Registration No. 333-

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

FORM S-8

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

MUSTANG BIO, INC.

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation or organization)

377 Plantation Street Worcester, MA (Address of Principal Executive Offices) 47-3828760 (I.R.S. Employer Identification No.)

> 01605 (Zip Code)

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Mustang Bio, Inc. 2019 Employee Stock Purchase Plan, as amended (Full title of the plan)

Manuel Litchman, M.D. President and Chief Executive Officer 377 Plantation Street Worcester, Massachusetts 01605 (781) 652-4500 (Name, address, and telephone number of agent for service)

> Copy to: Rakesh Gopalan Barlow Mann McGuireWoods LLP 201 North Tryon Street, Suite 3000 Charlotte, NC 28202 (704) 373-2275

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

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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.

INCORPORATION BY REFERENCE OF CONTENTS OF REGISTRATION STATEMENT ON FORM S-8

This Registration Statement is being filed by Mustang Bio, Inc. (the "Registrant") for the purpose of registering an additional 400,000 shares of common stock, \$0.0001 par value per share (the "Common Stock") that are issuable pursuant to the Registrant's 2019 Employee Stock Purchase Plan, as amended (the "Plan"). These additional shares of Common Stock are securities of the same class as other securities for which a Registration Statement on Form S-8 of the Registrant relating to the same employee stock purchase plan is effective. The Registrant previously registered common shares for issuance under the Plan under a Registration Statement on Form S-8 filed with the Securities and Exchange Commission (the "Commission") on April 2, 2021 (File No. 333-255007), as amended by a Registration Statement on Form S-8, filed with the Commission on July 30, 2021 (File No. 333-258311). Pursuant to General Instruction E to Form S-8, this Registration Statement hereby incorporates by reference the contents of the Registration Statements referenced above.

The following exhibits are filed as part of this registration statement:

Number	Description
4.1	Mustang Bio, Inc. 2019 Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.1 of the Registrant's Quarterly Report on Form 10-Q (file No. 001-
	38191) filed with SEC on August 9, 2019).
<u>4.2</u>	Amendment to the Mustang Bio, Inc. 2019 Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.2 of the Registrant's Current Report on Form 8-
	K (file No. 001-38191) filed with SEC on June 22, 2021).
<u>4.3</u>	Amendment No. 2 to the Mustang Bio, Inc. 2019 Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.1 of the Registrant's Current Report or
	Form 8-K (file No. 001-38191) filed with SEC on June 23, 2023).
<u>5.1*</u>	Opinion of McGuireWoods LLP
23.1*	Consent of McGuireWoods LLP (included in the Opinion filed as Exhibit 5.1)
23.2*	Consent of Independent Registered Public Accounting Firm, KPMG LLP, Hartford, Connecticut.
<u>24.1*</u>	Powers of Attorney (included on the signature pages to this registration statement)
107*	Filing Fee Table

* Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Worcester, State of Massachusetts, on July 31, 2023.

MUSTANG BIO, INC.

By: /s/ Manuel Litchman, M.D. Name: Manuel Litchman, M.D. Title: President and Chief Executive Officer

POWERS OF ATTORNEY

Each person whose signature appears below constitutes and appoints Manuel Litchman, M.D. his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto 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 he or she might or could do in person, hereby ratifying and confirming all said attorney-in-fact and agent, or his or her substitute or substitutes, may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed below by the following persons in the capacities indicated on July 31, 2023.

Signature	Capacity
/s/ Manuel Litchman, M.D. Manuel Litchman, M.D.	President and Chief Executive Officer (Principal Executive Officer)
/s/ Eliot Lurier Eliot Lurier	Interim Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)
/s/ Michael S. Weiss Michael S. Weiss	Chairman of the Board of Directors
Lindsay A. Rosenwald, M.D.	Director
/s/ Neil Herskowitz Neil Herskowitz	Director
/s/ Adam Chill Adam Chill	Director
/s/ Michael Zelefsky, M.D. Michael Zelefsky, M.D.	Director

McGUIREWOODS

201 North Tryon Street Suite 3000 Charlotte, North Carolina 28202

July 31, 2023

Mustang Bio, Inc. 377 Plantation Street Worcester, MA 01605

RE: Registration Statement on Form S-8

400,000 Shares of Common Stock of Mustang Bio, Inc. to be issued pursuant to the Mustang Bio, Inc. 2019 Employee Stock Purchase Plan Ladies and Gentlemen:

We have acted as counsel to Mustang Bio, Inc., a Delaware corporation (the <u>"Company</u>"), in connection with the Company's Registration Statement on Form S-8 (the <u>"Registration Statement</u>") that is being filed on the date hereof with the Securities and Exchange Commission (<u>SEC</u>"), pursuant to the Securities Act of 1933, as amended (the <u>"Securities Act</u>"), relating to the registration of the issuance of 400,000 shares (the <u>"Shares</u>") of the Company's common stock, par value \$0.0001 per share (the <u>"Common Stock</u>"), from time to time pursuant to the Mustang Bio, Inc. 2019 Employee Stock Purchase Plan, as amended (the <u>Plan</u>"). For purposes of clarification, the Shares exclude shares of the Company's Common Stock previously authorized under the Plan. This opinion letter is being furnished in accordance with the requirements of Item 8 of Form S-8 and Item 601(b)(5)(i) of Regulation S-K promulgated under the Securities Act.

In connection with this opinion letter, we have examined the Registration Statement, including the exhibits being filed therewith or incorporated by reference therein. In addition, we have examined and relied upon the following:

(i) a certificate from an officer of the Company certifying as to (A) true and correct copies of the Amended and Restated Certificate of Incorporation of the Company and Amended and Restated Bylaws of the Company, each as in effect the date hereof and as amended to date, (B) the resolutions of the Board of Directors of the Company with respect to the Shares and the Registration Statement, and (C) the proposal adopted by the stockholders of the Company relating to the amendment to the Plan at the Company's 2023 Annual Meeting of Stockholders;

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Atlanta | Austin | Baltimore | Charlotte | Charlottesville | Chicago | Dallas | Houston | Jacksonville | London | Los Angeles - Century City Los Angeles - Downtown | New York | Norfolk | Pittsburgh | Raleigh | Richmond | San Francisco | Tysons | Washington, D.C.

Mustang Bio, Inc. July 31, 2023 Page 2

(ii) a certificate dated July 28, 2023 issued by the Secretary of State of the State of Delaware, attesting to the corporate status of the Company in the State of Delaware; and

(iii) originals, or copies identified to our satisfaction as being true copies, of such other records, documents and instruments as we have deemed necessary for the purposes of this opinion letter.

For all purposes of the opinions expressed herein, we have assumed, without independent investigation, the following: (a) to the extent that we have reviewed and relied upon certificates of the Company or authorized representatives thereof and certificates and assurances from public officials, all of such certificates and assurances are accurate with regard to factual matters; (b) all documents submitted to us as originals are authentic, complete and accurate, and all documents submitted to us as copies conform to authentic original documents; (c) the genuineness of all signatures; and (d) the Registration Statement will be effective under the Securities Act.

Based on and subject to the foregoing and the exclusions, qualifications, limitations and other assumptions set forth in this opinion letter, we are of the opinion that the Shares have been duly authorized, and, when issued in accordance with the terms and upon the terms and conditions of the Plan upon receipt of the Company of adequate consideration for the Shares specified therein, will be validly issued, fully paid and non-assessable.

The foregoing opinion is limited to the Delaware General Corporation Law (including statutory provisions, all applicable provisions of the Delaware Constitution and reported judicial decisions interpreting the foregoing), as in effect on the date hereof, and we do not express any opinion concerning any other law.

The foregoing opinion is being furnished only for the purpose referred to in the first paragraph of this opinion letter. We hereby consent to the filing of this opinion as Exhibit 5.1 to the Registration Statement. In giving this consent, we do not admit that we are within the category of persons whose consent is required by Section 7 of the Securities Act or the rules and regulations of the SEC promulgated thereunder.

Very truly yours,

/s/ McGuireWoods LLP

McGuireWoods LLP





Consent of Independent Registered Public Accounting Firm

We consent to the use of our report dated March 29, 2023, with respect to the financial statements of Mustang Bio, Inc., incorporated herein by reference.

/s/ KPMG LLP

Hartford, Connecticut July 31, 2023

> KPMG LLP, a Delaware limited liability partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee.

Calculation of Filing Fee Tables

Form S-8

(Form Type)

Mustang Bio, Inc.

(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

Security Type	Security Class Title	Fee Calculation Rule ⁽¹⁾	Amount Registered ⁽²⁾	Proposed Maximum Offering Price Per Unit ⁽¹⁾	Maximum Aggregate Offering Price ⁽¹⁾	Fee Rate	Amount of Registration Fee
Equity	Common Stock, par value \$0.0001 per share	Other	400,000	\$4.79 ⁽¹⁾	\$1,916,000.00	0.00011020	\$211.14
Total Offer Total Fee O Net Fee Due					\$1,916,000.00		\$211.14 \$211.14

(1) Pursuant to Rules 457(c) and 457(h) under the Securities Act, and solely for the purpose of calculating the registration fee, the proposed maximum offering price per share is the average of the high and low prices reported for the registrant's Common Stock quoted on The Nasdaq Capital Market LLC on July 25, 2023.

(2) Represents 400,000 additional shares reserved for issuance under the Mustang Bio, Inc. 2019 Employee Stock Purchase Plan, as amended (the "Plan"). Pursuant to Rule 416(a) under the Securities Act, this registration statement also covers an indeterminate number of additional shares as may be necessary to account for adjustment provisions under the Plan as a result of stock splits, reverse stock splits, stock dividends or similar transactions.