

| OMB APPROVAL | |
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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

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

| | | |
|--|---|--|
| 1. Name and Address of Reporting Person* <u>Leschly Nick</u> (Last) (First) (Middle) 60 BINNEY STREET (Street) CAMBRIDGE MA 02142 (City) (State) (Zip) | 2. Issuer Name and Ticker or Trading Symbol <u>bluebird bio, Inc. [BLUE]</u> | 5. Relationship of Reporting Person(s) to Issuer (Check all applicable) <input checked="" type="checkbox"/> Director 10% Owner Officer (give title below) Other (specify below) |
| | 3. Date of Earliest Transaction (Month/Day/Year) 11/11/2021 | |
| | 4. If Amendment, Date of Original Filed (Month/Day/Year) | 6. Individual or Joint/Group Filing (Check Applicable Line) <input checked="" type="checkbox"/> Form filed by One Reporting Person <input type="checkbox"/> Form filed by More than One Reporting Person |

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 ⁽¹⁾⁽²⁾⁽³⁾ | 11/11/2021 | | J | | 7,384 | A | \$0 | 251,701 | D | | |
| Common Stock ⁽²⁾⁽³⁾⁽⁴⁾ | 11/11/2021 | | J | | 12,306 | A | \$0 | 264,007 | D | | |
| Common Stock ⁽²⁾⁽³⁾⁽⁵⁾ | 11/11/2021 | | J | | 23,998 | A | \$0 | 288,005 | D | | |
| Common Stock ⁽²⁾⁽³⁾⁽⁶⁾ | 11/11/2021 | | J | | 0 | A | \$0 | 288,005 | D | | |
| Common Stock ⁽²⁾⁽³⁾⁽⁷⁾ | 11/11/2021 | | J | | 0 | A | \$0 | 288,005 | D | | |
| Common Stock ⁽²⁾⁽³⁾⁽⁸⁾ | 11/11/2021 | | J | | 0 | A | \$0 | 288,005 | D | | |
| Common Stock ⁽²⁾⁽³⁾⁽⁹⁾ | 11/11/2021 | | J | | 0 | A | \$0 | 288,767 ⁽¹⁰⁾ | D | | |
| Common Stock | | | | | | | | 45,699 | I | Nick Leschly 2001 Trust | |
| Common Stock | | | | | | | | 123,000 | I | Nick Leschly Irrevocable GST Trust of 2019 | |

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 | (A) | (D) | Date Exercisable | Expiration Date | | | | | | Title |
| Stock Option (right to buy) | \$12.19 ⁽¹¹⁾ | 11/11/2021 | | D | | 165,000 ⁽¹¹⁾ | | (11) | 03/03/2024 | Common Stock | 162,450 | \$0 | 162,450 | D | |
| Stock Option (right to buy) | \$48.52 ⁽¹²⁾ | 11/11/2021 | | D | | 165,000 ⁽¹²⁾ | | (12) | 03/02/2025 | Common Stock | 162,450 | \$0 | 162,450 | D | |
| Stock Option (right to buy) | \$25.16 ⁽¹³⁾ | 11/11/2021 | | D | | 90,000 ⁽¹³⁾ | | (13) | 03/01/2026 | Common Stock | 88,609 | \$0 | 88,609 | D | |
| Stock Option (right to buy) | \$37.66 ⁽¹⁴⁾ | 11/11/2021 | | D | | 110,000 ⁽¹⁴⁾ | | (14) | 02/01/2027 | Common Stock | 108,300 | \$0 | 108,300 | D | |
| Stock Option (right to buy) | \$102.24 ⁽¹⁵⁾ | 11/11/2021 | | D | | 120,000 ⁽¹⁵⁾ | | (15) | 02/01/2028 | Common Stock | 118,145 | \$0 | 118,145 | D | |
| Common Stock | \$67.06 ⁽¹⁶⁾ | 11/11/2021 | | D | | 100,000 ⁽¹⁶⁾ | | (16) | 02/01/2029 | Common Stock | 98,454 | \$0 | 98,454 | D | |
| Stock Option (right to buy) | \$36.78 ⁽¹⁷⁾ | 11/11/2021 | | D | | 65,000 ⁽¹⁷⁾ | | (17) | 03/02/2030 | Common Stock | 63,995 | \$0 | 63,995 | D | |

**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 | (A) | (D) | Date Exercisable | Expiration Date | | | | | | Title |
| Stock Option (right to buy) | \$0.0 ⁽¹⁸⁾ | 11/11/2021 | | D | | | 90,000 ⁽¹⁸⁾ | (18) | 02/16/2031 | Common Stock | 0.0 | \$0 | 0 | D | |

Explanation of Responses:

- Represents restricted stock units awarded to the reporting person prior to the separation (the "Separation") of 2seventy bio, Inc. ("2seventy") from bluebird bio, Inc. ("bluebird"). In connection with the Separation, the restricted stock units underlying this award were adjusted pursuant to the Employee Matters Agreement by and between 2seventy and bluebird (the "EMA") such that the reporting person received restricted stock units of 2seventy to preserve the value associated with the original restricted stock unit award (see footnotes 2 and 3). This restricted stock unit award was originally granted on February 1, 2018 and vests over a four-year period at a rate of 25% on 01/04/2019, 25% on 01/04/2020, 25% on 01/04/2021, and 25% on 01/04/2022.
- bluebird equity awards granted prior to January 1, 2021 were converted into equity awards of both bluebird and 2seventy. The number of shares underlying the converted bluebird equity awards was determined by multiplying the number of shares underlying the existing bluebird equity award by a fraction, the numerator of which is the volume-weighted average trading price of bluebird common stock (trading "regular way") on the five trading days immediately prior to the distribution date (the "bluebird Pre-Distribution VWAP") and the denominator of which is the sum of (1) the volume-weighted average trading price of 2seventy common stock (trading "regular way") on the five trading days immediately following the distribution date multiplied by the distribution ratio and (2) the volume-weighted average trading price of bluebird bio common stock (trading "regular way") on the five trading days immediately following the distribution date (the "bluebird Post-Distribution VWAP").
- bluebird equity awards granted on or after January 1, 2021, such equity awards continued as bluebird equity awards, subject to adjustment. The adjusted number of shares of bluebird common stock underlying such equity awards is equal to the number of shares of bluebird common stock subject to the equity award immediately prior to the distribution multiplied by a fraction, the numerator of which is the bluebird Pre-Distribution VWAP and the denominator of which is the bluebird Post-Distribution VWAP.
- Represents restricted stock units awarded to the reporting person prior to the Separation. In connection with the Separation, the restricted stock units underlying this award were adjusted pursuant to the EMA such that the reporting person received restricted stock units of 2seventy to preserve the value associated with the original restricted stock unit award (see footnotes 2 and 3). This restricted stock unit award was originally granted on February 1, 2019 and vests over a four-year period at a rate of 25% on 01/04/2020, 25% on 01/04/2021, 25% on 01/04/2022, and 25% on 01/04/2023.
- Represents restricted stock units awarded to the reporting person prior to the Separation. In connection with the Separation, the restricted stock units underlying this award were adjusted pursuant to the EMA such that the reporting person received restricted stock units of 2seventy to preserve the value associated with the original restricted stock unit award (see footnotes 2 and 3). This restricted stock unit award was originally granted on March 2, 2020 and vests over a four-year period at a rate of 25% on 01/04/2021, 25% on 01/04/2022, 25% on 01/04/2023, and 25% on 01/04/2024.
- Represents restricted stock units awarded to the reporting person prior to the Separation. In connection with the Separation, the restricted stock units underlying this award were adjusted pursuant to the EMA to preserve the value associated with the original restricted stock unit award (see footnotes 2 and 3). This restricted stock unit award vests upon the satisfaction of certain performance criteria.
- Represents restricted stock units awarded to the reporting person prior to the Separation. In connection with the Separation, the restricted stock units underlying this award were adjusted pursuant to the EMA to preserve the value associated with the original restricted stock unit award (see footnotes 2 and 3). This restricted stock unit award was originally granted on February 16, 2021 and vests over a four-year period at a rate of 25% on 01/04/2022, 25% on 01/04/2023, 25% on 01/04/2024, and 25% on 01/04/2025.
- Represents restricted stock units awarded to the reporting person prior to the Separation. In connection with the Separation, the restricted stock units underlying this award were adjusted pursuant to the EMA to preserve the value associated with the original restricted stock unit award (see footnotes 2 and 3). This restricted stock unit award was originally granted on August 2, 2021 and vests over a two-year period at the rate of 40% on August 2, 2022 and 60% on August 2, 2023.
- Represents restricted stock units awarded to the reporting person prior to the Separation. In connection with the Separation, the restricted stock units underlying this award were adjusted pursuant to the EMA to preserve the value associated with the original restricted stock unit award (see footnotes 2 and 3). This restricted stock unit award was originally granted on August 2, 2021 and vests upon the satisfaction of certain performance criteria.
- 762 shares were acquired under the bluebird bio, Inc. employee stock purchase plan.
- Represents options to purchase bluebird common stock awarded to the reporting person prior to the Separation. In connection with the Separation, the shares of common stock underlying this award were adjusted pursuant to the EMA such that the reporting person received options to purchase shares of 2seventy common stock to preserve the value associated with the original award (see footnotes 2 and 3). This option was originally granted on March 3, 2014 and is fully vested and exercisable as of the date hereof. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.
- Represents options to purchase bluebird common stock awarded to the reporting person prior to the Separation. In connection with the Separation, the shares of common stock underlying this award were adjusted pursuant to the EMA such that the reporting person received options to purchase shares of 2seventy common stock to preserve the value associated with the original award (see footnotes 2 and 3). This option was originally granted on March 2, 2015 and is fully vested and exercisable as of the date hereof. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.
- Represents options to purchase bluebird common stock awarded to the reporting person prior to the Separation. In connection with the Separation, the shares of common stock underlying this award were adjusted pursuant to the EMA such that the reporting person received options to purchase shares of 2seventy common stock to preserve the value associated with the original award (see footnotes 2 and 3). This option was originally granted on March 1, 2016 and is fully vested and exercisable as of the date hereof. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.
- Represents options to purchase bluebird common stock awarded to the reporting person prior to the Separation. In connection with the Separation, the shares of common stock underlying this award were adjusted pursuant to the EMA such that the reporting person received options to purchase shares of 2seventy common stock to preserve the value associated with the original award (see footnotes 2 and 3). This option was originally granted on February 1, 2017 and is fully vested and exercisable as of the date hereof. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.
- Represents options to purchase bluebird common stock awarded to the reporting person prior to the Separation. In connection with the Separation, the shares of common stock underlying this award were adjusted pursuant to the EMA such that the reporting person received options to purchase shares of 2seventy common stock to preserve the value associated with the original award (see footnotes 2 and 3). This option was originally granted on February 1, 2018 and vests over a four-year period, at a rate of 25% on 01/04/2019 and in 36 equal monthly installments thereafter. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.
- Represents options to purchase bluebird common stock awarded to the reporting person prior to the Separation. In connection with the Separation, the shares of common stock underlying this award were adjusted pursuant to the EMA such that the reporting person received options to purchase shares of 2seventy common stock to preserve the value associated with the original award (see footnotes 2 and 3). This option was originally granted on February 1, 2019 and vests over a four-year period, at a rate of 25% on 01/04/2020 and in 36 equal monthly installments thereafter. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.
- Represents options to purchase bluebird common stock awarded to the reporting person prior to the Separation. In connection with the Separation, the shares of common stock underlying this award were adjusted pursuant to the EMA such that the reporting person received options to purchase shares of 2seventy common stock to preserve the value associated with the original award (see footnotes 2 and 3). This option was originally granted on March 2, 2020 and vests over a four-year period, at a rate of 25% on 01/04/2021 and in 36 equal monthly installments thereafter. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.
- Represents options to purchase bluebird common stock awarded to the reporting person prior to the Separation. In connection with the Separation, the shares of common stock underlying this award were adjusted pursuant to the EMA to preserve the value associated with the original award (see footnotes 2 and 3). This option was originally granted on February 16, 2021 and vests over a four-year period, at a rate of 25% on 01/04/2022 and in 36 equal monthly installments thereafter. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.

Remarks:

**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. Potential persons who are to respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB number.

/s/ Helen Fu, Attorney-in-Fact 11/17/2021

** 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).

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