

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

**FORM S-8
REGISTRATION STATEMENT**

*Under
The Securities Act of 1933*

AXCELLA HEALTH INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

26-3321056
(I.R.S. Employer
Identification Number)

**840 Memorial Drive
Cambridge, Massachusetts
(857) 320-2200**
(Address of Principal Executive Offices)

**Axcella Health Inc. 2019 Stock Option and Incentive Plan
Axcella Health Inc. 2019 Employee Stock Purchase Plan**
(Full Title of the Plans)

**William Hinshaw
Chief Executive Officer
Axcella Health Inc.
800 Memorial Drive
Cambridge, Massachusetts
(857) 320-2200**
(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:
**Kingsley L. Taft
Laurie A. Burlingame
Goodwin Procter LLP
100 Northern Avenue
Boston, Massachusetts 02210
(617) 570-1000**

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input type="checkbox"/>		Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>		Smaller reporting company	<input checked="" type="checkbox"/>
			Emerging growth company	<input checked="" type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered ⁽¹⁾	Proposed Maximum Offering Price per Share ⁽²⁾	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, \$0.001 par value per share	927,553 shares ⁽³⁾	\$ 5.61	\$ 5,203,572.33	\$ 675.42
Common Stock, \$0.001 par value per share	231,888 shares ⁽⁴⁾	\$ 5.61	\$ 1,300,891.68	\$ 168.86
Total	1,159,441 shares		\$ 6,504,464.01	\$ 844.28

(1) Pursuant to Rule 416 under the Securities Act of 1933, as amended, or the Securities Act, this Registration Statement shall also cover any additional shares of common stock which become issuable under the above-named plans by reason of any stock dividend, stock split, recapitalization or any

other similar transaction effected without the receipt of consideration which results in an increase in the number of our outstanding shares of common stock. Pursuant to Rule 416(c) under the Securities Act, this Registration Statement shall also cover an indeterminate amount of interests to be offered or sold pursuant to the employee benefit plans described herein.

- (2) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(h) of the Securities Act, and based on \$5.61, the average of the high and low sale prices of the of the Registrant's common stock as reported on the Nasdaq Global Select Market on June 4, 2020.
 - (3) Represents an automatic increase to the number of shares available for issuance under the Registrant's 2019 Stock Option and Incentive Plan (the "Plan") effective as of January 1, 2020. Shares available for issuance under the Plan were previously registered on Form S-8 filed with the Securities and Exchange Commission on May 17, 2019 (Registration No. 333-231570).
 - (4) Represents an automatic increase to the number of shares available for issuance under the 2019 Employee Stock Purchase Plan (the "ESPP") effective as of January 1, 2020. Shares available for issuance under the ESPP were previously registered on Form S-8 filed with the Securities and Exchange Commission on May 17, 2019 (Registration No. 333-231570).
-
-

EXPLANATORY NOTE

This Registration Statement on Form S-8 registers additional shares of the Registrant's common stock, par value \$0.001 (the "Common Stock") under the Registrant's 2019 Stock Option and Incentive Plan (the "Plan") and the Registrant's 2019 Employee Stock Purchase Plan (the "ESPP"). The number of shares of Common Stock reserved and available for issuance under the Plan is subject to an automatic annual increase on each January 1, beginning in 2020, by an amount equal to four percent of the number of shares of Common Stock issued and outstanding on the immediately preceding December 31 or such lesser number of shares of Common Stock as determined by the Administrator (as defined in the Plan). Accordingly, on January 1, 2020, the number of shares of Common Stock reserved and available for issuance under the Plan increased by 927,553 shares. The number of shares of Common Stock reserved and available for issuance under the ESPP is subject to an automatic annual increase on each January 1, beginning in 2020, by the lesser of (i) 237,181 shares of Common Stock, (ii) 1% of the outstanding shares of Common Stock on the immediately preceding December 31 or (iii) such lesser number of shares as determined by the Administrator of our ESPP (as defined in the ESPP). Accordingly, on January 1, 2020, the number of shares of Common Stock reserved and available for issuance under the ESPP increased by 231,888 shares. This Registration Statement on Form S-8 registers these additional 1,159,441 shares of Common Stock. The additional shares are of the same class as other securities relating to the plans for which the Registrant's registration statement filed on [Form S-8 \(Registration No. 333-231570\) on May 17, 2019](#) is effective. The information contained in the Registrant's registration statement on Form S-8 (Registration No. 333-231570) is hereby incorporated by reference pursuant to General Instruction E to Form S-8.

Part II INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 8. Exhibits.

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
4.1	Restated Certificate of Incorporation of the Registrant (Incorporated by reference to Exhibit 3.3 to the Registrant's Current Report on Form 8-K filed on May 17, 2019 (File No. 001-38901)).
4.2	Amended and Restated Bylaws of Registrant, as amended on May 4, 2020 (Incorporated by reference to Exhibit 3.2 to the Registrant's Quarterly Report on Form 10-Q filed on May 11, 2020 (File No. 001-38901)).
4.3	Specimen Stock Certificate (Incorporated by reference to Exhibit 4.1 to the Registrant's Amendment No. 1 to Registration Statement on Form S-1 filed on April 30, 2019 (File No. 333-230822)).
4.4	Fifth Amended and Restated Investors' Rights Agreement among the Registrant and certain of its stockholders, dated November 30, 2018 (Incorporated by reference to Exhibit 4.2 to the Registrant's Registration Statement on Form S-1 filed on April 12, 2019 (File No. 333-230822)).
5.1*	Opinion of Goodwin Procter LLP.
23.1*	Consent of Deloitte & Touche LLP, Independent Registered Public Accounting Firm.
23.2*	Consent of Goodwin Procter LLP (included in Exhibit 5.1).
24.1*	Power of Attorney (included on signature page).
99.1	2019 Stock Option and Incentive Plan, and forms of award agreements thereunder (Incorporated by reference to Exhibit 10.2 to the Registrant's Amendment No. 2 to Registration Statement on Form S-1 filed on May 6, 2019 (File No. 333-230822)).
99.2	2019 Employee Stock Purchase Plan (Incorporated by reference to Exhibit 10.3 to the Registrant's Amendment No. 1 to Registration Statement on Form S-1 filed on April 30, 2019 (File No. 333-230822)).

* Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Boston, Commonwealth of Massachusetts, on the fifth day of June, 2020.

AXCELLA HEALTH INC.

By: /s/ William Hinshaw

Title: Chief Executive Officer, President and Director

POWER OF ATTORNEY AND SIGNATURES

KNOW ALL BY THESE PRESENT, that each individual whose signature appears below hereby constitutes and appoints each of William Hinshaw and Laurent Chardonnet as such person's true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for such person in such person's name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement on Form S-8, and to file the same, with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission granting unto each said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as such person might or could do in person, hereby ratifying and confirming all that any said attorney-in-fact and agent, or any substitute or substitutes of any of them, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed by the following person in the capacities and on the date indicated.

<u>Name</u>	<u>Title</u>	<u>Date</u>
<u>/s/ William Hinshaw</u> William Hinshaw	Chief Executive Officer, President and Director (Principal Executive Officer)	June 5, 2020
<u>/s/ Laurent Chardonnet</u> Laurent Chardonnet	Senior Vice President and Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	June 5, 2020
<u>/s/ David R. Epstein</u> David R. Epstein	Chairman, Director	June 5, 2020
<u>/s/ Grégory Behar</u> Grégory Behar	Director	June 5, 2020
<u>/s/ William D. Baird III</u> William D. Baird III	Director	June 5, 2020
<u>/s/ Stephen Hoge</u> Stephen Hoge, M.D.	Director	June 5, 2020
<u>/s/ Gary Pisano</u> Gary Pisano, Ph.D.	Director	June 5, 2020
<u>/s/ Cristina M. Rondinone, Ph.D.</u> Cristina M. Rondinone, Ph.D.	Director	June 5, 2020
<u>/s/ Catherine A. Sohn, Pharm.D.</u> Catherine A. Sohn, Pharm.D.	Director	June 5, 2020



Goodwin Procter LLP
100 Northern Avenue
Boston, MA 02210
goodwinlaw.com
+1 617 570 1000

June 5, 2020

Axcella Health Inc.
840 Memorial Drive
Cambridge, MA 02139

Re: Securities Being Registered under Registration Statement on Form S-8

Ladies and Gentlemen:

We have acted as counsel to you in connection with your filing of a Registration Statement on Form S-8 (the "Registration Statement") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), on or about the date hereof relating to an aggregate of 1,159,441 shares (the "Shares") of common stock, \$0.001 par value per share (the "Common Stock"), of Axcella Health Inc., a Delaware corporation (the "Company"), that may be issued pursuant to the Company's 2019 Stock Option and Incentive Plan and 2019 Employee Stock Purchase Plan (collectively, the "Plans").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinions set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinion set forth below, on certificates of officers of the Company.

The opinion set forth below is limited to the Delaware General Corporation Law.

For purposes of the opinion set forth below, we have assumed that no event occurs that causes the number of authorized shares of the Common Stock available for issuance by the Company to be less than the number of then unissued Shares.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized and, upon issuance and delivery against payment therefor in accordance with the terms of the Plans, will be validly issued, fully paid and nonassessable.

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ GOODWIN PROCTER LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement on Form S-8 of our report dated March 23, 2020 relating to the financial statements of Axcella Health Inc. and subsidiaries, appearing in the Annual Report on Form 10-K of Axcella Health Inc. for the year ended December 31, 2019.

/s/ Deloitte & Touche LLP

Boston, Massachusetts

June 5, 2020
