

May 6, 2019

VIA EDGAR AND FEDERAL EXPRESS

Mr. David Plattner
Mr. Tom Kluck
Office of Healthcare and Insurance
Division of Corporation Finance
Securities and Exchange Commission
100 F Street, N.E.
Washington, D.C. 20549

**Re: Axcella Health Inc.
 Amendment No. 1 to Registration Statement on Form S-1
 Filed April 30, 2019
 CIK No. 0001633070**

Dear Mr. Plattner and Mr. Kluck:

This letter is submitted on behalf of Axcella Health Inc. (the “**Company**”) in response to comments of the staff of the Division of Corporation Finance (the “**Staff**”) of the U.S. Securities and Exchange Commission (the “**Commission**”) with respect to Amendment No. 1 to the Company’s Registration Statement on Form S-1 filed on April 30, 2019 (the “**Amendment No. 1**”), as set forth in the Staff’s letter dated May 2, 2019 to William Hinshaw, the Company’s Chief Executive Officer (the “**Comment Letter**”). The Company is concurrently filing Amendment No. 2 to the Registration Statement (“**Amendment No. 2**”), which includes changes to reflect responses to the Staff’s comments and other updates.

For reference purposes, the text of the Comment Letter has been reproduced and italicized herein with responses below each numbered comment. Unless otherwise indicated, page references in the descriptions of the Staff’s comments refer to the Amendment No. 1, and page references in the responses refer to Amendment No. 2. All capitalized terms used and not otherwise defined herein shall have the meanings set forth in Amendment No. 2.

The responses provided herein are based upon information provided to Goodwin Procter LLP by the Company. In addition to submitting this letter via EDGAR, we are sending via Federal Express four (4) copies of each of this letter and Amendment No. 2 (marked to show changes from the Amendment No. 1).

Amendment No. 1 to Registration Statement on Form S-1
Risk Factors
Our amended and restated bylaws will designate ..., page 85

1. We note the disclosure regarding your exclusive forum provision on page 85 of your registration statement, which states that “the Court of Chancery of the State of Delaware (or, if the Chancery Court does not have jurisdiction, the federal district court for the District of Delaware or other state courts of the State of Delaware) will be the sole and exclusive forum” for certain state law claims. We also note your disclosure that “[t]his exclusive forum provision will not apply to any [causes] of action arising under the Securities Act or the Exchange Act.” However, we note that Section 8 of your amended and restated bylaws identifies the Court of Chancery of the State of Delaware as the exclusive forum for certain litigation, including any “derivative action,” but is not limited to state law claims and does not provide for alternate jurisdiction in the federal district court for the District of Delaware if the Chancery Court does not have jurisdiction. Please clarify whether this provision applies to actions arising under the Exchange Act. In that regard, we note that Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder. We also note that Section 8 of your amended and restated bylaws provides that “the United States District Court for the District of Massachusetts shall be the sole and exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act of 1933, as amended.” Please revise your disclosure to address this provision, including any impact on shareholders, and state that there is uncertainty as to whether a court would enforce such provision. In that regard, we note that Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder. However, if Section 8 of your amended and restated bylaws does not apply to actions arising under the Securities Act or Exchange Act, please ensure that the exclusive forum provision in your amended and restated bylaws states this clearly.

RESPONSE: The Company respectfully advises the Staff that it has revised Section 8 on page 22 of its amended and restated bylaws and refiled the amended and restated bylaws as Exhibit 3.8 to Amendment No. 2 in response to the Staff’s comment.

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Should you have any further comments or questions with regard to the foregoing, please contact the undersigned at (617) 570-1879.

Sincerely,

/s/ Laurie A. Burlingame

Laurie A. Burlingame, Esq.

Enclosures:
cc: William Hinshaw, *Axcella Health Inc.*
Thomas Leggett, *Axcella Health Inc.*
Kingsley L. Taft, Esq., *Goodwin Procter LLP*
Peter N. Handrinos, Esq., *Latham & Watkins LLP*
Wesley C. Holmes, Esq., *Latham & Watkins LLP*
