

CONFIDENTIAL TREATMENT REQUESTED BY AXCELLA HEALTH INC.

CERTAIN PORTIONS OF THIS LETTER AS FILED VIA EDGAR HAVE BEEN OMITTED AND FILED SEPARATELY WITH THE COMMISSION. CONFIDENTIAL TREATMENT HAS BEEN REQUESTED WITH RESPECT TO THE OMITTED PORTIONS. OMITTED INFORMATION HAS BEEN REPLACED IN THIS LETTER AS FILED VIA EDGAR WITH A PLACEHOLDER IDENTIFIED BY THE MARK “[*].”**

April 24, 2019

VIA EDGAR

U.S. Securities and Exchange Commission
Office of Healthcare and Insurance
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549
Attention: David Plattner

**Re: Axcella Health Inc.
 Registration Statement on Form S-1
 File No. 333-230822
 CIK No. 0001633070**

Ladies and Gentlemen:

On behalf of Axcella Health Inc. (the “Company”), in response to comments from the staff (the “Staff”) of the Securities and Exchange Commission (the “Commission”) received by letter dated February 15, 2019 (the “Original Comment Letter”) relating to the Company’s Registration Statement on Form S-1, originally confidentially submitted to the Commission on January 28, 2019, resubmitted to the Commission on March 15, 2019 and subsequently filed by the Company with the Commission on April 12, 2019 (File No. 333-230822) (the “Registration Statement”), we submit this supplemental letter to further address comment 5 of the Original Comment Letter.

Because of the commercially sensitive nature of information contained herein, this submission is accompanied by the Company’s request for confidential treatment for selected portions of this

letter. The Company has concurrently filed a separate letter with the Office of Freedom of Information and Privacy Act Operations in connection with the confidential treatment request, pursuant to Rule 83 of the Commission’s Rules on Information and Requests, 17 C.F.R. § 200.83. For the Staff’s reference, we have enclosed a copy of the Company’s letter to the Office of Freedom of Information and Privacy Act Operations.

For the convenience of the Staff, we have recited the prior comment from the Staff in the Original Comment Letter in italicized type and have followed the comment with the Company’s response.

5. *Once you have an estimated offering price range, please explain to us how you determined the fair value of the common stock underlying your equity issuances and the reasons for any differences between the recent valuations of your common stock leading up to the initial public offering and the estimated offering price or range. This information will help facilitate our review of your accounting for equity issuances.*

The Company respectfully submits the below additional information to assist the Staff in its review of the Company’s position with respect to its determination of the fair value of its common stock underlying its outstanding equity awards and the reasons for the differences between the recent valuation of its common stock and the estimated offering price for its initial public offering (“IPO”).

Preliminary IPO Price Range

The Company advises the Staff that it estimates a preliminary price range of approximately \$[***] to \$[***] per share (the “Preliminary Price Range”) for its IPO, which reflects a 1.842 to one (1) reverse split of the Company’s common stock expected to be effected prior to the IPO (the “Reverse Stock Split”). The actual price range to be included in a subsequent amendment to the Registration Statement (which will comply with the Staff’s interpretation regarding the parameters of a *bona fide* price range) has not yet been determined and remains subject to adjustment based on factors outside of the Company’s control. However, the Company believes that the foregoing indicative price range will not be subject to significant change.

Determining the Fair Value of Common Stock Prior to the IPO

As there has been no public market for the Company’s common stock to date, the estimated fair value of its common stock has been determined by the Company’s board of directors (the “Board”) as of the date of each option grant, with input from management, considering the Company’s most recent third-party valuations of its common stock and the Board’s assessment of additional objective and subjective factors that it believed were relevant and which may have changed from the date of the most recent third-party valuation through the date of the grant. As

disclosed in the Registration Statement, the Company’s most recent third-party valuations of its common stock were prepared as of February 10, 2017, February 10, 2018, November 30, 2018 and January 31, 2019. These third-party valuations were performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants’ Accounting and Valuation Guide, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*, and were prepared using either an option pricing method (“OPM”) or a hybrid method, both of which used market approaches to estimate the Company’s enterprise value. The OPM treats common stock and preferred stock as call options on the total equity value of a company, with exercise prices based on the value thresholds at which the allocation among the various holders of a company’s securities changes. Under this method, the common stock has value only if the funds available for distribution to stockholders exceeded the value of the preferred stock liquidation preferences at the time of the liquidity event, such as a strategic sale or a merger. A discount for lack of marketability (“DLOM”) of the common stock is then applied to arrive at an indication of value for the common stock. The hybrid method is a probability-weighted expected return method (“PWERM”), where the equity value in one or more scenarios is calculated using an OPM. The PWERM is a scenario-based methodology that estimates the fair value of common stock based upon an analysis of future values for the company, assuming various outcomes. The common stock value is based on the probability-weighted present value of expected future investment returns considering each of the possible outcomes available as well as the rights of each class of stock. The future value of the common stock under each outcome is discounted back to the valuation date at an appropriate risk-adjusted discount rate and probability-weighted to arrive at an indication of value for the common stock.

The Company’s most recent third-party valuations, which do not reflect the anticipated Reverse Stock Split, were used by the Board to determine the fair value of the Company’s common stock as of the grant date of each option award. Key assumptions used by the Company in its most recent valuations, and the resulting indicated fair value of common stock, were as follows:

February 10, 2018 Valuation

The Company relied on the income approach in its determination of the fair value of its common stock of \$3.37 per share as of February 10, 2018, when the Board granted options for the purchase of an aggregate of 3,206,056 shares to employees, directors and non-employees on April 26, 2018, June 21, 2018, June 22, 2018, August 29, 2018 and October 2, 2018. The market approach was excluded in the valuation of the Company, as the business was pre-revenue and did not have any financial metrics for which to apply a market multiple to. The income approach utilized 10 years of projected financials down to free cash flow, which were discounted to present value using a [***]% discount rate, based on the Company’s weighted average cost of capital. Under the income approach, the Company’s equity was valued at \$[***] million. The equity value was then allocated to the various share classes using the OPM.

The OPM used an assumption of [***] years until a liquidation event, which was based on the Company’s judgment and expectation for liquidity event. A volatility of [***]% was based on the volatilities of the guideline public companies, identified by the Company, and adjusted for leverage. A risk-free rate of [***]% was utilized based on the interpolated Treasury bond rate to match the term to liquidity assumption. Finally, a DLOM of [***]% was utilized, based on a put-option analysis taking into consideration the timing until a liquidity event.

November 30, 2018 Valuation

The Company relied on the back-solve approach in its determination of the fair value of its common stock of \$4.64 per share as of November 30, 2018. The November 30, 2018 valuation was prepared taking into account the arms-length Series E preferred stock financing round as of November 30, 2018. Based on the price of \$11.17 per share for the Series E Preferred Stock, as well as the rights and preferences of the classes of the other equity shares, the equity value of the Company is implied.

Using the goal-seek function, the equity value is calculated using the pricing for the recent round of financing. Based on the back-solve approach, the implied equity value of the Company as of the November 30, 2018 was approximately \$[***] million. The equity value was then allocated using the OPM.

The OPM used an assumption of [***] years until a liquidation event, which was based on the Company’s judgment and expectation for liquidity event. A volatility of [***]% was based on the volatilities of the guideline public companies, identified by the Company, and adjusted for leverage. A risk-free rate of [***]% was utilized based on the interpolated Treasury bond rate to match the term to liquidity assumption. Finally, a DLOM of [***]% was utilized, based on a put-option analysis taking into consideration the timing until a liquidity event.

January 31, 2019 Valuation

The Company relied, in part, on the income approach as well as the equity value as of November 30, 2018 in its determination of the fair value of its common stock of \$7.51 per share as of January 31, 2019, when the Board granted options for the purchase of an aggregate of 1,000,200 shares to employees, directors and non-employees on March 11, 2019 and March 22, 2019. The January 31, 2019 valuation was prepared taking into account the sale of shares of the Company’s Series E preferred stock in November 2018. Since the time of the closing of the Series E financing in November 2018, the Company has not achieved any clinical milestones. However, given that some time had passed since the Series E financing, the income approach was also utilized to value the Company. The income approach utilized [***] years of projected financials down to free cash flow, which were discounted to present value using a [***]% discount rate,

based on the Company’s weighted average cost of capital. Under the income approach, the Company’s equity was valued at \$[***] million. The value as of November 30, 2018 (\$[***] million) and the value under the income approach (\$[***] million) were then equally weighted to arrive at the equity value of the Company under the staying private scenario (\$[***] million). Given the progress made towards completing an IPO, the hybrid method was utilized to value the common stock of the Company.

The PWERM section of the hybrid method considered four future-event scenarios: a short-term IPO scenario (\$[***] million future enterprise value), a long-term IPO scenario (\$[***] million future enterprise value), a sale scenario (\$[***] million future enterprise value) and a liquidation scenario (\$[***] million future enterprise value). Each valuation probability-weighted the future-event scenarios based on the Company’s assessment of its development pipeline and market conditions at that time. The future equity values under the various scenarios were allocated to the various share classes and then discounted back to present value using a [***]% discount rate, which was based on venture capital rates of return.

The OPM, or staying private scenario, utilized an equity value of \$[***] million discussed above. The OPM used an assumption of [***] years until a liquidation event, which was based on the Company’s judgment and expectation for a liquidity event if all liquidity events in the PWERM did not materialize. A volatility of [***]% was based on the volatilities of the guideline public companies, identified by the Company, and adjusted for leverage. A risk-free rate of [***]% was utilized based on the interpolated Treasury bond rate to match the term to liquidity assumption.

The common stock values under the PWERM scenarios and OPM were then discounted by their respective DLOMs, considering the various timing to liquidity for each scenario, and then weighted in order to arrive at the concluded fair value of the common stock.

Between January 31, 2019 and April 23, 2019, the Company continued to operate its business in the ordinary course. As a result, the Board determined that the fair value of the Company’s common stock remained \$7.51 per share between January 31, 2019 and April 23, 2019.

Comparison of Most Recent Valuation and the Preliminary Price Range

As is typical in initial public offerings, the Preliminary Price Range was not derived using a formal determination of fair value, but was determined based on discussions between the Company and the underwriters. Prior to April 23, 2019, the Company and the underwriters had not had any specific discussions regarding the Preliminary Price Range. Among the factors that were considered in setting the Preliminary Price Range were the following:

- the general conditions of the securities market and the recent market prices of, and the demand for, publicly traded common stock of comparable companies;
- the Company's financial condition and prospects;
- estimates of business potential and earnings prospects for the Company and the industry in which it operates;
- valuations metrics for and recent performance of initial public offerings of companies in the biotechnology sector; and
- progress and stage of development of the Company's development programs.

The Company believes that the difference between the fair value of its common stock as of January 31, 2019 of \$7.51 per share, which does not reflect the anticipated Reverse Stock Split, and the Preliminary Price Range of \$[***] to \$[***] per share is the result of the factors above and the following factors and positive developments with respect to the Company's business that occurred subsequent to January 31, 2019, the date of the Company's most recent determination of the fair value of its common stock.

- The Preliminary Price Range is based only upon a scenario in which the Company completes the IPO and is not probability weighted, in contrast to the Company's prior valuations of its common stock, which considered multiple potential outcomes, which would result in a lower valuation of the Company's common stock than its IPO. In the January 2019 valuation, the probability weighting of the IPO scenario was [***]%. If the Company had instead applied a weighting of [***]% to the IPO scenario, the fair value of the Company's common stock in the January 2019 valuation would have been \$11.79 per share (before giving effect to any DLOM or time value of money).
- The Preliminary Price Range necessarily assumes that the IPO has occurred and that a public market for the Company's common stock has been created, and, therefore, excludes any DLOM of the Company's common stock or impact of the time value of money, which were appropriately taken into account in the January 2019 valuation.
- The Preliminary Price Range assumes the conversion of all of the Company's outstanding preferred stock. The Company's preferred stock currently has substantial economic rights and preferences over the Company's common stock, including (i) the right to receive dividends prior to any dividends declared or paid on any shares of the Company's common stock and (ii) liquidation payments in preference to holders of the Company's common stock. Upon the closing of the IPO, all outstanding shares of the Company's preferred stock will convert into common stock, thus eliminating the superior rights and preferences of the preferred stock as compared to the common stock.

- The Preliminary Price Range represents a future price for shares of the Company's common stock that, if issued in the IPO, will be immediately freely tradable in a public market, whereas the estimated fair value of the Company's common stock as of January 31, 2019 represents a contemporaneous estimate of the fair value of shares that were then illiquid, might never become liquid and, even if an IPO were successfully completed, would remain illiquid at least until the expiration of the 180-day lockup period following the IPO.
- Since January 31, 2019, the Company has taken several steps towards the completion of an IPO, including publicly filing the Registration Statement with the Commission on April 12, 2019.
- Since January 31, 2019, the Company made further progress in the advancement of its lead development programs and the execution of its business strategies, including continuing to progress its product candidates, including a face-to-face pre-Investigational New Drug application meeting with the U.S. Food and Drug Administration for AXA1665 on March 6, 2019, following which the Company made the decision to pursue a drug development path for AXA1665, and continued screening and enrollment for AXA1665-002 and AXA1125-003.
- Since January 31, 2019, the Company held many "testing-the-waters" meetings, at which the Company received positive feedback from potential investors. Further positive feedback from potential investors was received through the underwriters on April 23, 2019.
- The proceeds of a successful IPO would substantially strengthen the Company's balance sheet by increasing its cash resources. In addition, the completion of the IPO would provide the Company with ready access to the public equity and debt markets.

The Company respectfully submits that the deemed per share fair values used as the basis for determining stock-based compensation expense in connection with its grants of equity awards are reasonable and appropriate for the reasons described herein and in the Registration Statement.

We hereby further request, pursuant to Rule 418(b) under the Securities Act of 1933, as amended, the return of the unredacted version of this letter. The Company believes that the return of the supplemental information contained in this letter will protect the interests of investors and is consistent with the provisions of the Freedom of Information Act by maintaining in confidence the potential valuation of the Company that may, if disseminated, negatively impact the trading in the common stock of the Company following the IPO. The Company

advises the Staff that it has not filed the supplemental information subject to this request in electronic format. Please return this letter to the Company, in care of the undersigned, a responsible representative of the Company, at 100 Northern Avenue, Boston, Massachusetts 02210.

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If you have any questions or comments with regard to this matter, please do not hesitate to contact the undersigned at (617) 570-1879.

Respectfully submitted,

GOODWIN PROCTER LLP

By /s/ Laurie A. Burlingame
Laurie A. Burlingame, Esq.

cc: William Hinshaw, *Axcella Health Inc.*
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