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Mustang Bio Announces Final Results from Follicular Lymphoma Cohort of Single-Institution Phase 1/2 Clinical Trial of MB-106, CD20-Targeted Autologous CAR T Therapy

10 out of 20 patients remain in complete remission for more than a year

95% overall response rate (ORR) and 80% complete response (CR) rate across all patients; 100% ORR and 91% CR with higher dose levels, including one patient previously treated with CD19-targeted CAR T-cell therapy

Initial data from ongoing multicenter trial expected shortly

WORCESTER, Mass., June 15, 2023 (GLOBE NEWSWIRE) -- Mustang Bio, Inc. (“Mustang” or the “Company”) (Nasdaq: MBIO), a clinical-stage biopharmaceutical company focused on translating today’s medical breakthroughs in cell and gene therapies into potential cures for difficult-to-treat cancers and rare genetic diseases, today announced that final data from the follicular lymphoma (“FL”) cohort of the single-institution Phase 1/2 clinical trial of MB-106 demonstrate treatment with the CD20-targeted, autologous CAR T-cell therapy resulted in high overall response (“ORR”) and complete response (“CR”) rates and CAR T persistence in FL patients. MB-106 is being developed in a collaboration between Mustang and Fred Hutchinson Cancer Center (“Fred Hutch”) to treat patients with relapsed or refractory B-cell non-Hodgkin lymphomas (“B-NHLs”) and chronic lymphocytic leukemia (“CLL”).

The final FL cohort results from the Phase 1/2 clinical trial being conducted at Fred Hutch were presented by Mazyar Shadman, M.D., M.P.H., Associate Professor and physician at Fred Hutch and University of Washington, at the 17th International Conference on Malignant Lymphoma (“17-ICML”).

“MB-106 continues to show promise as a viable treatment option for patients with FL and other B-NHLs, as evidenced by a 95% overall response rate in the FL cohort of the Phase 1/2 clinical trial, including a patient previously treated with a CD19 CAR T-cell therapy who remains in remission,” said Dr. Shadman. “Importantly, MB-106 was infused in an outpatient setting except for the first patient at each dose level, further highlighting the potential of this therapy to fill an unmet need in FL and other B-NHLs. We look forward to the publication of

the final data in a peer-reviewed journal in the near future."

A total of 20 patients with relapsed FL with confirmed CD20 expression participated in the study and had day 28 assessment. Median age was 63 years (range: 44 – 81), and median prior lines of treatment was 4 (range: 1 – 12). High-risk features included patients with progression of disease within 24 months of first-line chemoimmunotherapy (POD24) (n=15; 75%), history of histologic transformation (n=4, 20%), prior treatment with a CD19 target CAR T (n=1, 5%). ORR was 95% (19/20), and CR rate was 80% (16/20). Patients who received higher dose levels (3.3×10^6 and 1.0×10^7 cells/kg) had an ORR of 100% and a CR rate of 91%. Ten patients are in remission over one year, seven of whom are over two years. One patient, previously treated with a CD19-targeted CAR T-cell therapy, achieved a CR and remains in remission after 18 months. From a safety profile perspective, all cytokine release syndrome ("CRS") events were grade 1 (n=5; 25%) or grade 2 (n=1; 5%), with no grade ≥ 3 CRS events. There was no occurrence of immune effector cell-associated neurotoxicity syndrome of any grade.

Manuel Litchman, M.D., President and Chief Executive Officer of Mustang, commented, "We are encouraged by the MB-106 data from the FL cohort presented by Dr. Shadman at 17-ICML from the Fred Hutch Phase 1/2 clinical trial, as well as the data from the Waldenstrom macroglobulinemia cohort that he recently presented at the European Hematology Association 2023 Hybrid Congress. The data underscore the great potential of MB-106 to treat a range of hematologic malignancies. We look forward to reporting initial data from our multicenter Phase 1/2 clinical trial of MB-106 shortly."

For more information on the multicenter clinical trial, please visitwww.clinicaltrials.gov using the identifier NCT05360238 for the multicenter trial.

Scientists at Fred Hutch played a role in developing these discoveries, and Fred Hutch and certain of its scientists may benefit financially from this work in the future.

About MB-106 (CD20-targeted autologous CAR T-Cell Therapy)
CD20 is a membrane-embedded surface molecule which plays a role in the differentiation of B-cells into plasma cells. The CAR T was developed by Mustang's research collaborator, Fred Hutch, in the laboratories of the late Oliver Press, M.D., Ph.D., and Brian Till, M.D., Associate Professor in the Clinical Research Division at Fred Hutch, and was exclusively licensed to Mustang in 2017. The lentiviral vector drug substance used to transduce patients' cells to create the MB-106 drug product produced at Fred Hutch has been optimized as a third-generation CAR derived from a fully human antibody, and MB-106 is currently in a Phase 1/2 open-label, dose-escalation trial at Fred Hutch in patients with B-NHLs and CLL. The same lentiviral vector drug substance produced at Fred Hutch will be used to transduce patients' cells to create the MB-106 drug product produced at Mustang Bio's Worcester, MA, cell processing facility for administration in the planned multicenter Phase 1/2 clinical trial that is now open to enrollment under Mustang Bio's IND. It should be noted that Mustang Bio has introduced minor improvements to its cell processing to facilitate eventual commercial launch of the product. In addition, prior to commercial launch, Mustang Bio will replace the Fred Hutch lentiviral vector drug substance with vector produced at a commercial manufacturer. Additional information on the trials can be found at http://www.clinicaltrials.gov using the identifier NCT05360238 for the multicenter trial and NCT03277729 for the ongoing trial at Fred Hutch. Mustang Bio has entered into an

Asset Purchase Agreement pursuant to which it has agreed to sell, subject to the satisfaction of certain conditions, its leasehold interest in its cell processing facility and expects to enter into a manufacturing services agreement with the prospective purchaser to provide for the continued production of the MB-106 drug product. For additional information, please refer to the Current Report on Form 8-K filed by Mustang Bio with the U.S. Securities and Exchange Commission ("SEC") on May 22, 2023.

About Mustang Bio

Mustang Bio, Inc. is a clinical-stage biopharmaceutical company focused on translating today's medical breakthroughs in cell and gene therapies into potential cures for difficult-to-treat cancers and rare genetic diseases. Mustang aims to acquire rights to these technologies by licensing or otherwise acquiring an ownership interest, to fund research and development, and to outlicense or bring the technologies to market. Mustang has partnered with top medical institutions to advance the development of CAR T therapies across multiple cancers, as well as lentiviral gene therapies for severe combined immunodeficiency. Mustang's common stock is registered under the Securities Exchange Act of 1934, as amended, and Mustang files periodic reports with the U.S. Securities and Exchange Commission ("SEC"). Mustang was founded by Fortress Biotech, Inc. (Nasdaq: FBIO). For more information, visit www.mustangbio.com.

Forward-Looking Statements

This press release contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, each as amended. Such statements, which are often indicated by terms such as "anticipate," "believe," "could," "estimate," "expect," "goal," "intend," "look forward to," "may," "plan," "potential," "predict," "project," "should," "will," "would" and similar expressions. The Company's forward-looking statements, include, but are not limited to, any statements relating to our growth strategy and product development programs, including the timing of and our ability to make regulatory filings such as INDs and other applications and to obtain regulatory approvals for our product candidates, statements concerning the potential of therapies and product candidates, statements about the Company's expectations with respect to the consummation of the sale of its manufacturing facility, its entry into a manufacturing services agreement with the prospective purchaser of the facility and its ability to obtain its MB-106 drug product pursuant to such manufacturing services agreement and any other statements that are not historical facts. Actual events or results may differ materially from those described in this press release due to a number of risks and uncertainties. Risks and uncertainties include, among other things, risks related to the satisfaction of the conditions to closing the sale of the Company's manufacturing facility in the anticipated timeframe or at all; whether the prospective purchaser of the Company's manufacturing facility is able to successfully perform its obligation to produce the Company's products under the manufacturing services agreement on a timely basis and to acceptable standards; disruption from the sale of the Company's manufacturing facility making it more difficult to maintain business and operational relationships; negative effects of the announcement or the consummation of the transaction on the market price of the Company's common stock; significant transaction costs; the development stage of the Company's primary product candidates, our ability to obtain, perform under, and maintain financing and strategic agreements and relationships; risks relating to the results of research and development activities; risks relating to the timing of starting and completing clinical trials; uncertainties relating to preclinical and clinical testing; our dependence on third-party

suppliers; our ability to attract, integrate and retain key personnel; the early stage of products under development; our need for substantial additional funds; government regulation; patent and intellectual property matters; competition; as well as other risks described in Part I, Item 1A, “Risk Factors,” in our Annual Report on Form 10-K filed on March 30, 2023, subsequent Reports on Form 10-Q, and our other filings we make with the SEC. We expressly disclaim any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements contained herein to reflect any change in our expectations or any changes in events, conditions or circumstances on which any such statement is based, except as required by law, and we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

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