Alnylam Pharmaceuticals, Inc. (Name of Registrant as Specified in Its Charter)

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

Payment of Filing Fee (Check all boxes that apply):
☐ No fee required.
☐ Fee paid previously with preliminary materials.
☐ Fee computed on table in exhibit required by Item 25(b) per Exchange Act Rules 14a-6(j)(1) and 0-11.
You invested in ALNYLAM PHARMACEUTICALS, INC. and it’s time to vote!
You have the right to vote on proposals being presented at the Annual Meeting. This is an important notice regarding the availability of proxy material for the stockholder meeting to be held on May 18, 2023.

Get informed before you vote
View the Proxy Statement, Annual Report on Form 10-K and Annual Report to Stockholders online OR you can receive a free paper or email copy of the material(s) by requesting prior to May 4, 2023. If you would like to request a copy of the material(s) for this and/or future stockholder meetings, you may (1) visit www.ProxyVote.com, (2) call 1-800-579-1639 or (3) send an email to sendmaterial@proxyvote.com. If sending an email, please include your control number (indicated below) in the subject line. Unless requested, you will not otherwise receive a paper or email copy.

For complete information and to vote, visit www.ProxyVote.com
Control #

Smartphone users
Point your camera here and vote without entering a control number

Vote Virtually at the Meeting*
May 18, 2023
8:30 a.m., Eastern Time
Virtually at:
www.virtualshareholdermeeting.com/ALNY2023

*Please check the meeting materials for any special requirements for meeting attendance.
**Voting Items**

1. To elect the following nominees as Class I directors of Alnylam:
   - **Nominees:**
     1a. Michael W. Bonney
     1b. Yvonne L. Greenstreet, MBChB, MBA
     1c. Phillip A. Sharp, Ph.D.
     1d. Elliott Sigal, M.D., Ph.D.

2. To approve, in a non-binding advisory vote, the compensation of Alnylam’s named executive officers.

3. To recommend, in a non-binding advisory vote, the frequency of advisory stockholder votes on executive compensation.

4. To ratify the appointment of PricewaterhouseCoopers LLP, an independent registered public accounting firm, as Alnylam’s independent auditors for the fiscal year ending December 31, 2023.

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

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**Prefer to receive an email instead?** While voting on www.ProxyVote.com, be sure to click “Sign up for E-delivery.”