

PROSPECTUS SUPPLEMENT NO. 1
(to prospectus dated February 5, 2025)



495,000 Shares of Common Stock

2,162,807 Pre-funded Warrants to Purchase up to 2,162,807 Shares of Common Stock
2,657,807 Series C-1 Warrants to Purchase up to 2,657,807 Shares of Common Stock
2,657,807 Series C-2 Warrants to Purchase up to 2,657,807 Shares of Common Stock

Placement Agent Warrants to Purchase up to 159,468 Shares of Common Stock

Up to 7,637,889 Shares of Common Stock Issuable Upon Exercise of
the Series C-1 Warrants, Series C-2 Warrants, Pre-funded Warrants and Placement Agent Warrants

This prospectus supplement is being filed to update and supplement the information contained in the prospectus dated February 5, 2025 (the "Prospectus"), with the information contained in our Current Report on Form 8-K filed with the Securities and Exchange Commission (the "SEC") on February 13, 2025. Accordingly, we have attached such report to this prospectus supplement.

The Prospectus and this prospectus supplement relate to the offer and sale by us of an aggregate of (i) 495,000 shares of common stock, par value \$0.0001 per share, (ii) pre-funded warrants (the "Pre-Funded Warrants") to purchase up to an aggregate of 2,162,807 shares of common stock (the "Pre-Funded Warrant Shares"), (iii) Series C-1 warrants (the "Series C-1 Warrants") to purchase up to an aggregate of 2,657,807 shares of common stock (the "Series C-1 Warrant Shares"), and (iv) Series C-2 warrants (the "Series C-2 Warrants," and together with the Series C-1 Warrants, the "Warrants") to purchase up to an aggregate of 2,657,807 shares of common stock (the "Series C-2 Warrant Shares," and together with the Series C-1 Warrant Shares, the "Warrant Shares"). The Prospectus and this prospectus supplement also relate to the offering of the shares of common stock issuable upon exercise of the Warrants, Pre-Funded Warrants and placement agent warrants we issued to H.C. Wainwright & Co. LLC, as placement agent, to purchase up to 159,468 shares of our common stock.

This prospectus supplement updates and supplements the information in the Prospectus and is not complete without, and may not be delivered or utilized except in combination with, the Prospectus, including any amendments or supplements thereto. This prospectus supplement should be read in conjunction with the Prospectus and if there is any inconsistency between the information in the Prospectus and this prospectus supplement, you should rely on the information in this prospectus supplement.

Our common stock is listed on the Nasdaq Capital Market under the symbol "MBIO". On February 12, 2025, the last reported sale price of our common stock on the Nasdaq Capital Market was \$2.87 per share.

Investing in our securities involves risks that are described in the "Risk Factors" section beginning on page 14 of the Prospectus. Neither the SEC nor any state securities commission has approved or disapproved of the securities to be issued under the Prospectus or determined if the Prospectus or this prospectus supplement is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is February 13, 2025

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

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d) of the
Securities Exchange Act of 1934

Date of report (Date of earliest event reported): February 7, 2025

Mustang Bio, Inc.

(Exact Name of Registrant as Specified in Charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

001-38191
(Commission File Number)

47-3828760
(IRS Employer
Identification No.)

377 Plantation Street
Worcester, Massachusetts 01605
(Address of Principal Executive Offices)

(781) 652-4500
(Registrant's telephone number, including area code)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value \$0.0001 per share	MBIO	Nasdaq Capital Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

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 13(a) of the Exchange Act.

Item 1.01. Entry Into a Material Definitive Agreement.

Bill of Sale and Surrender Agreement

Effective February 10, 2025, Mustang Bio, Inc. (the “Company”) entered into a Bill of Sale and Surrender Agreement (the “Sale/Surrender Agreement”), effective as of January 31, 2025 (the “Effective Date”), with AbbVie Bioresearch Center Inc., a Delaware corporation (“AbbVie”). The Company is the current tenant in the leased premises located at 377 Plantation Street, Worcester, Massachusetts (the “Premises”) under a Lease Agreement, dated as of October 27, 2017 (the “Lease”) with WCS - 377 Plantation Street, Inc., a Massachusetts nonprofit corporation (the “Landlord”). Prior to the transactions described herein, the base term (the “Base Term”) of the Lease was scheduled to expire on October 31, 2026 (the “Termination Date”).

Pursuant to the terms of the Sale/Surrender Agreement, AbbVie agreed to purchase from the Company, and the Company agreed to sell and convey to AbbVie, certain furniture, fixtures and equipment (“FF&E”) located in the Premises and other items as set forth in the Sale/Surrender Agreement for a purchase price of \$1.0 million (the “Purchase Price”). AbbVie also agreed to lease the Premises from the Landlord following the termination of the Lease pursuant to a First Amendment to Lease Agreement (the “Amendment”), dated as of February 7, 2025, as more fully described below. On or before the tenth (10th) business day (the “Anticipated Vacation Date”) following the Effective Date, the Company agreed to provide notice and vacate the Premises no later than twenty (20) business days following the Effective Date.

For the seven (7) business day period (the “Inspection Period”) following the date that is the later of (i) the date AbbVie receives written notice from the Company that it has vacated the Premises, and (ii) the Anticipated Vacation Date, AbbVie has the right to enter the Premises to inspect the Premises and FF&E. Prior to the expiration of the Inspection Period, AbbVie will either (A) give the Company and the Escrow Agent (defined below) written notice (an “Acceptance Notice”) stating that a Sufficient Percentage of the FF&E items listed in the Sale/Surrender Agreement are present in the Premises and functional for their intended purpose without the need for repair or replacement (“Acceptable Condition”); or (B) give the Company and Escrow Agent written notice stating that the condition of the FF&E is not acceptable and specifying the reasons therefor (a “Rejection Notice”). As used in the preceding sentences, “Sufficient Percentage” means at least ninety percent (90%) of the furniture items listed in the Sale/Surrender Agreement (“Furniture Items”) and at least ninety (90%) of all FF&E items (including the Furniture Items) listed in the Sale/Surrender Agreement are in Acceptable Condition.

If (i) AbbVie gives the Company and the Escrow Agent a Rejection Notice, and (ii) at least ninety percent (90%) of the Furniture Items and at least seventy-five percent (75%) of all FF&E items (including the Furniture Items) listed in the Sale/Surrender Agreement are in Acceptable Condition, the Purchase Price shall be reduced proportionally. Within fifteen (15) business days following the expiration of the Inspection Period (the “Negotiation Period”), the Purchase Price reduction calculated pursuant to the Sale/Surrender Agreement will be confirmed by AbbVie and the Company executing and delivering a written agreement (an “Amended Bill of Sale Agreement”) and giving Escrow Agent a written notice signed by both parties enclosing a copy of such Amended Bill (a “Joint Settlement Notice”).

If (i) AbbVie gives the Company and Escrow Agent a Rejection Notice, and (ii) less than ninety percent (90%) of the Furniture Items or less than seventy-five percent (75%) of all FF&E items (including the Furniture Items) listed in the Sale/Surrender Agreement are in Acceptable Condition, AbbVie and the Company shall have until the expiration of the Negotiation Period to execute and deliver an Amended Bill of Sale Agreement and to give Escrow Agent a Joint Settlement Notice.

If AbbVie gives the Company and Escrow Agent a Rejection Notice and thereafter, both parties do not give Escrow Agent a Joint Settlement Notice within the Negotiation Period, then either party is entitled to terminate the Sale/Surrender Agreement at any time thereafter by giving a written termination notice to Escrow Agent before the Escrow Agent receives a Joint Settlement Notice. In that event, (i) the Company will retain possession of all FF&E and the Warehouse Items, (ii) AbbVie shall vacate the Premises without further claims to the FF&E or the Warehouse Items, (iii) the Sale/Surrender Agreement will become null and void and (iv) the parties shall have no further obligations under the Sale/Surrender Agreement, except that either party will be entitled to pursue any legal or equitable remedies that may be available to such party for any prior breach by the other party of its obligations pursuant to the Sale/Surrender Agreement.

Escrow Agreement

In connection with the entrance into the Sale/Surrender Agreement, the Company entered into an Escrow Agreement, dated February 10, 2025 (the “Escrow Agreement”) with Bowditch & Dewey, LLP, as escrow agent (the “Escrow Agent”), pursuant to which the Escrow Agent will disburse the Purchase Price pursuant to the terms of the Escrow Agreement.

Pursuant to the terms of the Escrow Agreement, the Company and AbbVie agreed that the Escrow Agent will hold the Purchase Price in accordance with the terms and conditions of this Agreement, and as further described in the Sale/Surrender Agreement, until (i) AbbVie has given the Company and Escrow Agent an Acceptance Notice, or (ii) AbbVie and the Company have given Escrow Agent a Joint Settlement Notice or other joint written instructions, or (iii) AbbVie or the Company has given the other party and Escrow Agent a termination notice pursuant to the Sale/Surrender Agreement.

First Amendment to Lease Agreement

On February 7, 2025, the Company entered into the Amendment with the Landlord. The Amendment amends the term of the Lease with respect to the Company and facilitates a transfer of the Lease of the Premises to AbbVie.

Pursuant to the terms of the Amendment, the Base Term of the Lease will terminate earlier than the Termination Date on the later to occur of (a) the Transfer Date, as such term is defined in the Sale/Surrender Agreement (the “Anticipated Early Termination Date”), or (b) the date the Company surrenders and yields up the Premises to the Landlord in the condition required by the Lease as modified by the Amendment (the later of (a) or (b) to occur shall constitute the “Early Termination Date”).

In the Amendment, the Company also waived its right to exercise the extension options granted under the Lease. In the event the Early Termination Date does occur, the Company will no longer have any obligation to pay Rent, operating expenses, or other amounts payable under the Lease excepting those amounts due and outstanding as of the Early Termination Date. If the Early Termination Date does not occur, however, then the Base Term of the Lease shall not be subject to early termination. If the Lease is terminated pursuant to the Amendment, then the Company estimates potential savings of approximately \$2.0 million in Lease-related payments and obligations.

Item 1.02. Termination of a Material Definitive Agreement.

The disclosures set forth in Item 1.01 of this Current Report on Form 8-K are incorporated into this Item 1.02 by reference with respect to the termination of the Lease pursuant to the Amendment.

Cautionary Note Regarding Forward-looking Statements

This Current Report on Form 8-K contains predictive or “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. All statements other than statements of current or historical fact contained in this Current Report on Form 8-K, including statements that express the Company’s intentions, plans,

objectives, beliefs, expectations, strategies, predictions or any other statements relating to our future activities or other future events or conditions are forward-looking statements. The words “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “predict,” “project,” “will,” “should,” “would” and similar expressions are intended to identify forward-looking statements. These statements are based on current expectations, estimates and projections made by management about the Company’s business, industry and other conditions affecting its financial condition, results of operations or business prospects. These statements are not guarantees of future performance and involve risks, uncertainties and assumptions that are difficult to predict. Therefore, actual outcomes and results may differ materially from what is expressed or forecasted in, or implied by, the forward-looking statements due to numerous risks and uncertainties, including the risks that any of the conditions in the Sale/Surrender Agreement, Escrow Agreement or Amendment are not satisfied and those risks and uncertainties described in the filings the Company makes with the Securities and Exchange Commission. Any forward-looking statements speak only as of the date on which they are made, and the Company undertakes no obligation to publicly update or revise any forward-looking statements to reflect events or circumstances that may arise after the date of this Current Report on Form 8-K, except as required by applicable law. Investors should evaluate any statements made by the Company in light of these important factors.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: February 13, 2025

Mustang Bio, Inc.
(Registrant)

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