1. Name and Address of Reporting Person
   Poulton Jeffrey V.
   675 WEST KENDALL STREET
   CAMBRIDGE MA 02142

2. Issuer Name and Ticker or Trading Symbol
   ALNYLAM PHARMACEUTICALS, INC. [ ALNY ]

3. Date of Earliest Transaction (Month/Day/Year)
   03/01/2024

4. If Amendment, Date of Original Filed (Month/Day/Year)
   
5. Relationship of Reporting Person(s) to Issuer
   Director
   EVP, Chief Financial Officer

6. Individual or Joint/Group Filing (Check Applicable Line)
   X Form filed by One Reporting Person
   
   
   
Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

<table>
<thead>
<tr>
<th>Security</th>
<th>Date Acquired</th>
<th>Code</th>
<th>V</th>
<th>Amount (A)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Stock</td>
<td>03/01/2024</td>
<td>A</td>
<td>7,741(1)</td>
<td>$0.0</td>
<td>27,219(1)</td>
</tr>
<tr>
<td>Common Stock</td>
<td></td>
<td>57</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Security</th>
<th>Date Acquired</th>
<th>Code</th>
<th>V</th>
<th>Amount (A)</th>
<th>Expiration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Option (right to buy)</td>
<td>03/01/2024</td>
<td>A</td>
<td>15,118</td>
<td>4)</td>
<td>03/01/2034</td>
</tr>
</tbody>
</table>

By: Stephen Hall, Attorney-in-Fact For: Jeffrey V. Poulton
03/05/2024
** Signature of Reporting Person

Explanation of Responses:

1. These shares are represented by restricted stock units (RSUs) granted under the Amended and Restated 2018 Stock Incentive Plan. Each RSU represents a contingent right to receive one share of common stock. The RSUs will vest over a three-year period, with one third vesting on each of the first, second and third anniversaries of the grant date, subject to the Reporting Persons continuous service with the Issuer as of each such vesting date.

2. The Reporting Person has reported prior awards of RSUs in Table II of Form 4.

3. 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. The total reported in Column 5 includes the 7,741 newly awarded RSUs and 19,478 shares of common stock. The Reporting Person also holds 3,816 unvested RSUs that were previously reported in Table II.

4. The stock option vests as to 25% of the shares on the first anniversary of the grant date and the remaining shares vesting in equal installments at the end of each successive three-month period thereafter until the fourth anniversary of the grant date, subject to the Reporting Persons continuous service with the Issuer as of each such vesting 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).

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.