

OMB APPROVAL	
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Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

1. Name and Address of Reporting Person* <u>Poulton Jeffrey V.</u> (Last) (First) (Middle) 675 WEST KENDALL STREET HENRI A. TERMEER SQUARE (Street) CAMBRIDGE MA 02142 (City) (State) (Zip)	2. Issuer Name and Ticker or Trading Symbol <u>ALNYLAM PHARMACEUTICALS, INC. [ALNY]</u>	5. Relationship of Reporting Person(s) to Issuer (Check all applicable) Director 10% Owner <input checked="" type="checkbox"/> Officer (give title below) Other (specify below) <u>EVP, Chief Financial Officer</u>
	3. Date of Earliest Transaction (Month/Day/Year) 08/03/2023	
	4. If Amendment, Date of Original Filed (Month/Day/Year)	

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

1. Title of Security (Instr. 3)	2. Transaction Date (Month/Day/Year)	2A. Deemed Execution Date, if any (Month/Day/Year)	3. Transaction Code (Instr. 8)		4. Securities Acquired (A) or Disposed Of (D) (Instr. 3, 4 and 5)			5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4)	6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	7. Nature of Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price			
Common Stock	08/03/2023		A ⁽¹⁾		4,518	A	\$0.0	16,224	D	
Common Stock	08/03/2023		A ⁽²⁾		3,109	A	\$0.0	19,333	D	
Common Stock	08/04/2023		S ⁽³⁾		658	D	\$184.7 ⁽⁴⁾	18,675	D	
Common Stock	08/04/2023		S ⁽³⁾		1,593	D	\$185.54 ⁽⁵⁾	17,082	D	
Common Stock	08/04/2023		S ⁽³⁾		944	D	\$186.39 ⁽⁶⁾	16,138	D	
Common Stock	08/04/2023		S ⁽³⁾		86	D	\$187.37 ⁽⁷⁾	16,052	D	
Common Stock	08/04/2023		S ⁽³⁾		15	D	\$188.4 ⁽⁸⁾	16,037	D	
Common Stock	08/04/2023		S ⁽³⁾		164	D	\$189.31	15,873	D	
Common Stock								57	I	by Managed Account ⁽⁹⁾

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

1. Title of Derivative Security (Instr. 3)	2. Conversion or Exercise Price of Derivative Security	3. Transaction Date (Month/Day/Year)	3A. Deemed Execution Date, if any (Month/Day/Year)	4. Transaction Code (Instr. 8)		5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5)	6. Date Exercisable and Expiration Date (Month/Day/Year)		7. Title and Amount of Securities Underlying Derivative Security (Instr. 3 and 4)	8. Price of Derivative Security (Instr. 5)	9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4)	10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	11. Nature of Indirect Beneficial Ownership (Instr. 4)
				Code	V		Date Exercisable	Expiration Date					

Explanation of Responses:

- On February 26, 2020, the reporting person was granted performance-based stock units (PSUs) in connection with the issuer 2019 year-end compensation review. The PSUs vest in separate installments based on the achievement of three specified performance measures as determined by the People, Culture and Compensation Committee of the issuer Board of Directors. The shares reported were issued to the reporting person upon vesting of one-third of the PSUs based on achievement of a corresponding performance measure relating to the issuer public reporting of the achievement of the first \$2.5 billion in cumulative net product revenues determined in accordance with GAAP based solely upon the sales by the Company, including its affiliates and ex-U.S. distributions, of products discovered/developed by the Company.
- On February 24, 2021, the reporting person was granted performance-based stock units (PSUs) in connection with the issuer 2020 year-end compensation review. The PSUs vest in separate installments based on the achievement of four specified performance measures as determined by the People, Culture and Compensation Committee of the issuer Board of Directors. The shares reported were issued to the reporting person upon vesting of one-quarter of the PSUs based on achievement of a corresponding performance measure relating to the issuer public reporting of the achievement of the first \$2.5 billion in cumulative net product revenues determined in accordance with GAAP based solely upon the sales by the Company, including its affiliates and ex-U.S. distributions, of products discovered/developed by the Company.
- Represents shares automatically sold by the Company on behalf of the reporting person pursuant to a mandatory sell-to-cover provision in the award agreement required to cover minimum statutory tax withholding obligations that became due upon the vesting and settlement of restricted stock units reported in this form.
- The price reported represents the weighted average sales price of shares sold in multiple transactions at prices ranging from \$184.01 to \$185.01. The reporting person will provide to the issuer, any security holder of the issuer or the SEC staff, upon request, information regarding the number of shares sold at each price within the range.
- The price reported represents the weighted average sales price of shares sold in multiple transactions at prices ranging from \$185.02 to \$186.02. The reporting person will provide to the issuer, any security holder of the issuer or the SEC staff, upon request, information regarding the number of shares sold at each price within the range.

6. The price reported represents the weighted average sales price of shares sold in multiple transactions at prices ranging from \$186.03 to \$187.02. The reporting person will provide to the issuer, any security holder of the issuer or the SEC staff, upon request, information regarding the number of shares sold at each price within the range.
7. The price reported represents the weighted average sales price of shares sold in multiple transactions at prices ranging from \$187.04 to \$188.04. The reporting person will provide to the issuer, any security holder of the issuer or the SEC staff, upon request, information regarding the number of shares sold at each price within the range.
8. The price reported represents the weighted average sales price of shares sold in multiple transactions at prices ranging from \$188.14 to \$189.05. The reporting person will provide to the issuer, any security holder of the issuer or the SEC staff, upon request, information regarding the number of shares sold at each price within the range.
9. Reflects shares of ALNY common stock acquired by the reporting person under the issuer 401(k) plan as a result of the issuer 401(k) matching contribution program.

By: Stephen Hall, Attorney-
in-Fact For: Jeffrey V. Poulton 08/07/2023

** Signature of Reporting Person Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

* If the form is filed by more than one reporting person, see Instruction 4 (b)(v).

** Intentional misstatements or omissions of facts constitute Federal Criminal Violations See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.