

August 28, 2015

VIA EDGAR AND COURIER

Securities and Exchange Commission
Division of Corporation Finance
100 F. Street, N.E.
Washington, D.C. 20549
Attention: Jeffrey P. Riedler
Preston Brewer
John Krug

**Re: REGENXBIO Inc.
Registration Statement on Form S-1
Filed August 17, 2015
File No. 333-206430**

**Amendment No. 1 to Draft Registration Statement on Form S-1
Submitted August 10, 2015
CIK No. 0001590877**

Dear Messrs. Riedler, Brewer and Krug:

On behalf of REGENXBIO Inc. (the "Company"), we submit this letter in response to comments from the staff (the "Staff") of the Securities and Exchange Commission (the "Commission") received by letter dated August 26, 2015 relating to the Company's Registration Statement on Form S-1 filed on August 17, 2015 (the "Registration Statement") and originally submitted as a draft registration statement on Form S-1 on July 1, 2015.

For the convenience of the Staff, we are providing to the Staff by courier copies of this letter.

In this letter, we have recited the written comments from the Staff in italicized, bold type and have followed each comment with the Company's response.

8. Stock-based Compensation, page F-33

1. ***With regard to your response to comment 24 please tell us how you considered the following in determining expected volatility for stock-based compensation in accordance with ASC 718:***
- ***Using BioMarin and Regeneron as similar when they have significantly greater market capitalizations, revenues, and research and development expense than your company,***
 - ***Using the volatility of companies with less than six years of trading data (like Spark from only February 2015 to May 2015) to estimate expected volatility over the six year expected term of the options, and***
 - ***Tell us how you intend to estimate expected volatility for future stock option grants.***

RESPONSE TO COMMENT 1:

Selection of BioMarin and Regeneron as peer group companies

The Company respectfully advises the Staff that its selection of peer group companies for determining expected volatility is weighted toward companies in its industry, and more specifically with similar disease focuses and technologies. Additionally, the Company considers the size, stage of life-cycle and financial leverage of potential peer group companies relative to the Company's, as well as the availability of historical trading data when developing an estimate for the expected volatility over the expected term of the underlying stock options. The Company's selection of BioMarin Pharmaceuticals, Inc. ("BioMarin") and Regeneron Pharmaceuticals, Inc. ("Regeneron") as peer group companies was based on the similarity of those companies' disease focus and technology to those of the Company, their financial leverage and the availability of active trading history. The following factors were considered when assessing the similarity of BioMarin and Regeneron to the Company and the appropriateness for their inclusion within the Company's list of peer group companies:

- *BioMarin.* BioMarin focuses on treatments for a number of rare diseases that are also in the Company's development pipeline or in the pipelines of the Company's licensees, including treatments for MPS I (approved), PKU (approved), Pompe Disease (Phase III) and hemophilia A (preclinical). Additionally, BioMarin's preclinical candidate for hemophilia A uses AAV technology to deliver genetic material to the body that is similar to the technology used by the Company and its licensees.
- *Regeneron.* Regeneron has an approved product for the treatment of wet AMD, which is a disease that is also in the Company's lead product development pipeline. Additionally, Regeneron has an approved product which regulates LDL-C levels for patients with HeFH, a similar disease to HoFH (in which patients suffer from abnormally high LDL levels), a disease that is in the Company's lead

product development pipeline. In May 2014, Regeneron and Avalanche Biotechnologies, Inc. (“Avalanche”), a gene therapy company using technology similar to that of the Company, entered into a collaboration agreement to develop and commercialize novel gene therapy products for the treatment of ophthalmologic diseases using AAV technology.

The Company also notes that BioMarin and Regeneron each have available trading histories to estimate volatility over the expected term of the Company’s stock option awards. The Company recognizes that BioMarin and Regeneron are larger than the Company in terms of market capitalization and are at a later stage of development than the Company. However, the Company believes that the expected volatility of the Company’s common stock is more similar to these companies’ historical volatility than other biotechnology companies of similar size which lack similarity to the Company in terms of disease focus and underlying technology as it relates to the use of AAV-based gene therapies. BioMarin and Regeneron were included in the Company’s peer group selection due to these similarities, in combination with a sufficient trading history which is generally not present in other companies with similar focus and technology as the Company.

Selection of companies with available trading history less than the expected term of the Company’s stock option awards as peer group companies

As stated above, the Company focuses the selection of its peer group companies on companies with similar disease focus and technology, specifically as it relates to gene therapy using AAV technology. The Company believes the historical volatility of these companies is the best indicator of the Company’s expected volatility because stock price changes for these companies are primarily driven by investors’ and research analysts’ opinions on the safety and efficacy of the underlying technology. Accordingly, the Company believes that the AAV-based gene therapy companies used in its peer group, including bluebird bio, Inc., Applied Genetic Technologies Corporation, Spark Therapeutics, Inc. and Avalanche, are appropriate. However, the Company acknowledges that gene therapy technology is only recently receiving significant attention from the investment community. As such, none of these companies were publicly-traded prior to 2013, and accordingly these companies’ have less historical trading data than the expected term of the Company’s stock option awards. The Company does not believe that peer group companies’ history of trading data must be at least equal to the expected term of the Company’s stock options in order to provide a meaningful estimate of the Company’s common stock volatility. However, in order to account for the lack of long-term trading history for these companies, the Company also included companies like BioMarin, Regeneron and Sangamo Biosciences, Inc. in its peer group selection, which have long-term historical trading data available in excess of the expected term of stock options awarded.

Impact of peer group company selections on expected volatility

The Company performed a sensitivity analysis on its expected volatility for the year ended December 31, 2014 and the six months ended June 30, 2015 to determine whether placing a higher focus on peer group companies more similar to the size of the Company, and with

available trading data at least equal to the expected term of the Company's stock option awards to employees, would have a material effect on volatility and stock-based compensation expense in the Company's financial statements. In the analysis, the Company replaced its peer group company selections with biotechnology companies which are all similar to the Company in terms of disease indication (although using different technologies), size, stage of development and financial leverage, and which have an available trading history in excess of six years. As a result of the analysis, the Company determined that the alternative peer group selections, and resulting expected volatility, had an immaterial effect on the Company's financial statements in total and for any periods presented in the Registration Statement. Accordingly, the Company determined that its peer group company selection provided a reasonable basis for expected volatility for the year ended December 31, 2014 and the six months ended June 30, 2015.

Estimating expected volatility for future stock option grants

The Company respectfully advises the Staff that until it has sufficient trading history, it plans to continue to use historical volatility of peer group companies to estimate expected volatility of its common stock. The Company will place a higher focus on companies with market capitalization and stage of development more similar to the Company's, and that have a longer history of available trading data closer to the expected term of the Company's stock option grants. Assuming the consummation of the Company's proposed initial public offering, the Company will use a hybrid approach to estimate expected volatility and therefore will include its own common stock volatility along with the volatility of the peer group companies. The Company will initially place a low weight on its own common stock volatility, and will increase that weighting as more historical trading data becomes available over time.

2. ***Refer to our prior comment 25. You disclose on page 166 that certain of your directors and officers purchased an aggregate of 6.95 million shares of Dimension common stock for an aggregate price of \$695.45. Please explain why the use of the OPM method based on a preferred stock issuance was appropriate to value Dimension's common stock when there was a contemporaneous issuance of its common stock.***

RESPONSE TO COMMENT 2:

The Company respectfully advises the Staff that the Company's directors and officers purchased 6,954,536 shares of Dimension Therapeutics, Inc. ("Dimension") common stock at a purchase price equal to the par value of \$0.0001 per share, for an aggregate purchase price of \$695.45. The Company notes that the 6,954,536 shares was part of a total purchase of 9,990,000 shares of Dimension common stock by directors, officers and members of the Company, as disclosed in page F-42 of the Registration Statement. The purchase was in connection with a license agreement issued by the Company to Dimension, and no other shares of Dimension were issued for cash proceeds on the date of this transaction. Due to its related party nature, the Company does not view the purchase of the Dimension common stock, at par value, to be a contemporaneous sale of common stock for which a fair value can be relied upon.

On the same date, Dimension issued preferred stock to an unrelated investor. The Company applied the back-solve method of the option-pricing method ("OPM") using the per share price of the preferred stock issuance, which indicated that the fair value of Dimension's common stock exceeded its par value on the date it was purchased. Since the preferred stock was issued to an unrelated party, the Company believes the fair value of Dimension common stock under the OPM is a more reliable indicator of fair value than the par value per share paid by the directors and officers of the Company.

3. ***Please confirm for us whether you received 10,000 shares of Dimension's common stock or 10 million shares and how you determined the amount of revenue to recognize. You recognized \$2.7 million of revenue which would represent 10 million shares at \$0.27 per share. However, Exhibit 10.18 states that the consideration was 10,000 shares which would be \$2,700 at \$0.27 per share.***

RESPONSE TO COMMENT 3:

The Company respectfully advises the Staff that, in accordance with the agreement filed as Exhibit 10.18 to the Registration Statement, the Company received 10,000 shares of Dimension's common stock as consideration for the license granted by the Company. However, simultaneous with the issuance of the 10,000 shares to the Company, Dimension sold and issued an additional 9,990,000 shares of its common stock to directors, officers and members of the Company (the "Related Parties") at par value of \$0.0001 per share, which were estimated by the Company to have a fair value of \$0.27 per share.

The Company acknowledges that, in form, 9,990,000 shares of Dimension common stock were sold directly to the Related Parties by Dimension at par value, and 10,000 shares of Dimension common stock were issued to the Company in consideration of the license granted to Dimension; however, due to its related party nature, the Company determined that for the purposes of its financial statements, in substance, the transaction is deemed to be an intellectual property license granted by the Company to Dimension, for a total deemed consideration of 10,000,000 shares of Dimension common stock, 9,990,000 of which were then deemed granted to the Related Parties by the Company as compensation. The only consideration transferred to Dimension in the transaction (excluding the nominal par value per share paid by the Related Parties) was the intellectual property license granted by the Company. As disclosed on page F-42 of the Registration Statement, the Company recorded license revenue related to the license grant in accordance with the deemed nature of the transaction, which is equal to 10,000,000 shares of Dimension common stock at a fair value of \$0.27 per share. As disclosed on page F-43 of the Registration Statement, the Company recorded compensation expense to the Related Parties equal to the fair value of the 9,990,000 shares at \$0.27 per share, for a total of \$2,697,300. The 10,000 shares of Dimension common stock issued to the Company as a result of the license agreement were recorded on the Company's balance sheet as a cost method investment.

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Please do not hesitate to contact me at (617) 648-9101, Richard Hesp at (617) 648-9230 or Keith Scherer at (617) 648-9231 if you have any questions or would like additional information regarding this matter.

Very truly yours,

GUNDERSON DETTMER STOUGH
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