Arrowhead Collaborator Presents Phase 2b Clinical Data from REEF-1 Study in Patients with Chronic Hepatitis B Infection

November 15, 2021

PASADENA, Calif.--(BUSINESS WIRE)--Nov. 15, 2021-- Arrowhead Pharmaceuticals Inc. (NASDAQ: ARWR) collaborator Janssen Pharmaceuticals, Inc., one of the Janssen Pharmaceutical Companies of Johnson & Johnson, presented clinical data from REEF-1, a Phase 2b study of different combination regimens, including JNJ-73763989 (JNJ-3989), formerly called ARO-HBV, and/or JNJ-56136379 (JNJ-6379), and a nucleos(t)ide analog (NA) for the treatment of chronic hepatitis B virus infection (CHB). The data were presented in a late breaking oral presentation at The Liver Meeting, the Annual Meeting of the American Association for the Study of Liver Disease (AASLD).

JNJ-3989 is an investigational small interfering RNA (siRNA) that targets all hepatitis B virus (HBV) RNAs, thereby reducing levels of all viral proteins. JNJ-6379 is an investigational capsid assembly modulator (CAM-N) that inhibits viral replication by inducing the formation of non-infectious viral particles that are devoid of HBV DNA and RNA. Arrowhead entered into a license and collaboration agreement with Janssen in October 2018 to develop and commercialize JNJ-3989.

REEF-1 (NCT03982186) is a Phase 2b, multicenter, double-blind, active-controlled, randomized study to assess the efficacy and safety over 48 weeks of monthly subcutaneous injections of JNJ-3989 (3 dose levels of 40, 100, and 200mg) and/or 250mg daily oral JNJ-6379 in combination with daily oral NA in currently not treated or virally suppressed patients with HBeAg positive or negative CHB. Patients were required to have HBsAg levels greater than 100 IU/mL to enter the study. The mean baseline HBsAg level was approximately 3.7 $\log_{10}$ IU/mL across all study arms. The primary endpoint of the study is the proportion of patients meeting NA stopping criteria (ALT less than 3 times upper limit of normal, HBV DNA less than the lower limit of quantitation, HBeAg negative, and HBsAg less than 10 IU/mL) at the end of treatment (week 48).

Presentation Details:

> Title: **Efficacy and Safety of the siRNA JNJ-3989 and/or the Capsid Assembly Modulator (CAM) JNJ-6379 for the Treatment of Chronic Hepatitis B Virus Infection (CHB): Results from the Phase 2B REEF-1 Study**
> Authors: Man Fung Yuen, et al.
> Publication Number: LO10
> Session: Late Breaking Session 2

Select data presented include the following:

Pharmacodynamic Response in JNJ-3989 200 mg with NA cohort (n=94)

- The greatest reduction in HBsAg was observed in the JNJ-3989 200 mg with NA cohort
  - A dose dependent response was observed in other cohorts
- At week 48, 19.1% of patients met NA stopping criteria
- Up to week 72, an additional 10.6% of patients met NA stopping criteria for a total of 29.7%
- At week 48, the mean reduction in HBsAg from baseline was 2.6 log10
- At week 72, the mean reduction in HBsAg from baseline was 1.9 log10
- At week 48, 74.7% of patients achieved HBsAg less than 100 IU/mL

Summary

- A dose dependent response was observed
- JNJ-3989 200 mg (highest dose) arm at Week 48:
  - 19.1% of patients met the primary endpoint (NA stopping criteria) The greatest reduction of HBsAg levels from baseline (2.6 $\log_{10}$ IU/mL)
  - 74.7% of patients achieving HBsAg <100 IU/mL
- All regimens within this long-term study were generally well tolerated and have a favorable safety profile
- Combination studies involving different mechanisms of action are ongoing

A copy of the presentation materials with full data may be accessed on the Events and Presentations page under the Investors section of the Arrowhead website.

About Arrowhead Pharmaceuticals

Arrowhead Pharmaceuticals develops medicines that treat intractable diseases by silencing the genes that cause them. Using a broad portfolio of RNA chemistries and efficient modes of delivery, Arrowhead therapies trigger the RNA interference mechanism to induce rapid, deep, and durable knockdown of target genes. RNA interference, or RNAi, is a mechanism present in living cells that inhibits the expression of a specific gene, thereby affecting the production of a specific protein. Arrowhead's RNAi-based therapeutics leverage this natural pathway of gene silencing.

For more information, please visit www.arrowheadpharma.com, or follow us on Twitter @ArrowheadPharma. To be added to the Company's email list

and receive news directly, please visit http://ir.arrowheadpharma.com/email-alerts.

Safe Harbor Statement under the Private Securities Litigation Reform Act:

This news release contains forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. Any statements contained in this release except for historical information may be deemed to be forward-looking statements. Without limiting the generality of the foregoing, words such as "may," "will," "expect," "believe," "anticipate," "hope," "intend," "plan," "project," "could," "estimate," or "continue" are intended to identify such forward-looking statements. In addition, any statements that refer to projections of our future financial performance, trends in our business, expectations for our product pipeline or product candidates, including anticipated regulatory submissions and clinical program results, prospects or benefits of our collaborations with other companies, or other characterizations of future events or circumstances are forward-looking statements. These statements are based upon our current expectations and speak only as of the date hereof. Our actual results may differ materially and adversely from those expressed in any forward-looking statements as a result of numerous factors and uncertainties, including the impact of the ongoing COVID-19 pandemic on our business, the safety and efficacy of our product candidates, decisions of regulatory authorities and the timing thereof, the duration and impact of regulatory delays in our clinical programs, our ability to finance our operations, the likelihood and timing of the receipt of future milestone and licensing fees, the future success of our scientific studies, our ability to successfully develop and commercialize drug candidates, the timing for starting and completing clinical trials, rapid technological change in our markets, the enforcement of our intellectual property rights, and the other risks and uncertainties described in our most recent Annual Report on Form 10-K, subsequent Quarterly Reports on Form 10-Q and other documents filed with the Securities and Exchange Commission from time to time. We assume no obligation to update or revise forward-looking statements to reflect new events or circumstances.

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Arrowhead Pharmaceuticals, Inc.
Vince Anzalone, CFA
626-304-3400
ir@arrowheadpharma.com

Investors:
LifeSci Advisors, LLC
Brian Ritchie
212-915-2578
britchie@lifesciadvisors.com
www.lifesciadvisors.com

Media:
LifeSci Communications, LLC
Josephine Belluardo, Ph.D.
646-751-4361
jo@lifescicomms.com
www.lifescicommunications.com

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