

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

OMB APPROVAL	
OMB Number:	3235-0287
Estimated average burden hours per response:	0.5

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>Obenshain Andrew</u>			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 <input checked="" type="checkbox"/> Officer (give title below) Other (specify below) <b>Chief Executive Officer</b>		
(Last)	(First)	(Middle)	3. Date of Earliest Transaction (Month/Day/Year) <u>11/11/2021</u>			6. Individual or Joint/Group Filing (Check Applicable Line) <input checked="" type="checkbox"/> Form filed by One Reporting Person Form filed by More than One Reporting Person		
60 BINNEY STREET			4. If Amendment, Date of Original Filed (Month/Day/Year)					
(Street)								
<u>CAMBRIDGE MA 02142</u>								
(City) (State) (Zip)								

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 <sup>(1)(2)(3)</sup>	11/11/2021		J		586	A	\$0	10,468	D		
Common Stock <sup>(2)(3)(4)</sup>	11/11/2021		J		978	A	\$0	11,446	D		
Common Stock <sup>(2)(3)(5)</sup>	11/11/2021		J		2,584	A	\$0	14,030	D		
Common Stock <sup>(2)(3)(6)</sup>	11/11/2021		J		10,337	A	\$0	24,367	D		
Common Stock <sup>(2)(3)(7)</sup>	11/11/2021		J		30,115	A	\$0	54,482	D		
Common Stock <sup>(2)(3)(8)</sup>	11/11/2021		J		200,771	A	\$0	255,253	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)	\$34.2 <sup>(9)</sup>	11/11/2021		J		18,000 <sup>(9)</sup>		<sup>(9)</sup>	12/01/2026	Common Stock	17,721	\$0	17,721	D	
Stock Option (right to buy)	\$102.24 <sup>(10)</sup>	11/11/2021		J		9,500 <sup>(10)</sup>		<sup>(10)</sup>	02/01/2028	Common Stock	9,353	\$0	9,353	D	
Stock Option (right to buy)	\$67.06 <sup>(11)</sup>	11/11/2021		J		7,950 <sup>(11)</sup>		<sup>(11)</sup>	02/01/2029	Common Stock	7,827	\$0	7,827	D	
Stock Option (right to buy)	\$36.78 <sup>(12)</sup>	11/11/2021		J		7,000 <sup>(12)</sup>		<sup>(12)</sup>	03/02/2030	Common Stock	6,891	\$0	6,891	D	
Stock Option (right to buy)	\$26.45 <sup>(13)</sup>	11/11/2021		J		21,000 <sup>(13)</sup>		<sup>(13)</sup>	11/02/2030	Common Stock	20,674	\$0	20,674	D	
Stock Option (right to buy)	\$14.17 <sup>(14)</sup>	11/11/2021		J		30,000 <sup>(14)</sup>		<sup>(14)</sup>	02/16/2031	Common Stock	60,230	\$0	60,230	D	
Stock Option (right to buy)	\$12.76 <sup>(15)</sup>	11/11/2021		J		200,000 <sup>(15)</sup>		<sup>(15)</sup>	08/02/2031	Common Stock	401,543	\$0	401,543	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 January 4, 2019, 25% on January 4, 2020, 25% on January 4, 2021, and 25% on January 4, 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 January 4, 2020, 25% on January 4, 2021, 25% on January 4, 2022, and 25% on January 4, 2023.

5. 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 January 4, 2021, 25% on January 4, 2022, 25% on January 4, 2023, and 25% on January 4, 2024.

6. 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 November 2, 2020 and vests over a four-year period at a rate of 25% on November 2, 2021, 25% on November 2, 2022, 25% on November 2, 2023, and 25% on November 2, 2024.

7. 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 the rate of 25% on January 4, 2022, 25% on January 4, 2023, 25% on January 4, 2024, and 25% on January 4, 2025.

8. 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, subject to certain performance criteria, vests over a 4-year period at the rate of 25% on each of August 2, 2022, August 2, 2023, August 2, 2024 and August 2, 2025.

9. 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 December 1, 2016 and is fully vested 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.

10. 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 twenty-five percent (25%) on January 4, 2019, and in 36 equal monthly installments. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.

11. 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 twenty-five percent (25%) on January 4, 2020, and in 36 equal monthly installments. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.

12. 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 twenty-five percent (25%) on January 4, 2021, and in 36 equal monthly installments. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.

13. 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 November 2, 2020 and vests over a four-year period, at a rate of twenty-five percent (25%) on November 2, 2021, and in 36 equal monthly installments. The exercise price of the option has been adjusted based on the conversion ratio described in footnotes 2 and 3.

14. 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 vests over a four-year period at the rate of 25% on January 4, 2022 and then 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.

15. 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 August 2, 2021. Subject to certain performance criteria, this stock option shall vest over a 4-year period at the rate of 25% on August 2, 2022 and then 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:

/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).

\*\* 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.

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