UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of The Securities Exchange Act of 1934

Date of Report (Date of Earliest Event Reported): February 3, 2014

bluebird bio, Inc.

(Exact name of registrant as specified in its charter)

DELAWARE (State or other jurisdiction of incorporation)

001-35966 (Commission File Number) 13-3680878 (I.R.S. Employer Identification No.)

150 Second Street
Cambridge, MA
(Address of principal executive offices)

02141 (Zip Code)

Registrant's telephone number, including area code (339) 499-9300

Not Applicable (Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 5.02 Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers

On February 3, 2014, Linda Bain, Vice President, Finance and Business Operations, Principal Accounting Officer and Treasurer of bluebird bio, Inc. (the "Company") informed the Company of her resignation, effective as of March 7, 2014. Ms. Bain's resignation did not result from any disagreement regarding the Company's financial reporting or accounting policies, procedures, estimates or judgments.

In connection with the foregoing, effective as of March 7, 2014, Eric M. Sullivan will serve as the principal accounting officer of the Company. Mr. Sullivan, age 34, has served as the Company's Senior Director of Finance since November 2013. Previously, Mr. Sullivan served as Controller of Merrimack Pharmaceuticals from January 2011 to November 2013 and as Assistant Controller of Merrimack Pharmaceuticals from September 2008 to December 2010. Prior to Merrimack Pharmaceuticals, Mr. Sullivan held positions at NSTAR and PricewaterhouseCoopers LLP. Mr. Sullivan received his B.S. in Accountancy from Bentley University (formerly known as Bentley College).

Mr. Sullivan is not a party to any transaction with the Company that would require disclosure under Item 404(a) of Regulation S-K, and there are no arrangements or understandings between Mr. Sullivan and any other persons pursuant to which he was selected to serve as the principal accounting officer of the Company.

Jeffrey T. Walsh will continue to serve as the principal financial officer of the Company.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: February 7, 2014 bluebird bio, Inc.

By: /s/ Jeffrey T. Walsh

Jeffrey T. Walsh

Chief Operating Officer, Principal Financial Officer and Secretary