in 2020 and beyond.

Other Key Performance Factors and Industry Specific Considerations

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. While we became a commercial-stage company in 2018 and have launched two products to date, we have not achieved profitability and therefore, several of the traditional benchmarking metrics, such as profits and earnings per share, remain inappropriate measures for Alnylam as we move towards our goal of self-sustainability. Accordingly, 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 and identification of new therapeutic areas and novel disease targets;
- initiation and progress of clinical trials, in particular late-stage programs;
- achievement of regulatory milestones, including regulatory filings for product approvals and regulatory approvals;
- establishment of global commercial and medical infrastructure and commercial launch readiness, as well as patient and physician education initiatives;
- revenue results, as well as other key metrics, including progress on pricing and reimbursement efforts, for our recently launched products;
- establishment and maintenance of key strategic relationships and new business initiatives;
- filing, prosecution, defense and enforcement of key intellectual property rights;
- success in our human capital management strategy, including development of global organizational capabilities, success in hiring, employee retention 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.

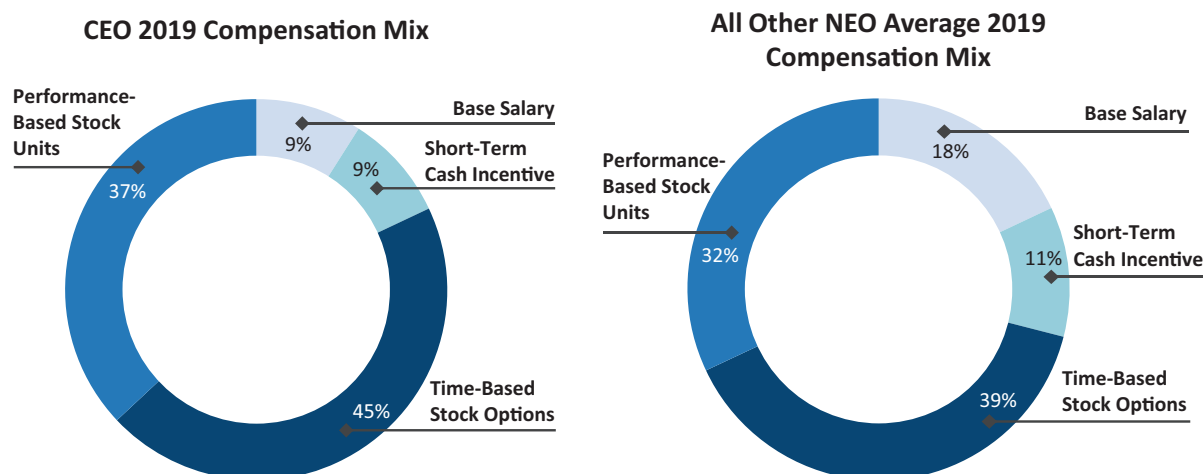
Components of our Compensation Program

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
Base Salary	<ul style="list-style-type: none"> Fixed cash compensation Targeted within the range of the market median taking into consideration each NEO's individual performance, skills, experience and internal equity 	<ul style="list-style-type: none"> Attracts and rewards high performing executives via market competitive pay and industry norms and reflects individual performance
Short-Term Cash Incentives—Variable Pay	<ul style="list-style-type: none"> Quantitative and qualitative performance objectives that are annually pre-determined and based on achievement of specific measures Cash incentives are awarded only if corporate performance against goals is at least 50% Awards capped at specified target percentage (130% for fiscal year 2019) 	<ul style="list-style-type: none"> Drives company-wide and individual performance Rewards annual performance Motivates executives to achieve performance objectives that are key to our annual operating and strategic plans Aligns executive and stockholder interests
Long-Term Equity Incentives—Variable Pay	<ul style="list-style-type: none"> Historically, primarily in the form of stock options until the annual awards for 2018 performance, the value of which were split 50% stock options and 50% PSUs 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 Equity awards for 2019 performance were granted in February 2020 	<ul style="list-style-type: none"> Encourages executives to achieve multi-year strategic objectives and clinical development, regulatory and commercial milestones Motivates executives to deliver sustained long-term growth Unique position within our peer group focused on significant use of performance-based vesting for equity awards to align executive and stockholder interests through long-term value creation Enhances retention of key talent

The compensation committee is committed to ensuring that a substantial portion of executive compensation is “at-risk” and variable. As such, 91% of our CEO’s total direct compensation for 2019 and, on average, 82% of our other NEOs’ total direct compensation for 2019, 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 equity awards beginning in 2013. Awards with respect to 2019, which were granted in February 2020, were a mix of time-based stock options and PSUs.



Note: For purposes of the calculation of “All Other NEOs Average 2019 Compensation Mix,” we annualized Mr. Poulton’s base salary for 2019 and assumed an annual short-term cash incentive payout at 107.5% of his target for 2019. The figures above exclude (i) Mr. Poulton’s on-hire stock option award and (ii) Mr. Soni as a result of his resignation in August 2019. In addition, the figures above do not include an annual equity award for Mr. Poulton due to his start date in July 2019. We included the annual equity awards made in 2019 with respect to 2018 performance, as reflected in the Summary Compensation Table for 2019 compensation below. With respect to the PSUs reflected above, we assumed that as of the grant date it was probable that 100% of the performance conditions would be achieved. See Note 4 of the Summary Compensation Table below for additional information regarding the treatment of PSUs. Equity awards made for 2019 performance were granted in February 2020 and are not reflected above.

Base Salary

Our compensation committee typically determines the base salary for each new executive based on the executive’s responsibilities and experience. 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 CEO, are approved by our compensation committee based upon a recommendation from our CEO. Any merit-based increase in base salary for our CEO is based upon an assessment of his performance by our compensation committee and a review by our compensation committee of the base salaries of chief executive officers in our peer group. Beginning with the year-end 2019 compensation review, our compensation committee will recommend any changes to our CEO’s base salary to our board for review and approval.

During the first quarter of 2020, our compensation committee approved increases for 2020 base salary for each of our NEOs other than our CEO, and recommended a base salary increase for our CEO to our board for approval, which our board approved. These increases, reflected below, were

effective as of March 1, 2020 and were 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 2019 peer group. The annual increase for Dr. Maraganore partially addresses a significant gap in his base salary relative to the market median. Our compensation committee intends to continue to assess Dr. Maraganore's base salary and further adjust it as necessary in future years to address this gap.

The table below sets forth the 2020 and 2019 base salaries, in dollars, and the adjustment to base salaries, as a percentage, for each of our NEOs:

Base Salary Adjustments

Name*	2020 Base Salary(\$)	2019 Base Salary(\$)*	Increase(%)
John M. Maraganore, Ph.D.	925,000	850,000	8.8
Barry E. Greene	627,300	597,400	5.0
Yvonne L. Greenstreet, MBChB, MBA	603,800	575,000	5.0
Akshay K. Vaishnaw, M.D., Ph.D.	616,500	587,100	5.0
Jeffrey V. Poulton**	537,600	530,000	1.4

* Mr. Soni resigned from the company in August 2019 and therefore, he has been excluded from the table.

** Mr. Poulton joined the company in July 2019 and received a pro-rated base salary adjustment on March 1, 2020.

Short-Term Incentives—2019 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 for 2019 under the AIP for our NEOs, our compensation committee and our board considered our success against pre-established 2019 corporate goals. Based on our performance in 2019, our board determined that we achieved 107.5% of our corporate goals for fiscal year 2019, including the majority of our commercial execution and early- and mid-stage pipeline goals, along with all of our late-stage pipeline goals, strategic infrastructure, growth and growth management goals, and our research platform goals.

Annual Metrics and Goal Assessment

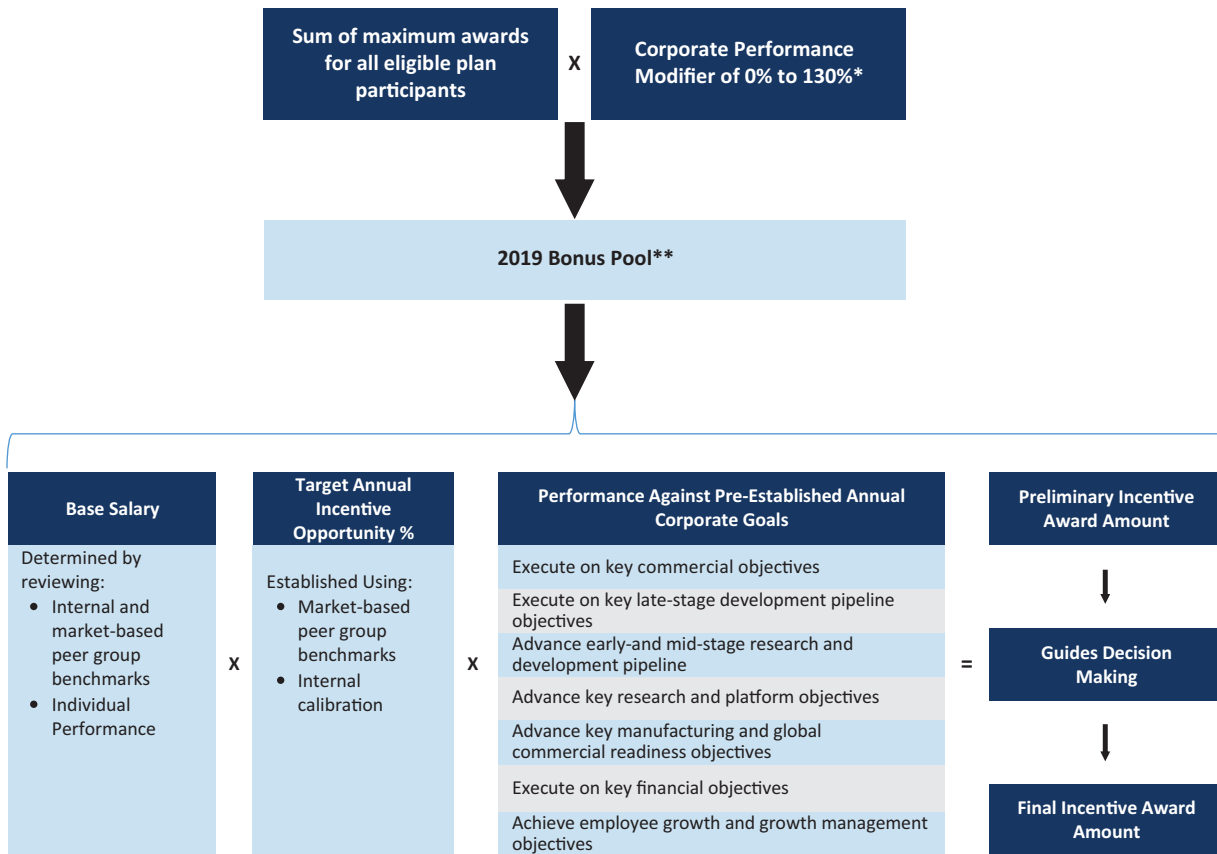
The 2019 corporate goals approved by our board, the relative weightings assigned to each goal, our actual achievement during the performance period as a percentage of target and the weighted performance against these corporate goals for 2019, as approved by our compensation committee and our full board in determining our NEOs compensation, were as follows:

Annual Incentive Payout Matrix

2019 Corporate Goals	Relative Weighting(%)	Actual Achievement For 2019 (As % of Target)	Weighted Performance(%)
<ul style="list-style-type: none"> Execute on key commercial objectives, including: <ul style="list-style-type: none"> Achieve ONPATTRO success, focusing on patient impact; Stretch Goal—Exceed more aggressive ONPATTRO commercial metrics. 	40	87.5	35
<ul style="list-style-type: none"> Stretch Goal—Exceed more aggressive ONPATTRO commercial metrics. 	15	0	0
<ul style="list-style-type: none"> Execute on key late-stage development pipeline objectives, including: <ul style="list-style-type: none"> Advance five late-stage clinical programs, including three positive Phase 3 studies and one NDA/MAA; Stretch Goal – Exceed certain specified pipeline advancement timelines. 	25	100	25
<ul style="list-style-type: none"> Stretch Goal – Exceed certain specified pipeline advancement timelines. 	7.5	100	7.5
<ul style="list-style-type: none"> Advance early- and mid-stage research and development pipeline 	10	75	7.5
<ul style="list-style-type: none"> Advance key research and platform objectives, including advancement of ESC+ GalNAc Conjugate Platform and ocular/CNS strategic therapeutic areas 	7.5	100	7.5
<ul style="list-style-type: none"> Advance key manufacturing and global commercial readiness objectives 	5	100	5
<ul style="list-style-type: none"> Execute on key financial objectives, including: <ul style="list-style-type: none"> Maintain strong investment discipline by prioritizing pipeline and commercial investment opportunities; Stretch Goal—Execute key business development transaction. 	7.5	100	7.5
<ul style="list-style-type: none"> Stretch Goal—Execute key business development transaction. 	7.5	100	7.5
<ul style="list-style-type: none"> Achieve employee growth and growth management objectives 	5	100	5
Approved 2019 Corporate Performance Level for NEOs	130		107.5*

Calculation of Annual Cash Incentives

Annual cash incentives were calculated as shown below.



* If the 2019 corporate performance level was 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 did not exercise such discretion with respect to the determination of awards under the AIP for 2019.

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 February 2019, our compensation committee approved the target awards for 2019 under the AIP, including the opportunity for eligible participants to achieve incentive awards above established bonus targets based on the company's performance against 2019 corporate goals. Each potential bonus award for 2019 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 2019 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 2019 AIP as a percentage of each NEO's annual base salary in 2019, 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 2019 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 2019 performance, which were paid in March 2020, and (4) the actual bonus payment as a percentage of the target award opportunity.

2019 Annual Incentive Program Awards

Name*	2019 Target Award (% of Base Salary)	2019 Target Award Opportunity(\$)	2019 Maximum Award Opportunity(\$)**	2019 Actual AIP Payout(\$)	2019 Actual AIP Payout (% of Target Award Opportunity)
John M. Maraganore, Ph.D.	100	850,000	1,105,000	913,750	107.5
Barry E. Greene	60	358,440	465,972	385,323	107.5
Yvonne L. Greenstreet, MBChB, MBA	60	345,000	448,500	370,875	107.5
Akshay K. Vaishnaw, M.D., Ph.D.	60	352,260	457,938	378,680	107.5
Jeffrey V. Poulton**	50	127,200	165,360	136,740	107.5

* Mr. Soni resigned from the company in August 2019 and therefore, he has been excluded from the table. Under the terms of his separation agreement, described below, Mr. Soni received a pro-rated award under the AIP of \$137,300 based upon his 2019 annual salary, a target of 40% and the 107.5% corporate multiplier.

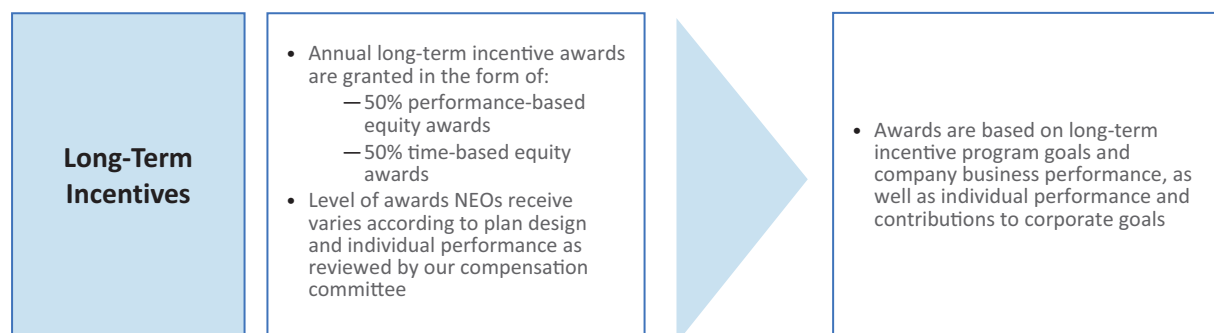
** Mr. Poulton's award opportunity was pro-rated based on his July 2019 hire date.

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

Following a review of our CEO's compensation in February 2019 and input from Radford, as described above, our compensation committee determined to adjust Dr. Maraganore's target award under the AIP for 2019 from 75% to 100% and to adjust the target award for employees at the level of president from 50% to 60%, in each case to bring the target award more in line with comparable executives in our peer group.

Long-Term Incentives – 2019 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. Beginning with the awards for 2018 performance, granted in February 2019, our compensation committee determined that a 50/50 split between stock options and PSUs was more aligned with the achievement of our long-term equity strategy and growth objectives and our desire to maintain competitive levels of executive compensation.

Also, historically, annual equity awards to our executive officers were approved by and granted at our compensation committee's regularly scheduled meeting at the end of the year. However, beginning with 2017 performance, as noted above, the compensation committee evaluated performance for the year and determined new annual incentive plan amounts and long-term equity incentive plan grants at a meeting in the first quarter of the following year.

Equity awards typically vary among our executive officers based on their positions and annual performance assessments. In addition, our compensation committee reviews all components of

each executive officer's compensation to ensure that his or her total compensation is aligned with our overall philosophy and objectives. 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. PSUs will only vest in the event that specified performance criteria are met and will vest no earlier than one year after the date of grant. Accordingly, each portion of our executive officers' annual equity compensation is "at risk" and is directly aligned with stockholder value creation.

Stock options granted to our executive officers upon commencement of employment and granted annually, typically vest over four years, and, as noted above, performance-based awards vest only upon achievement of the specified performance events, which we believe provides in both cases an incentive to our executives to add value to the company over the long-term and to remain with Alnylam.

Time- and Performance-Based Equity Awards

Since 2013, our annual equity awards have been in the form of stock option awards with both time-based and performance-based vesting terms. Generally, these annual stock options included a vesting schedule whereby 50% of the grant had time-based vesting over four years, while the remaining 50% of the grant vested in thirds or fourths upon the achievement of certain pre-determined performance milestones that were generally expected to occur in a staggered fashion over a three- to four-year period. As noted above, beginning with the awards for 2018 performance, the performance-based component of the annual equity awards is granted in the form of PSUs rather than stock options. Only a minority of our peer group have adopted a similar approach to emphasizing long-term performance through the grant of annual performance-based equity 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 equity awards, a portion of the shares subject to the performance-based option or PSU, as applicable, 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 equity awards granted over the last five years, together with the status of the achievement of such events:

Year for Award	Performance Milestone (% of Award)	Date Achieved	Status of Potential Achievement*
2015	• Completion of Patient Enrollment in Third Phase 3 Clinical Trial (25%)	✓ August 2018	
	• Start of Fourth Phase 3 Clinical Trial (25%)	✓ November 2017	
	• Achievement of Positive Phase 3 Clinical Data in Second Clinical Program (25%)	✓ September 2018	
	• Achievement of First \$100.0 Million in Cumulative Gross Product Sales (25%)	✓ August 2019	

Year for Award	Performance Milestone (% of Award)	Date Achieved	Status of Potential Achievement*
2016	<ul style="list-style-type: none"> Filing of First NDA for Regulatory Approval with the FDA (25%) 	✓ December 2017	
	<ul style="list-style-type: none"> Achievement of Positive Phase 3 Clinical Data in Second Clinical Program (25%) 	✓ September 2018	
	<ul style="list-style-type: none"> Filing of Second NDA for Regulatory Approval with the FDA (25%) 	✓ June 2019	
	<ul style="list-style-type: none"> Achievement of First \$100.0 Million in Cumulative Gross Product Sales (25%) 	✓ August 2019	
2017	<ul style="list-style-type: none"> Achievement of Human Proof of Concept (POC) for Investigational Therapeutic Utilizing ESC+GalNAc Conjugate Platform (33%) 	✓ November 2019	
	<ul style="list-style-type: none"> Filing of Third NDA or MAA for Regulatory Approval with the FDA or EMA (33%) 	✓ December 2019	
	<ul style="list-style-type: none"> Achievement of First \$500.0 Million in Cumulative Net Product Revenues (33%) 		<ul style="list-style-type: none"> Timing of achievement depends on progress of commercial efforts, success of regulatory filing(s) and potential additional product approvals
2018	<ul style="list-style-type: none"> Filing an IND or CTA for CNS or Ocular Product Candidate (33%) 		<ul style="list-style-type: none"> Timing of achievement depends on success of early stage research and development efforts in CNS/ocular programs
	<ul style="list-style-type: none"> Filing of Fourth NDA or MAA for Regulatory Approval with the FDA or EMA (33%) 		<ul style="list-style-type: none"> Timing of achievement depends on progress and success of Phase 3 programs
	<ul style="list-style-type: none"> Achievement of First \$500.0 Million in Cumulative Net Product Revenues (33%) 		<ul style="list-style-type: none"> Timing of achievement depends on progress of commercial efforts, success of regulatory filing(s) and potential additional product approvals
2019	<ul style="list-style-type: none"> Filing of Fifth NDA or MAA for Regulatory Approval with the FDA or EMA (33%) 		<ul style="list-style-type: none"> Timing of achievement depends on progress and success of Phase 3 programs
	<ul style="list-style-type: none"> Positive Data from Phase 3 Clinical Study in ATTR Amyloidosis Patients with Cardiomyopathy (33%) 		<ul style="list-style-type: none"> Timing of achievement depends on progress and success of Phase 3 programs in indication
	<ul style="list-style-type: none"> Achievement, on or before December 31, 2024, of First \$2.5 Billion in Cumulative Net Product Revenues (33%) 		<ul style="list-style-type: none"> Timing of achievement depends on progress of commercial efforts, success of regulatory filing(s) and potential additional product approvals

* Timing of actual achievement, if at all, will depend on the progress of our clinical trials, the timing and success of regulatory filing(s) and potential additional product launch(es) and the success of our commercial efforts for our marketed product(s). Actual achievement may be based upon events not listed above.

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 and the performance events for a PSU must occur within ten years from the date of grant. Vesting of equity awards to employees typically ceases upon termination of employment and exercise rights for vested awards typically cease three months following termination of employment, except in the case of death or disability, or with respect to members of our management board, in the event of a qualifying termination following a CIC. Prior to the exercise of an option or the vesting of a PSU, the holder does not have any rights as a stockholder with respect to the shares subject to such option or PSU, 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 for 2019 performance. As noted above, in connection with the continued assessment of our equity incentive program, beginning with annual awards for 2019 (that were made in February 2020) and new hire awards in 2020, we transitioned from a unit-based to a value-based approach for determining equity awards for all employees, including our NEOs.

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 2019 and 2018 performance, the value of such awards and the percentage change from 2019 versus 2018, are set forth in the table below:

Annual Equity Incentive Awards

Name*	Number of Stock Options Granted			Number of Performance Stock Units Granted			Annual Equity Incentive Award Values**		
	2019 (#)***	2018 (#)***	2019 versus 2018 Year-over-Year Change(%)	2019 (#)***	2018 (#)***	2019 versus 2018 Year-over-Year Change(%)	2019 (\$)***	2018 (\$)***	2019 versus 2018 Year-over-Year Change(%)
John M. Maraganore, Ph.D.	88,240	85,000	3.8	48,709	42,500	14.6	11,500,000	7,939,638	44.8
Barry E. Greene	29,925	32,500	(7.9)	16,519	16,250	1.7	3,900,000	3,035,744	28.5
Yvonne L. Greenstreet, MBChB, MBA	27,623	32,500	(15.0)	15,248	16,250	(6.2)	3,600,000	3,035,744	18.6
Akshay K. Vaishnav, M.D., Ph.D.	27,623	32,500	(15.0)	15,248	16,250	(6.2)	3,600,000	3,035,744	18.6
Jeffrey V. Poulton****	24,554	N/A	N/A	13,554	N/A	N/A	3,200,000	N/A	N/A

* Mr. Soni resigned from the company in August 2019 and, as a result, he has been excluded from the table.

** See Note 4 and Note 6 to Summary Compensation Table for additional information on the calculation of the value of awards.

*** Reflects awards made in first quarter of 2020 and 2019 for 2019 and 2018 performance, respectively. Awards granted in February 2020 for 2019 performance are presented for comparative purposes and are not reflected in the Summary Compensation Table for 2019. These awards will be included as 2020 compensation in the 2021 proxy statement.

**** Although Mr. Poulton joined the company in July 2019, his 2019 equity award was not pro-rated based on his performance and contributions to the achievement of corporate goals and objectives.

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 and a 401(k) 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. Through December 31, 2019, we matched, in the form of shares of our common stock, 50% of the first 6% of a plan participant's pay that was contributed to the plan. Our contribution was made at the end of each quarter up to an annual maximum number of shares with a value of \$8,000 for each participant. Our matching contributions became 50% vested after the employee had been employed by us for one year and fully vested after the employee had been employed by us for two years. Beginning January 1, 2020, we match, in cash versus stock, 100% of the first 2% of a plan participant's contributions and 50% of the next 4% of contributions. In addition, we no longer have an annual maximum for matching contributions (subject to statutory maximums under the Code) and such matching contributions are fully vested immediately. In connection with these changes, all existing matching contributions were fully vested as of January 1, 2020.

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 at least 12 months after termination of employment.

In connection with the conclusion of his employment with Alnylam, we entered into a separation agreement with Mr. Soni dated July 10, 2019. Under the separation agreement, in consideration for Mr. Soni's continued service through August 12, 2019, his separation date from the company, and his agreement to a general release and certain other standard terms and conditions, we agreed to provide Mr. Soni with the following severance pay and benefits: (i) twelve months of salary continuation, (ii) a pro-rated portion of any bonus award he may have been entitled to under the AIP had he remained an employee, and (iii) the cost of COBRA premiums, less Mr. Soni's regular contribution towards premiums prior to the separation date, until the earlier of February 28, 2021 and the date Mr. Soni becomes eligible for coverage through another employer. Mr. Soni has not elected COBRA coverage. In addition, in consideration for his provision of up to ten hours of consulting services per month to us following the separation date through August 12, 2020 and subject to Mr. Soni's compliance with all continuing obligations to us, we agreed to continue the vesting of any equity awards outstanding as of the separation date through August 12, 2020. All equity awards vested as of August 12, 2020 will be exercisable through November 12, 2020.

We have entered into an individual CIC agreement with each member of our management board, including our CEO and all of our other current NEOs. The CIC agreements entitle each executive to certain benefits in the event of certain terminations of employment with us within 12 months following a CIC (as defined in the CIC agreement). Pursuant to each CIC Agreement, if an executive is terminated by us without Cause (as defined in the CIC agreement) or if an executive terminates his or her employment for Good Reason (as defined in the CIC agreement), in either case, within 12 months following a CIC, such executive will be entitled to receive (i) a lump sum cash payment equal to one and a half times the sum of: (A) his or her annual base salary in effect immediately prior to termination (or prior to the CIC, if higher) and (B) his or her target bonus for the fiscal year in which the CIC occurred; and (ii) if the executive was participating in our group health plan immediately prior to such termination and elects continuation coverage under COBRA, a monthly cash payment for 18 months (or the expiration of the COBRA continuation period, if earlier) equal to the monthly employer contribution we would have paid to provide the executive with health insurance if he or she had remained employed. In addition, following a CIC and qualifying termination of employment, all of an executive's outstanding unvested stock options and other stock-based awards shall immediately accelerate and become fully exercisable or nonforfeitable. Receipt of these payments and benefits is subject to execution of a general release of claims in favor of us.

If any payment and benefits to be paid or provided to an executive, whether pursuant to the terms of a CIC Agreement or otherwise, would be subject to “golden parachute” excise taxes under the Code, the payments and benefits will be reduced to the extent necessary to avoid such excise taxes, but only if such a reduction of pay or benefits would result in a greater after-tax benefit to the executive.

Each CIC Agreement will terminate upon the earlier of (i) an executive’s termination of employment with us for any reason prior to a CIC, (ii) an executive’s termination of employment with Alnylam after a CIC other than for Cause or Good Reason or (iii) the date that is 12 months after a CIC, if the executive is still employed by the company.

Stock Ownership Guidelines

In March 2015, our compensation committee adopted share ownership guidelines for our directors (including our chief executive officer) and the president of the company, which were updated in December 2016 for our CEO and president. Under these guidelines, directors (other than our CEO) are required to hold equity securities having a minimum value of \$150,000, our CEO is required to hold equity securities having a minimum value of six times his base salary and our president is required to hold equity securities having a minimum value of three times his base salary. Newly appointed/elected persons have five years to achieve the guideline. The following forms of equity count toward the ownership guideline: shares owned outright; unvested restricted stock, restricted stock units, or RSUs (whether or not performance-based) 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. All of our directors (including our CEO) and our president are currently in compliance with our ownership guidelines.

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 allowing for pre-clearance/pre-approval under certain situations 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 cash and equity incentive compensation earned during the covered period.

Tax and Accounting Considerations

Section 162(m) of the Code generally places a \$1 million limit on the amount of compensation a company can deduct in any one year for certain executive officers and certain other individuals. While the compensation committee considers tax deductibility as one factor in determining executive

compensation, the compensation committee also looks at other factors in making its decisions, as noted above, and retains the flexibility to award compensation that it determines to be consistent with the goals of our executive compensation program even if the awards are not deductible by us for tax purposes. The exemption from Section 162(m)'s deduction limit for performance-based compensation has been repealed, effective for taxable years beginning after December 31, 2017, such that compensation paid to our NEOs in excess of \$1 million will not be deductible unless it qualifies for the limited transition relief applicable to certain arrangements in place as of November 2, 2017.

Despite the compensation committee's efforts to structure certain performance-based awards in a manner intended to be exempt from Section 162(m) and therefore not subject to its deduction limits, because of ambiguities and uncertainties as to the application and interpretation of Section 162(m) and the regulations issued thereunder, including the uncertain scope of the transition relief under the legislation repealing the performance-based compensation exemption from the deduction limit, no assurance can be given that compensation intended to satisfy the requirements for exemption from Section 162(m) in fact will. Further, the compensation committee reserves the right to modify compensation that was initially intended to be exempt from Section 162(m) if it determines that such modifications are consistent with our business needs. The compensation committee believes that stockholder interests are best served if its discretion and flexibility in awarding compensation is not restricted, even though some compensation awards may result in non-deductible compensation expenses.

Compensation Committee Report on Executive Compensation

The members of our compensation committee have 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, 2019, which was filed with the SEC on February 13, 2020.

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

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

Executive Compensation

The following table sets forth the total compensation paid or accrued for the years ended December 31, 2019, 2018 and 2017 to our NEOs.

Summary Compensation Table

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards \$(4)(5)	Option Awards \$(6)	Non-Equity Incentive Plan Compensation \$(7)	All Other Compensation \$(8)	Total (\$)
John M. Maraganore, Ph.D. <i>Chief Executive Officer (principal executive officer)</i>	2019	845,000	—	1,204,195	4,327,138	913,750	27,773	7,317,856
	2018	800,000	—	—	3,782,231(10)	480,000	27,038	5,089,269
	2017	753,548	—	—	—	636,748	27,098	1,417,394
Barry E. Greene <i>President</i>	2019	596,820	—	460,360	1,654,494	385,323	21,367	3,118,364
	2018	580,000	—	—	2,161,275(10)	232,000	21,108	2,994,383
	2017	562,792	—	—	—	365,814	15,539	944,145
Yvonne L. Greenstreet, MBChB, MBA(1) <i>Chief Operating Officer</i>	2019	571,423	—	460,360	1,654,494	370,875	192,874	3,250,026
	2018	540,000	—	—	1,801,063(10)	216,000	125,692	2,682,755
	2017	504,200	—	—(5)	—	327,730	152,744	984,674
Akshay K. Vaishnaw, M.D., Ph.D. <i>President, Research and Development</i>	2019	586,530	—	460,360	1,654,494	378,680	20,889	3,100,953
	2018	570,000	—	—	1,801,063(10)	228,000	20,608	2,619,671
	2017	542,141	—	—(5)	—	352,391	20,686	915,218
Jeffrey V. Poulton(2) <i>Executive Vice President, Chief Financial Officer (principal financial officer)</i>	2019	254,808	—	—	5,479,525	136,740	6,343	5,877,416
Manmeet S. Soni(3) <i>Former Senior Vice President, Chief Financial Officer (former principal financial officer)</i>	2019	314,442	—	283,390	2,016,551(11)	—	694,549	3,308,932
	2018	500,000	50,000(9)	—	643,916(10)	160,000	9,845	1,363,761
	2017	318,500	100,000(9)	—	3,853,400(10)	165,620	44,180	4,481,700

- (1) Dr. Greenstreet has served as our president, chief operating officer since March 2019 and was our executive vice president, chief operating officer from September 2016 to March 2019.
- (2) Mr. Poulton joined Alnylam in July 2019 and was appointed as our executive vice president, chief financial officer and principal financial and accounting officer in August 2019. The amount reported as salary for 2019 represents the total salary earned by Mr. Poulton during 2019 and is based upon an annual salary of \$530,000, pro-rated to reflect his partial year of employment. Mr. Poulton was eligible to participate in the 2019 annual cash incentive program with a pro-rated award. In addition, Mr. Poulton received a stock option award upon commencement of his employment. Mr. Poulton also was eligible to receive an annual stock option award for 2019, which was granted in February 2020 and therefore, is not reflected in the table above.
- (3) Mr. Soni resigned from Alnylam, effective August 12, 2019. The amount reported as salary for 2019 represents the total salary earned by Mr. Soni during 2019 prior to his resignation and is based upon an annual 2019 salary of \$515,000. In connection with his resignation, we entered into a separation agreement with Mr. Soni, pursuant to which Mr. Soni is entitled to the following severance pay and benefits: (i) twelve months of salary continuation, (ii) a pro-rated portion of any bonus award for 2019 that he may have been entitled to under the AIP had he remained an employee, and (iii) the cost of COBRA premiums, less Mr. Soni's regular contribution towards premiums prior to the separation date, until the earlier of February 28, 2021 and the date Mr. Soni becomes eligible for coverage through another employer. Mr. Soni has not elected COBRA coverage. In addition, in consideration for his provision of up to ten hours of consulting services per month through August 12, 2020, we agreed to continue the vesting of any equity awards outstanding as of the separation date through August 12, 2020.

Mr. Soni joined Alnylam as our senior vice president, chief financial officer in May 2017. The amount reported as salary for 2017 represents the total salary earned by Mr. Soni during 2017 and is based upon an annual 2017 salary of \$490,000, pro-rated to reflect his partial year of employment. Mr. Soni was eligible to participate in the 2017 annual cash incentive program with a pro-rated award. In addition, Mr. Soni received a stock option award upon commencement of his employment and was eligible to receive a pro-rated annual stock option award for 2017, which was granted in March 2018.

- (4) The amounts reported in the Stock Awards column for 2019 represent the aggregate grant date fair value for the fiscal year ended December 31, 2019 of grants of PSUs 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 11 of our audited consolidated financial statements for the year ended December 31, 2019 included in our Annual Report on Form 10-K, filed with the SEC on February 13, 2020. In accordance with SEC rules, these amounts are calculated based on the probable outcome of the performance conditions as of the grant date. The grant date fair value of such PSU awards, based upon maximum achievement, would be \$3,612,500 for Dr. Maraganore, \$1,381,250 for Mr. Greene, \$1,381,250 for Dr. Greenstreet, \$1,381,250 for Dr. Vaishnav and \$850,000 for Mr. Soni. PSUs granted in February 2019 for 2018 performance are reflected in the Summary Compensation Table above for 2019. Mr. Poulton joined Alnylam in July 2019 and did not receive a PSU award. We did not grant PSUs to any of our NEOs in 2018.

On June 29, 2017, Dr. Greenstreet received a one-time award of 15,000 PSUs. 7,500 PSUs vested upon the launch of ONPATTRO in August 2018 and 7,500 PSUs vested upon the launch of GIVLAARI in December 2019. In accordance with SEC rules, the grant date fair value to be reported for PSUs 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 either performance condition would be achieved and assigned a grant date fair value of \$0 in the Stock Awards column for 2017 based on this evaluation. However, if we had determined that as of the date of the grant it was probable that the performance conditions would be achieved, we would have assigned a grant date fair value of \$1,185,450 for the PSU awards in the Stock Awards column for 2017, measured based on the closing fair market value of our common stock on the date of grant.

- (5) On November 7, 2017, we entered into a CIC Agreement with each member of our management board, including our CEO and all other NEOs. If a member of our management board is terminated by us without Cause (as defined in the CIC Agreement) or if a management board member terminates his or her employment for Good Reason (as defined in the CIC Agreement), in either case, within 12 months following a CIC, such management board member will be entitled to receive certain benefits, including the immediate acceleration of all outstanding unvested stock options and other stock-based awards. Under the applicable accounting guidance, entrance into the CIC Agreement modified outstanding PSUs and the compensation cost to be recognized for any PSUs that vest under a modified performance condition, and were not determined to be probable of vesting at the modification date, will be based on the modification date value instead of the grant date fair value. In accordance with accounting guidance for stock-based compensation expense, we record the modification date fair value for any equity grants that were not considered probable of vesting as of November 7, 2017 that ultimately vest. We also determined as of the date of modification it was not probable, as defined under applicable accounting guidance, that the modified performance conditions would be achieved and assigned a modification date fair value of \$0 based on this evaluation. However, if 100% achievement was probable at the modification date, the fair value of outstanding PSUs to each to Dr. Greenstreet and Dr. Vaishnav would be increased as a result of this modification from the grant date fair value by \$757,050 and \$62,874, respectively.
- (6) The amounts reported in the Option Awards column represent the aggregate grant date fair value for the fiscal years ended December 31, 2019, 2018 and 2017 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 11 of our audited consolidated financial statements for the year ended December 31, 2019 included in our Annual Report on Form 10-K, filed with the SEC on February 13, 2020. To see the value actually realized by the NEO from stock option exercises in 2019, see the 2019 Option Exercises and Stock Vested table appearing below.

In connection with the continued build-out of our global commercial organization and preparations for the potential launch of our first commercial product in 2018, our compensation committee shifted the timing of annual performance reviews and the determination of annual equity awards for 2017 from the fourth quarter of the year to the first quarter of the subsequent year. As a result, options granted in March 2018 for 2017 performance are not reflected in the Summary Compensation Table above for 2017 and instead are included as 2018 compensation in this proxy statement. In addition, options granted in February 2019 for 2018 performance are reflected in the Summary Compensation Table above for 2019. Options granted in February 2020 for 2019 performance are not reflected in the Summary Compensation Table above for 2019 and will be included as 2020 compensation in the 2021 proxy statement.

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.

- (7) 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 the first quarter of the calendar year following the year to which the cash bonus relates.

- (8) 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.	2019	19,773	8,000	—
	2018	19,038	8,000	—
	2017	19,098	8,000	—
Barry E. Greene	2019	13,007	8,000	360(a)
	2018	12,748	8,000	360(a)
	2017	7,165	8,000	374(a)
Yvonne L. Greenstreet, MBChB, MBA	2019	11,701	8,000	173,173(b)
	2018	11,178	8,000	106,514(b)
	2017	11,113	12,035	129,596(b)
Akshay K. Vaishnaw, M.D., Ph.D.	2019	12,529	8,000	360(a)
	2018	12,248	8,000	360(a)
	2017	12,312	8,000	374(a)
Jeffrey V. Poulton	2019	1,083	5,260	—
Manmeet S. Soni	2019	706	7,630	686,213(c)
	2018	1,020	8,825	—
	2017	667	1,507	42,006(d)

(a) Represents amounts for an employee fitness benefit, paid by Alnylam.

(b) Represents \$222 for an employee fitness benefit, paid by Alnylam, in 2019, as well as amounts paid to Dr. Greenstreet for relocation assistance pursuant to her letter of employment, including \$122,103 in reimbursement for relocation expenses and \$50,848 for a gross-up related to taxable relocation benefits in 2019, \$75,146 in reimbursement for relocation expenses and \$31,368 for a gross-up related to taxable relocation benefits in 2018, and \$87,542 in reimbursement for relocation expenses and \$42,054 for a gross-up related to taxable relocation benefits in 2017.

(c) This amount includes \$518,961 in paid and accrued salary continuation, \$137,300 paid for a pro-rated annual cash incentive bonus for 2019 and \$29,712 paid for accrued vacation, in each case paid under Mr. Soni's separation agreement, as well as \$240 paid for an employee fitness benefit, paid by Alnylam.

(d) Represents amounts paid to Mr. Soni for relocation assistance pursuant to his letter of employment, including \$28,375 in reimbursement for relocation expenses and \$13,631 for a gross-up related to taxable relocation benefits in 2017.

- (9) Pursuant to the terms of his letter of employment, we paid Mr. Soni an initial sign-on bonus of \$100,000 in May 2017 and a supplemental sign-on bonus of \$50,000 in May 2018.

- (10) Each of the March 1, 2018 annual stock option awards and the on-hire grant to Mr. Soni on May 8, 2017 included certain stock options that are subject to vesting upon the achievement of specific performance conditions. 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 grant date fair value included in the table below for the performance-based stock option awards made to each NEO in the Options Awards column for the related year of grant.

In connection with the CIC Agreements on November 7, 2017, described above, we also determined as of the date of modification it was not probable, as defined under applicable accounting guidance, that certain of the performance conditions of performance-

based stock options that were unvested as of November 7, 2017 would be achieved and assigned a modification date fair value of \$0 based on this evaluation. Under the applicable accounting guidance, compensation cost to be recognized for any performance-based stock option awards that vest under the modified performance condition and were not considered probable as of the date of the modification is based on the modification date value instead of the grant date fair value. If 100% achievement of the performance conditions was considered probable, the fair value in 2017 would have been increased as a result of this modification from the grant date fair value as noted in the table below under "Incremental CIC Modification Fair Value of Performance-Based Option Awards if 100% Achievement Probable."

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(\$)	Incremental CIC Modification Fair Value of Performance-Based Option Awards if 100% Achievement Probable(\$)
John M. Maraganore, Ph.D.	03/01/18	2017	03/01/18	3,782,231	N/A
	12/20/16	2016	12/20/16	620,958	1,436,432
	12/18/15	2015	12/18/15	2,964,962	1,599,094
	05/01/15	2014	12/17/14	4,158,585	426,395
	12/18/13	2013	12/18/13	3,078,463	1,215,930
Barry E. Greene	03/01/18	2017	03/01/18	2,161,275	N/A
	12/20/16	2016	12/20/16	620,958	1,436,432
	12/18/15	2015	12/18/15	1,824,592	984,058
	05/01/15	2014	12/17/14	2,640,701	270,761
	12/18/13	2013	12/18/13	1,847,078	729,216
Yvonne L. Greenstreet, MBChB, MBA	03/01/18	2017	03/01/18	1,801,063	N/A
	12/20/16	2016	12/20/16	620,958	1,436,432
	09/19/16	N/A	09/14/16	1,005,158	1,159,848
Akshay K. Vaishnaw, M.D., Ph.D.	03/01/18	2017	03/01/18	1,801,063	N/A
	12/20/16	2016	12/20/16	620,958	1,436,432
	12/18/15	2015	12/18/15	1,368,444	738,044
	05/01/15	2014	12/17/14	1,947,604	199,672
	12/18/13	2013	12/18/13	1,334,001	526,591
Jeffrey V. Poulton*	N/A	N/A	N/A	N/A	N/A
Manmeet S. Soni	03/01/18	2017	03/01/18	643,844	N/A
	05/08/17	N/A	05/03/17	770,680	1,662,605

* Mr. Poulton joined the Company in July 2019.

- (11) Amount includes the modification date value of \$998,401 in the Option Awards column to reflect the incremental fair value recognized for stock options granted prior to 2019 that will continue to vest through August 12, 2020 as a result of the modification in July 2019 pursuant to Mr. Soni's separation agreement. See Note 3 above for additional information. Under the applicable accounting guidance, compensation cost to be recognized for equity awards that vest only as a result of a modification is based on the modification date value instead of the grant date fair value.

The following table sets forth information concerning each grant of an award made to a NEO during the fiscal year ended December 31, 2019 under any plan, contract, authorization or arrangement pursuant to which cash, securities, similar instruments or other property may be received:

2019 Grants of Plan-Based Awards(1)

Name	Award Type	Date of Grant	Estimated Future Payouts Under Non-Equity Incentive Plan Awards(2)			Estimated Future Payouts Under Equity Incentive Plan Awards(3)			All Other Option Awards: Number of Securities Underlying Options(4)	Exercise or Base Price of Option Awards (\$)	Grant Date Fair Value of Stock and Option Awards \$(4)
			Threshold (\$)	Target (\$)	Maximum (\$)	Threshold (#)	Target (#)	Maximum (#)			
John M. Maraganore, Ph.D.	Cash incentive		—	850,000	1,105,000						
	Time-based stock options	02/28/19							85,000(5)	85.00	4,327,138
	Performance-based stock units	02/28/19				—	42,500	42,500			1,204,195(6)
Barry E. Greene	Cash incentive		—	358,440	465,972						
	Time-based stock options	02/28/19							32,500(5)	85.00	1,654,494
	Performance-based stock units	02/28/19				—	16,250	16,250			460,360(6)
Yvonne L. Greenstreet, MBChB, MBA	Cash incentive		—	345,000	448,500						
	Time-based stock options	02/28/19							32,500(5)	85.00	1,654,494
	Performance-based stock units	02/28/19				—	16,250	16,250			460,360(6)
Akshay K. Vaishnaw, M.D., Ph.D.	Cash incentive		—	352,260	457,938						
	Time-based stock options	02/28/19							32,500(5)	85.00	1,654,494
	Performance-based stock units	02/28/19				—	16,250	16,250			460,360(6)
Jeffrey V. Poulton	Cash-incentive		—	127,200	165,360						
	Time-based stock options	08/01/19							125,000(5)	75.36	5,479,525
Manmeet S. Soni	Cash incentive		—	127,721	166,037						
	Time-based stock options	02/28/19							20,000(5)	85.00	1,018,150
	Time-based stock options	07/10/19(7)									998,401(7)
	Performance-based stock units	02/28/19				—	10,000	10,000			283,390(6)

- (1) As described in the “Compensation Discussion and Analysis” and under the Summary Compensation Table, the equity awards for each of 2017, 2018 and 2019 annual performance were granted in the first quarter of the following year.
- (2) The amounts shown in the threshold, target and maximum columns reflect the minimum, target and maximum amounts payable, respectively, under our 2019 AIP, which is described above in the “Compensation Discussion and Analysis” under the heading “Short-Term Incentives—2019 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.
- (3) 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.
- (4) The grant date fair value, computed in accordance with FASB ASC Topic 718, represents the value of 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 2019 Grants of Plan-Based Awards table for the 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.
- (5) 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 the remaining shares ratably at the end of each three-month period thereafter over the following thirty-six months, assuming the NEO continues to be employed with us through each vesting date.
- (6) The performance-based awards granted in February 2019 were split equally into three performance-based vesting conditions. As of the grant date, only one of the three vesting conditions was considered probable, as defined under applicable accounting guidance, while the remaining two vesting conditions were not considered probable of vesting and were therefore assigned a grant date fair value of \$0 in the Grant Date Fair Value of Stock and Option Awards column based on this determination.
- (7) Amount represents the modification date value of time-based stock options reflecting the incremental fair value recognized for stock options that will continue to vest through August 12, 2020 as a result of the modification in July 2019 pursuant to Mr. Soni’s separation agreement. See Note 3 to the Summary Compensation table above for additional information. Under the applicable accounting guidance, compensation cost to be recognized for equity awards that vest only as a result of a modification is based on the modification date value instead of the grant date fair value.

Information Relating to Equity Awards and Holdings

The following table sets forth information concerning outstanding equity awards held by each of our NEOs on December 31, 2019.

Outstanding Equity Awards at Fiscal Year-End for 2019

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 Unearned Options (#)	Option Exercise Price (\$)	Option Expiration Date	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 (\$)
John M. Maraganore, Ph.D.	12/08/2010	139,060	—		9.14	12/08/2020		
	11/30/2011	135,915	—		7.10	11/30/2021		
	12/20/2012	144,641	—		18.66	12/20/2022		
	09/11/2013	10,000(3)	—		55.96	09/11/2023		
	12/18/2013	148,413	—		63.00	12/18/2023		
	12/18/2013	75,000(4)	—	—	63.00	12/18/2023		
	05/01/2015	75,000(5)	—		96.45	12/17/2024		
	05/01/2015	75,000(6)	—	—	96.45	12/17/2024		
	12/18/2015	65,000	—		88.95	12/18/2025		
	12/18/2015	65,000(7)	—	—	88.95	12/18/2025		
	12/20/2016	18,750	6,250		42.22	12/20/2026		
	12/20/2016	25,000(8)	—	—	42.22	12/20/2026		
	03/01/2018	23,863(10)	28,637(10)		119.13	03/01/2028		
	03/01/2018	34,996(11)	—	17,504(11)	119.13	03/01/2028		
	02/28/2019		85,000		85.00	02/28/2029		
	02/28/2019						42,500(12)	4,894,725
Barry E. Greene	12/08/2010	89,060	—		9.14	12/08/2020		
	11/30/2011	85,915	—		7.10	11/30/2021		
	12/20/2012	94,641	—		18.66	12/20/2022		
	10/21/2013	10,000(3)	—		59.31	10/21/2023		
	12/18/2013	90,000	—		63.00	12/18/2023		
	12/18/2013	45,000(4)	—	—	63.00	12/18/2023		
	05/01/2015	47,625(5)	—		96.45	12/17/2024		
	05/01/2015	47,625(6)	—	—	96.45	12/17/2024		
	12/18/2015	40,000	—		88.95	12/18/2025		
	12/18/2015	40,000(7)	—	—	88.95	12/18/2025		
	12/20/2016	18,750	6,250		42.22	12/20/2026		
	12/20/2016	25,000(8)	—	—	42.22	12/20/2026		
	03/01/2018	13,636(10)	16,364(10)		119.13	03/01/2028		
	03/01/2018	19,998(11)	—	10,002(11)	119.13	03/01/2028		
	02/28/2019		32,500		85.00	02/28/2029		
	02/28/2019						16,250(12)	1,871,513
Yvonne L. Greenstreet, MBChB, MBA	09/19/2016	101,562	23,438		77.10	09/19/2026		
	09/19/2016	25,000(9)	—	—	77.10	09/19/2026		
	12/20/2016	9,375	6,250		42.22	12/20/2026		
	12/20/2016	18,750(8)	—	—	42.22	12/20/2026		
	03/01/2018	11,363(10)	13,637(10)		119.13	03/01/2028		
	03/01/2018	16,666(11)	—	8,334(11)	119.13	03/01/2028		
	02/28/2019		32,500		85.00	02/28/20129		
	02/28/2019				85.00		16,250(12)	1,871,513

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	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 (\$)
Akshay K. Vaishnaw, M.D., Ph.D.	12/18/2013	32,500	—	—	63.00	12/18/2023		
	12/18/2013	32,500(4)	—	—	63.00	12/18/2023		
	05/01/2015	35,125(5)	—	—	96.45	12/17/2024		
	05/01/2015	35,125(6)	—	—	96.45	12/17/2024		
	12/18/2015	30,000	—	—	88.95	12/18/2025		
	12/18/2015	30,000(7)	—	—	88.95	12/18/2025		
	02/23/2016	10,000(3)	—	—	94.14	02/23/2026		
	12/20/2016	18,750	6,250	—	42.22	12/20/2026		
	12/20/2016	25,000(8)	—	—	42.22	12/20/2026		
	03/01/2018	11,363(10)	13,637(10)	—	119.13	03/01/2028		
	03/01/2018	16,666(11)	—	8,334(11)	119.13	03/01/2028		
	02/28/2019		32,500	—	85.00	02/28/2029		
	02/28/2019						16,250(12)	1,871,513
Jeffrey V. Poulton	08/01/2019		125,000	—	75.36	08/01/2029		
Manmeet S. Soni(13)	05/08/2017	644	46,875	—	52.61	11/12/2020		
	03/01/2018	4,063(10)	4,875(10)	—	119.13	11/12/2020		
	03/01/2018	5,958(11)	—	2,979(11)	119.13	11/12/2020		
	02/28/2019		20,000	—	85.00	11/12/2020		
	02/28/2019						10,000(12)	1,151,700

- (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 PSUs that have not vested is based on the number of unvested PSUs outstanding times the closing price of our common stock on the Nasdaq Global Select Market on December 31, 2019.
- (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 vested 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 “AInylam 5x15” program, one-third of these options vested in September 2017 based on the positive topline results from our APOLLO Phase 3 study and one-third of these options vested in August 2018 based on FDA approval of ONPATTRO.
- (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 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 vested in three equal installments upon the achievement of each of three specific clinical development or regulatory events. One-third of these options vested in February 2016 based on the completion of patient enrollment in our APOLLO Phase 3 study, one-third vested in July 2017 based on the initiation of the ATLAS Phase 3 program for fitusiran and one-third of these options vested in August 2018 based on FDA approval of ONPATTRO.

- The following table sets forth information concerning the exercise of stock options and the vesting of PSUs during 2019 for each of our NEOs.

Name	Option Awards		Stock Awards	
	Number of Shares Acquired on Exercise(#)	Value Realized on Exercise (\$)(1)	Number of Shares Acquired on Vesting(#)	Value Realized on Vesting (\$)
John M. Maraganore, Ph.D.	98,913	5,766,030	—	—
Barry E. Greene	58,913	4,274,727	—	—
Yvonne L. Greenstreet, MBChB, MBA	8,404	453,272	7,500	904,575(2)
Akshay K. Vaishnaw, M.D., Ph.D.	—	—	—	—
Jeffrey V. Poulton	—	—	—	—
Manmeet S. Soni	102,481	5,493,409	—	—

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Potential Payments Upon Termination or Change-in-Control (CIC)

Mr. Soni resigned from Alnylam, effective August 12, 2019. In connection with his resignation, we entered into a separation agreement with Mr. Soni, pursuant to which Mr. Soni is entitled to the following severance pay and benefits: (i) twelve months of salary continuation, in the amount of \$518,916, (ii) the pro-rated portion of any bonus award for 2019 that he may have been entitled to under the AIP had he remained an employee, in the amount of \$137,300, and (iii) the cost of COBRA premiums, less Mr. Soni's regular contribution towards premiums prior to the separation date, until the earlier of February 28, 2021 and the date Mr. Soni becomes eligible for coverage through another employer. Mr. Soni did not elect COBRA coverage. In addition, in consideration for his provision of up to ten hours of consulting services per month through August 12, 2020, we agreed to continue the vesting of any equity awards outstanding as of the separation date through August 12, 2020. As of December 31, 2019, Mr. Soni's unvested stock options, including performance-based stock options, and performance-based stock units scheduled to vest during his separation period had an intrinsic value of \$1,654,781 and \$383,862, respectively. The intrinsic value of Mr. Soni's unvested stock options was calculated based on the number of unvested stock options outstanding scheduled to vest during his separation period as of December 31, 2019, multiplied by the result of \$115.17 per share (the closing price of our common stock on the Nasdaq Global Select Market on the last trading day of 2019) minus the respective exercise price per share. The intrinsic value of Mr. Soni's unvested performance-based stock units was calculated based on the number of unvested performance-based stock units scheduled to vest during his separation period multiplied by \$115.17 per share (the closing price of our common stock on the Nasdaq Global Select Market on the last trading day of 2019).

We have also entered into CIC agreements with each of our NEOs. Accordingly, the following table sets forth potential payments and benefits payable assuming a termination date of December 31, 2019 for our NEOs in connection with a CIC. Other than the CIC agreements described below with the members of our management board, we do not maintain employment agreements with any of executive officers pursuant to which they would become eligible for potential severance payments upon termination.

Name(1)	Cash Severance Benefits(\$)(2)	Continuation of Medical, Dental and Vision Benefits(\$)(3)	Accelerated Vesting of Stock Options(\$)(4)	Accelerated Vesting of Restricted Stock Awards(\$)(5)	Total Amount (\$)
John M. Maraganore, Ph.D.	2,550,000	33,077	3,020,388	4,894,725	10,498,190
Barry E. Greene	1,433,760	33,334	4,198,963	1,871,513	7,537,570
Yvonne L. Greenstreet, MBChB, MBA	1,380,000	33,334	5,091,247	1,871,513	8,376,094
Akshay K. Vaishnaw, M.D., Ph.D.	1,409,040	33,158	1,436,463	1,871,513	4,750,174
Jeffrey V. Poulton	985,800	33,334	4,976,250	—	5,995,384

(1) In November 2017, we entered into an individual CIC agreement with each member of our management board, including our CEO and all of our other NEOs, with the exception of Mr. Poulton with whom we entered into an individual CIC agreement in August 2019.

(2) The amount represents 150% of the sum of his or her (i) base salary for 2019 and (ii) target bonus for 2019.

(3) The amount is calculated as the monthly Alnylam contribution we would pay to provide the executive with medical, dental and vision benefits if he or she remained employed based on rates as of January 2020 multiplied by 18 months, based on each NEO's participation status as of December 31, 2019.

- (4) The value is calculated based on the number of stock options unvested as of December 31, 2019, including performance-based stock options, multiplied by the result of \$115.17 per share (the closing price of our common stock on the Nasdaq Global Select Market on the last trading day of 2019) minus the respective exercise price per share.
- (5) The value is calculated based on the number of unvested PSUs multiplied by \$115.17 per share (the closing price of our common stock on the Nasdaq Global Select Market on the last trading day of 2019).

The actual amount an executive would realize upon termination related to a CIC would likely differ from the amounts above, including adjustments to base salary, adjustments to target bonus, stock price fluctuations and the vesting and grant of additional stock-based awards, as well as the exercise and sale of any stock-based award prior to any such termination. In the event an executive would be subject to “golden parachute taxes” under the Code, payments and benefits in connection with a CIC will be reduced to the extent necessary to avoid such taxes, but only if such reduction provided a greater after-tax benefit to an executive.

Change-in-Control Agreements

In November 2017, we entered into an individual CIC agreement with each member of our management board, including our CEO and all of our other current NEOs, with the exception of Mr. Poulton, with whom we entered into a CIC agreement in August 2019. The CIC agreements entitle each executive to certain benefits in the event of certain terminations of employment with us within 12 months following a CIC (as defined in the CIC agreement). Pursuant to each CIC Agreement, if an executive is terminated by us without Cause (as defined in the CIC agreement) or if an executive terminates his or her employment for Good Reason (as defined in the CIC agreement), in either case, within 12 months following a CIC, such executive will be entitled to receive (i) a lump sum cash payment equal to one and a half times the sum of: (A) his or her annual base salary in effect immediately prior to termination (or prior to the CIC, if higher) and (B) his or her target bonus for the fiscal year in which the CIC occurred; and (ii) if the executive was participating in our group health plan immediately prior to such termination and elects continuation coverage under COBRA, a monthly cash payment for 18 months (or the expiration of the COBRA continuation period, if earlier) equal to the monthly employer contribution we would have paid to provide the executive with health insurance if he or she had remained employed. In addition, in the event of a CIC and a qualifying termination of employment, all of an executive’s outstanding unvested stock options and other stock-based awards shall immediately accelerate and become fully exercisable or nonforfeitable. Receipt of these payments and benefits is subject to execution of a general release of claims in favor of us.

If any payment and benefits to be paid or provided to an executive, whether pursuant to the terms of a CIC Agreement or otherwise, would be subject to “golden parachute” excise taxes under the Code, the payments and benefits will be reduced to the extent necessary to avoid such excise taxes, but only if such a reduction of pay or benefits would result in a greater after-tax benefit to the executive.

Each CIC Agreement will terminate upon the earlier of (i) an executive’s termination of employment with us for any reason prior to a CIC, (ii) an executive’s termination of employment with Alnylam after a CIC other than for Cause or Good Reason or (iii) the date that is 12 months after a CIC, if the executive is still employed by us.

CEO Pay Ratio

In connection with Item 402(u) of Regulation S-K adopted pursuant to Section 953(b) of the Dodd-Frank Wall Street Reform and Consumer Protection Act, we are required to calculate and disclose the median annual compensation of all of our employees (excluding our CEO, Dr. Maraganore), the annual compensation of Dr. Maraganore, and the ratio of these two amounts.

Based on a significant number of new hires in 2019, we did not elect to use the same median employee as the prior year. Our median employee was identified using the entire population of our employees as of October 1, 2019 based on a consistently applied compensation measure, or CACM, that reasonably reflects the annual compensation of employees. The CACM selected by us for our disclosure included annual base salary for salaried employees (or wages based on an annual work schedule for non-permanent employees), overtime for the year-to-date period ended October 1, 2019, target bonus opportunity for 2019 and the grant-date fair value for stock-based awards (calculated in accordance with requirements for the Summary Compensation Table). In 2019, the target bonus opportunity for our non-field-based employees was based on corporate and individual performance under our AIP and the target bonus opportunity for field-based employees consisted of sales-related metrics in connection with the continued launch of ONPATTRO during 2019, our first commercial product, under our field-based incentive plan.

Based on the CACM methodology described above, we identified the median employee. We calculated the 2019 compensation for our median employee of \$225,811 in the same manner we determine the annual total compensation of our NEOs for purposes of the Summary Compensation Table. Dr. Maraganore's 2019 compensation as disclosed in the Summary Compensation Table is \$7,317,856. As a result, our CEO to median employee pay ratio for 2019 is 32:1, representing an increase from the ratio for 2018 as a result of our increased hiring across more junior positions with lower base salaries, combined with the increase in our CEO's base salary and non-equity incentive plan compensation year over year to more closely align with the market median and comparable executives in our peer group.

This pay ratio is a reasonable estimate calculated by a method consistent with the SEC requirements, described above, based on our payroll and employment records. As a result of a variety of factors, including employee populations, potential differences in the components used for the CACM, compensation philosophies and certain assumptions, pay ratios reported by other companies may not be comparable to our pay ratio. The pay ratio is not utilized by our management or our compensation committee for compensation-related decisions.

APPROVAL OF AN AMENDMENT TO THE ALNYLAM PHARMACEUTICALS, INC. 2018 STOCK INCENTIVE PLAN, AS AMENDED (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.

On March 1, 2020, our board of directors approved the amendment to the Alnylam Pharmaceuticals, Inc. 2018 Stock Incentive Plan, as amended, or the 2018 Plan. We refer to such amendment as the Plan Amendment, and together with the 2018 Plan, the Amended Plan. The Plan Amendment increases the aggregate number of shares authorized for issuance under the 2018 Plan by 7,000,000 shares and increases the aggregate number of shares that may be issued in the form of incentive stock options to 29,270,000 shares. Shares underlying any awards under the 2018 Plan or our Amended and Restated 2009 Equity Incentive Plan, or the 2009 Plan, that are forfeited, canceled or otherwise terminated (other than by exercise) shall be added to the shares available for issuance under the Amended Plan.

In addition to the share increase, the Plan Amendment also revises the director compensation limits to remove the prior share limits and express director compensation limits in terms of aggregate dollar amounts. Specifically, the Plan Amendment provides that the maximum value of all compensation, including any awards granted under the Amended Plan, paid or granted to any individual (i) in connection with his or her initial appointment or election as a non-employee director shall be \$1,500,000 and (ii) in connection with such individual's service on the board of directors (excluding the value of any awards or compensation paid pursuant to clause (i) above) shall be \$1,000,000.

The Plan Amendment 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 committed to the advancement of our *Alnylam 2020* strategy of building a multi-product, global, commercial biopharmaceutical company with a deep clinical pipeline to fuel future growth and a robust product engine for sustainable and organic innovation, a company profile rarely achieved in our industry. In order to continue to execute on our long-term strategic goals, we expect

to continue to grow our company significantly over the next several years. During 2019, we added several hundred new employees in the U.S. and abroad. In 2019, we saw continued and steady growth of patients on our first commercial product, ONPATTRO, driven by new patient finding, geographic expansion and evidence-generating activities. In addition, we achieved early approval in the U.S. during the fourth quarter of 2019 for our second product, GIVLAARI. We also reported positive topline Phase 3 results for lumasiran, our third program to achieve positive Phase 3 results, and initiated a rolling submission of an NDA with the FDA. In addition, we, together with our partners, advanced six other late-stage clinical development programs, and we continued to advance earlier stage candidates and optimize our product platform. We also continued to execute on our business objectives, including by forming a landmark strategic alliance with Regeneron, further strengthening our financial position and building our global commercial infrastructure. We expect 2020 to be an equally important year, with additional regulatory filings planned for both ONPATTRO and GIVLAARI. We also plan to complete the rolling NDA submission for lumasiran in 2020 and submit an MAA, as well as advance several additional late-stage programs. As we focus on growing our company and continuing to enable our global commercial infrastructure, we expect to continue to hire a significant number of employees in 2020 and beyond.

In the opinion of our board of directors, 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 of directors believes that approval of the Plan Amendment, including 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 Amended Plan. If the proposed Plan Amendment is not approved by our stockholders, we currently anticipate that we will exhaust all the shares available for issuance under the 2018 Plan by late 2020 and such shares may be exhausted sooner depending on the pace of our hiring to support our global growth. The inability to make competitive equity awards to attract and retain talented employees in a highly competitive market could have an adverse impact on our business.

A copy of the proposed Amended Plan is attached as Appendix A to this proxy statement and is incorporated herein by reference.

As of February 29, 2020, there were stock options to acquire 13,672,492 shares of common stock outstanding under our equity compensation plans, including stock options to acquire 1,947,213 shares of common stock subject to performance vesting, 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). These stock options have a weighted-average exercise price of \$84.44 and a weighted-average remaining contractual term of 7.01 years. In addition, as of February 29, 2020, there were 1,420,708 unvested full-value awards, including 1,286,411 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 February 29, 2020.

At February 29, 2020, the number of remaining securities available for future issuance under equity compensation plans of 2,211,468 shares consists solely of shares of our common stock available for future issuance under our 2018 Plan. This amount does not reflect the additional 7,000,000 shares to be reserved under the Amended Plan, as set forth in this Proposal 2.

Proposal 2 seeks stockholder approval of the Plan Amendment.

Summary of Material Features of the Amended Plan

The material features of the Amended Plan are:

- The maximum number of shares of common stock available for awards under the Amended Plan is 13,790,000 shares, plus the number of the shares that were reserved and available for issuance under the 2009 Plan as of the effective date of the 2018 Plan and any shares underlying any awards granted under the 2009 Plan that expire, or are terminated, surrendered or canceled without having been fully exercised or are forfeited in whole or in part after the effective date of the 2018 Plan.
- Grants of “full-value” awards are deemed for purposes of determining the number of shares available for future grants under the Amended 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 Amended 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 value of all compensation, including any awards granted under the Amended Plan, paid or granted to any individual (i) in connection with his or her initial appointment or election as a non-employee director shall be \$1,500,000 and (ii) in connection with such individual’s service on the board of directors (excluding the value of any awards or compensation granted or paid pursuant to clause (i) above) shall be \$1,000,000.
- 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, RSUs and other stock-based awards is permitted.
- Minimum vesting periods are required for awards granted under the Amended Plan, with certain exceptions described below.
- To the extent an award is eligible to receive dividends or dividend equivalents, in no event shall any such dividends or dividend equivalents be paid unless and until such award has vested.
- Any material amendment to the Amended 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 February 28, 2020 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 Amended Plan

is \$258,659,038. The shares we issue under the Amended 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 Amended Plan are added back to the shares of common stock available for issuance under the Amended Plan. Shares tendered or held back upon exercise of a stock option or settlement of an award under the Amended 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 Amended Plan.

Rationale for the Plan Amendment

The 2018 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. Adopting the Plan Amendment 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 committed to the continued advancement of our *Alnylam 2020* strategy of building a multi-product, global, commercial biopharmaceutical company with a deep clinical pipeline to fuel future growth and a robust product engine for sustainable and organic innovation, a company profile rarely achieved in our industry. In order to achieve our goals for 2020, we expect to continue to grow our company significantly over the next several years. During 2019, we added several hundred new employees in the U.S. and abroad. In 2019, we saw continued and steady growth of patients on our first commercial product, ONPATTRO, driven by new patient finding, geographic expansion and evidence-generating activities. In addition, we achieved early approval in the U.S. during the fourth quarter of 2019 for our second product, GIVLAARI. We also reported positive topline Phase 3 results for lumasiran, our third program to achieve positive Phase 3 results, and initiated a rolling submission of an NDA with the FDA. In addition, we, together with our partners, advanced six other late-stage clinical development programs, and we continued to advance earlier stage candidates and optimize our product platform. We also continued to execute on our business objectives, including by forming a landmark strategic alliance with Regeneron, further strengthening our financial position and building our global commercial infrastructure. We expect 2020 to be an equally important year, with additional regulatory filings planned for both ONPATTRO and GIVLAARI. We also plan to complete the rolling NDA submission for lumasiran and submit an MAA, as well as advance several additional late-stage programs. As we focus on growing our company and continuing to enable our global commercial infrastructure, we expect to continue to hire a significant number of employees in 2020 and beyond.

Our board of directors believes that approval of the Plan Amendment 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 Amended Plan. If the proposed Plan Amendment is not approved by our stockholders, we currently anticipate that we will exhaust all the shares available for issuance under the 2018 Plan by late 2020 and such shares may be exhausted sooner

depending on the pace of our hiring to support our global growth. The inability to make competitive equity awards to attract and retain talented employees in a highly competitive market could have an adverse impact on our business.

We manage our long-term stockholder dilution by limiting the number of equity incentive awards granted annually. Our compensation committee carefully reviews both our annual net burn rate and total dilution and our projected burn rate and dilution over the next several years based upon our expected growth and equity strategy 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 2017 through 2019 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	Year		
	2019	2018	2017
Time-Based Stock Options Granted	3,073,464(1)	2,273,113(1)	1,664,075(1)
Performance-Based Stock Options Earned	889,896	763,982	614,796
Time-Based Full-Value Awards Granted	126,762	23,772	5,665
Performance-Based Full-Value Awards Earned	12,500	134,284	—
Total Time-Based Awards Granted and Performance-Based Awards Earned	4,102,622	3,195,151	2,284,536
Weighted-Average Common Shares Outstanding During the Fiscal Year	109,264,190	100,590,296	90,554,423
Annual Burn Rate	3.75%	3.18%	2.52%
Three Year Average Burn Rate(2)	3.15%		

(1) In connection with the continued build-out of our global commercial organization and preparations for the potential launch of our first commercial product in 2018, our compensation committee shifted the timing of annual performance reviews and the determination of annual equity awards for 2017 from the fourth quarter of the year to the first quarter of the subsequent year. As a result, options granted in March 2018 for 2017 performance are reflected in 2018 in the table above and equity awards granted in February 2019 for 2018 performance are reflected in 2019 in the table above, but awards granted for 2019 performance are not reflected in the table above as such awards were granted in 2020.

(2) As illustrated in the table above, our three-year average burn rate for the 2017-2019 period was 3.15%, which is below the ISS industry category burn rate threshold of 8.08%.

If our request to adopt the Plan Amendment is approved by stockholders, we will have approximately 9,211,468 shares available for grant after the 2020 annual meeting, based on the shares reserved for issuance under the Amended Plan. Our compensation committee determined the number of shares available for issuance under the Amended Plan based on projected equity awards

to anticipated new hires, projected annual equity awards to existing employees, non-employee directors and scientific advisory board members, 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 until our 2022 annual meeting of stockholders.

Summary of the Amended Plan

The following description of certain features of the Amended Plan is intended to be a summary only. The summary is qualified in its entirety by the complete text of the Amended Plan, which is attached to this proxy statement as Appendix A.

Plan Administration. The Amended 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 Amended 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 Amended 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 February 29, 2020, 1,400 individuals are currently eligible to participate in the Amended Plan, which includes six executive officers, 1,385 employees who are not executive officers, five non-employee/director members of our scientific advisory board, ten non-employee directors and no consultants.

Plan Limits. The value of all compensation, including any awards granted under the Amended Plan, paid or granted to any individual (i) in connection with his or her initial appointment or election as a non-employee director shall be \$1,500,000 and (ii) in connection with such individual’s service on the board of directors (excluding the value of any awards or compensation granted or paid pursuant to clause (i) above) shall be \$1,000,000.

Effect of Awards. For purposes of determining the number of shares of common stock available for issuance under the Amended Plan, the grant of any “full-value” award, such as a restricted stock, RSU 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 Amended 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 Amended Plan. In addition, the compensation committee retains discretion to accelerate the vesting schedule in the event of death or disability of the participant or a change in control of Alnylam.

Stock Options. The Amended 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 Amended 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 RSUs 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. RSUs are ultimately payable in the form of shares of common stock. During the vesting period, restricted stock may be credited with dividends and RSU awards may be credited with dividend equivalent rights (but no dividends shall be paid unless and until such restricted stock or RSUs 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 in Control Provisions. The Amended Plan provides that, in connection with a “reorganization event,” as defined in the Amended 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 RSUs: (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 RSUs 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 RSU. 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 RSUs 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 RSUs then outstanding shall automatically be deemed terminated or satisfied.

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

Tax Withholding. Participants in the Amended 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 Amended Plan will be subject to our clawback policy.

Amendments and Termination. Our board of directors may at any time amend or discontinue the Amended 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 Amended 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.

Effective Date of the Amended Plan. Our board of directors adopted the 2018 Plan on March 8, 2018, and it became effective on May 10, 2018 upon approval by our stockholders at our 2018 annual meeting. Our board of directors adopted the first amendment to the 2018 Plan on March 1, 2019, and it became effective upon approval by our stockholders at our 2019 annual meeting. Our board of directors adopted the Plan Amendment on March 1, 2020, and it will become effective upon approval by our stockholders at our 2020 annual meeting. Awards of incentive options may be granted under the Amended Plan until March 8, 2028. No other awards may be granted under the Amended Plan after the date that is ten years from the date of stockholder approval.

New Plan Benefits

Because the grant of awards under the Amended 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 Amended Plan. Accordingly, in lieu of providing information regarding benefits that will be received under the Amended Plan, the following table provides information concerning the benefits that were received by the following persons and groups during 2019 under the 2018 Plan: (a) each named executive officer; (b) all current executive officers, as a group; (c) all current directors who are not executive officers, as a group; and (d) 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>	85.00	85,000	—	—
Barry E. Greene, <i>President</i>	85.00	32,500	—	—
Yvonne L. Greenstreet, MBChB, MBA, <i>Chief Operating Officer</i>	85.00	32,500	—	—
Akshay K. Vaishnav, M.D., Ph.D., <i>President, Research and Development</i>	85.00	32,500	—	—
Jeffrey V. Poulton, <i>Executive Vice President, Chief Financial Officer</i>	75.36	125,000	—	—
Manmeet S. Soni, <i>Former Senior Vice President, Chief Financial Officer</i>	85.00	20,000	—	—
All current executive officers, as a group	81.38	332,500	—	—
All current directors who are not executive officers, as a group	74.87	108,000	—	—
All current employees who are not executive officers, as a group	83.69	2,722,689	9,887,765	126,762

- (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 Amended Plan. It does not describe all federal tax consequences under the Amended 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 Amended 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 2018 Plan may be limited to the extent that any “covered employee” (generally, the chief executive officer, chief financial officer or other executive officer whose compensation is required to

be reported in the Summary Compensation Table for any year following 2016) receives compensation in excess of \$1.0 million a year.

Vote Required

A majority of the votes cast is required for the approval of the Plan Amendment.

Securities Authorized for Issuance Under Equity Compensation Plans

The following table provides information as of December 31, 2019 about the securities authorized for issuance under our stockholder approved equity compensation plans, consisting of our Amended and Restated 2004 Equity Incentive Plan, our 2009 Plan, our 2018 Plan and our 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, 2019

	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	13,620,717(2)	78.68	5,044,523(3)
Equity compensation plans not approved by stockholders(4)	197,519	71.21	—
Total	13,818,236	78.57	5,044,523(3)

- (1) Since RSUs do not have any exercise price, such units are not included in the weighted-average exercise price calculation.
- (2) Includes 12,871,646 shares of common stock issuable upon the exercise of outstanding options and 749,071 shares of common stock issuable upon the vesting of outstanding RSUs.
- (3) Consists of 4,704,971 shares of our common stock available for future issuance under our 2018 Plan and 339,552 shares of our common stock available for future issuance under our Existing ESPP. Shares of our common stock available for issuance under our 2018 Plan include any shares underlying any awards granted under the 2009 Plan or the 2018 Plan that expire, or are terminated, surrendered or canceled without having been fully exercised or are forfeited in whole or in part after the effective date of the 2018 Plan.
- (4) Consists of shares of common stock issuable upon the exercise of stock options granted as inducement grants outside of our stockholder approved stock plans in accordance with Nasdaq Listing Rule 5635(c)(4).

For additional information regarding our equity compensation plans, see Note 11, Stock-Based Compensation, to our consolidated financial statements included in Part II, Item 8 of our 2019 Form 10-K.

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 of directors believes approval of the Plan Amendment to the Alnylam Pharmaceuticals, Inc. 2018 Equity Incentive Plan, as amended, is in the best interests of Alnylam and our stockholders and unanimously recommends that you vote to approve the Plan Amendment by voting “FOR” Proposal 2.

APPROVAL OF AMENDMENT TO AMENDED AND RESTATED 2004 EMPLOYEE STOCK PURCHASE PLAN, AS AMENDED (PROPOSAL 3)

Overview

On March 1, 2020, upon the recommendation of our compensation committee, our board of directors approved the amendment to our Amended and Restated 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 1,215,789 shares to 1,965,789 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 February 29, 2020, there were 339,552 shares available for future awards under the Existing ESPP. Our board of directors believes that it is necessary to adopt the amendment to the Existing ESPP 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 2024 and potentially beyond depending on participation and stock price over time.

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.

General

The Amended ESPP has two components in order to give us increased flexibility in the granting of purchase rights under the Amended ESPP to U.S. and to non-U.S. employees. Specifically, the Amended ESPP authorizes the grant of purchase rights that are intended to qualify for favorable U.S. federal tax treatment under Section 423 of the Code, or the Section 423 Component. To facilitate

participation for employees located outside of the United States in light of non-U.S. law and other considerations, the Amended ESPP also provides for the grant of purchase rights that are not intended to be tax-qualified under Section 423 of the Code, or the Non-Section 423 Component. The compensation committee will designate offerings made under the Non-Section 423 Component and, except as otherwise noted below, the Section 423 Component and the Non-Section 423 Component generally will be operated and administered in the same way.

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 (to the extent participating in the Section 423 Component), 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 is not eligible to participate in the Amended ESPP for purposes of the Section 423 Component. As of February 29, 2020, 1,222 employees were eligible to participate in the Existing 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 may 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 or other direct contribution form, which will authorize a regular payroll deduction from the employee’s compensation (as defined in the Amended ESPP) or contribution during the plan period. Unless an employee files a new form or withdraws from the Amended ESPP, his or her deductions, contributions and purchases may be continued at the same rate for future offerings under the Amended ESPP as long as it remains in effect.

Deductions and Contributions

We maintain payroll deduction and contribution accounts for all participants. With respect to any offering made under the Amended ESPP, a participant may authorize a payroll deduction or contribution 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 or contributions are made.

Purchase of Shares

On each offering commencement date, we grant to each participant in the Amended ESPP a right to purchase, or a purchase right, on the last business day of the plan period, at the 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 a purchase right 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 purchase right 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 purchase right at the purchase 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 purchase right then outstanding will thereafter be entitled to receive, at

the next purchase date, upon the exercise of the purchase right for each share as to which the purchase right 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 purchase rights 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 purchase right shall be entitled, upon exercise of such purchase right, to receive instead of shares of common stock, shares of such stock or other securities as the holders of shares of common stock received pursuant to the terms of such transaction; or
2. all outstanding purchase rights 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 purchase rights 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 a purchase right, and each holder of a purchase right shall have the right to exercise such purchase right 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 423 Component of the Amended ESPP to fail to comply with Section 423 of the Code.

Plan Benefits

As of February 29, 2020, 1,222 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 46,919 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.

U.S. Tax Consequences of 423 Component

Tax Consequences to U.S. Participants in 423 Component. 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 for 423 Component. 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 purchase rights 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 for 423 Component. 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.

U.S. Tax Consequences of Non-423 Component

Tax Consequences to U.S. Participants in Non-423 Component. A participant will not have income upon enrolling in the Amended ESPP. However, upon purchasing stock at the end of an

offering, a participant will have compensation income equal to the value of the common stock on the day he or she purchased the common stock less the purchase price.

When a participant sells the common stock he or she purchased under the Non-Section 423 Component of the Amended ESPP, he or she also will have a capital gain or loss equal to the difference between the sales proceeds and the value of the common stock on the day he or she purchased it. This capital gain or loss will be long-term if the participant held the common stock for more than one year and otherwise will be short-term.

Withholding for Non-423 Component. 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 purchase rights 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 for Non-423 Component. There will be no tax consequences to us except that we will be entitled to a deduction when a participant has compensation income upon purchase of the shares at the end of a plan period. 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 to the Existing ESPP to increase the number of shares authorized for issuance from 1,215,789 shares to 1,965,789 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 NEOs 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 48, 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, 2019.

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 NEOs 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 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, and, in the case of our CEO, recommended to our board of directors for approval, 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 NEOs.

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.

RATIFICATION OF APPOINTMENT OF INDEPENDENT AUDITORS (PROPOSAL 5)

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, 2020. 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 audit committee will reconsider its appointment of PricewaterhouseCoopers LLP. Representatives of PricewaterhouseCoopers LLP are expected to participate in 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, 2020.

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.

Our audit committee has reviewed our audited financial statements for the fiscal year ended December 31, 2019, 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, critical accounting estimates, alternative accounting treatments, accounting for significant unusual transactions, and other 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, including the matters required by the applicable requirements of the PCAOB and the SEC. Our audit committee conducts a meeting each quarter to review the financial statements prior to the public release of earnings.

Based on its discussions with management and PricewaterhouseCoopers LLP, and its review of the representations and information provided by management and PricewaterhouseCoopers LLP, our audit committee recommended to our board that the audited financial statements be included in our Annual Report on Form 10-K for the year ended December 31, 2019. 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, 2020.

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

Marsha H. Fanucci, Chair

Michael W. Bonney

Colleen F. Reitan

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	2019(\$)	2018(\$)
Audit Fees(1)	2,016,549	1,180,898
Audit-Related Fees(2)	—	75,000
Tax Fees(3)	65,000	24,463
All Other Fees(4)	2,756	2,756
Total Fees	2,084,305	1,283,117

- (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, statutory audits of our international operations, and other professional services provided in connection with regulatory filings or audit engagements. In 2019, this amount also includes \$125,000 for comfort letters and associated fees in connection with our equity offerings.
- (2) "Audit-Related Fees" in 2018 consist of fees for services performed related to our adoption of the new lease standard in the first quarter of 2019.
- (3) "Tax Fees" in 2019 and 2018 consist of fees for procedures completed in connection with a research and development tax credit study.
- (4) "All Other Fees" in 2019 and 2018 represent non-audit fees in connection with access to the PricewaterhouseCoopers LLP on-line accounting research and disclosures 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 general counsel and our chief financial officer. The policy calls for the proposed related person transaction to be reviewed by our general counsel and/or our chief financial 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

In April 2019, we and Sanofi Genzyme, entered into an amendment to our 2014 collaboration, which we refer to as the Collaboration Amendment. In connection and simultaneously with entering into Collaboration Amendment, we and Sanofi Genzyme also entered into the Amended and Restated ALN-AT3 Global License Terms with respect to ALN-AT3 (fitusiran) and certain back-up products, which we refer to as the A&R AT3 License Terms. The A&R AT3 License Terms amend and restate the ALN-AT3 Global License Terms entered into by us and Sanofi Genzyme in January 2018 to modify certain of the business terms. The material collaboration terms for fitusiran continued unchanged. Dr. Olivier Brandicourt, who was appointed to our board of directors in March 2020, was formerly the Chief Executive Officer of Sanofi Genzyme, including in early 2019 when we and Sanofi Genzyme amended our collaboration.

In connection with entering into the Collaboration Amendment and the A&R AT3 License Terms, we agreed to advance, at our cost, a selected investigational asset in an undisclosed rare genetic disease through the end of IND-enabling studies. Following completion of such studies, we will transition, at our cost, such asset to Sanofi Genzyme. Thereafter, Sanofi Genzyme will fund all potential future development and commercialization costs for such asset. If this asset is developed and approved, we will be eligible to receive tiered double-digit royalties on global net sales.

The Collaboration Amendment and the A&R AT3 License Terms were approved by our full board of directors.

In December 2017, we entered into a six-month consulting agreement with Dr. Mark Keating pursuant to which Dr. Keating would provide us with assistance, on a full-time basis, with our early stage target evaluation and research efforts. In July 2018, we entered into a six-month extension of Dr. Keating's consulting agreement in connection with the continuation of the services. In January 2019, we entered into an additional six-month extension, pursuant to which we agreed to pay Dr. Keating up to a maximum of \$150,000 in connection with the continued performance of his services. In April 2019, we hired Dr. Keating as a full-time employee, to serve as a Senior Distinguished Fellow, supporting our development efforts in our CNS and ocular programs. During the fiscal year ended December 31, 2019, he earned compensation consisting of \$394,206 in consulting fees, base salary, bonus, matching contributions from us under our 401(k) plan and life insurance premiums, as well as option awards with an estimated grant date fair value of \$1,660,600. Dr. Keating is the spouse of Laurie Keating, one of our executive officers. The initial transaction with Dr. Keating, as well as the subsequent extensions and offer for full-time employment, were approved in advance by the chair of our audit committee and subsequently ratified by the full audit committee pursuant to our related person transaction policy.

Other than the 2019 amendment to the 2014 Sanofi Genzyme collaboration and related license agreements, and Dr. Brandicourt's employment with Sanofi Genzyme during the period we entered into such agreements, and the employment relationship with Dr. Keating 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 2021 annual meeting of stockholders, stockholders' proposals must be received by us at our principal executive offices, 675 West Kendall Street, Henri A. Termeer Square, Cambridge, Massachusetts 02142 no later than November 20, 2020. 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 5, 2021 (90 days prior to the first anniversary of our 2020 annual meeting of stockholders) and not before January 6, 2021 (120 days prior to the first anniversary of our 2020 annual meeting of stockholders). However, if the 2021 annual meeting of stockholders is advanced by more than 20 days, or delayed by more than 60 days, from the first anniversary of the 2020 annual meeting of stockholders, notice must be received not earlier than the 120th day prior to such annual meeting and not later than the close of business on the later of (1) the 90th day prior to such annual meeting and (2) the 10th day following the date on which notice of the date of such annual meeting was mailed or public disclosure of the date of such annual meeting was made, whichever occurs first.

Our bylaws also specify requirements relating to the content of the notice which stockholders must provide, including a stockholder nomination for election to our board of directors, to be properly presented at the 2021 annual meeting of stockholders.

OUR BOARD OF DIRECTORS ENCOURAGES STOCKHOLDERS TO PARTICIPATE ONLINE IN OUR VIRTUAL ANNUAL MEETING. WHETHER OR NOT YOU PLAN TO PARTICIPATE IN THE VIRTUAL ANNUAL MEETING, 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 VIRTUAL ANNUAL MEETING AND YOUR COOPERATION WILL BE APPRECIATED. YOU WILL NOT BE ABLE TO ATTEND THE ANNUAL MEETING IN PERSON.

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ALNYLAM PHARMACEUTICALS, INC.

2018 STOCK INCENTIVE PLAN1. Purpose

The purpose of this 2018 Stock Incentive Plan (the “**Plan**”) of Alnylam Pharmaceuticals, Inc., a Delaware corporation (the “**Company**”), is to advance the interests of the Company’s stockholders by enhancing the Company’s ability to attract, retain and motivate persons who are expected to make important contributions to the Company by providing such persons with equity ownership opportunities and performance-based incentives that are intended to better align the interests of such persons with those of the Company’s stockholders. Except where the context otherwise requires, the term “**Company**” shall include any of the Company’s present or future parent or subsidiary corporations as defined in Sections 424(e) or (f) of the Internal Revenue Code of 1986, as amended, and any regulations promulgated thereunder (the “**Code**”) and any other business venture (including, without limitation, joint venture or limited liability company) in which the Company has a controlling interest, as determined by the Board of Directors of the Company (the “**Board**”).

2. Eligibility

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

3. Administration and Delegation

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

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

(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 the sum of (i) 3,500,000 shares of common stock, \$0.01 par value per share, of the Company (the “**Common Stock**”), (ii) the number of shares that remain available for grants under the Company’s Second Amended and Restated 2009 Stock Incentive Plan (the “**2009 Plan**”) immediately prior to the Effective Date and (iii) shares of Common Stock underlying any awards granted under the 2009 Plan that expire, or are terminated, surrendered or canceled without having been fully exercised or are forfeited in whole or in part after the Effective Date and become available for issuance under the Plan in accordance with Section 4(a)(3). No more than 18,980,000 shares may be issued 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)(1) 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)(1) 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 under the Plan or an award under the 2009 Plan 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 under the Plan or the 2009 Plan 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)(1), (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 under the Plan or any award outstanding under the 2009 Plan (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

or 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 or 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) 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 36,000. 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 18,000.

(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)(1). 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)(1).

(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, shall be settled in cash and/or shares of Common Stock and may be subject to the same restrictions on transfer and forfeitability as the Restricted Stock Units with respect to which paid, as determined by the Board in its sole discretion, subject in each case to such terms and conditions as the Board shall establish, in each case to be set forth in the applicable Award agreement. 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 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.

12. Miscellaneous

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

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

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

(d) Amendment of Plan. The Board may amend, suspend or terminate the Plan or any portion thereof at any time provided that (i) 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 (ii) 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.

**AMENDMENT
TO
ALNYLAM PHARMACEUTICALS, INC.
2018 STOCK INCENTIVE PLAN**

A. The Alnylam Pharmaceuticals, Inc. 2018 Stock Incentive Plan (the “Plan”) is hereby amended by the Board of Directors of Alnylam Pharmaceuticals, Inc. (the “Company”), subject to approval of the Company’s stockholders, to increase the aggregate number of shares authorized for issuance under the Plan by 3,290,000 shares of common stock, par value \$0.01 per share, of the Company, and to clarify certain provisions in the Plan related to minimum vesting and the payment of dividends, as follows:

1. Section 4(a)(1) of the Plan is hereby amended and restated in its entirety as follows:

“(1) Authorized Number of Shares. Subject to adjustment under Section 10, Awards may be made under the Plan for up to the sum of (i) 6,790,000 shares of common stock, \$0.01 par value per share, of the Company (the “**Common Stock**”), (ii) the number of shares that remain available for grants under the Company’s Second Amended and Restated 2009 Stock Incentive Plan (the “**2009 Plan**”) immediately prior to the Effective Date and (iii) shares of Common Stock underlying any awards granted under the 2009 Plan that expire, or are terminated, surrendered or canceled without having been fully exercised or are forfeited in whole or in part after the Effective Date and become available for issuance under the Plan in accordance with Section 4(a)(3). No more than 22,270,000 shares may be issued 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. Section 4(d) of the Plan is hereby amended and restated in its entirety as follows:

“(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 retains the discretion to accelerate the vesting of Awards in the event of a Participant’s death or disability or in the event of 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).”

3. Section 11 of the Plan is hereby amended by adding the following new paragraph at the end thereof:

“(i) No Dividends on Unvested Awards. Notwithstanding anything herein to the contrary, to the extent any Participant is entitled to receive dividends or dividend equivalents with respect to any Award, no such dividends or dividend equivalents shall be paid unless and until the underlying Award has vested.”

B. Except as amended herein, the Plan is confirmed in all other respects.

Approved by the Board of Directors on March 1, 2019.

**SECOND AMENDMENT
TO
ALNYLAM PHARMACEUTICALS, INC.
2018 STOCK INCENTIVE PLAN**

A. The Alnylam Pharmaceuticals, Inc. 2018 Stock Incentive Plan (the “Plan”) is hereby amended by the Board of Directors of Alnylam Pharmaceuticals, Inc. (the “Company”), subject to approval of the Company’s stockholders, to, among other things, increase the aggregate number of shares authorized for issuance under the Plan by 7,000,000 shares of common stock, par value \$0.01 per share, of the Company, and to amend the director grant limits, as follows:

1. Section 4(a)(1) of the Plan is hereby amended and restated in its entirety as follows:

“(1) Authorized Number of Shares. Subject to adjustment under Section 10, Awards may be made under the Plan for up to the sum of (i) 13,790,000 shares of common stock, \$0.01 par value per share, of the Company (the “**Common Stock**”), (ii) the number of shares that remain available for grants under the Company’s Second Amended and Restated 2009 Stock Incentive Plan (the “**2009 Plan**”) immediately prior to the Effective Date and (iii) shares of Common Stock underlying any awards granted under the 2009 Plan that expire, or are terminated, surrendered or canceled without having been fully exercised or are forfeited in whole or in part after the Effective Date and become available for issuance under the Plan in accordance with Section 4(a)(3). No more than 29,270,000 shares may be issued 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. Section 4(a)(2) of the Plan is hereby amended by deleting “and 4(b)(1)” in each place where it appears.

3. Section 4(a)(3) of the Plan is hereby amended by deleting the phrase “and under the sub limits contained in Section 4(b)(1)”.

4. Section 4(b) of the Plan is hereby amended and restated in its entirety as follows:

“(b) Limits on Awards to Non-Employee Directors. The maximum value of all compensation, including Awards hereunder, granted or paid to an individual in connection with such individual’s initial appointment or election as a Non-employee Director shall be \$1,500,000. The maximum value of all compensation, including Awards hereunder, granted or paid to a Non-employee Director in any calendar year in connection with such individual’s service on the Board (excluding for this purpose the value of any compensation, including Awards hereunder, granted under the preceding sentence) shall be \$1,000,000. For the purpose of these limitations, the value of any Award shall be its grant date fair value, as determined in accordance with ASC 718 or successor provision but excluding the impact of estimated forfeitures related to service-based vesting provisions.”

5. Section 6(a) of the Plan is hereby amended and restated in its entirety as follows:

“(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 limitations contained in Section 4(b). 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 limitations contained in Section 4(b).”

6. Section 10(a) of the Plan is hereby amended by deleting “and 4(b)”.

B. Except as amended herein, the Plan is confirmed in all other respects.

Approved by the Board of Directors on March 1, 2020.

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ALNYLAM PHARMACEUTICALS, INC.**AMENDED AND RESTATED 2004 EMPLOYEE STOCK PURCHASE PLAN, AS AMENDED**

The purpose of this Amended and Restated Employee Stock Purchase Plan, as amended (the “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”). This Plan includes two components: a Code Section 423 Component (the “423 Component”) and a Non-Code Section 423 Component (the “Non-423 Component”). It is the intention of the Company to have the 423 Component 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. The provisions of the 423 Component, accordingly, shall be construed so as to extend and limit participation in a uniform and non-discriminatory basis consistent with the requirements of Section 423 of the Code. In addition, this Plan authorizes the grant of share purchase rights under the Non-423 Component that do not qualify as an “employee stock purchase plan” under Section 423 of the Code. The share purchase rights granted under the Non-423 Component are granted pursuant to rules, procedures or sub-plans adopted by the Company’s Board of Directors (the “Board”) or by a Committee appointed by the Board (the “Committee”) designed to achieve tax, securities laws or other objectives for eligible employees and the Company. Except as otherwise provided herein, the Non-423 Component will be operated and administered in the same manner as the 423 Component.

An aggregate of 1,215,789 shares of Common Stock have been approved for this Plan. This aggregate limit will apply to purchases of Common Stock under either the 423 Component or the Non-423 Component.

1.Administration. The Plan will be administered by the Board or by 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. The Board and the Committee will have full and discretionary authority to construe, interpret and apply the terms of the Plan, to adjudicate all disputed claims made under the Plan, to designate separate Plan Periods (as defined below), to designate subsidiaries as participating in the Plan, to determine eligibility, including which subsidiaries shall be Designated Subsidiaries (as defined below) and whether the employees of the Designated Subsidiary shall participate in the 423 Component or the Non-423 Component. Notwithstanding any provision in this Plan to the contrary, the Board or Committee may adopt rules or procedures relating to the operation and administration of the Plan to accommodate the specific requirements of local laws and procedures for jurisdictions outside of the United States. Without limiting the generality of the foregoing, the Board or the Committee specifically is authorized to adopt rules, procedures and sub-plans, which, for purposes of the Non-423 Component, may be outside the scope of Section 423 of the Code, regarding, without limitation, eligibility to participate, the definition of Compensation (defined in Section 4), handling of payroll deductions, making of contributions to the Plan (including, in forms other than payroll deductions), establishment of bank or trust accounts to hold payroll deductions, payment of interest, conversion of local currency, obligations to pay payroll tax, withholding procedures and handling of Common Stock issuances, which may vary according to local requirements.

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 Purchase Rights (as defined in Section 9) to purchase Common Stock under the Plan provided that:

(a) they are customarily employed by the Company or a Designated Subsidiary for more than twenty (20) hours a week and for more than five (5) months in a calendar year if they are participating in the 423 Component;

(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; and

(d) for purposes of the 423 Component, 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 a Purchase Right hereunder if such employee, immediately after the Purchase Right 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 Common 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 Committee may, at its discretion, decide that an employee may contribute to the Plan by means other than payroll deductions, provided that contributions other than payroll deductions will be permissible only for employees participating in the Non-423 Component. The Board or the Committee also may, at its discretion, choose a different Plan Period of twelve (12) months or less for subsequent Offerings. Notwithstanding any provision in this Plan 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 (electronically or otherwise) and forwarding a payroll deduction authorization form or other direct contribution form to the employee’s appropriate payroll office at least five (5) business days prior to the applicable Offering Commencement Date (or other period of time determined by the Company). The payroll deduction authorization form or other direct contribution form will designate the percentage of Compensation withheld or contributed during the Plan Period. Unless an employee files a new form or withdraws from the Plan, his deductions or contributions and purchases will continue at the same rate for future Offerings under the Plan as long

as the Plan remains in effect. For the 423 Component, the term “Compensation” means the amount of money reportable on the employee’s Wage and Tax Statement (the “Form W-2”). For the 423 Component, Compensation shall exclude 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 Form W-2, but including, in the case of salespersons, sales commissions to the extent determined by the Company.

5.Deductions or Contributions. The Company will maintain payroll deduction or contribution accounts for all participating employees. With respect to any Offering made under this Plan, an employee may authorize a payroll deduction or contribution 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 or contributions are made. The minimum payroll deduction is such percentage of Compensation as may be established from time to time by the Company.

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

7.Interest. Interest will not be paid on any employee accounts unless otherwise required by local law.

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 (or other date set by the Company) and for any reason withdraw 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 Company.

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 a purchase right (“Purchase Right”) to purchase on the last business day of such Plan Period (the “Purchase Date”), at the Purchase Price (as defined below) 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 a Purchase Right 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 Purchase Right is outstanding at any time.

The purchase price for each share of Common Stock 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 Purchase Date, whichever closing price shall be less (the "Purchase Price"). 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 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 Purchase Date shall be deemed to have exercised his Purchase Right at the Purchase 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 or contributions 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 or contribution 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 or contribution 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 or contribution shall be taken from any pay or contribution 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 manner specified by the Company) 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. No Stockholder Rights. Neither the granting of a Purchase Right to an employee nor the payroll deductions or contributions shall constitute such employee a stockholder of the shares of

Common Stock covered by a Purchase Right 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 under 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 unless otherwise required by local law.

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 Purchase Right then outstanding will thereafter be entitled to receive at the next Purchase Date upon the exercise of such Purchase Right for each share as to which such Purchase Right 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 Purchase Right 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 Purchase Rights 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 Purchase Right shall be entitled, upon exercise of such Purchase Right, 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 Purchase Rights 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 Purchase Rights 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 a Purchase Right, and each holder of a Purchase Right shall have the right to exercise such Purchase Right 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 stockholders 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 423 Component of 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 of Common Stock purchased under previous Offerings under this Plan exceeds the maximum number of shares of Common Stock issuable under this Plan, the Board or the Committee will allot the shares of Common Stock 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 Common 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. Common Stock may be issued upon exercise of a Purchase Right from authorized but unissued Common Stock, from Common Stock 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 Common Stock purchased under the Plan where such disposition occurs within two (2) years after the date of grant of the Purchase Right pursuant to which such Common Stock was 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 or contributions 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 or contributions up to the aggregate amount which would have been credited to his account if a deduction or contribution of fifteen percent (15%) of the Compensation which he 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 Purchase Right on the Purchase Date for the first Plan Period, a participant shall be permitted to purchase Common Stock with (i) the accumulated payroll deductions or contributions in his 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 Purchase Rights granted to or Common Stock acquired by such employee pursuant to the Plan. The Company or Designated Subsidiary 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 Stockholders. 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 became effective on May 2, 2017 following approval by the stockholders of the Company. The Plan was further amended on December 4, 2018.

**AMENDMENT
TO
ALNYLAM PHARMACEUTICALS, INC.
AMENDED AND RESTATED 2004 EMPLOYEE STOCK PURCHASE PLAN**

C. The Alnylam Pharmaceuticals, Inc. Amended and Restated 2004 Employee Stock Purchase Plan (as amended, the “Plan”) is hereby amended by the Board of Directors of Alnylam Pharmaceuticals, Inc. (the “Company”), subject to approval of the Company’s stockholders, to, among other things, increase the aggregate number of shares authorized for issuance under the Plan by 750,000 shares of common stock, par value \$0.01 per share, of the Company:

1. The second sentence of the second paragraph of the Plan is hereby amended and restated in its entirety as follows:

“An aggregate of 1,965,789 shares of Common Stock have been approved for this Plan.”

D. Except as amended herein, the Plan is confirmed in all other respects.

Approved by the Board of Directors on March 1, 2020.

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