Assembly Biosciences Presents New Data Highlighting Herpes Simplex Virus Development Candidate ABI-5366 at the 47th Annual International Herpesvirus Workshop

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-- First presentation of preclinical data describing the activity, pharmacokinetics and safety profile of ABI-5366, supporting planned clinical entry in 1H 2024 --

SOUTH SAN FRANCISCO, Calif., July 17, 2023 (GLOBE NEWSWIRE) -- Assembly Biosciences, Inc. (Nasdaq: ASMB), a biotechnology company developing innovative antiviral therapeutics targeting serious viral diseases, today announced data from development candidate ABI-5366, a long-acting herpes simplex virus (HSV) helicase inhibitor targeting high-recurrence genital herpes, featured in one oral and one poster presentation at the 47th Annual International Herpesvirus Workshop in Missoula, Montana, taking place July 15-19, 2023.

"We are excited to present data for the first time highlighting the preclinical characterization of our development candidate ABI-5366, including its potent antiviral activity against both HSV-1 and HSV-2 and remarkable sustained plasma concentrations after both oral and subcutaneous dosing," said William Delaney, PhD, chief scientific officer of Assembly Bio. "These promising results support the potential of ABI-5366 as a long-acting therapeutic for those suffering from high-recurrence genital herpes, a patient population that has been without advancements in treatment for far too long. We have initiated GLP toxicology studies and anticipate entering the clinic in the first half of next year."

In both the oral and poster presentation entitled "*Pre-clinical characterization of ABI-5366: a highly potent long-acting helicase-primase inhibitor for the treatment of high recurrence genital herpes,"* data describe ABI-5366's low-nanomolar potency *in vitro* against both HSV-1 and HSV-2 clinical isolates. Supporting ABI-5366's potential as a long-acting therapeutic, data also demonstrate ABI-5366's low plasma clearance rates in multiple preclinical models with an extremely low projected clearance rate in humans. Additionally, in multiple preclinical models, oral dosing or subcutaneous injection of ABI-5366 demonstrated sustained plasma concentrations for greater than one month. The presentations also include non-GLP safety data available to date supporting a favorable safety profile for ABI-5366 with high exposure margins and minimal potential for off-target effects. Assembly Bio plans to initiate a Phase 1a study for ABI-5366 in the first half of 2024.

Subsequent to presentation at the International Herpesvirus Workshop, Assembly Bio intends to make the oral presentation and poster available on the "Events & Presentations" page in the "Investors" section of its website at www.assemblybio.com.

About Assembly Biosciences
Assembly Biosciences is a biotechnology company dedicated to the development of innovative small molecule antiviral therapeutics designed to change the path of serious viral diseases and improve the lives of patients worldwide. Led by an accomplished team of leaders in virologic drug development, Assembly Bio is committed to improving outcomes for patients struggling with the serious, chronic impacts of herpesvirus, hepatitis B virus (HBV) and hepatitis delta virus (HDV) infections. For more information, visit **assemblybio.com**.

Forward-Looking Statements
The information in this press release contains forward-looking statements that are subject to certain risks and uncertainties that could cause actual results to materially differ. These risks and uncertainties include: Assembly Bio's ability to maintain financial resources necessary to continue its clinical studies and fund business operations; Assembly Bio's ability to initiate and complete clinical studies involving its therapeutic product candidates, including studies contemplated by Assembly Bio's collaboration agreements, in the currently anticipated timeframes; safety and efficacy data from clinical or nonclinical studies may not warrant further development of Assembly Bio's product candidates; clinical and nonclinical data presented at conferences may not differentiate Assembly Bio's product candidates from other companies' candidates; results of nonclinical studies may not be representative of disease behavior in a clinical setting and may not be predictive of the outcomes of clinical studies; and other risks identified from time to time in Assembly Bio's reports filed with the U.S. Securities and Exchange Commission (the SEC). You are urged to consider statements that include the words may, will, would, could, should, might, believes, hopes, estimates, projects, potential, expects, plans, anticipates, intends, continues, forecast, designed, goal or the negative of those words or other comparable words to be uncertain and forward-looking. Assembly Bio intends such forward-looking statements to be covered by the safe harbor provisions contained in Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. More information about Assembly Bio's risks and uncertainties are more fully detailed under the heading "Risk Factors" in Assembly Bio's filings with the SEC, including its most recent Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K. Except as required by law, Assembly Bio assumes no

obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

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