Assembly Biosciences Announces Program Reprioritization and Organizational Update

July 20, 2022

- Discontinues clinical development of vebicorvir, Assembly Bio's first-generation core inhibitor, based on interim efficacy data from ongoing combination clinical studies

- Advancing next-generation, significantly more potent core inhibitors, ABI-H3733 and ABI-4334, in clinical studies

- Prioritizes research activities including small molecule HBV/HDV entry inhibitor, small molecule interferon-α receptor agonist and two additional undisclosed viral targets

- Reprioritized clinical programs and organizational restructuring extends cash runway into the first half of 2024

SOUTH SAN FRANCISCO, Calif., July 20, 2022 (GLOBE NEWSWIRE) -- Assembly Biosciences, Inc. (Nasdaq: ASMB), a clinical-stage biotechnology company developing innovative, investigational therapeutics targeting hepatitis B virus (HBV) and other viral diseases, today announced that it is discontinuing further development of its first-generation core inhibitor, vebicorvir (VBR), as it prioritizes clinical development of its next-generation core inhibitors, ABI-H3733 (3733) and ABI-4334 (4334), and advances its research pipeline. Assembly Bio will restructure the organization and reduce its workforce to align with these strategic goals.

VBR Program Update

Assembly Biosciences will discontinue clinical development of its first-generation investigational core inhibitor, VBR, based on review of interim on-treatment efficacy from the two ongoing VBR triple combination studies. The data indicate that the triple combinations do not show a benefit in multiple key viral parameters compared to the dual combinations without VBR in either study.

"By combining VBR with NrtI therapy, we achieved a more rapid and a deeper level of viral suppression than with NrtI alone and we have continued to see a favorable safety and tolerability profile for VBR. Unfortunately, we do not believe, based on the interim data from our current studies, that either VBR triple combination is likely to achieve a meaningful rate of functional cure for patients with chronic HBV infection," said John McHutchison, AO, MD, chief executive officer and president of Assembly Bio. "Our strategy remains data driven, and, while data from our VBR program do not support conducting additional cure-focused clinical trials with this candidate, the work has greatly informed the clinical development programs for our next-generation core inhibitors and contributed to the HBV field. Those next-generation candidates, 3733 and 4334, are significantly more potent and provide the secondary mechanism against cccDNA that we believe will be critical to finite and curative treatments for HBV."

As a result of these data, Study 203, an open-label, Phase 2 study evaluating the triple combination of VBR + nucleos(t)ide analogue reverse transcriptase inhibitors (NrtI) + interferon (PEG-IFNα) versus the dual combinations of VBR + NrtI and NrtI + PEG-IFNα, will conclude immediately. No additional clinical studies of VBR are currently planned.

Study 204, which is fully enrolled and conducted in collaboration with Arbutus Biopharma, is an open-label Phase 2 triple combination study evaluating VBR + NrtI + Arbutus' investigational RNAi (AB-729) versus VBR + NrtI and NrtI + AB-729. In consultation with Arbutus, the companies intend to continue the study and evaluate the primary endpoints of safety and tolerability of the combination regimen.

Pipeline Program Updates

Assembly Bio will now focus on advancing clinical development programs for the company's next-generation investigational core inhibitors, 3733 and 4334, which have demonstrated >35-fold and >900-fold higher potency, respectively, than VBR in inhibiting the formation of new cccDNA in preclinical studies. A randomized, multi-center, double-blind and placebo-controlled Phase 1b trial of 3733 is underway, evaluating the safety, pharmacokinetics (PK) and antiviral activity of 3733 in adults with chronic HBV (cHBV) infection. Initial data are anticipated during the second half of 2022. Additionally, during the second half of 2022, Assembly Bio intends to initiate a Phase 1a trial of 4334 to evaluate safety, tolerability and PK following single ascending dose and multiple ascending dose administrations in healthy participants.

The company will also prioritize its small molecule research programs, including the oral HBV/hepatitis D virus (HDV) entry inhibitor and oral, liver-focused interferon-α receptor (IFNAR) agonist programs announced earlier this year and two additional viral targets to be introduced during the third quarter of 2022. The IFNAR agonist program will be described in more detail during a

research webcast on July 26. Registration for this webcast is available at https://investor.assemblybio.com/events/event-details/ifnar-interferon-receptor-agonist-research-webcast.

“Given the extensive experience of our team in advancing novel antivirals, we have leveraged our world class virology expertise to build upon our core inhibitor portfolio, expanding our research focus into new novel targets for HBV and other related and unrelated viruses,” noted Dr. McHutchison. “We look forward to unveiling these additional programs and highlighting the expansion of our portfolio in our planned research webcasts over the coming months.”

Organizational Updates

Assembly Bio will align the organization to reflect its refocused pipeline. The company workforce will be reduced by approximately 30%, to approximately 70 full-time employees, to support clinical development of 3733 and 4334 and the company’s novel research pipeline, and to optimize manufacturing of all candidates.

Luisa Stamm, MD, PhD, the current Assembly Bio chief medical officer, will leave the company at the end of this month. Michele Anderson, SVP of development operations at Assembly Bio, has been appointed as chief development officer effective August 1, 2022, and will assume responsibility for the company’s development organization.

Additionally, Michael Samar, currently the chief financial officer, will leave the organization effective August 12, 2022.

Jason Okazaki, Assembly Bio’s current chief operating officer, will oversee all general and administrative functions, including finance. Due to these increased departmental responsibilities, Mr. Okazaki has been appointed as president and chief operating officer effective August 1, 2022. John McHutchison, AO, MD, will continue as chief executive officer at Assembly Bio.

The reprioritization and restructuring activities are expected to extend Assembly Bio’s estimated cash runway into the first half of 2024 after incurring a one-time charge for severance and other reorganization costs.

Dr. McHutchison concluded, “I want to personally thank my colleagues who have supported Assembly Bio’s progress to this point, particularly those responsible for advancing VBR into Phase 2 studies and who are impacted by today’s announcement. The decision to realign our resources and restructure our organization is a difficult one, but refocusing our organization is essential to delivering on Assembly Bio’s mission of advancing next-generation compounds for patients suffering from HBV, HDV and other viruses.”

About Assembly Biosciences
Assembly Bio is a clinical-stage biotechnology company pioneering the development of therapeutics for viral diseases, including pursuing finite and potentially curative therapies for the 296 million people living with hepatitis B virus (HBV) worldwide. Assembly Bio is advancing a leading portfolio of more potent, next-generation core inhibitor drug candidates that aim to break the complex viral replication cycle of HBV and research programs focused on the discovery of additional novel antiviral mechanisms for HBV and other viral diseases. 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 successfully execute its reprioritization and restructuring activities; potential adverse legal, reputational, operational and financial effects on Assembly Bio resulting from the reprioritization and restructuring activities; 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 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; continued development and commercialization of ABI-H3733, if successful, in the China territory will be dependent on, and subject to, Assembly Bio’s collaboration agreement governing this activity in the China territory; Assembly Bio’s ability to maintain financial resources necessary to continue its clinical studies and fund business operations; any impact that the COVID-19 pandemic may have on Assembly Bio’s business and operations, including initiation, enrollment and continuation of its clinical studies or timing of discussions with regulatory authorities; 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.

Contacts

Investor and Corporate:
Shannon Ryan
SVP, Investor Relations, Corporate Affairs and Alliance Management
(415) 738-2992
sryan@assemblybio.com

Media:
Sam Brown Inc.
Hannah Hurdle
(805) 338-4752
ASMBMedia@sambrown.com