

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

FORM S-3
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)

47-3828760
(I.R.S. Employer
Identification Number)

377 Plantation Street
Street Worcester, MA 01605
(781) 652-4500
(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

Manuel Litchman, M.D.
President & CEO
377 Plantation Street
Street Worcester, MA 01605
(781) 652-4500
(Name, Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent For Service)

Copies to:

Mark McElreath
Alston & Bird LLP
90 Park Avenue
New York, NY 10016
(212) 210-9400

Approximate date of commencement of proposed sale to the public: As soon as practicable 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 offering 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 definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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

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

CALCULATION OF REGISTRATION FEE

Title Of Each Class Of Securities To Be Registered(1)	Proposed Maximum Aggregate Offering Price(2)	Amount Of Registration Fee(3)
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Common Stock, par value \$0.0001 per share(4)	-	-
Preferred Stock, par value \$0.0001 per share(4)	-	-
Warrants	-	-
Debt Securities	-	-
Units(5)	-	-
Total	\$ 200,000,000	\$ 21,820

- (1) An indeterminate aggregate initial offering price or number of the securities of each identified class is being registered as may from time to time be offered at indeterminate prices, along with an indeterminate number of securities that may be issued upon exercise, settlement, exchange or conversion of securities offered hereunder. Separate consideration may or may not be received for securities that are issuable upon exercise, settlement, conversion or exchange of other securities or that are issued in units with other securities registered hereunder.
- (2) Certain information as to each class of securities to be registered is not specified, in accordance with General Instruction II.D of Form S-3 under the Securities Act.
- (3) The registration fee has been calculated in accordance with Rule 457(o) under the Securities Act of 1933, as amended.
- (4) Includes an indeterminate number of shares of common stock or preferred stock as may be issued by the registrant upon exercise, conversion or exchange of any securities that provide for such issuance, or that may from time to time become issuable by reason of any stock split, stock dividend or similar transaction, for which no separate consideration will be received by registrant.
- (5) Each unit will be issued under a unit agreement and will represent an interest in two or more other securities, which may or may not be separable from one another.

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 Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

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 we are not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED APRIL 23, 2021

PROSPECTUS

\$200,000,000



MUSTANG BIO, INC.

**Common Stock
Preferred Stock
Warrants
Debt Securities
Units**

We may offer, from time to time, up to \$200,000,000 of our common stock, preferred stock, warrants to purchase our common stock, preferred stock, debt securities, or units comprised of two or more such securities (the “Securities”) from time to time under this prospectus. You should read this prospectus and any prospectus supplement carefully before you invest.

We may offer the Securities in one or more offerings in amounts, at prices, and on terms determined at the time of the offering. We may sell the Securities through agents we select or through underwriters and dealers we select. If we use agents, underwriters or dealers, we will name them and describe their compensation in a prospectus supplement.

This prospectus provides a general description of the Securities we may offer. Each time we sell Securities, we will provide specific terms of the Securities offered in a supplement to this prospectus. The prospectus supplement may also add, update or change information contained in this prospectus. You should read this prospectus and the applicable prospectus supplement carefully, together with additional information described under the heading “Where You Can Find More Information,” before you invest in any Securities. This prospectus may not be used to consummate a sale of Securities unless accompanied by the applicable prospectus supplement.

Our common stock is listed for trading on the Nasdaq Global Market under the symbol “MBIO.” On April 21, 2021, the per share closing price of our Common Stock as reported on the Nasdaq Capital Market was \$3.13 per share.

We are an “emerging growth company” as defined in the Jumpstart Our Business Startups Act and a “smaller reporting company” as defined in the Securities and Exchange Act of 1934 (the “Exchange Act”) and will therefore be subject to reduced reporting requirements.

Investing in our Securities involves risks. See “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2020, which has been filed with

the U.S. Securities and Exchange Commission and are incorporated by reference into this prospectus. You should read this entire prospectus carefully before you make your investment decision.

Neither the U.S. Securities and Exchange Commission nor any state securities commission has approved or disapproved of these Securities or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this Prospectus is _____, 2021

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SUMMARY

Overview

We are a clinical-stage biopharmaceutical company focused on translating today's medical breakthroughs in cell and gene therapies into potential cures for hematologic cancers, solid tumors and rare genetic diseases. We aim to acquire rights to these technologies by licensing the rights or otherwise acquiring an ownership interest in the technologies, funding their research and development and eventually either out-licensing or bringing the technologies to market.

Our pipeline is currently focused in three core areas: gene therapy programs for rare genetic disorders, chimeric antigen receptor ("CAR") engineered T cell ("CAR T") therapies for hematologic malignancies and CAR T therapies for solid tumors. For each therapy we have partnered with world class research institutions. For our gene therapy program, we have partnered with St. Jude Children's Research Hospital ("St. Jude") in the development of a first-in-class *ex vivo* lentiviral treatment of X-linked severe combined immunodeficiency ("XSCID") and for our CAR T therapies we have partnered with the City of Hope National Medical Center ("COH"), Fred Hutchinson Cancer Research Center ("Fred Hutch") and Nationwide Children's Hospital ("Nationwide").

Gene Therapy

In partnership with St. Jude, our gene therapy program is being conducted under an exclusive license to develop a potentially curative treatment for XSCID, a rare genetic immune system condition in which affected patients do not live beyond infancy without treatment. This first-in-class *ex vivo* lentiviral gene therapy is currently in two Phase 1/2 clinical trials involving two different autologous cell products: a multicenter trial of the MB-107 product in newly diagnosed infants sponsored by St. Jude and a single-center trial of the MB-207 product in previously transplanted patients sponsored by the National Institutes of Health ("NIH"). In January 2021 we received approval to proceed with our Investigational New Drug ("IND") application with the U.S. Food and Drug Administration ("FDA") to initiate a pivotal non-randomized multicenter Phase 2 clinical trial of MB-107 in newly diagnosed infants with XSCID who are under the age of two. We plan to file an IND application in the second quarter of 2021 in order to conduct a pivotal non-randomized multicenter Phase 2 clinical trial of MB-207 in previously transplanted XSCID patients.

CAR T Therapies

Our pipeline of CAR T therapies is being developed under exclusive licenses from several world class research institutions. Our strategy is to license these technologies, support preclinical and clinical research activities by our partners and transfer the underlying technology to our cell processing facility located in Worcester, Massachusetts, to conduct our own clinical trials.

We are developing CAR T therapies for hematologic malignancies in partnership with COH targeting CD123 (MB-102) and CS1 (MB-104) and with Fred Hutch targeting CD20 (MB-106). Phase 1 clinical trials sponsored by COH for MB-102 and MB-104 and by Fred Hutch for MB-106 are underway. In the third quarter of 2019 the FDA approved our IND application to initiate a multi-center Phase 1/2 clinical trial of MB-102, and our clinical trial began enrollment in 2020 for the treatment of patients with blastic plasmacytoid dendritic cell neoplasm. We filed an IND for MB-106 in the first quarter of 2021 and we expect to initiate our own Phase 1/2 clinical trial shortly for the treatment of patients with non-Hodgkin lymphoma and chronic lymphocytic leukemia. We plan to file an IND for a multicenter Phase 1/2 trial for MB-104 for the treatment of patients with multiple myeloma once COH has established a safe and effective dose.

We are also developing CAR T therapies for solid tumors in partnership with COH targeting IL13R α 2 (MB-101), HER2 (MB-103) and PSCA (MB-105). In addition, we have partnered with Nationwide for the C134 oncolytic virus (MB-108) in order to enhance the activity of MB-101 for the treatment of patients with glioblastoma multiforme ("GBM"). Phase 1 clinical trials sponsored by COH for MB-101, MB-103 and MB-105 are underway. A Phase 1 clinical trial sponsored by the University of Alabama at Birmingham ("UAB") for MB-108 began during the third quarter of 2019 and, in the fourth quarter of 2021, we plan to file an IND for the combination of MB-101 and MB-

108 for the treatment of patients with GBM. We also plan to file INDs and initiate our own clinical trials for MB-103 for the treatment of patients with metastatic breast cancer to brain and for MB-105 for the treatment of patients with prostate and pancreatic cancer.

To date, we have not received approval for the sale of our product candidates in any market and, therefore, have not generated any product sales from our product candidates. In addition, we have incurred substantial operating losses since our inception, and expect to continue to incur significant operating losses for the foreseeable future and may never become profitable. As of December 31, 2020, we have an accumulated deficit of \$185.5 million.

Company Information

We are a majority-controlled subsidiary of Fortress Biotech, Inc. (“Fortress”).

Our principal executive office is located at 377 Plantation Street, Worcester, Massachusetts 02605, and our telephone number is 781-652-4500. We maintain a website on the Internet at www.mustangbio.com and our e-mail address is info@mustangbio.com. Our Internet website, and the information contained on it, are not to be considered part of this prospectus.

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ABOUT THIS PROSPECTUS

In this prospectus, unless the context suggests otherwise, references to “Mustang Bio,” “Mustang,” the “Company,” “we,” “us,” and “our” refer to Mustang Bio, Inc.

This prospectus is part of a “shelf” registration statement that we filed with the U.S. Securities and Exchange Commission (“SEC”). By using a shelf registration statement, we may sell our Securities, as described in this prospectus, from time to time in one or more offerings. Each time we sell Securities, we will provide a prospectus supplement to this prospectus that contains specific information about the terms of such offering. The prospectus supplement may also add, update or change information contained in this prospectus. Before purchasing any Securities, you should carefully read both this prospectus and any prospectus supplement, together with the additional information incorporated into this prospectus or described under the heading “Where You Can Find More Information.”

You should rely only on the information contained or incorporated by reference in this prospectus and any prospectus supplement. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We will not make an offer to sell Securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus, as well as information we previously filed with the SEC and have incorporated by reference, is accurate as of the date on the front cover of this prospectus only, or when such document was filed with the SEC. Our business, financial condition, results of operations and prospects may have changed since the relevant date.

Neither we, nor any of our officers, directors, agents or representatives or underwriters, make any representation to you about the legality of an investment. You should not interpret the contents of this prospectus, any prospectus supplement, or any free writing prospectus to be legal, business, investment or tax advice. You should consult with your own advisors for that type of advice and consult with them about the legal, tax, business, financial and other issues that you should consider before investing in our common stock.

We will not use this prospectus to offer and sell Securities unless it is accompanied by a prospectus supplement that more fully describes the terms of the offering.

Solely for convenience, tradenames referred to in this prospectus, the accompanying prospectus and the documents incorporated by reference may appear without the ® or TM symbol, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or that the applicable owner will not assert its rights, to these tradenames.

THIS PROSPECTUS MAY NOT BE USED TO CONSUMMATE A SALE OF SECURITIES UNLESS IT IS ACCOMPANIED BY A PROSPECTUS SUPPLEMENT.

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DESCRIPTION OF CAPITAL STOCK

The following description summarizes the material terms of Mustang capital stock as of the date of this registration statement. Because it is only a summary, it does not contain all the information that may be important to you. For a complete description of our capital stock, you should refer to our certificate of incorporation, our bylaws and to the provisions of applicable Delaware law.

Our common stock is traded on The Nasdaq Capital Market under the symbol “MBIO.” The closing sale price of our common stock on April 21, 2021 was \$3.13 per share.

Capital Stock

The Company is authorized to issue 125,000,000 shares of common stock with a par value of \$0.0001 per share, of which 1,000,000 shares are designated as Class A common stock and 2,000,000 of preferred stock at \$0.0001 par value of which 250,000 are designated as Class A preferred stock.

The holders of common stock are entitled to one vote per share of common stock held.

The undesignated preferred stock may be issued from time to time in one or more series. The Board of Directors is authorized to determine or alter the dividend rights, dividend rate, conversion rights, voting rights, rights and terms of redemption (including sinking fund provisions, if any), the redemption price or prices, the liquidation preferences and other designations, powers, preferences and relative, participating, optional or other special rights, if any, and the qualifications, limitations and restrictions granted to or imposed upon any wholly unissued series of preferred stock, and to fix the number of shares of any series of preferred stock (but not below the number of shares of any such series then outstanding).

Class A Common Stock

The holders of Class A common stock are entitled to the number of votes equal to the number of whole shares of common stock into which the shares of Class A common shares held by such holder are convertible. For a period of ten years from issuance, the holders of the Class A common stock have the right to appoint one member of the board of directors of Mustang. To date, the holders of Class A common stock have not yet appointed such director.

Class A Preferred Stock

The Class A Preferred Stock is identical to undesignated common stock other than as to voting rights, conversion rights, and the PIK dividend right.

The holders of the outstanding shares of Class A Preferred Stock receive on each January 1 (each a "PIK Dividend Payment Date") after the original issuance date of the Class A Preferred Stock until the date all outstanding Class A Preferred Stock is converted into common stock or redeemed (and the purchase price is paid in full), pro rata per share dividends paid in additional fully paid and non-assessable shares of common stock such that the aggregate number of shares of common stock issued pursuant to such PIK dividend is equal to 2.5% of the Corporation's fully-diluted outstanding capitalization on the date that is one business day prior to any PIK Dividend Payment Date ("PIK Record Date"). In the event the Class A Preferred Stock converts into common stock, the holders shall receive all PIK dividends accrued through the date of such conversion. No dividend or other distribution shall be paid, or declared and set apart for payment (other than dividends payable solely in capital stock on the capital stock) on the shares of common stock until all PIK dividends on the Class A Preferred Stock shall have been paid or declared and set apart for payment. All dividends are non-cumulative.

On any matter presented to the stockholders for their action or consideration at any meeting of stockholders (or by written consent of stockholders in lieu of meeting), each holder of outstanding shares of Class A Preferred Stock shall be entitled to cast for each share of Class A Preferred Stock held by such holder as of the record date for determining stockholders entitled to vote on such matter, the number of votes that is equal to one and one-tenth (1.1) times a fraction, the numerator of which is the sum of (A) the number of shares of outstanding common stock and (B) the whole shares of common stock in to which the shares of outstanding Class A Common Stock and the Class A Preferred Stock are convertible, and the denominator of which is number of shares of outstanding Class A Preferred Stock. Thus, the Class A Preferred Stock will at all times constitute a voting majority.

Each share of Class A Preferred Stock is convertible, at the option of the holder, into one fully paid and nonassessable share of common stock, subject to certain adjustments. If the Company, at any time effects a subdivision or combination of the outstanding common stock (by any stock split, stock dividend, recapitalization, reverse stock split or otherwise), the applicable conversion ratio in effect immediately before that subdivision is proportionately decreased or increased, as applicable, so that the number of shares of common stock issuable on conversion of each share of Class A Preferred Stock shall be increased or decreased, as applicable, in proportion to such increase or decrease in the aggregate number of shares of common stock outstanding. Additionally, if any reorganization, recapitalization, reclassification, consolidation or merger involving the Company occurs in which the common stock (but not the Class A Preferred Stock) is converted into or exchanged for securities, cash or other property, then each share of Class A Preferred Stock becomes convertible into the kind and amount of securities, cash or other property which a holder of the number of shares of common stock of the Company issuable upon conversion of one share of the Class A Preferred Stock immediately prior to such reorganization, recapitalization, reclassification, consolidation or merger would have been entitled to receive pursuant to such transaction.

Additional Features

Other features of our capital stock include:

- *Dividend Rights.* The holders of outstanding shares of our common stock, including Class A common stock, are entitled to receive dividends out of funds legally available at the times and in the amounts that our board of directors may determine. All dividends are non-cumulative.
- *Voting Rights.* The holders of our common stock are entitled to one vote for each share of common stock held on all matters submitted to a vote of the stockholders, including the election of directors. Our certificate of incorporation and bylaws do not provide for cumulative voting rights.
- *No Preemptive or Similar Rights.* The holders of our common stock have no preemptive, conversion, or subscription rights, and there are no redemption or sinking fund provisions applicable to our common stock.
- *Right to Receive Liquidation Distributions.* Upon our liquidation, dissolution, or winding-up, the assets legally available for distribution to our stockholders would be distributable ratably among the holders of our common stock, including Class A common stock, outstanding at that time after payment of other claims of creditors, if any.
- *Fully Paid and Non-Assessable.* All of the outstanding shares of our common stock, including Class A common stock, and the Class A Preferred Stock are duly issued, fully paid and non-assessable.

DESCRIPTION OF WARRANTS

We may issue warrants to purchase shares of our common stock or preferred stock in one or more series together with other Securities or separately, as described in each applicable prospectus supplement.

The prospectus supplement relating to any warrants we offer will include specific terms relating to the offering. These terms will include some or all of the following:

- the title of the warrants;
- the aggregate number of warrants offered;
- the designation, number and terms of the shares of common stock purchasable upon exercise of the warrants and procedures by which those numbers may be adjusted;
- the exercise price of the warrants;
- the dates or periods during which the warrants are exercisable;
- the designation and terms of any Securities with which the warrants are issued;
- if the warrants are issued as a unit with another security, the date on and after which the warrants and the other security will be separately transferable;
- if the exercise price is not payable in U.S. dollars, the foreign currency, currency unit or composite currency in which the exercise price is denominated;
- any minimum or maximum amount of warrants that may be exercised at any one time;

- any terms relating to the modification of the warrants;
- any terms, procedures and limitations relating to the transferability, exchange or exercise of the warrants; and
- any other specific terms of the warrants.

DESCRIPTION OF DEBT SECURITIES

We may offer debt securities which may be senior, subordinated or junior subordinated and may be convertible. Unless otherwise specified in the applicable prospectus supplement, our debt securities will be issued in one or more series under an indenture to be entered into between us and a trustee. We will issue the debt securities offered by this prospectus and any accompanying prospectus supplement under an indenture to be entered into between us and the trustee identified in the applicable prospectus supplement. The terms of the debt securities will include those stated in the indenture and those made part of the indenture by reference to the Trust Indenture Act of 1939, as in effect on the date of the indenture. We have filed a copy of the form of indenture as an exhibit to the registration statement in which this prospectus is included. The indenture will be subject to and governed by the terms of the Trust Indenture Act of 1939.

The following description briefly sets forth certain general terms and provisions of the debt securities that we may offer. The particular terms of the debt securities offered by any prospectus supplement and the extent, if any, to which these general provisions may apply to the debt securities, will be described in the related prospectus supplement. Accordingly, for a description of the terms of a particular issue of debt securities, reference must be made to both the related prospectus supplement and to the following description.

Debt Securities

The aggregate principal amount of debt securities that may be issued under the indenture is unlimited. The debt securities may be issued in one or more series as may be authorized from time to time pursuant to a supplemental indenture entered into between us and the trustee or an order delivered by us to the trustee. For each series of debt securities we offer, a prospectus supplement accompanying this prospectus will describe the following terms and conditions of the series of debt securities that we are offering, to the extent applicable:

- title and aggregate principal amount;
- whether the debt securities will be senior, subordinated or junior subordinated;
- applicable subordination provisions, if any;
- provisions regarding whether the debt securities will be convertible or exchangeable into other Securities or property of the Company or any other person;
- percentage or percentages of principal amount at which the debt securities will be issued;
- maturity date(s);
- interest rate(s) or the method for determining the interest rate(s);
- whether interest on the debt securities will be payable in cash or additional debt securities of the same series;
- dates on which interest will accrue or the method for determining dates on which interest will accrue and dates on which interest will be payable;
- whether the amount of payment of principal of, premium, if any, or interest on the debt securities may be determined with reference to an index, formula or other method;
- redemption, repurchase or early repayment provisions, including our obligation or right to redeem, purchase or repay debt securities under a sinking fund, amortization or analogous provision;
- if other than the debt securities' principal amount, the portion of the principal amount of the debt securities that will be payable upon declaration of acceleration of the maturity;

- authorized denominations;
- form;
- amount of discount or premium, if any, with which the debt securities will be issued, including whether the debt securities will be issued as "original issue discount" securities;
- the place or places where the principal of, premium, if any, and interest on the debt securities will be payable;
- where the debt securities may be presented for registration of transfer, exchange or conversion;
- the place or places where notices and demands to or upon the Company in respect of the debt securities may be made;
- whether the debt securities will be issued in whole or in part in the form of one or more global securities;
- if the debt securities will be issued in whole or in part in the form of a book-entry security, the depository or its nominee with respect to the debt securities and the circumstances under which the book-entry security may be registered for transfer or exchange or authenticated and delivered in the name of a person other than the depository or its nominee;

- whether a temporary security is to be issued with respect to such series and whether any interest payable prior to the issuance of definitive securities of the series will be credited to the account of the persons entitled thereto;
- the terms upon which beneficial interests in a temporary global security may be exchanged in whole or in part for beneficial interests in a definitive global security or for individual definitive securities;
- the guarantors, if any, of the debt securities, and the extent of the guarantees and any additions or changes to permit or facilitate guarantees of such debt securities;
- any covenants applicable to the particular debt securities being issued;
- any defaults and events of default applicable to the debt securities, including the remedies available in connection therewith;
- currency, currencies or currency units in which the purchase price for, the principal of and any premium and any interest on, such debt securities will be payable;
- time period within which, the manner in which and the terms and conditions upon which the Company or the purchaser of the debt securities can select the payment currency;
- securities exchange(s) on which the debt securities will be listed, if any;
- whether any underwriter(s) will act as market maker(s) for the debt securities;
- extent to which a secondary market for the debt securities is expected to develop;
- provisions relating to defeasance;
- provisions relating to satisfaction and discharge of the indenture;
- any restrictions or conditions on the transferability of the debt securities;

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- provisions relating to the modification of the indenture both with and without the consent of holders of debt securities issued under the indenture;
- any addition or change in the provisions related to compensation and reimbursement of the trustee;
- provisions, if any, granting special rights to holders upon the occurrence of specified events;
- whether the debt securities will be secured or unsecured, and, if secured, the terms upon which the debt securities will be secured and any other additions or changes relating to such security; and
- any other terms of the debt securities that are not inconsistent with the provisions of the Trust Indenture Act (but may modify, amend, supplement or delete any of the terms of the indenture with respect to such series of debt securities).

General

One or more series of debt securities may be sold as “original issue discount” securities. These debt securities would be sold at a substantial discount below their stated principal amount, bearing no interest or interest at a rate which at the time of issuance is below market rates. One or more series of debt securities may be variable rate debt securities that may be exchanged for fixed rate debt securities.

United States federal income tax consequences and special considerations, if any, applicable to any such series will be described in the applicable prospectus supplement.

Debt securities may be issued where the amount of principal and/or interest payable is determined by reference to one or more currency exchange rates, commodity prices, equity indices or other factors. Holders of such debt securities may receive a principal amount or a payment of interest that is greater than or less than the amount of principal or interest otherwise payable on such dates, depending upon the value of the applicable currencies, commodities, equity indices or other factors. Information as to the methods for determining the amount of principal or interest, if any, payable on any date, the currencies, commodities, equity indices or other factors to which the amount payable on such date is linked and certain additional United States federal income tax considerations will be set forth in the applicable prospectus supplement.

The term “debt securities” includes debt securities denominated in U.S. dollars or, if specified in the applicable prospectus supplement, in any other freely transferable currency or units based on or relating to foreign currencies.

We expect most debt securities to be issued in fully registered form without coupons and in denominations of \$1,000 and any integral multiples thereof. Subject to the limitations provided in the indenture and in the prospectus supplement, debt securities that are issued in registered form may be transferred or exchanged at the principal corporate trust office of the trustee, without the payment of any service charge, other than any tax or other governmental charge payable in connection therewith.

Global Securities

The debt securities of a series may be issued in whole or in part in the form of one or more global securities that will be deposited with, or on behalf of, a depository identified in the prospectus supplement. Global securities will be issued in registered form and in either temporary or definitive form. Unless and until it is exchanged in whole or in part for the individual debt securities, a global security may not be transferred except as a whole by the depository for such global security to a nominee of such depository or by a nominee of such depository to such depository or another nominee of such depository or by such depository or any such nominee to a successor of such depository or a nominee of such successor. The specific terms of the depository arrangement with respect to any debt securities of a series and the rights of and limitations upon owners of beneficial interests in a global security will be described in the applicable prospectus supplement.

Governing Law

The indenture and the debt securities shall be construed in accordance with and governed by the laws of the State of New York.

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DESCRIPTION OF UNITS

We may issue, in one more series, units comprised of shares of our common stock, preferred stock, warrants to purchase common stock or preferred stock, debt securities or any combination of those securities. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

We may evidence units by unit certificates that we issue under a separate agreement. We may issue the units under a unit agreement between us and one or more unit agents. If we elect to enter into a unit agreement with a unit agent, the unit agent will act solely as our agent in connection with the units and will not assume any obligation or relationship of agency or trust for or with any registered holders of units or beneficial owners of units. We will indicate the name and address and other information regarding the unit agent in the applicable prospectus supplement relating to a particular series of units if we elect to use a unit agent.

We will describe in the applicable prospectus supplement the terms of the series of units being offered, including:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions of the governing unit agreement that differ from those described herein; and
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

The other provisions regarding our common stock, preferred stock, warrants and debt securities as described in this section will apply to each unit to the extent such unit consists of shares of our common stock, warrants and/or debt securities.

PLAN OF DISTRIBUTION

We may sell the Securities covered in this prospectus in any of three ways (or in any combination):

- through underwriters or dealers;
- directly to a limited number of purchasers or to a single purchaser; or
- through agents.

Each time that we use this prospectus to sell Securities, we will also provide a prospectus supplement that contains the specific terms of the offering. The prospectus supplement will set forth the terms of the offering of the Securities, including:

- the name or names of any underwriters, dealers or agents and the amounts of any Securities underwritten or purchased by each of them; and
- the public offering price of the common stock and the proceeds to us and any discounts, commissions or concessions allowed or reallocated or paid to dealers.

Any public offering price and any discounts or concessions allowed or reallocated or paid to dealers may be changed from time to time.

If underwriters are used in the sale of any Securities, the Securities will be acquired by the underwriters for their own account and may be resold from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. The Securities may be either offered to the public through underwriting syndicates represented by managing underwriters, or directly by underwriters. Generally, the underwriters' obligations to purchase the Securities will be subject to certain conditions precedent. The underwriters will be obligated to purchase all of the Securities if they purchase any of Securities.

We may sell the Securities through agents from time to time. The prospectus supplement will name any agent involved in the offer or sale of the Securities and any commissions we pay to them. Generally, any agent will be acting on a best efforts basis for the period of its appointment.

We may authorize underwriters, dealers or agents to solicit offers by certain purchasers to purchase the Securities from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. The contracts will be subject only to those conditions set forth in the prospectus supplement, and the prospectus supplement will set forth any commissions we pay for solicitation of these contracts.

Agents and underwriters may be entitled to indemnification by us against certain civil liabilities, including liabilities under the Securities Act of 1933, as amended, or to contribution with respect to payments which the agents or underwriters may be required to make in respect thereof. Agents and underwriters may be customers of, engage in transactions with, or perform services for us in the ordinary course of business.

We may enter into derivative transactions with third parties, or sell Securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those derivatives, the third parties may sell Securities covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use Securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of Securities, and may use Securities received from us in settlement of those derivatives to close out any related open borrowings of Securities. The third party in such sale transactions will be an underwriter and will be identified in the applicable prospectus supplement (or a post-effective amendment).

LEGAL MATTERS

Certain legal matters will be passed upon for us by Alston & Bird LLP, New York, New York. Additional legal matters may be passed upon for us or any underwriters, dealers or agents, by counsel that we will name in the applicable prospectus supplement.

EXPERTS

The financial statements as of December 31, 2020 and 2019 and for each of the two years in the period ended December 31, 2020 incorporated by reference in this Prospectus and in the Registration Statement have been so incorporated in reliance on the report of BDO USA, LLP, an independent registered public accounting firm, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We are a public company and file reports with the SEC on an annual basis using Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K. Additionally, the SEC maintains a website that contains annual, quarterly and current reports, proxy statements, and other information that issuers (including us) file electronically with the SEC. The SEC's website address is <http://www.sec.gov>. You can also obtain copies of materials we file with the SEC from our Internet website found at www.mustangbio.com.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" the information we file with them which means that we can disclose important information to you by referring you to those documents instead of having to repeat the information in this prospectus and accompanying prospectus. The information incorporated by reference is considered to be part of this prospectus and accompanying prospectus, and later information that we file with the SEC will automatically update and supersede this information. This prospectus incorporates by reference the documents listed below (other than, unless otherwise specifically indicated, current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items):

- a) [Our Annual Report on Form 10-K for the fiscal year ended December 31, 2020](#); and
- d) [The description of our Common Stock contained in Exhibit 4.3 of our Annual Report on Form 10-K for the year ended December 31, 2020, filed with the SEC on March 24, 2021](#), including any other amendment or report filed for the purpose of updating such descriptions.

All reports and other documents we subsequently file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of this offering, including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement, but excluding any information furnished to, rather than filed with, the SEC, will also be incorporated by reference.

\$200,000,000



MUSTANGBIO

Mustang Bio, Inc.

Common Stock
Preferred Stock
Warrants
Debt Securities
Units

PROSPECTUS

, 2021

PART II INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution

	Amount to Be Paid
U.S. Securities and Exchange Commission registration fee	\$ 21,820
FINRA filing fees	\$ *
Legal fees and expenses	*
Accounting fees and expenses	*
Miscellaneous	*
Total	*

Item 15. Indemnification of Directors and Officers

Under the General Corporation Law of the State of Delaware (“DGCL”), a corporation may include provisions in its certificate of incorporation that will relieve its directors of monetary liability for breaches of their fiduciary duty to the corporation, except under certain circumstances, including a breach of the director’s duty of loyalty, acts or omissions of the director not in good faith or which involve intentional misconduct or a knowing violation of law, the approval of an improper payment of a dividend or an improper purchase by the corporation of stock or any transaction from which the director derived an improper personal benefit. The Company’s Amended and Restated Certificate of Incorporation eliminates the personal liability of directors to the Company or its stockholders for monetary damages for breach of fiduciary duty as a director with certain limited exceptions set forth in the DGCL.

Section 145 of the DGCL grants to corporations the power to indemnify each officer and director against liabilities and expenses incurred by reason of the fact that he or she is or was an officer or director of the corporation if he or she acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation and, with respect to any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful. The Company’s Amended and Restated Certificate of Incorporation and Bylaws provide for indemnification of each officer and director of the Company to the fullest extent permitted by the DGCL. Section 145 of the DGCL also empowers corporations to purchase and maintain insurance on behalf of any person who is or was an officer or director of the corporation against liability asserted against or incurred by him in any such capacity, whether or not the corporation would have the power to indemnify such officer or director against such liability under the provisions of Section 145 of the DGCL.

Item 16. Exhibits and Financial Statement Schedules

The exhibits to the Registration Statement are listed in the Exhibit Index attached hereto and incorporated by reference herein.

Item 17. Undertakings

(a) 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 (the “Securities Act”);

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(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 (the “Exchange Act”) that are incorporated by reference into 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, 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.

5. That, for the purpose of determining liability under the Securities Act 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 the 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 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 the registration statement or made in any such document immediately prior to such effective date.

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6. That, for the purpose of determining liability of the registrant under the Securities Act to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefits plan's annual report pursuant to Section 15(d) of the Exchange Act) 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.

(h) Insofar as indemnification for liabilities arising under the Securities Act 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 Securities Act, as amended, 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 of whether such indemnification by it is against public policy as expressed in the Securities Act, as amended, and will be governed by the final adjudication of such issue.

(i) The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus 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.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized.

Mustang Bio, Inc.

April 23, 2021

By: /s/ Manuel Litchman, M.D.
Manuel Litchman, M.D.
Chief Executive Officer and President
(Principal Executive Officer)

POWER OF ATTORNEY

We, the undersigned directors and officers of Mustang Bio, Inc., hereby severally constitute and appoint Manuel Litchman, acting singly, his true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him and his name, place and stead, in any and all capacities, to sign any or all amendments (including pre-effective and post-effective amendments) to this registration statement, and to file the same, with all exhibits thereto and other documents in connection therewith, including any Registration Statement filed pursuant to Rule 462(b) under the Securities Act of 1933, with the SEC, 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 might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent or any of his substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons in the capacities indicated as of April 23, 2021.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Manuel Litchman, M.D.</u> Manuel Litchman, M.D.	Chief Executive Officer and President (Principal Executive Officer)	April 23, 2021
<u>/s/ Brian Achenbach</u> Brian Achenbach	Senior Vice President of Finance & Corporate Controller (Principal Financial Officer)	April 23, 2021
<u>/s/ Michael S. Weiss</u> Michael S. Weiss	Executive Chairman of the Board	April 23, 2021
<u>/s/ Lindsay A. Rosenwald, M.D.</u> Lindsay A. Rosenwald, M.D.	Director	April 23, 2021
<u>/s/ Adam J. Chill</u> Adam J. Chill	Director	April 23, 2021
<u>/s/ Neil Herskowitz</u> Neil Herskowitz	Director	April 23, 2021
<u>/s/ Michael J. Zelefsky, M.D.</u> Michael J. Zelefsky, M.D.	Director	April 23, 2021

EXHIBIT INDEX

Exhibit No.	Description
1.1	Underwriting Agreement. ♦
3.1	Amended and Restated Certificate of Incorporation of Mustang Bio, Inc. (formerly Mustang Therapeutics, Inc.), filed as Exhibit 3.1 on Form 10-12G filed on July 28, 2016 and incorporated herein by reference.
3.2	Certificate of Amendment of Amended and Restated Certificate of Incorporation of Mustang Bio, Inc., dated June 14, 2018, filed as Exhibit 3.1 on the Company's Form 10-Q filed on August 13, 2018 and incorporated herein by reference.
3.3	Certificate of Amendment of Amended and Restated Certificate of Incorporation of Mustang Bio, Inc., dated June 30, 2019, filed as Exhibit 3.1 on the Company's Form 8-K filed on September 30, 2019 and incorporated herein by reference.
3.4	Certificate of Amendment of Amended and Restated Certificate of Incorporation of Mustang Bio, Inc., dated December 4, 2020, filed as Exhibit 3.1 on the Company's Form 8-K filed on December 4, 2020 and incorporated herein by reference.
3.5	Bylaws of Mustang Bio, Inc., filed as Exhibit 3.2 to Form 10-12G filed on July 28, 2016 and incorporated herein by reference.
4.1	Specimen certificate evidencing shares of common stock, filed as Exhibit 4.1 to Form 10-12G filed on July 28, 2016 and incorporated herein by reference.
4.2	Form of Preferred Stock Designation. ♦
4.3	Form of Warrant Agreement. ♦
4.4	Form of Common Stock Warrant Agreement and Warrant Certificate. ♦
4.5	Form of Indenture, filed as Exhibit 4.5 on the Company's Registration Statement on Form S-3, filed on August 16, 2019 and incorporated herein by reference.
4.6	Description of Securities of Mustang Bio, Inc., filed as Exhibit 4.3 on the Company's Form 10-K filed on March 24, 2021 and incorporated herein by reference.
4.7	Form of Note. ♦
4.8	Form of Unit Agreement. ♦
5.1	Opinion of Alston & Bird LLP. †
23.1	Consent of BDO USA, LLP, Independent Registered Accounting Firm. †
23.2	Consent of Alston & Bird LLP (to be included in Exhibit 5.1). †
24.1	Power of Attorney (included on signature page to this Registration Statement). †
25.1	Statement of Eligibility of Trustee Under Debt Indenture. *

† Filed herewith.

♦ To be filed by amendment or as an exhibit to a document to be incorporated by reference herein in connection with an offering of our securities to the extent applicable.

* To be filed, if necessary separately pursuant to Section 305(b)(2) of the Trust Indenture Act of 1939.

ALSTON & BIRD

90 Park Avenue
New York, NY 10016
212-210-9400 | Fax: 212-210-9444

Mark F. McElreath

Direct Dial: 212-210-9595

Email: mark.mcelreath@alston.com

April 23, 2021

Re: Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to Mustang Bio, Inc., a Delaware corporation (the "Company"), in connection with the registration statement (the "Registration Statement") on Form S-3 filed today by the Company with the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Securities Act"). The Registration Statement relates to the issuance and sale by the Company from time to time, pursuant to Rule 415 of the General Rules and Regulations of the Commission promulgated under the Securities Act, of up to \$200,000,000 of securities of the Company consisting of (i) shares of common stock, \$0.0001 par value per share (the "Common Stock"), (ii) shares of preferred stock, \$0.0001 par value per share (the "Preferred Stock"), (iii) warrants (the "Warrants") to purchase Common Stock or Preferred Stock, (iv) debt securities (the "Debt Securities"), the terms of which will be determined by the Board of Directors of the Company (the "Board of Directors") prior to the issuance thereof, and (v) units (the "Units," and together with the Common Stock, Preferred Stock, Warrants and Debt Securities, the "Securities"). This opinion letter is being rendered pursuant to Item 16 of Form S-3 and Item 601(b)(5) of Regulation S-K.

We have examined the Amended and Restated Certificate of Incorporation of the Company, as amended (the "Certificate of Incorporation"), the By-Laws of the Company (the "Bylaws"), records of proceedings of the Board of Directors, or committees thereof, and records of proceedings of the stockholders, deemed by us to be relevant to this opinion letter, and the Registration Statement. We also have made such further legal and factual examinations and investigations as we deemed necessary for purposes of expressing the opinion set forth herein.

We have assumed that the terms of the Securities will have been established so as not to, and that the execution and delivery by the Company of the Securities, and the performance of its obligations under the Securities, will not, violate, conflict with or constitute a default under (i) any agreement or instrument to which the Company is subject (except that we do not make the assumption set forth in this clause (i) with respect to those agreements and instruments that are listed on the Exhibit Index in Part II of the Registration Statement), (ii) any law, rule or regulation to which the Company is subject (except that we do not make the assumption with respect to Opined on Law (as defined below)), (iii) any judicial or regulatory order or decree of any governmental authority or (iv) any consent, approval, license, authorization or validation of, or filing, recording or registration with any governmental authority.

We have also assumed that any Debt Securities that may be issued will be issued in a form that complies with the indenture and any supplemental indenture to be entered into in connection with the issuance of such Debt Securities and will be manually signed or countersigned, as the case may be, by duly authorized officers of the trustee.

As to certain factual matters relevant to this opinion letter, we have relied conclusively upon originals or copies, certified or otherwise identified to our satisfaction, of such records, agreements, documents and instruments, including certificates or comparable documents of officers of the Company and of public officials, as we have deemed appropriate as a basis for the opinion hereinafter set forth. Except to the extent expressly set forth herein, we have made no independent investigations with regard to matters of fact, and, accordingly, we do not express any opinion as to matters that might have been disclosed by independent verification.

Based on the foregoing, we are of the opinion that:

(1) With respect to any shares of Common Stock to be offered by the Company pursuant to the Registration Statement (the "Offered Common Shares"), (i) when the Registration Statement, as finally amended (including all necessary post-effective amendments), has become effective under the Securities Act, (ii) when an appropriate prospectus supplement with respect to the Offered Common Shares has been prepared, delivered and filed in compliance with the Securities Act and the applicable rules and regulations thereunder, (iii) if the Offered Common Shares are to be sold pursuant to a firm commitment underwritten offering, the underwriting agreement with respect to the Offered Common Shares has been duly authorized, executed and delivered by the Company and the other parties thereto, (iv) when the Board of Directors, including any appropriate committee appointed thereby, and appropriate officers of the Company have taken all necessary corporate action to approve the issuance of the Offered Common Shares, the consideration to be received therefor and related matters, (v) when the terms of the issuance and sale of the Offered Common Shares have been duly established in conformity with the Certificate of Incorporation and the Bylaws so as not to violate any applicable law or result in a default under or breach of any agreement or instrument binding upon the Company and so as to comply with any requirement or restriction imposed by any court or governmental body having jurisdiction over the Company and (vi) when certificates in the form required under the Delaware General Corporation Law (the "DGCL") representing the Offered Common Shares are duly executed, countersigned, registered and delivered upon payment of the agreed upon consideration therefor, the Offered Common Shares (including any shares of Common Stock duly issued upon conversion, exchange or exercise of any Preferred Stock or Warrants), when issued and sold in accordance with the applicable underwriting agreement, or any other duly authorized, executed and delivered valid and binding agreement, will be duly authorized, validly issued, fully paid and nonassessable, provided that the consideration therefor is not less than \$0.0001 per share of Common Stock.

(2) With respect to the shares of any series of Preferred Stock to be offered by the Company pursuant to the Registration Statement (the "Offered Preferred Shares"), (i) when the Registration Statement, as finally amended (including all necessary post-effective amendments), has become effective under the Securities Act, (ii) when an appropriate prospectus supplement with respect to the Offered Preferred Shares has been prepared, delivered and filed in compliance with the Securities Act and the applicable rules and regulations thereunder, (iii) if the Offered Preferred Shares are to be sold pursuant to a firm commitment underwritten offering, the underwriting agreement with respect to the Offered Preferred Shares has been duly authorized, executed and delivered by the Company and the other parties thereto, (iv) the Board of Directors, including any appropriate committee appointed thereby, and appropriate officers of the Company have taken all necessary corporate action to approve the issuance, sale and terms of the Offered Preferred Shares, the consideration to be received therefor and related matters, including the adoption of a certificate of designation for the Offered Preferred Shares in accordance with the applicable provisions of the DGCL (the "Certificate of Designation"), (v) the filing of the certificate of designation with the Secretary of State of the State of Delaware has duly occurred, (vi) the terms of the Offered Preferred Shares and of their issuance and sale have been duly established in conformity with the Certificate of Incorporation, including the Certificate of Designation relating to the Offered Preferred Shares, and the Bylaws so as not to violate any applicable law or result in a default under or breach of any agreement or instrument binding upon the Company and so as to comply with any requirement or restriction imposed by any court or governmental body having jurisdiction over the Company and (vii) certificates in the form required under DGCL representing the Offered Preferred Shares are duly executed, countersigned, registered and delivered upon payment of the agreed upon consideration therefor, the Offered Preferred Shares (including any shares of Preferred Stock duly issued upon conversion, exchange or exercise of any Preferred Stock or Warrants), when issued and sold in accordance with the applicable underwriting agreement, or any other duly authorized, executed and delivered valid and binding agreement, will be duly authorized, validly issued, fully paid and nonassessable, provided that the consideration therefor is not less than \$0.0001 per share of Preferred Stock.

(3) With respect to the Warrants to be offered by the Company pursuant to the Registration Statement (the “Offered Warrants”), (i) when the Registration Statement, as finally amended (including all necessary post-effective amendments), has become effective under the Securities Act, (ii) when an appropriate prospectus supplement with respect to the Offered Warrants has been prepared, delivered and filed in compliance with the Securities Act and the applicable rules and regulations thereunder, (iii) if the Offered Warrants are to be sold pursuant to a firm commitment underwritten offering, the underwriting agreement with respect to the Offered Warrants has been duly authorized, executed and delivered by the Company and the other parties thereto, (iv) the Board of Directors, including any appropriate committee appointed thereby, and appropriate officers of the Company have taken all necessary corporate action to approve the issuance, sale and terms of the Offered Warrants, the consideration to be received therefor and related matters, (v) the terms of the Offered Warrants and of their issuance and sale have been duly established in conformity with the Certificate of Incorporation and the Bylaws so as not to violate any applicable law or result in a default under or breach of any agreement or instrument binding upon the Company and so as to comply with any requirement or restriction imposed by any court or governmental body having jurisdiction over the Company and the applicable warrant agent, (vi) the Common Stock or the Preferred Stock relating to such Offered Warrants have been duly authorized for issuance, (vii) the applicable warrant agreement has been duly authorized, executed and delivered by each party thereto, and (viii) the Offered Warrants have been duly executed, delivered, countersigned, issued and sold in accordance with the provisions of the applicable warrant agreement to be filed on a Current Report on Form 8-K in the manner contemplated in the Registration Statement or any prospectus supplement relating thereto, the Offered Warrants, when issued and sold in accordance with the applicable warrant agreement and the applicable purchase agreement or any other duly authorized, executed and delivered valid and binding purchase or agency agreement, will be valid and binding obligations of the Company, enforceable against the Company in accordance with their respective terms.

(4) With respect to any series of Debt Securities offered by the Company pursuant to the Registration Statement (the “Offered Debt Securities”), when (i) the Registration Statement has become effective under the Securities Act and the Indenture has been qualified under the Trust Indenture Act of 1939, as amended (the “Trust Indenture Act”), (ii) an appropriate prospectus supplement with respect to the Offered Debt Securities has been prepared, delivered and filed in compliance with the Securities Act and the applicable rules and regulations thereunder, (iii) if the Offered Debt Securities are to be sold pursuant to a firm commitment underwritten offering, an underwriting agreement with respect to the Offered Debt Securities has been duly authorized, executed and delivered by the Company and the other parties thereto, (iv) the indenture and any supplemental indenture relating to the Offered Debt Securities has been duly authorized, executed and delivered by the Company and the other parties thereto, (v) the Board of Directors of the Company, including any appropriate committee appointed thereby, and appropriate officers of the Company have taken all necessary corporate action to approve the issuance, sale and terms of the Offered Debt Securities, the consideration received therefor and related matters, (vi) the terms of the Offered Debt Securities and of their issuance and sale have been duly established in conformity with the indenture and any supplemental indenture relating to such Offered Debt Securities so as not to violate any applicable law, the Certificate of Incorporation as then in effect or Bylaws as then in effect, or result in a default under or breach of any agreement or instrument binding upon the Company, and so as to comply with any requirement or restriction imposed by any court or governmental authority having jurisdiction over the Company, and (vii) the Offered Debt Securities have been duly executed and authenticated in accordance with the provisions of the indenture and any supplemental indenture relating to such Offered Debt Securities and delivered to the purchasers thereof upon payment of the agreed upon consideration therefor, the Offered Debt Securities, when issued and sold or otherwise distributed in accordance with the indenture and any supplemental indenture relating to such Offered Debt Securities, and the applicable underwriting agreement, if any, or any other duly authorized, executed and delivered valid and binding agreement, will constitute valid and binding obligations of the Company, enforceable against the Company in accordance with their respective terms.

(5) With respect to any offering of Units by the Company pursuant to the Registration Statement (the “Offered Units”), when (i) the Registration Statement, as finally amended (including all necessary post-effective amendments), has become effective under the Securities Act, (ii) an appropriate prospectus supplement with respect to the Offered Units has been prepared, delivered and filed in compliance with the Securities Act and the applicable rules and regulations thereunder, (iii) if the Offered Units are to be sold pursuant to a firm commitment underwritten offering or in a best efforts placement offering, the underwriting agreement or placement agency agreement with respect to the Offered Units has been duly authorized, executed and delivered by the Company and the other parties thereto, (iv) the Board of Directors, including any appropriate committee appointed thereby, and appropriate officers of the Company have taken all necessary corporate action to approve the form, issuance, execution and terms of the Offered Units, the related unit agreements between the Company and the unit agent or purchaser named therein (“Unit Agreements”), if any, and any Offered Securities which are components of such Offered Units, the terms of the offering thereof and related matters, (v) the terms of the issuance and sale of the Offered Units have been duly established in conformity with the Certificate of Incorporation and the Bylaws so as not to violate any applicable law or result in a default under or breach of any agreement or instrument binding upon the Company and so as to comply with any requirement or restriction imposed by any court or governmental body having jurisdiction over the Company and (vi) the (1) Offered Units, (2) the Unit Agreements, if any, and (3) such Offered Securities that are components of such Offered Units have been duly and properly sold, paid for and delivered as contemplated in the Registration Statement, any prospectus supplement relating thereto and, if applicable, in accordance with the applicable underwriting or other purchase agreement and otherwise in accordance with the provisions of any applicable (i) Unit Agreement and (ii) warrant agreement, in the case of Warrants, such Units will be validly issued and will entitle the holder thereof to the rights specified in the Unit Agreements, if any.

The opinions set forth herein are limited to the DGCL, applicable provisions of the Constitution of the State of Delaware and reported judicial decisions interpreting the foregoing, and federal laws of the United States of America to the extent referred to specifically herein (all of the foregoing being referred to as “Opined on Law”). We do not express any opinion herein concerning any other laws. We are not engaged in the practice in the State of Delaware; however, we are generally familiar with the DGCL as currently in effect and have made such inquiries as we consider necessary to render the opinion contained herein. We assume no obligation to revise or supplement this opinion in the event of future changes in such laws or the interpretations thereof or such facts.

The opinions set forth above in numbered paragraphs (1) through (5) are subject to (i) the effect of any bankruptcy, insolvency, reorganization, moratorium, arrangement or similar laws affecting the rights and remedies of creditors generally, including the effect of statutory or other laws regarding fraudulent transfers or preferential transfers, and (ii) general principles of equity, including concepts of materiality, reasonableness, good faith and fair dealing and the possible unavailability of specific performance, injunctive relief or other equitable remedies regardless of whether enforceability is considered in a proceeding in equity or at law. We express no opinion regarding the effectiveness of (i) any waiver of stay, extension or usury laws or of unknown future rights; or (ii) provisions may be held unenforceable as contrary to federal or state securities laws.

No opinion may be implied or inferred beyond the opinions expressly stated in numbered paragraphs (1) through (5) above. Our opinions expressed herein are as of the date hereof, and we undertake no obligation to advise you of any changes in applicable law or any other matters that may come to our attention after the date hereof that may affect our opinion expressed herein.

We consent to the filing of this opinion letter as an exhibit to the Registration Statement and to the use of our name under the heading “Legal Matters” in the prospectus constituting a part thereof. In giving such consent, we do not thereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission thereunder.

Sincerely,

/s/ Mark F. McElreath
Mark F. McElreath

Consent of Independent Registered Public Accounting Firm

Mustang Bio, Inc.
Worcester, Massachusetts

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement on Form S-3 of our report dated March 24, 2021, relating to the consolidated financial statements of Mustang Bio, Inc. appearing in the Company's Annual Report on Form 10-K for the year ended December 31, 2020.

We also consent to the reference to us under the caption "Experts" in the Prospectus.

/s/ BDO USA, LLP
Boston, Massachusetts
April 23, 2021
