

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP

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).

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>GILLIS STEVEN</u> (Last) (First) (Middle) <u>8725 WEST HIGGINS ROAD, SUITE 290</u> (Street) <u>CHICAGO IL 60631</u> (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) <u>06/24/2013</u>	
		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	06/24/2013		C		1,793,588 ⁽¹⁾	A	\$0.00	1,793,588	I	See footnotes ⁽²⁾⁽³⁾

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	Amount or Number of Shares				
Series C Convertible Preferred Stock	⁽⁴⁾	06/24/2013		C			19,971,242	⁽⁴⁾	⁽⁴⁾	Common Stock	1,052,946	⁽⁴⁾	0	I	See footnotes ⁽²⁾⁽³⁾
Series D Convertible Preferred Stock	⁽⁴⁾	06/24/2013		C			14,047,762	⁽⁴⁾	⁽⁴⁾	Common Stock	740,642	⁽⁴⁾	0	I	See footnotes ⁽²⁾⁽³⁾

Explanation of Responses:

- Represents the total number of shares received upon conversion of shares of the Issuer's Series C Convertible Preferred Stock (the "Series C Shares") and Series D Convertible Preferred Stock (the "Series D Shares" and together with the Series C Shares, collectively, the "Preferred Shares").
- Beneficial ownership consists of 1,793,588 shares of Common Stock held by ARCH Venture Fund VII, L.P. ("ARCH Fund VII"). The sole general partner of ARCH Fund VII is ARCH Venture Partners VII, L.P. ("ARCH Partners VII"), which may be deemed to be the beneficial owner of the shares held by ARCH Fund VII. The sole general partner of ARCH Partners VII is ARCH Venture Partners VII, LLC ("ARCH VII LLC"), which may be deemed to be the beneficial owner of the shares held by ARCH Fund VII. ARCH Partners VII and ARCH VII LLC disclaim beneficial ownership of such shares, except to the extent of any pecuniary interest therein. The managing directors of ARCH VII LLC are Keith Crandell, Clinton Bybee and Robert Nelsen, and they may be deemed to beneficially own the shares held by ARCH Fund VII. Messrs. Crandell, Bybee and Nelsen disclaim beneficial ownership of such shares, except to the extent of any pecuniary interest therein.
- Director Steven Gillis owns an interest in ARCH Partners VII but does not have voting or investment control over the shares held by ARCH Fund VII and disclaims beneficial ownership of such shares, except to the extent of any pecuniary interest therein.
- Effective upon the closing of the Issuer's initial public offering of its Common Stock, each Preferred Share automatically converted at a ratio of 18.967-to-one into the number of shares of Common Stock shown in column 7. The Preferred Shares had no expiration date.

Remarks:

/s/ Linda C. Bain, Attorney-in-Fact 06/26/2013

** 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.