UNITED STATES SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT Pursuant to Section 13 or 15(d)

of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): March 8, 2023 (March 7, 2023)

Alnylam Pharmaceuticals, Inc.

001-36407

(Commission

File Number)

Delaware
(State or Other Jurisdiction

of Incorporation)

77-0602661

(IRS Employer

Identification No.)

675 West Kendall Street, Henri A. Termeer Square Cambridge, Massachusetts 02142 (Address of Principal Executive Offices) (Zip Code) Registrant's telephone number, including area code: (617) 551-8200 Not applicable (Former Name or Former Address, if Changed Since Last Report) Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below): Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425) Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12) Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b)) Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c)) Securities registered pursuant to Section 12(b) of the Act: Trading Name of Each Exchange Title of Each Class Symbol(s) on Which Registered Common Stock, \$0.01 par value per share The Nasdag Stock Market LLC Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter)or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter). Emerging growth company \square If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with

any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. \Box

Item 5.02. Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

Effective as of March 7, 2023, the Board of Directors (the "Board") of Alnylam Pharmaceuticals, Inc. (the "Company"), following the recommendation of its Nominating and Corporate Governance Committee, expanded the size of the Company's Board from twelve to thirteen and elected Peter N. Kellogg to fill the newly created vacancy. Mr. Kellogg will serve as a Class II director with a term expiring at the annual meeting of stockholders to be held in 2024. Mr. Kellogg is expected to be appointed to the Audit Committee.

As a non-employee director, Mr. Kellogg will receive an annual cash fee of \$55,000 (increasing to \$60,000, effective April 1, 2023). In addition, in connection with his election to the Board, on March 7, 2023, Mr. Kellogg received a stock option to purchase 4,948 shares of the Company's common stock, having an aggregate grant date fair value equal to \$600,000.00 (rounded to the nearest share) using the Company's then current Black-Scholes valuation model, vesting ratably in three annual installments beginning on the one-year anniversary of the grant date, with an exercise price of \$194.34 per share. Beginning in 2024, Mr. Kellogg will be eligible to receive an annual stock option award, in an amount determined by the Board upon recommendation of the People, Culture and Compensation Committee (currently such number of shares of the Company's common stock with an aggregate grant date fair value equal to \$400,000.00 (rounded to the nearest share) using the Company's then current Black-Scholes valuation model per the Company's compensation policy for non-employee directors), vesting in full on the one-year anniversary of the grant date, with an exercise price equal to the fair market value of the Company's common stock on the date of grant. The Company will also reimburse Mr. Kellogg for reasonable travel and other related expenses incurred in connection with his service on the Board.

In addition, Mr. Kellogg entered into an indemnification agreement with the Company consistent with the form of the existing indemnification agreement entered into between the Company and its non-employee directors.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: March 8, 2023 ALNYLAM PHARMACEUTICALS, INC.

By: /s/ Jeffrey V. Poulton

Jeffrey V. Poulton Executive Vice President, Chief Financial Officer