UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

DIVISION OF
CORPORATION FINANCE

May 4, 2018

Geoff MacKay
President and Chief Executive Officer
AVROBIO, Inc.
One Kendall Square
Building 300, Suite 201
Cambridge, MA 02139

Re: AVROBIO, Inc.
Draft Registration Statement on Form F-1
Submitted April 6, 2018
CIK No. 0001681087

Dear Mr. MacKay:

We have reviewed your draft registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information and either submitting an amended draft registration statement or publicly filing your registration statement on EDGAR. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing the information you provide in response to these comments and your amended draft registration statement or filed registration statement, we may have additional comments.

Draft Registration Statement on Form S-1

Prospectus Summary, page 1

1. We note your statements in the penultimate paragraph and on page 84 that lentiviral-based gene therapy has demonstrated durable effects and safety in ongoing clinical trials. As safety and efficacy determinations are solely within the FDA's authority and they continue to be evaluated throughout all phases of clinical trials, please remove these statements.In the Business section, you may present objective data resulting from your trials, such as Plasma AGA Activity (nmol//hr.ml) without including conclusions

relating to efficacy, such as that the program has demonstrated promising results to date..

2. Please limit the summary discussion of your ongoing clinical trial to a discussion of the trial endpoint(s) and any serious adverse events. Additionally explain that patients in this Phase 1 trial for Fabry diseases are also receiving ERT and clarify that enrollment for this Phase I trial is still ongoing.

3. We note that you have an ongoing Phase I clinical trial for your most advanced product candidate, AVR-RD-01, and anticipate commencing a Phase 2 trial in mid-2018. Please revise your Pipeline table to present Phase 1 and Phase 2 trials in separate columns or explain why you believe the current presentation is appropriate.

Risks Associated with Our Business, page 4

4. Please expand the disclosure in your penultimate bullet to explain that you are aware of issued patents in the U.S. that cover the lentiviral vectors used in the manufacture of your product candidates, and that you do not own or license any patents or patent applications covering AVR-RD-01 or AVR-RD-02, as you explain in your risk factors on pages 40 and 42.

Implications of Being an Emerging Growth Company, page 5

5. Please supplementally provide us with copies of all written communications, as defined in Rule 405 under the Securities Act, that you, or anyone authorized to do so on your behalf, present to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of the communications.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Critical Accounting Policies and Significant Judgments and Estimates
Stock-Based Compensation
Determination of the Fair Value of Common Stock, page 80

6. Once you have an estimated offering price or range, please explain to us the reasons for any differences between the recent valuations of your common stock leading up to the IPO and the estimated offering price. This information will help facilitate our review of your accounting for equity issuances including stock compensation and beneficial conversion features.

Business
Our Approach, page 86

7. Please expand the narrative disclosure relating to the two charts on page 89 to explain what the bottom axis represents, and the significance of the right axis.

AVR-RD-01, Our Gene Therapy for Fabry Disease, page 91

8. Please revise your description of your Phase 1 trial for AVR-RD-01 on page 93 to describe the primary endpoints of safety and tolerability in terms of the objective data points you are using. Please also disclose the range of plasma AGA enzyme activity for males with classic Fabry disease, and clarify whether the two patients that have been dosed are male.

9. Please explain the significance of the p-values at the top of the charts on pages 97, 99, and 103, and also discuss how these values relate to the FDA's evidentiary standards of efficacy.

Intellectual Property and Other Barriers to Entry, page 105

10. We note your statement on page 106 that your royalty obligations under the UHN agreement expire on a licensed product-by-licensed-product and country-by-country basis upon the latest to occur of several events, one of which is the expiration or termination of the last valid claim in such country. Please revise to clarify the types of claims this refers to and when these claims are expected to expire. Please also revise your disclosure regarding the BioMarin agreement to clarify the term of your royalty obligations.

General

11. Please provide us proofs of all graphics, visual or photographic information you will provide in the printed prospectus prior to its use, for example in a preliminary prospectus. Please note that we may have comments regarding this material.

12. Your statements in the last paragraph under the Table of Contents that you have not independently verified any third party market data and other statistical information may imply an inappropriate disclaimer of responsibility with respect to the third party information. Please either delete these statements or specifically state that you are liable for such information.

You may contact Rolf Sundwall at 202-551-3105 or Jim Rosenberg at 202-551-3679 if you have questions regarding comments on the financial statements and related matters. Please contact Dorrie Yale at 202-551-8776 or Suzanne Hayes at 202-551-3675 with any other questions.

Division of Corporation Finance
Office of Healthcare & Insurance