

As filed with the Securities and Exchange Commission on April 16, 2021

Registration No. 333-254174

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

Amendment No. 1
to
Form S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

CATABASIS PHARMACEUTICALS, INC.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

26-3687168
(I.R.S. Employer
Identification No.)

100 High Street, 28th Floor
Boston, MA 02110
(617) 394-1971

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Jill C. Milne
President and Chief Executive Officer
Catabasis Pharmaceuticals, Inc.
100 High Street, 28th Floor
Boston, MA 02110
(617) 394-1971

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copy to:

Rosemary G. Reilly, Esq.
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, Massachusetts 02109
Telephone: (617) 526-6000
Fax: (617) 526-5000

Approximate date of commencement of proposed sale to the public: From time to time, after the effective date of this Registration Statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

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
Non-accelerated filer

Accelerated filer
Smaller reporting company
Emerging growth company

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 Each Class of Securities to be Registered	Amount to be Registered ⁽¹⁾	Offering Price Per Share ⁽²⁾	Proposed Maximum Aggregate Offering Price ⁽²⁾	Amount of Registration Fee
Common Stock, \$0.001 par value	92,399,805	\$2.69	\$248,555,475.45	\$27,117.41

(1) Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement also covers such additional securities as may become issuable to prevent dilution resulting from stock splits, stock dividends and similar events.

(2) Pursuant to Rule 457(c), calculated on the basis of the average of the high and low prices of the Registrant's Common Stock reported on The Nasdaq Global Market on March 5, 2021. The registrant paid a registration fee of \$27,117.41 in respect of the Common Stock with a proposed maximum aggregate offering price of \$248,555,475.45 in connection with the initial filing of this Registration Statement.

The registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission acting pursuant to said Section 8(a), may determine.

Subject to Completion, dated April 16, 2021

PROSPECTUS**CATABASIS PHARMACEUTICALS, INC.****92,399,805 Shares of Common Stock
Offered by the Selling Stockholders**

This prospectus relates to the proposed resale or other disposition of an aggregate of 92,399,805 shares (the “Shares”) of our common stock, par value \$0.001 per share (the “Common Stock”), by the selling stockholders identified in this prospectus (collectively with any of the holders’ transferees, pledgees, donees or other successors-in-interest, the “Selling Stockholders”). The Shares covered by this prospectus consist of (i) 3,332,669 shares of Common Stock issued in connection with our acquisition of Quellis Biosciences, Inc.; (ii) 50,504,000 shares of Common Stock issuable upon the conversion of our Series X Convertible Preferred Stock, par value \$0.001 per share (the “Series X Preferred Stock”), issued in connection with the acquisition; (iii) 2,805,000 shares of Common Stock issuable upon the conversion of the Series X Preferred Stock underlying warrants assumed by us in connection with the acquisition; (iv) 185,136 shares of Common Stock underlying warrants assumed by us in connection with the acquisition; and (v) 35,573,000 shares of Common Stock issuable upon the conversion of Series X Preferred Stock issued in a private placement transaction.

We will not receive any proceeds from the sale by the Selling Stockholders of the Shares. We are paying the cost of registering the Shares covered by this prospectus as well as various related expenses. The Selling Stockholders are responsible for all selling commissions, transfer taxes and other costs related to the offer and sale of their shares.

Sales of the Shares by the Selling Stockholders may occur at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices. The Selling Stockholders may sell shares to or through underwriters, broker-dealers or agents, who may receive compensation in the form of discounts, concessions or commissions from the Selling Stockholders, the purchasers of the shares, or both. If required, the number of shares to be sold, the public offering price of those shares, the names of any underwriters, broker-dealers or agents and any applicable commission or discount will be included in a supplement to this prospectus, called a prospectus supplement. See the disclosure under the heading “Plan of Distribution” elsewhere in this prospectus for more information about how the Selling Stockholders may sell or otherwise dispose of their Shares hereunder.

The Common Stock is traded on The Nasdaq Global Market under the symbol “CATB”. On April 15, 2021, the closing sale price of the Common Stock was \$2.37 per share. You are urged to obtain current market quotations for the Common Stock.

Investing in our common stock involves a high degree of risk. Please read the information contained in and incorporated by reference under the heading “Risk Factors” beginning on page 6 of this prospectus, and under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

This prospectus is dated _____, 2021

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

TABLE OF CONTENTS

	Page No.
<u>ABOUT THIS PROSPECTUS</u>	<u>1</u>
<u>SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS</u>	<u>2</u>
<u>PROSPECTUS SUMMARY</u>	<u>3</u>
<u>THE OFFERING</u>	<u>5</u>
<u>RISK FACTORS</u>	<u>6</u>
<u>USE OF PROCEEDS</u>	<u>7</u>
<u>SELLING STOCKHOLDERS</u>	<u>8</u>
<u>PLAN OF DISTRIBUTION</u>	<u>14</u>
<u>LEGAL MATTERS</u>	<u>17</u>
<u>EXPERTS</u>	<u>17</u>
<u>WHERE YOU CAN FIND MORE INFORMATION</u>	<u>17</u>
<u>INCORPORATION OF CERTAIN INFORMATION BY REFERENCE</u>	<u>17</u>

ABOUT THIS PROSPECTUS

You should read this prospectus, any applicable prospectus supplement and the information incorporated by reference in this prospectus before making an investment in the securities of the Company. See “Where You Can Find More Information” and “Incorporation of Certain Information by Reference” for additional information. You should rely only on the information contained in or incorporated by reference in this prospectus or a prospectus supplement. We have not authorized anyone to provide you with different information. This document may be used only in jurisdictions where offers and sales of these securities are permitted. You should assume that information contained in this prospectus, or in any document incorporated by reference, is accurate only as of any date on the front cover of the applicable document. Our business, financial condition, results of operations and prospects may have changed since that date.

Unless otherwise indicated, references to the terms “Catabasis,” “our,” “us,” “we”, or the “Company” refer to Catabasis Pharmaceuticals, Inc. and its wholly-owned subsidiaries, on a consolidated basis.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS AND INDUSTRY DATA

This prospectus includes and incorporates forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). All statements, other than statements of historical facts, included or incorporated in this prospectus regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans and objectives of management and expected market growth are forward-looking statements. The words “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “should,” “target,” “would” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

These forward-looking statements include, among other things, statements about:

- our expectations regarding the timing of our planned filing of an initial investigational new drug application, or IND, for QLS-215, and the timing, nature, goals and results of our planned Phase 1a and Phase 1b/2 clinical trials of QLS-215, including that favorable results from such trials could establish proof of concept for the differentiation of QLS-215 as a potential treatment for hereditary angioedema, or HAE;
- our expectations about the unmet medical need for HAE, the potential differentiating attributes of QLS-215 as a potential treatment for HAE, along with the potential market impact of such differentiation, the potential of QLS-215 to be a best-in-class treatment for HAE, and the nature and anticipated growth of the global HAE market and HAE therapies;
- our expectations that the acquisition of Quellis may be an opportunity to create significant stockholder value;
- our expectations that we have identified a cell line for QLS-215 and the ability of such cell line to generate sufficient material for our planned QLS-215 toxicology studies and the master cell bank, and our plans and timetable for initiating current Good Manufacturing Practices, or cGMP, manufacturing of QLS-215;
- our expectations regarding our ability to expand our pipeline;
- the potential benefits of any future acquisition, in-license, collaboration or pre-clinical development activities;
- our manufacturing plans, capabilities and strategy;
- our intellectual property position and strategy;
- our estimates regarding expenses, future revenue, capital requirements and needs for additional financing;
- our use of the proceeds from the private placement completed in February 2021;
- developments relating to our competitors and our industry; and
- the impact of government laws and regulations.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included in this prospectus, particularly in the “Risk Factors” section, that could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, collaborations, joint ventures or investments that we may make or enter into.

You should read this prospectus with the understanding that our actual future results may be materially different from what we expect. We do not assume any obligation to update any forward-looking statement, whether as a result of new information, future events or otherwise, except as required by law.

PROSPECTUS SUMMARY

This summary highlights important features of this offering and the information included or incorporated by reference in this prospectus. This summary does not contain all of the information that you should consider before investing in our common stock. You should read the entire prospectus carefully, especially the risks of investing in our common stock discussed under “Risk Factors.”

Overview

We are a biopharmaceutical company focused on the discovery, development and commercialization of novel therapeutics. Our mission is to bring hope with life-changing therapies to patients and families that are affected by rare diseases. Our lead product candidate is QLS-215, a potential best-in-class monoclonal antibody inhibitor of plasma kallikrein in preclinical development for the treatment of hereditary angioedema, or HAE, a rare, debilitating and potentially life-threatening disease.

In January 2021, as further described below, we acquired Quellis Biosciences, Inc., or Quellis, including the QLS-215 program, and announced a private placement that, upon closing in February 2021, resulted in gross proceeds to us of approximately \$110.0 million before deducting placement agent and other offering expenses. In November 2020, after we stopped the development of our edasalonexent program as a potential treatment for Duchenne Muscular Dystrophy, or DMD, we decided to explore and evaluate strategic options and engaged Ladenburg Thalmann & Co., Inc. as our strategic financial advisor. The acquisition of Quellis was the result of our evaluation of strategic options and we believe that the acquisition represents an opportunity to create substantial value for our stockholders.

HAE is a rare, debilitating and potentially life-threatening disease. The treatment options for patients with HAE have improved, however there is remaining unmet medical need and the global market for HAE therapy is strong and growing. The vision for our lead program, QLS-215, is to develop a best-in-class monoclonal antibody inhibitor of plasma kallikrein for HAE prophylaxis that is able to treat HAE by achieving sustained blood levels of QLS-215 with infrequent dosing. Plasma kallikrein is a critical component of HAE that causes pathologic vascular permeability, vasodilation and ultimately excessive tissue swelling. QLS-215 is a humanized monoclonal antibody targeting plasma kallikrein that has shown in preclinical studies that it may potentially enable patients to dose less frequently and potentially be more effective than existing HAE treatments. QLS-215 is currently in preclinical development and we expect to submit an Investigational New Drug application, or IND, for QLS-215 in the first half of 2022 and plan to initiate a Phase 1a clinical trial with initial results anticipated by the end of 2022. Subsequently, assuming positive data from the Phase 1a clinical trial, we plan to initiate a Phase 1b/2 trial in patients with HAE in 2023 with initial results anticipated by the end of 2023. We believe that these clinical trials have the opportunity to establish proof of concept for the differentiated profile of QLS-215.

Previously, our lead program was edasalonexent, which was in Phase 3 clinical development for the treatment of DMD. In October 2020, we announced that the Phase 3 PolarisDMD trial of edasalonexent did not meet its primary endpoint, which was a change from baseline in the North Star Ambulatory Assessment over one year of treatment with edasalonexent compared to placebo. In addition, we announced that the secondary endpoint timed function tests (time to stand, 10-meter walk/run and 4-stair climb) did not show statistically significant improvements. Based on these results, we stopped activities related to the development of edasalonexent, including the GalaxyDMD open-label extension trial. The Phase 3 Polaris DMD trial was a one-year placebo-controlled trial designed to evaluate the safety and efficacy of edasalonexent in boys ages 4-7 (up to 8th birthday) with DMD. The trial enrolled 131 boys across eight countries, with any mutation type, who were not on steroids. Edasalonexent was well-tolerated, consistent with the safety profile seen to date. The majority of adverse events were mild in nature and the most common treatment-related adverse events were diarrhea, vomiting, abdominal pain and rash. There were no treatment-related serious adverse events and no dose reductions. Data from the Phase 3 PolarisDMD trial will be further analyzed and we expect to publish these data.

January 2021 Quellis Acquisition and February 2021 Financing

In January 2021, we acquired Quellis pursuant to an Agreement and Plan of Merger, or the Merger Agreement, by and among us, Cabo Merger Sub I, Inc., a Delaware corporation and our wholly owned

subsidiary, or the First Merger Sub, Cabo Merger Sub II, LLC, a Delaware limited liability company and our wholly owned subsidiary, or the Second Merger Sub, and Quellis. Pursuant to the Merger Agreement, the First Merger Sub merged with and into Quellis, pursuant to which Quellis was the surviving entity and became a wholly owned subsidiary of Catabasis, or the First Merger. Immediately following the First Merger, Quellis merged with and into the Second Merger Sub, pursuant to which the Second Merger Sub was the surviving entity, or the Second Merger and, together with the First Merger, the Merger. Under the terms of the Merger Agreement, at the closing of the Merger, we issued to the Quellis stockholders 3,332,669 shares of our common stock, and 50,504 shares of newly designated Series X Preferred Stock (as described below). In addition, we assumed outstanding Quellis stock options, which became options for our common stock, and assumed a warrant exercisable for Quellis common stock, which became a warrant to purchase 2,805 shares of Series X Preferred Stock at an exercise price of \$341.70 per share, and a warrant to purchase 185,136 shares of our common stock at an exercise price of \$0.35 per share.

In January 2021, we also entered into a Stock Purchase Agreement, or the Purchase Agreement, with certain institutional and accredited investors, or the Investors, pursuant to which, we sold an aggregate of 35,573 shares of Series X Preferred Stock for an aggregate purchase price of \$110.0 million, or the February 2021 Financing. Subject to stockholder approval, each share of Series X Preferred Stock issued in the Merger and pursuant to the Purchase Agreement is convertible into 1,000 shares of common stock. Pursuant to the Merger Agreement, we have agreed to hold a stockholders' meeting to submit the following matters to our stockholders for their consideration: (i) the approval of the conversion of the Series X Preferred Stock into shares of common stock in accordance with Nasdaq Listing Rule 5635(a), or the Conversion Proposal and (ii) if necessary or appropriate, the approval of an amendment to our certificate of incorporation to authorize sufficient shares of common stock after the conversion of the Series X Preferred Stock issued pursuant to the Merger Agreement and the Purchase Agreement and/or to effectuate a reverse stock split, or the Charter Amendment Proposal, and together with the Conversion Proposal, the Meeting Proposals. Assuming stockholder approval of the Conversion Proposal, on the fourth business day after such approval, each share of Series X Preferred Stock then outstanding would automatically convert into 1,000 shares of common stock, subject to certain beneficial ownership limitations, including that a holder of Series X Preferred Stock is prohibited from converting shares of Series X Preferred Stock into shares of common stock if, as a result of such conversion, such holder, together with its affiliates, would beneficially own more than a specified percentage (to be initially set at 9.99% and thereafter adjustable by the holder to a number between 4.99% and 19.99%) of the total number of shares of common stock issued and outstanding immediately after giving effect to such conversion. Shares of Series X Preferred Stock not converted automatically are thereafter subject to conversion at the option of the holder.

Corporate Information

We were incorporated under the laws of the State of Delaware on June 26, 2008 under the name Catabasis Pharmaceuticals, Inc. Our executive offices are located at 100 High Street, 28th Floor, Boston, Massachusetts, 02110, and our telephone number is (617) 349-1971. Our website address is www.catabasis.com. The information contained on, or that can be accessed through, our website is not a part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

THE OFFERING

Common Stock offered by selling stockholder	92,399,805 shares.
Use of proceeds	We will not receive any proceeds from the sale of shares in this offering.
Nasdaq Global Market symbol	CATB.

RISK FACTORS

Investing in our common stock involves a high degree of risk. The trading price of our common stock could decline and you might lose all or part of your investment. You should consider carefully the risks and uncertainties described under the sections captioned “Risk Factors” and “Summary of the Material Risks Associated with Our Business” contained in our most recent Annual Report on Form 10-K and other filings we make with the SEC from time to time, which are incorporated by reference herein in their entirety, together with other information in this prospectus, the information and documents incorporated by reference in this prospectus, and in any prospectus supplement. The risks and uncertainties described in the Risk Factors and Summary of the Material Risks Associated with Our Business sections of our most recent Annual Report on Form 10-K are not the only ones facing our company. Additional risks and uncertainties may also impair our business operations. If any of such risks actually occur, our business, financial condition, results of operations or cash flows would likely suffer materially. In that case, the trading price of our common stock could fall, and you may lose all or part of the money you paid to buy our common stock.

USE OF PROCEEDS

We will not receive any proceeds from the sale of shares by the Selling Stockholders. The Selling Stockholders will pay any underwriting discounts and commissions and expenses incurred by the Selling Stockholders for brokerage, accounting, tax or legal services or any other expenses incurred by the Selling Stockholders in disposing of the shares. We will bear all other costs, fees and expenses incurred in effecting the registration of the shares covered by this prospectus, including, without limitation, all registration and filing fees, Nasdaq Global Market listing fees and fees and expenses of our counsel and our accountants.

SELLING STOCKHOLDERS

This prospectus covers the resale or other disposition from time to time by the Selling Stockholders identified in the table below of up to an aggregate of 92,399,805 of our Shares.

On January 28, 2021, we completed our acquisition of Quellis in accordance with the Merger Agreement, pursuant to which we issued (i) 3,332,669 shares of Common Stock and (ii) 50,504 shares of Series X Preferred Stock that are convertible into an aggregate of 50,504,000 shares of Common Stock in accordance with the terms of the Certificate of Designation and we reserved for issuance (iii) 2,805,000 shares of Common Stock issuable upon the conversion of Series X Preferred Stock underlying warrants assumed by us and (iv) 185,136 shares of Common Stock underlying warrants assumed by us. Also on January 28, 2021, we entered into the Purchase Agreement, pursuant to which we sold an aggregate of 35,573 shares of Series X Preferred Stock for an aggregate purchase price of approximately \$110.0 million. Subject to stockholder approval, each share of Series X Preferred Stock is convertible into 1,000 shares of Common Stock. The preferences, rights and limitations initially applicable to the Series X Preferred Stock are set forth in the Certificate of Designation of Preferences, Rights and Limitations of the Series X Preferred Stock filed with the Secretary of State of the State of Delaware on January 28, 2021 (the "Certificate of Designation"). We are registering the above-referenced Shares to permit the Selling Stockholders and their transferees, pledgees, donees or other successors-in-interest that receive their shares after the date of this prospectus to resell or otherwise dispose of the shares in the manner contemplated under "Plan of Distribution" herein.

The following table sets forth the name of the Selling Stockholders, the number of shares of our Common Stock owned by the Selling Stockholders, the number of shares of our Common Stock that may be offered under this prospectus and the number of shares of our Common Stock that will be owned after this offering by the Selling Stockholders assuming all of the Shares registered for resale hereby are sold. The number of shares set forth below assumes the conversion of one share of Series X Preferred Stock into 1,000 shares of Common Stock. The Selling Stockholders may sell some, all or none of their Shares. We do not know how long the Selling Stockholders will hold the Shares before selling them, and we currently have no agreements, arrangements or understandings with the Selling Stockholders regarding the sale or other disposition of any of the Shares. The Shares covered hereby may be offered from time to time by the Selling Stockholders, provided that Shares issuable upon conversion of Series X Preferred Stock may only be offered after the relevant shares of Series X Preferred Stock are converted into Common Stock pursuant to the terms of the Certificate of Designation. Except as otherwise disclosed herein, the Selling Stockholders do not have, and within the past three years have not had, any position, office or other material relationship with us.

Beneficial ownership reflected in the table below is as of April 5, 2021 and is determined in accordance with the rules and regulations of the SEC and includes voting or investment power with respect to our common stock. Shares of our Common Stock subject to options or warrants that are currently exercisable or exercisable within 60 days of April 5, 2021 are considered outstanding and beneficially owned by the person holding the options or warrants for the purpose of calculating the percentage ownership of that person but not for the purpose of calculating the percentage ownership of any other person. The information set forth below is based upon information obtained from the Selling Stockholders and upon information in our possession regarding the issuance of the Shares in connection with the private placement and the Merger. The percentage of Common Stock owned after the offering is based on 23,417,006 shares of common stock outstanding as of April 5, 2021, and, for each Selling Stockholder, assumes the conversion of only the Series X Preferred Stock owned by such Selling Stockholder but not the Series X Preferred Stock owned by any other Selling Stockholder.

Selling Stockholder ⁽¹⁾	Shares Beneficially Owned Before Offering ⁽²⁾	Shares Offered	Shares Beneficially Owned After Offering ⁽³⁾	
			Number	Percent
Lazarus Life Sciences I, LLC ⁽⁴⁾	8,777,373	8,777,373	—	*
Entities affiliated with Perceptive ⁽⁵⁾	37,704,551	37,704,551	—	*
Entities affiliated with Xontogeny ⁽⁶⁾	8,777,373	8,777,373	—	*
Entities affiliated with Fairmount ⁽⁷⁾	4,092,166	4,092,166	—	*
Xencor, Inc. ⁽⁸⁾	4,187,206	4,187,206	—	*
RA Capital Healthcare Fund, L.P. ⁽⁹⁾	5,174,000	5,174,000	—	*
Entities affiliated with Cormorant ⁽¹⁰⁾	4,526,000	4,526,000	—	*
Logos Global Master Fund LP ⁽¹¹⁾	3,234,000	3,234,000	—	*
Entities affiliated with Venrock ⁽¹²⁾	3,234,000	3,234,000	—	*
Entities affiliated with Boxer Capital ⁽¹³⁾	1,940,000	1,940,000		*
Acorn Bioventures, L.P. ⁽¹⁴⁾	1,617,000	1,617,000	—	*
Commodore Capital Master LP ⁽¹⁵⁾	1,617,000	1,617,000	—	*
Citadel Multi-Strategy Equities Master Fund Ltd. ⁽¹⁶⁾	1,294,000	1,294,000	—	*
Entities affiliated with Acuta ⁽¹⁷⁾	1,896,000	1,294,000	602,000	2.4%
Sphera Biotech Master Fund, LP ⁽¹⁸⁾	1,294,000	1,294,000	—	*
Wedbush Healthcare Partners 2021 Fund, LLC ⁽¹⁹⁾	404,000	404,000	—	*
Serrado Opportunity Fund LLC ⁽²⁰⁾	243,000	243,000	—	*
Viridian, LLC ⁽²¹⁾	2,990,136	2,990,136	—	*

* Indicates less than 1%

- (1) If required, information about other selling stockholders, except for any future transferees, pledgees, donees or other successors-in-interest of the Selling Stockholders named in the table above, will be set forth in a prospectus supplement or amendment to the registration statement of which this prospectus is a part. Additionally, post-effective amendments to the registration statement will be filed to disclose any material changes to the plan of distribution from the description contained in the final prospectus.
- (2) Includes shares of Common Stock issuable upon conversion of Series X Preferred Stock.
- (3) Assumes all shares offered by the Selling Stockholders hereby are sold and that the Selling Stockholders buy or sell no additional shares of Common Stock prior to the completion of this offering. The beneficial ownership numbers and percentages shown assume the conversion of Series X Preferred Stock into Common Stock without regard for any applicable limitations on beneficial ownership.
- (4) Based on information provided to the Company by the Selling Stockholder. Consists of 543,373 shares of Common Stock issued in the Merger and (ii) 8,234,000 shares of Common Stock underlying 8,234 shares of Series X Preferred Stock issued in the Merger. The address of the Selling Stockholder is 2001 Market Street Suite 2500 Philadelphia, PA 19103.
- (5) Based on information provided to the Company by the Selling Stockholders. Consists of (i) 1,933,551 shares of Common Stock issued to Perceptive Xontogeny Venture Fund, LP in the Merger, (ii) 29,303,000 shares of Common Stock underlying 29,303 shares of Series X Preferred Stock issued to Perceptive Xontogeny Venture Fund, LP in the Merger, (iii) 1,617,000 shares of Common Stock underlying 1,617 shares of Series X Preferred Stock issued to Perceptive Xontogeny Venture Fund, LP in the private placement and (iv) 4,851,000 shares of Common Stock underlying 4,851 shares of Series X Preferred Stock issued to Perceptive Life Sciences Master Fund, LTD. in the private placement. Joseph E. Edelman is the natural person who exercises voting and dispositive power over the shares. The address for Xontogeny, LLC is 240 Newbury Street, Boston, MA 02116. The address for Perceptive Xontogeny Venture Fund, LP and Perceptive Life Sciences Master Fund, LTD. is 51 Astor Pl, Floor 10, New York, NY 10003.

- (6) Based on information provided to the Company by the Selling Stockholder. Consists of (i) 543,373 shares of Common Stock issued to Xontogeny, LLC in the Merger and (ii) 8,234,000 shares of Common Stock underlying 8,234 shares of Series X Preferred Stock issued to Xontogeny, LLC in the Merger. Christopher Garabedian, Joseph Edelman and Adam Stone have shared voting and dispositive power with respect to the shares held by Xontogeny LLC. The principal address of Xontogeny LLC is 240 Newbury Street, Suite 201, Boston, MA 02116.
- (7) Based on information provided to the Company by the Selling Stockholder. Consists of (i) 53,166 shares of Common Stock issued to Fairmount SPV II, LLC in the Merger, (ii) 805,000 shares of Common Stock underlying 805 shares of Series X Preferred Stock issued to Fairmount SPV II, LLC in Merger, (iii) 271,000 shares of Common Stock underlying 271 shares of Series X Preferred Stock issued to Fairmount Healthcare Fund LP in the private placement and (iv) 2,963,000 shares of Common Stock underlying 2,963 shares of Series X Preferred Stock issued to Fairmount Healthcare Fund II LP in the private placement. Fairmount Funds Management LLC is the Class A Member of Fairmount SPV II, LLC, Fairmount Healthcare Fund GP LLC is the general partner of Fairmount Healthcare Fund LP and Fairmount Healthcare Fund II GP LLC is the general partner of Fairmount Healthcare Fund II LP. Fairmount Funds Management LLC is the investment manager of Fairmount SPV II, LLC, LLC, Fairmount Healthcare Fund LP and Fairmount Healthcare Fund II LP. Fairmount Funds Management LLC, as the investment manager, along with Fairmount Healthcare Fund GP LLC and Fairmount Healthcare Fund II GP LLC, as the general partners, exercise voting and investment power over Fairmount SPV II, LLC, Fairmount Healthcare Fund LP and Fairmount Healthcare Fund II LP, respectively. Fairmount Funds Management LLC disclaims beneficial ownership of securities held by Fairmount SPV II, LLC except to the extent of their pecuniary interest therein Fairmount Healthcare Fund GP LLC and Fairmount Funds Management LLC disclaim beneficial ownership of securities held by Fairmount Healthcare Fund LP, except to the extent of their pecuniary interest therein. Fairmount Healthcare Fund II GP LLC and Fairmount Funds Management LLC disclaim beneficial ownership of securities held by Fairmount Healthcare Fund II LP, except to the extent of their pecuniary interest therein. The address of the Selling Stockholders is c/o Fairmount Funds Management LLC 2001 Market Street Suite 2500, Philadelphia, PA 19103.
- (8) Based on information provided to the Company by the Selling Stockholder. Consists of (i) 259,206 shares of Common Stock issued in the Merger and (ii) 3,928,000 shares of Common Stock underlying 3,928 shares of Series X Preferred Stock issued in the Merger. The address of the Selling Stockholder is 111 West Lemon Avenue, Monrovia, California 91016.
- (9) Based on information provided to the Company by the Selling Stockholder. Consists of 5,174,000 shares of Common Stock underlying 5,174 shares of Series X Preferred Stock issued in the private placement. RA Capital Management, L.P. is the investment manager for RA Capital Healthcare Fund, L.P. The general partner of RA Capital Management, L.P. is RA Capital Management GP, LLC, of which Peter Kolchinsky and Rajeev Shah are the managing members. RA Capital Management, L.P., RA Capital Management GP, LLC, Peter Kolchinsky and Rajeev Shah may be deemed to have voting and investment power over the shares held of record by RA Capital Healthcare Fund, L.P. RA Capital Management, L.P., RA Capital Management GP, LLC, Peter Kolchinsky and Rajeev Shah disclaim beneficial ownership of such shares, except to the extent of any pecuniary interest therein. The address of the entities listed above is 200 Berkeley Street, 18th Floor, Boston, Massachusetts 02116.
- (10) Based on information provided to the Company by the Selling Stockholder. Consists of (i) 199,000 shares of Common Stock underlying 199 shares of Series X Preferred Stock issued to CRMA SPV LP (CRMA) in the private placement and (ii) 4,327,000 shares of Common Stock underlying 4,327 shares of Series X Preferred Stock issued to Cormorant Global Healthcare Master Fund LP (Cormorant Master Fund) in the private placement. Cormorant Global Healthcare GP, LLC (Global GP) is the general partner of Cormorant Hedge Fund. Bihua Chen serves as the managing member of Global GP and as the general partner of Cormorant Asset Management, LP (Cormorant). Cormorant serves as the investment manager to Cormorant Master Fund and CRMA. Ms. Chen is the natural person who exercises voting and dispositive power over the shares. The address of the Selling Stockholders is c/o Cormorant Asset Management, LP, 200 Clarendon Street, 52nd Floor, Boston, MA 02116.
- (11) Based on information provided to the Company by the Selling Stockholder. Consists of 3,234,000 shares of Common Stock underlying 3,234 shares of Series X Preferred Stock issued to Logos Global

Master Fund LP in the private placement. Arsani William is the natural person who exercises voting and dispositive power over the shares. The address of the Selling Stockholder is 1 Letterman Dr., Ste D-700, San Francisco, CA 94129.

- (12) Based on information provided to the Company by the Selling Stockholders. Consists of (i) 1,259,000 shares of Common Stock underlying 1,259 shares of Series X Preferred Stock issued to Venrock Healthcare Capital Partners EG, L.P. in the private placement, (ii) 1,128,000 shares of Common Stock underlying 1,128 shares of Series X Preferred Stock issued to Venrock Healthcare Capital Partners III, L.P. in the private placement, (iii) 113,000 shares of Common Stock underlying 113 shares of Series X Preferred Stock issued to VHCP Co-Investment Holdings III, LLC in the private placement, (iv) 522,000 shares of Common Stock underlying 522 shares of Series X Preferred Stock issued to Venrock Healthcare Capital Partners II, L.P. in the private placement and (v) 212,000 shares of Common Stock underlying 212 shares of Series X Preferred Stock issued to VHCP Co-Investment Holdings II, LLC in the private placement. VHCP Management III, LLC (“VHCPM III”) is the sole general partner of Venrock Healthcare Capital Partners III, L.P. (“VHCP III”) and the sole manager of VHCP Co Investment Holdings III, LLC (“VHCP III Co”). VHCP Management II, LLC (“VHCPM II”) is the sole general partner of Venrock Healthcare Capital Partners II, L.P. (“VHCP II”) and the sole manager of VHCP Co Investment Holdings II, LLC (“VHCP II Co”). VHCP Management EG, LLC (“VHCPM EG”) is the sole general partner of Venrock Healthcare Capital Partners EG, L.P. (“VHCP EG”). Dr. Bong Koh and Nimish Shah are the voting members of VHCPM III, VHCPM II and VHCPM EG. Dr. Koh, Mr. Shah, VHCPM III, VHCPM II and VHCPM EG disclaim beneficial ownership over all shares held by VHCP III, VHCP III Co, VHCP II, VHCP II Co, and VHCP EG, except to the extent of their respective indirect pecuniary interests therein. The address of the Selling Stockholders is 7 Bryant Park, 23rd Floor, New York, NY 10018.
- (13) Based on information provided to the Company by the Selling Stockholders. Consists of (i) 1,775,000 shares of Common Stock underlying 1,775 shares of Series X Preferred Stock issued to Boxer Capital, LLC in the private placement and (ii) 165,000 shares of Common Stock underlying 165 shares of Series X Preferred Stock issued to MVA Investors, LLC in the private placement. Boxer Asset Management Inc. (“Boxer Management”) is the managing member and majority owner of Boxer Capital. Joe Lewis is the sole indirect beneficial owner of and controls Boxer Management. Boxer Management and Joseph C. Lewis may be deemed to have shared voting and dispositive power of the securities held by Boxer Capital, LLC. Aaron I. Davis is a member of and has voting and dispositive power over securities held by MVA Investors, LLC. The address of the Selling Stockholders is 12860 El Camino Real, Suite 300, San Diego, CA 92130.
- (14) Based on information provided to the Company by the Selling Stockholder. Consists of 1,617,000 shares of Common Stock underlying 1,617 shares of Series X Preferred Stock issued in the private placement. The address of the Selling Stockholder is 420 Lexington Avenue, Suite 2626, New York, NY 10170.
- (15) Based on information provided to the Company by the Selling Stockholder. Consists of 1,617,000 shares of Common Stock underlying 1,617 shares of Series X Preferred Stock issued in the private placement. The address of the Selling Stockholder is 767 Fifth Avenue, FL 12, New York, NY 10153.
- (16) Based on information provided to the Company by the Selling Stockholder. Consists of 1,294,000 shares of Common Stock underlying 1,294 shares of Series X Preferred Stock issued in the private placement. Citadel Advisors LLC (“Citadel Advisors”) is the portfolio manager of Citadel Multi-Strategy Equities Master Fund Ltd. (“CEMF”). Citadel Advisors Holdings LP (“CAH”) is the sole member of Citadel Advisors. Citadel GP LLC (“CGP”) is the general partner of CAH. Kenneth Griffin owns a controlling interest in CGP. Mr. Griffin, as the owner of a controlling interest in CGP, may be deemed to have shared power to vote and/or shared power to dispose of the securities held by CEMF. The foregoing shall not be construed as an admission that Mr. Griffin nor any of the Citadel related entities listed above is the beneficial owner of any securities of the Company other than the securities actually owned by such person (if any). The address of CEMF is c/o Citadel Advisors LLC, 601 Lexington Avenue, New York, NY 10022.
- (17) Based on information provided to the Company by the Selling Stockholder. Consists of (i) 1,074,000 shares of Common Stock underlying 1,074 shares of Series X Preferred Stock issued to Acuta Capital Fund, LP in the private placement and (ii) 220,000 shares of Common Stock underlying 220 shares of

Series X Preferred Stock issued to Acuta Opportunity Fund, LP in the private placement. Beneficial ownership includes (i) warrants to purchase 483,000 shares of Common Stock held by Acuta Capital Fund, LP and (ii) warrants to purchase 119,000 shares of Common Stock held by Acuta Capital Partners, LLC. Acuta Capital Partners, LLC exercises voting and dispositive power over the shares. The address of the Selling Stockholders is 1301 Shoreway Road, Ste. 350, Belmont, CA 94002.

- (18) Based on information provided to the Company by the Selling Stockholder. Consists of 1,294,000 shares of Common Stock underlying 1,294 shares of Series X Preferred Stock issued in the private placement. The address of the Selling Stockholder is 21 Ha'arbaa Street, 4th Floor, Tel Aviv, Israel.
- (19) Based on information provided to the Company by the Selling Stockholder. Consists of 404,000 shares of Common Stock underlying 404 shares of Series X Preferred Stock issued in the private placement. Benjamin James Davey is the natural person who exercises voting and dispositive power over the shares. The address of the Selling Stockholder is Wedbush Center, 1000 Wilshire Blvd., Los Angeles, CA 90017.
- (20) Based on information provided to the Company by the Selling Stockholder. Consists of 243,000 shares of Common Stock underlying 243 shares of Series X Preferred Stock issued in the private placement. Stewart J. Hen is the natural person who exercises voting and dispositive power over the shares. The address of the Selling Stockholder is 25 N. Moore Street #15A, New York, NY 10013.
- (21) Based on information provided to the Company by the Selling Stockholder. Consists of (i) 2,805,000 shares of Common Stock underlying 2,805 shares of Series X Preferred Stock issuable upon the exercise of warrants assumed by the Company and (ii) 185,136 shares of Common Stock issuable upon the exercise of warrants assumed by the Company. Jonathon Violin, a founder of Viridian, LLC, is a director of the Company. Peter Harwin is the natural person who exercises voting and dispositive power over the shares. The address of the Selling Stockholder is 203 Crescent Street, Bldg. #17, Suite #102B, Waltham, MA 02453.

Relationship with the Selling Stockholders

Registration Rights Agreement

In addition to the Merger Agreement and Purchase Agreement, on January 28, 2021, we entered into a registration rights agreement with the Selling Stockholders who participated in the private placement (the "Registration Rights Agreement"). Pursuant to the Registration Rights Agreement, we agreed to prepare and file with the SEC a registration statement that permits the resale or other disposition of the Selling Stockholders' Shares issued upon conversion of the Series X Preferred Stock issued to such Selling Stockholder pursuant to the Purchase Agreement and, subject to certain exceptions, use commercially reasonable efforts to keep the registration statement of which this prospectus forms a part effective under the Securities Act for so long as such securities registered for resale thereunder retain their character as Registrable Securities. We also agreed, among other things, to indemnify the Selling Stockholders, their officers, directors, members, employees and agents, successors and assigns under the registration statement from certain liabilities and pay all fees and expenses (excluding any legal fees of the Selling Stockholders, and any underwriting discounts and selling commissions) incident to our obligations under the Registration Rights Agreement.

Xencor License

Xencor, Inc. ("Xencor") is party to a license agreement with Quellis, dated May 21, 2018, pursuant to which Xencor licensed to Quellis certain rights with respect to Xencor's intellectual property.

Directors and Related Parties

In connection with the Merger, on January 28, 2021, in exchange for an aggregate of 350,000 shares of Quellis common stock and 1,245,447 shares of Quellis preferred stock, (i) Perceptive Xontogeny Venture Fund, LP, a partnership in which Fred Callori, a director of the Company, has an indirect pecuniary interest, received 1,933,551 shares of Common Stock and 29,303 shares of Series X Preferred Stock and (ii) Xontogeny, LLC, a limited liability company in which Fred Callori has an indirect pecuniary interest, received 543,373 shares of Common Stock and 8,234 shares of Series X Preferred Stock. In connection with the Merger, on January 28, 2021, Fred Callori also received a grant of option to purchase 15,000 shares of

Common Stock, which grant features an exercise price of \$2.43 per share and vests in equal 1/3 installments on the first, second and third anniversaries of the grant date.

In connection with the Merger, (i) Lazarus Life Sciences I, LLC, a limited liability company in which Jonathan Violin has an indirect interest, received 543,373 shares of Common Stock and 8,234 shares of Series X Preferred Stock in exchange for an aggregate of 350,000 shares of Quellis common stock and (ii) Viridian, LLC, a limited liability company in which Jonathan Violin, a director of the Company, holds a profits interest received warrants to purchase 185,136 shares of Common Stock and 2,805 shares of Series X Preferred Stock in exchange for a warrant to purchase 119,251 shares of Quellis common stock. The warrants are exercisable as to 52.1% of the shares subject thereto as of January 21, 2021 and the remaining shares become exercisable at a rate of 2.0833% each month thereafter until fully exercisable on December 21, 2022, subject to continued services by a specified advisor to the Company through each vesting date. In connection with the Merger, on January 28, 2021, Jonathan Violin also received a grant of option to purchase 15,000 shares of Common Stock, which grant features an exercise price of \$2.43 per share and vests in equal 1/3 installments on the first, second and third anniversaries of the grant date.

PLAN OF DISTRIBUTION

We are registering the Shares issued to the Selling Stockholders to permit the resale of these Shares by the holders of the Shares from time to time after the date of this prospectus. We will not receive any of the proceeds from the sale by the Selling Stockholders of the Shares. We will, or will procure to, bear all fees and expenses incident to our obligation to register the Shares.

The Selling Stockholders may sell all or a portion of the Shares beneficially owned by them and offered hereby from time to time directly or through one or more underwriters, broker-dealers or agents. If the Shares are sold through underwriters or broker-dealers, the Selling Stockholders will be responsible for underwriting discounts or commissions or agent's commissions. The Shares may be sold on any national securities exchange or quotation service on which the securities may be listed or quoted at the time of sale, in the over-the-counter market or in transactions otherwise than on these exchanges or systems or in the over-the-counter market and in one or more transactions at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale, or at negotiated prices. These sales may be effected in transactions, which may involve crosses or block transactions. The Selling Stockholders may use any one or more of the following methods when selling shares:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales;
- broker-dealers may agree with the Selling Stockholders to sell a specified number of such shares at a stipulated price per share;
- through the writing or settlement of options or other hedging transactions, whether such options are listed on an options exchange or otherwise;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The Selling Stockholders also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144 under the Securities Act, as amended, or the Securities Act, as permitted by that rule, or Section 4(a)(1) under the Securities Act, if available, rather than under this prospectus, provided that they meet the criteria and conform to the requirements of those provisions.

Broker-dealers engaged by the Selling Stockholders may arrange for other broker-dealers to participate in sales. If the Selling Stockholders effect such transactions by selling Shares to or through underwriters, broker-dealers or agents, such underwriters, broker-dealers or agents may receive commissions in the form of discounts, concessions or commissions from the Selling Stockholders or commissions from purchasers of the Shares for whom they may act as agent or to whom they may sell as principal. Such commissions will be in amounts to be negotiated, but, except as set forth in a supplement to this Prospectus, in the case of an agency transaction will not be in excess of a customary brokerage commission in compliance with FINRA Rule 2121; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2121.01.

In connection with sales of the Shares or otherwise, the Selling Stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the Shares in the course of hedging in positions they assume. The Selling Stockholders may also sell Shares short and if such short sale shall take place after the date that this Registration Statement is declared effective by the Commission, the Selling Stockholders may deliver Shares covered by this prospectus to close out short positions and to return borrowed shares in connection with such short sales. The Selling Stockholders may also loan or pledge Shares to broker-dealers that in turn may sell such shares, to the extent permitted

by applicable law. The Selling Stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The Selling Stockholders may, from time to time, pledge or grant a security interest in some or all of the Shares owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the Shares from time to time pursuant to this prospectus or any amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act of 1933, amending, if necessary, the list of Selling Stockholders to include the pledgee, transferee or other successors in interest as Selling Stockholders under this prospectus. The Selling Stockholders also may transfer and donate the Shares in other circumstances, with or without cash consideration, in which case the transferees, donees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

The Selling Stockholders and any broker-dealer or agents participating in the distribution of the Shares may be deemed to be “underwriters” within the meaning of Section 2(11) of the Securities Act in connection with such sales. In such event, any commissions paid, or any discounts or concessions allowed to, any such broker-dealer or agent and any profit on the resale of the shares purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Selling Stockholders who are “underwriters” within the meaning of Section 2(11) of the Securities Act will be subject to the applicable prospectus delivery requirements of the Securities Act including Rule 172 thereunder and may be subject to certain statutory liabilities of, including but not limited to, Sections 11, 12 and 17 of the Securities Act and Rule 10b-5 under the Securities Exchange Act of 1934, as amended, or the Exchange Act.

Each Selling Stockholder has informed the Company that it is not a registered broker-dealer and does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the Shares. Upon the Company being notified in writing by a Selling Stockholder that any material arrangement has been entered into with a broker-dealer for the sale of Common Stock through a block trade, special offering, exchange distribution or secondary distribution or a purchase by a broker or dealer, a supplement to this prospectus will be filed, if required, pursuant to Rule 424(b) under the Securities Act, disclosing (i) the name of each such Selling Stockholder and of the participating broker-dealer(s), (ii) the number of shares involved, (iii) the price at which such the Shares were sold, (iv) the commissions paid or discounts or concessions allowed to such broker-dealer(s), where applicable, (v) that such broker-dealer(s) did not conduct any investigation to verify the information set out or incorporated by reference in this prospectus, and (vi) other facts material to the transaction. In no event shall any broker-dealer receive fees, commissions and markups, which, in the aggregate, would exceed eight percent (8.0%).

Under the securities laws of some U.S. states, the Shares may be sold in such states only through registered or licensed brokers or dealers. In addition, in some U.S. states the Shares may not be sold unless such shares have been registered or qualified for sale in such state or an exemption from registration or qualification is available and is complied with.

There can be no assurance that any Selling Stockholder will sell any or all of the Shares registered pursuant to the shelf registration statement, of which this prospectus forms a part.

Each Selling Stockholder and any other person participating in such distribution will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including, without limitation, to the extent applicable, Regulation M of the Exchange Act, which may limit the timing of purchases and sales of any of the Shares by the Selling Stockholders and any other participating person. To the extent applicable, Regulation M may also restrict the ability of any person engaged in the distribution of the Shares to engage in market-making activities with respect to the Shares. All of the foregoing may affect the marketability of the Shares and the ability of any person or entity to engage in market-making activities with respect to the Shares.

We will pay all expenses of the registration of the Shares pursuant to the registration rights agreement, including, without limitation, Securities and Exchange Commission filing fees and expenses of compliance

with state securities or “blue sky” laws; *provided, however*, that each Selling Stockholder will pay all underwriting discounts and selling commissions, if any and any related legal expenses incurred by it. We will indemnify the Selling Stockholders against certain liabilities, including some liabilities under the Securities Act, in accordance with the registration rights agreement, or the Selling Stockholders will be entitled to contribution. We may be indemnified by the Selling Stockholders against civil liabilities, including liabilities under the Securities Act, that may arise from any written information furnished to us by the Selling Stockholders specifically for use in this prospectus, in accordance with the related registration rights agreements, or we may be entitled to contribution.

LEGAL MATTERS

The validity of the securities in respect of which this prospectus is being delivered will be passed upon for us by Wilmer Cutler Pickering Hale and Dorr LLP, Boston, Massachusetts.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2020, as set forth in their report (which contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's ability to continue as a going concern as described in Note 1 to the consolidated financial statements), which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements and other documents with the SEC. You may read and copy any document we file at the SEC's public reference room at 100 F Street, N.E., Washington, D.C. 20549. You should call 1-800-SEC-0330 for more information on the public reference room. Our SEC filings are also available to you on the SEC's Internet site at www.sec.gov.

This prospectus is part of a registration statement that we filed with the SEC. The registration statement contains more information than this prospectus regarding us and our common stock, including certain exhibits and schedules. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's Internet site.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" into this prospectus the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is an important part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings made with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Securities Exchange Act of 1934 subsequent to the date of this registration statement until the end of any offerings under this prospectus:

- [Our Annual Report on Form 10-K for the fiscal year ended December 31, 2020 filed with the SEC on March 11, 2021, including the information specifically incorporated by reference into the Annual Report on Form 10-K from our definitive proxy statement for the 2021 Annual Meeting of Stockholders;](#)
- [Our Current Reports on Form 8-K dated January 29, 2021](#) and [April 16, 2021](#);
- The description of our common stock contained in our Registration Statement on [Form 8-A filed with the SEC on June 23, 2015](#), as well as any subsequent amendments or reports filed for the purpose of updating such description; and
- All documents filed by the Company pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, after the date of the original Registration Statement and prior to effectiveness of the registration statement of which this prospectus is a part, provided that all documents "furnished" by the Company to the SEC and not "filed" are not deemed incorporated by reference herein.

You should rely only on the information incorporated by reference or provided in this prospectus or any prospectus supplement. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus or any prospectus supplement is accurate as of any date other than the date on the front page of those documents.

Notwithstanding the foregoing, unless specifically stated to the contrary, information that we furnish (and that is not deemed "filed" with the SEC) under Items 2.02 and 7.01 of any Current Report on Form 8-K,

including the related exhibits under Item 9.01, is not incorporated by reference into this prospectus or the registration statement of which this prospectus is a part.

We will furnish without charge to you, on written or oral request, a copy of any or all of the documents incorporated by reference in this prospectus, including exhibits to these documents. You should direct any requests for documents to Catabasis Pharmaceuticals, Inc., 100 High Street, 28th Floor, Boston, Massachusetts 02110, telephone (617) 394-1971.

CATABASIS PHARMACEUTICALS, INC.

**92,399,805 Shares of Common Stock
Offered by the Selling Stockholders**

PROSPECTUS

, 2021

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the various expenses to be incurred in connection with the sale and distribution of the securities being registered hereby, all of which will be borne by Catabasis Pharmaceuticals, Inc. (except any underwriting discounts and commissions and expenses incurred by the Selling Stockholders for brokerage, accounting, tax or legal services or any other expenses incurred by the Selling Stockholders in disposing of the shares). All amounts shown are estimates except the SEC registration fee.

Registration Fee – Securities and Exchange Commission	\$ 27,117
Accountants Fees and Expenses	\$ 5,000
Legal Fees and Expenses	\$100,000
Miscellaneous	\$ 5,000
Total	<u>\$137,117</u>

Item 15. Indemnification of Directors and Officers.

Section 102 of the Delaware General Corporation Law allows a corporation to eliminate the personal liability of directors of a corporation to the corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. Catabasis Pharmaceuticals, Inc. has included such a provision in its Certificate of Incorporation.

Section 145 of the General Corporation Law of Delaware provides that a corporation has the power to indemnify a director, officer, employee or agent of the corporation and certain other persons serving at the request of the corporation in related capacities against amounts paid and expenses incurred in connection with an action or proceeding to which he is or is threatened to be made a party by reason of such position, if such person shall have acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation, and, in any criminal proceeding, if such person had no reasonable cause to believe his conduct was unlawful; provided that, in the case of actions brought by or in the right of the corporation, no indemnification shall be made with respect to any matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the adjudicating court determines that such indemnification is proper under the circumstances.

Our certificate of incorporation provides that no director shall be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty as a director, notwithstanding any provision of law imposing such liability, except to the extent that the DGCL prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty. Our certificate of incorporation also provides that we will indemnify each person who was or is a party or threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of us), by reason of the fact that he or she is or was, or has agreed to become, our director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise (all such persons being referred to as an Indemnitee), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding and any appeal therefrom if such Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, and, with respect to any criminal action or proceeding, he or she had no reasonable cause to believe his or her conduct was unlawful.

Our certificate of incorporation also provides that we will indemnify any Indemnitee who was or is a party to an action or suit by or in the right of us to procure a judgment in our favor by reason of the fact that the Indemnitee is or was, or has agreed to become, our director or officer, or is or was serving, or has

agreed to serve, at our request as a director, officer, partner, employee or trustee or, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise, or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees) and, to the extent permitted by law, amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding, and any appeal therefrom, if the Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, except that no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to us, unless a court determines that, despite such adjudication but in view of all of the circumstances, he or she is entitled to indemnification of such expenses. Notwithstanding the foregoing, to the extent that any Indemnitee has been successful, on the merits or otherwise, he or she will be indemnified by us against all expenses (including attorneys' fees) actually and reasonably incurred by him or her or on his or her behalf in connection therewith. If we do not assume the defense, expenses must be advanced to an Indemnitee under certain circumstances.

We have entered into indemnification agreements with our directors and executive officers. In general, these agreements provide that we will indemnify the director or executive officer to the fullest extent permitted by law for claims arising in his or her capacity as a director or officer of our company or in connection with their service at our request for another corporation or entity. The indemnification agreements also provide for procedures that will apply in the event that a director or executive officer makes a claim for indemnification and establish certain presumptions that are favorable to the director or executive officer.

We maintain a general liability insurance policy that covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers.

In any underwriting agreement we enter into in connection with the sale of securities being registered hereby, the underwriters will agree to indemnify, under certain conditions, us, our directors and officers (as well as certain other persons) against certain liabilities arising in connection with such offering.

Insofar as the foregoing provisions permit indemnification of directors, executive officers, or persons controlling us for liability arising under the Securities Act of 1933, as amended, or the Securities Act, we have been informed that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Item 16. Exhibits

A list of exhibits filed with this registration statement on Form S-3 is set forth on the Exhibit Index and is incorporated herein by reference.

Item 17. Undertakings.

Item 512(a) of Regulation S-K. The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

Provided, however, That:

Paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in this registration statement; and

(B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of this Registration Statement or made in any such document immediately prior to such effective date.

Item 512(b) of Regulation S-K. The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934, as amended (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

Item 512(h) of Regulation S-K. Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act, and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

EXHIBIT INDEX

Exhibit No.	Description
2.1	<u>Agreement and Plan of Merger, dated January 28, 2021, by and among Catabasis Pharmaceuticals, Inc., Cabo Merger Sub I, Inc., Cabo Merger Sub II, LLC and Quellis Biosciences, Inc. (incorporated by reference to Exhibit 2.1 to the Registrant's Current Report on Form 8-K (File No. 001-36620) filed on January 29, 2021).</u>
3.1	<u>Certificate of Designations of Series X Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K (File No. 001-36620) filed on January 29, 2021).</u>
4.1	<u>Specimen stock certificate evidencing the shares of common stock (incorporated by reference to Exhibit 4.1 to the Registrant's Registration Statement on Form S-1 (File No. 333-204144) filed on June 11, 2015).</u>
4.2	<u>Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K (File No. 001-37467) filed on July 1, 2015).</u>
4.3	<u>Certificate of Amendment to Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K (File No. 001-37467) filed on December 31, 2018).</u>
4.4	<u>Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K (File No. 001-37467) filed on July 1, 2015).</u>
5.1**	<u>Opinion of Wilmer Cutler Pickering Hale and Dorr LLP</u>
10.1	<u>Stock Purchase Agreement, dated as of January 28, 2021, by and among Catabasis Pharmaceuticals, Inc. and each purchaser identified on Annex A thereto (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (File No. 001-37467) filed on January 29, 2021).</u>
10.2	<u>Registration Rights Agreement, by and among Catabasis Pharmaceuticals, Inc. and certain purchasers named therein (incorporated by reference to Exhibit 10.3 to the Registrant's Annual Report on Form 10-K (File No. 001-37467) filed on March 11, 2021).</u>
23.1*	<u>Consent of Ernst & Young LLP, independent registered public accounting firm</u>
23.2**	<u>Consent of Wilmer Cutler Pickering Hale and Dorr LLP (included in legal opinion filed as Exhibit 5.1).</u>
24.1**	<u>Power of Attorney (included on signature page).</u>

* Filed herewith.

** Previously filed.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 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 April 16, 2021.

CATABASIS PHARMACEUTICALS, INC.

By: /s/ Jill C. Milne

 Jill C. Milne, Ph.D.
 President and Chief Executive Officer

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
_____ /s/ Jill C. Milne Jill C. Milne	Chief Executive Officer and Director (Principal Executive Officer)	April 16, 2021
_____ /s/ Noah Clauser Noah Clauser	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	April 16, 2021
_____ * Kenneth Bate	Director, Chair of the Board of Directors	April 16, 2021
_____ * Joanne T. Beck	Director	April 16, 2021
_____ * Fred Callori	Director	April 16, 2021
_____ * Hugh M. Cole	Director	April 16, 2021
_____ * Gregg Lapointe	Director	April 16, 2021
_____ * Michael D. Kishbauch	Director	April 16, 2021
_____ * Jonathan Violin	Director	April 16, 2021

*By /s/ Ben Harshbarger

 Ben Harshbarger
 Attorney-in-fact

Consent of Independent Registered Public Accounting Firm

We consent to the reference to our firm under the caption "Experts" in Amendment No.1 to the Registration Statement (Form S-3 No. 333-254174) and related Prospectus of Catabasis Pharmaceuticals, Inc. for the registration of 92,399,805 shares of its common stock and to the incorporation by reference therein of our report dated March 11, 2021, with respect to the consolidated financial statements of Catabasis Pharmaceuticals, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2020, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Boston, Massachusetts

April 16, 2021
