Registration No. 333-

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-8 REGISTRATION STATEMENT

Under The Securities Act of 1933

CABALETTA BIO, INC.

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation) 82-1685768 (I.R.S. Employer Identification No.)

2929 Arch Street, Suite 600 Philadelphia, PA (Address of principal executive offices)

19104 (Zip Code)

Cabaletta Bio, Inc. 2019 Stock Option and Incentive Plan (Full title of the plan)

> Steven Nichtberger President and Chief Executive Officer Cabaletta Bio, Inc. 2929 Arch Street, Suite 600 Philadelphia, PA 19104 (267) 759-3100

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, anon-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□Emerging growth company⊠

Smaller reporting 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.

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STATEMENT OF INCORPORATION BY REFERENCE

This Registration Statement on Form S-8 is filed to register the offer and sale of an additional 1,912,929 shares of the Registrant's common stock, \$0.00001 par value per share, to be issued under the Registrant's 2019 Stock Option and Incentive Plan. This Registration Statement incorporates by reference the contents of the registration statements on Form S-8, File No. 333-234367, filed by the Registrant on <u>October 29, 2019</u>, File No. 333-237484, filed by the Registrant on <u>March 30, 2020</u>, File No. 333-254342, filed by the Registrant on <u>March 16, 2021</u>, File No. 333-263637, filed by the Registrant on <u>March 17, 2022</u>, File No. 333-270595, filed by the Registrant on <u>March 16, 2023</u>, and File No. 333-270595, filed by the Registrant on <u>March 16, 2023</u>, and File No. 333-273863, filed by the Registrant on <u>August 10, 2023</u>, and the registration relating to the Registrant's 2019 Stock Option and Incentive Plan and 2019 Employee Stock Purchase Plan pursuant to General Instruction E.

Part II

Information Required in the Registration Statement

Item 8. Exhibits

Refer to the Exhibit Index on the next page for a list of exhibits filed as part of this registration statement, which Exhibit Index is incorporated herein by reference.

EXHIBIT INDEX

| Exhibit No. | Description of Exhibit | | | | | | |
|----------------|---|--|--|--|--|--|--|
| 4.1 | Third Amended and Restated Certificate of Incorporation of the Registrant, as currently in effect (Incorporated by reference to Exhibit 3.1 of the Registrant's Current Report on Form 8-K (File No. 001-39103) filed on October 30, 2019). | | | | | | |
| 4.2 | Amended and Restated Bylaws (Incorporated by reference to Exhibit 3.2 of the registrant's Current Report on Form8-K (File No. 001-39103) filed on October 30, 2019). | | | | | | |
| 4.3 | Amendment No. 1 to the Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.3 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-39103) filed with the SEC on May 12, 2022). | | | | | | |
| 4.4 | Description of Securities (incorporated by reference to Exhibit 4.3 of the Registrant's Annual Report on Form10-K (File No. 001-39103) filed with the Securities and Exchange Commission on March 21, 2024). | | | | | | |
| 5.1* | Opinion of Goodwin Procter LLP. | | | | | | |
| 23.1* | Consent of Ernst & Young, 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 Registration Statement on Form S-1, as amended (File No. 333-234017) filed with the SEC on October 16, 2019). | | | | | | |
| 99.2 | 2019 Employee Stock Purchase Plan (Incorporated by reference to Exhibit 10.3 to the registrant's Registration Statement on FormS-1, as amended (File No. 333-234017) filed with the SEC on October 16, 2019). | | | | | | |
| 107* | Filing Fee Table. | | | | | | |

* Filed herewith.

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-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Philadelphia, Commonwealth of Pennsylvania, on this 21st day of March, 2024.

CABALETTA BIO, INC.

By: /s/ Steven Nichtberger Steven Nichtberger, M.D. President and Chief Executive Officer

POWER OF ATTORNEY AND SIGNATURES

KNOW ALL BY THESE PRESENT, that each individual whose signature appears below hereby constitutes and appoints each of Steven Nichtberger and Anup Marda 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, this Registration Statement has been signed by the following person in the capacities and on the date indicated.

| Name | Title | Date |
|--|---|----------------|
| /s/ Steven Nichtberger Steven Nichtberger, M.D. | President, Chief Executive Officer and Director (<i>Principal Executive Officer</i>) | March 21, 2024 |
| /s/ Anup Marda Anup Marda | Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer) | March 21, 2024 |
| /s/ Catherine Bollard Catherine Bollard, M.D. | Director | March 21, 2024 |
| /s/ Scott C. Brun Scott C. Brun, M.D. | Director | March 21, 2024 |
| /s/ Richard Henriques Richard Henriques | Director | March 21, 2024 |
| /s/ Mark Simon Mark Simon | Director | March 21, 2024 |
| /s/ Shawn Tomasello Shawn Tomasello | Director | March 21, 2024 |

Cabaletta Bio, Inc. 2929 Arch Street, Suite 600 Philadelphia, PA 19104

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

We have acted as counsel to you in connection with your filing of a Registration Statement on FormS-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 1,912,929 shares (the "Shares") of Common Stock, \$0.00001 par value per share ("Common Stock"), of Cabaletta Bio, Inc., a Delaware corporation (the "Company"), that may be issued pursuant to the Company's 2019 Stock Option and Incentive Plan (the "Plan").

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 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 Plan, will be validly issued, fully paid and nonassessable.

This opinion letter and the opinion it contains shall be interpreted in accordance with the Core Opinion Principles as published in 74Business Lawyer 815 (Summer 2019).

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

GOODWIN PROCTER LLP

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (FormS-8) pertaining to the Cabaletta Bio, Inc. 2019 Stock Option and Incentive Plan of our report dated March 21, 2024, with respect to the financial statements of Cabaletta Bio, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2023, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Philadelphia, Pennsylvania March 21, 2024

Calculation of Filing Fee Table

Form S-8 (Form Type)

Cabaletta Bio, Inc.

(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

| Security Type | Security Class Title | Fee Calculation Rule | Amount Registered(1) | Proposed Maximum Offering Price Per Share | Maximum Aggregate Offering Price | Fee Rate | Amount of Registration Fee |
|---------------|---|----------------------------|-------------------------|---|---|--------------|----------------------------------|
| Equity | 2019 Stock Option and Incentive Plan, Common Stock, \$0.00001 par value per share | | 1,912,929(3) | \$18.13(2) | \$34,681,402.77 | \$0.00014760 | \$5,118.98 |
| | Total Offering A | | | | | | |
| | Total Fees Previou | | | | _ | | |
| | Total Fee Off | | | | | | |
| | Net Fee Du | | | | \$5,118.98 | | |

(1) In accordance with Rule 416(a) under the Securities Act of 1933, as amended (the "Securities Act"), this registration statement shall be deemed to cover any additional securities that may from time to time be offered or issued to prevent dilution resulting from stock splits, stock dividends or similar transactions effected without the receipt of consideration which results in an increase in the number of our outstanding shares of common stock, \$0.00001 par value per share ("Common Stock").

(2) Estimated solely for the purpose of calculating the registration fee pursuant to Rules 457(c) and 457(h) of the Securities Act. The price per share and aggregate offering price are calculated on the basis of \$18.13, the average of the high and low price of the registrant's Common Stock as reported on the Nasdaq Global Select Market on March 18, 2024.

(3) Consists of 1,912,929 additional shares issuable under the 2019 Stock Option and Incentive Plan (the "2019 Plan"), which represents the automatic annual increase to the number of shares available for issuance under the 2019 Plan effective as of January 1, 2024. Shares available for issuance under the 2019 Plan were previously registered on registration statements on Form S-8 filed with the Securities and Exchange Commission on October 29, 2019 (File No. 333-234367), March 30, 2020 (File No. 333-237484), March 16, 2021 (File No. 333-254342), March 17, 2022 (File No. 333-263637) and March 16, 2023 (File No. 333-270595).