Assembly Biosciences Presents Interim Data from Two Phase 2a Studies of ABI-H0731 in HBV-Infected Subjects in a Late-Breaker Oral Session at EASL 2019

April 13, 2019

- Favorable safety and tolerability profile
- Superior antiviral activity with ABI-H0731 in combination with nucleos(t)ide therapies
- Selected for inclusion in "Best of ILC" presentation
- Company to host conference call Monday, April 15, 2019 at 8am EDT

SAN FRANCISCO, April 13, 2019 (GLOBE NEWSWIRE) -- Assembly Biosciences, Inc. (NASDAQ: ASMB), a clinical-stage biotechnology company developing innovative therapeutics targeting hepatitis B virus (HBV) and diseases associated with the microbiome, presented interim results from two Phase 2a clinical trials of ABI-H0731 (731), a novel antiviral in development for the treatment of chronic HBV infection. The data were presented during a late-breaker oral session on Saturday, April 13, 2019, at The International Liver Congress™(ILC), the Annual Meeting of the European Association for the Study of the Liver (EASL) in Vienna, Austria. The late-breaker abstract was also selected for inclusion in the 'Best of ILC' presentation as well as for press release coverage at ILC 2019. A copy of the presentation will be posted to the Events & Presentations page in the Investors section of the company's website at assemblybio.com.

"This interim analysis of two Phase 2a studies supports that 731 in combination with nucleos(t)ide therapy (Nucs) demonstrates rapid and enhanced anti-HBV activity," said Dr. Jacob Lalezari, of Quest Clinical Research in San Francisco. "The data we have seen thus far are directionally correct and decreases in HBeAg and HBsAg have been observed in some individuals in both studies. The accelerated decline and significant loss of baseline RNA and DNA viremia suggest that combination therapy with a core inhibitor + Nuc has the potential to significantly advance treatments for patients with HBV."

"Assembly's 731 combination interim data demonstrate the potential of core inhibitors in combinations with Nuc therapy to be the backbone of HBV cure regimens going forward," said Derek Small, President and Chief Executive Officer. "We are encouraged by the safety, tolerability and initial antiviral activity we've seen to date from the core inhibitor and Nuc combination and look forward to results throughout the year following longer-term treatment. The data generated from these studies and the ongoing extension study will help inform timelines for our future trials and regulatory proposals regarding registration strategies."

The oral presentation reviewed interim analyses from two ongoing double-blind, placebo-controlled Phase 2a studies of 731 in HBV subjects evaluating the potential benefit of combination with standard of care (SOC) Nuc therapy. The studies explore the first two critical steps thought to be necessary for a direct acting antiviral therapy to achieve higher cure rates, including the ability to eliminate residual viremia and prevent new viral replication, and the prevention of new cccDNA generation. Interim analyses suggest faster and deeper declines in HBV DNA and HBV RNA are possible with combination therapy.

The *ABI-H0731-201* (201) study enrolled 47 HBeAg positive and 26 negative subjects whose viral load was already suppressed on active Nuc therapy and the *ABI-H0731-202* (202) study enrolled 25 treatment naïve HBeAg positive subjects. The primary efficacy endpoints are the $\log_{10}$ reduction in HBeAg or HBsAg at week 24 (Study 201) and the $\log_{10}$ reduction in HBV DNA at weeks 12 and 24 (Study 202). While 89 subjects have reached the 12 week interim endpoint across the two studies, few subjects on combination therapy have reached the 24 week endpoint.

In Study 201, the interim analysis includes 65/73 subjects that have completed the week 12 assessments and 11 that have completed week 24. All subjects receiving 731 in combination with a Nuc had significant reductions in HBV RNA levels compared to the group receiving Nuc + placebo. Approximately 60% of subjects on combination therapy with quantifiable RNA at entry demonstrated RNA decline (below the limit of quantitation (LOQ) 200 copies/mL) by week 16 compared to 0% on Nuc monotherapy. Additionally, DNA viremia was persistently detectable at the LOQ in all subjects on Nuc monotherapy, while several subjects on combination therapy showed a further reduction in HBV DNA to below the limits of a highly sensitive PCR assay (2-5 copies). Reduction of residual viral replication may be a critical milestone for cure and does not occur on Nuc monotherapy.

Study 201 (Nuc Suppressed HBeAg + Subjects), Mean Log_{10} Declines				
Marker	**Week**	**Nuc (n)**	**731+Nuc (n)**	**P values**
RNA	**12**	**0.05 (18)**	**2.34 (23)**	**<.001**
	24	**0.15 (4)**	**2.20 (6)**	**.012**
Study 201 (Available subjects at week 24), HBV DNA (+/-)				

DNA, PCR TND*	**24**	**0 (4)**	**5 (6)**	**N/A**

*Assembly Internal semiquantitative PCR: Limit of quantitation 2-5 IU/mL

In Study 202, 24 treatment-naive subjects have completed week 12 assessments, and 12 have completed week 24. The combination of 731 + entecavir (ETV) reduced both HBV DNA and HBV RNA significantly faster and deeper compared to ETV monotherapy as early as week 2. More subjects with liver inflammation at baseline experienced improvement on combination therapy.

Study 202 (Tx Naïve HBeAg + Subjects), Mean Log_{10} Declines				
Marker	**Week**	**ETV (n)**	**731+ETV (n)**	**P values**
DNA	**12**	**3.29 (12)**	**4.54 (12)**	**<.011**
	24	**3.99 (6)**	**5.94 (6)**	**<.005**
RNA	**12**	**0.44 (12)**	**2.27 (12)**	**<.005**
	24	**0.61 (5)**	**2.54 (6)**	**<.005**

Blinded, pooled results across both studies indicate favorable safety and tolerability for 731 when combined with SOC Nuc therapy. Adverse events (AEs) were mild, infrequent, and evaluated as generally unrelated to treatment. There were no treatment related discontinuations, no serious adverse events and no clinical AEs greater than Grade 2 observed. Lab abnormalities were mostly Grade 1, transient, and not thought to be related to drug. To date, across all clinical studies,731 has been dosed in over 150 subjects and has exhibited a favorable safety profile.

Both studies are ongoing, with subjects receiving treatment through 24 weeks, and Assembly expects to report final data later in 2019. At the conclusion of 24 weeks of treatment, all subjects from both studies will have the opportunity to roll over to an open label combination (‘731 + Nuc) extended treatment study for up to an additional year. The data generated over the course of these studies will help to inform timelines and Assembly’s registration strategies for its core inhibitors.

About the Phase 2a Studies
ABI-H0731-201 is a Phase 2a “viral antigen” proof-of-concept study that enrolled HBeAg positive and negative subjects whose viral load was already suppressed on active Nuc therapy. The enrolled subjects continue their Nuc therapy and were randomized 3:2 to either placebo or ABI-H0731 for six months. This study is designed to evaluate the effectiveness of ABI-H0731 in inhibiting the generation of new covalently closed circular DNA (cccDNA). Inhibition of new cccDNA generation is anticipated to occur once HBV DNA and RNA are eliminated and decay of existing cccDNA should manifest as a decline in viral antigens HBsAg and HBeAg.

ABI-H0731-202 is a Phase 2a “viral load” study that enrolled treatment-naïve HBeAg positive subjects and is designed to evaluate the *de novo* combination of ABI-H0731 and ETV to ETV monotherapy alone. This study is designed to assess the antiviral efficacy and potential benefit of combination therapy by comparing the relative rates of HBV viral load declines at 12 and 24 weeks.

ABI-H0731-211 is an open label extension study that will allow subjects in studies 201 and 202 to continue therapy on 731 + SOC Nuc for up to an additional year.

Conference Call and Webcast
Assembly will host a conference call and live audio webcast on Monday, April 15, 2019 at 8:00am EDT. The live audio webcast can be accessed through the Events & Presentations page in the Investors section of the company's website at assemblybio.com. Alternatively, participants can dial (866) 438-0453 (domestic) or (409) 220-9366 (international) and refer to conference ID 8497467.

The archived webcast will be available on Assembly’s website beginning approximately two hours after the event and will be archived and available for replay for at least 30 days after the event.

About Assembly Biosciences
Assembly Biosciences, Inc. is a clinical-stage biotechnology company developing innovative therapeutics targeting hepatitis B virus (HBV) and diseases associated with the microbiome. The HBV program is focused on advancing a new class of potent, oral core inhibitors that have the potential to increase cure rates for chronically infected patients. The microbiome program is developing novel oral live synthetic biotherapeutic candidates with Assembly’s fully integrated platform, including a robust process for strain identification and selection, GMP banking and production, and targeted delivery to the lower gastrointestinal tract with the GEMICEL® technology. For more information, visit assemblybio.com.

Forward-Looking Statements
The information in this press release contains forward-looking statements regarding future events, including statements about the

clinical and therapeutic potential of core inhibitors, including ABI-H0731, the timing of reporting data and the results of nonclinical and clinical studies being predictive of results in future clinical studies. Certain forward-looking statements may be identified by reference to a future period or by use of forward-looking terminology such as “anticipated,” “expects”, “may” “suggest”, “will” and “potential.” Assembly 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. Actual results or developments may differ materially from those projected or implied in these forward-looking statements. More information about the risks and uncertainties faced by Assembly are more fully detailed under the heading “Risk Factors” in Assembly's Annual Report on Form 10-K for the year ended December 31, 2018 filed with the Securities and Exchange Commission. Except as required by law, Assembly 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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