



Innovate Biopharmaceuticals Plans to Commence the First Ever Phase 3 Registration Trial in Celiac Disease in 1H 2019 and Announce Top-line NASH Data with Drug Combinations by EASL 2019

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Preliminary top-line data from the alcoholic steatohepatitis (ASH) collaboration with Massachusetts General Hospital shows positive effect of larazotide on ethanol-induced permeability in vitro

RALEIGH, N.C., Dec. 17, 2018 (GLOBE NEWSWIRE) -- [Innovate Biopharmaceuticals Inc.](#) (Nasdaq: INNT), a clinical stage biotechnology company focused on developing novel medicines for autoimmune and inflammatory diseases, is evaluating various funding proposals for commencing the first ever Phase 3 registration trial for celiac disease. Celiac disease affects approximately 1% of the U.S. population, more than 3 million Americans, and is a high unmet need with no FDA approved treatments available.

Christopher Prior, Ph.D., CEO of Innovate, stated, "We believe that during 2018 we have laid the foundation for an exciting 2019 by completing much of the preparatory work to launch our Phase 3 trial for celiac disease and to expand our pipeline in areas of liver disease." Dr Prior added, "We are continuing our efforts to secure financing for this trial on favorable terms with the goal of benefiting our stockholders and bringing important medicines to patients where there are no currently available therapies."

As previously presented, larazotide demonstrated decreased deterioration of gut permeability, in the DIAMOND NASH mouse model, where leaky gut developed by 16 weeks. With ongoing work in drug combinations with Novo Nordisk A/S's OZEMPIC[®] (semaglutide) approved for type 2 diabetes and Intercept Pharmaceuticals Inc.'s OCALIVA[®] (obeticholic acid) approved for primary biliary cholangitis (PBC), Innovate expects to release data by EASL 2019.

Through its recent collaboration with Massachusetts General Hospital (MGH) on alcoholic steatohepatitis (ASH), Innovate is announcing preliminary top-line data showing positive effects by larazotide on ethanol-induced permeability *in vitro*. The MGH model shows larazotide markedly protects and rescues cells from increased ethanol-induced permeability, a known pathologic effect in ASH. Innovate plans to present further details, including transepithelial electric resistance (TEER), and timing of these ethanol induced permeability effects, at an upcoming medical meeting in 2019. Alcoholic liver disease (ALD), including acute-on-chronic forms, such as alcoholic hepatitis, has been shown to lead to hospitalizations (1% of hospital admissions in 2010)¹ and high mortality rates (20–30% at 1 month and 40–70% at 6 months).²

Peter Traber, M.D., an experienced drug developer in NASH and GI, said, "The fact that larazotide is capable of restoring permeability following three different insults, namely gluten, high fat diet and alcohol relevant to celiac disease, NASH and ASH, respectively, underscores the potential broad application for this unique mechanism of action."

About larazotide acetate for celiac disease

In celiac disease, larazotide is the only drug which has successfully met its primary endpoint with statistical significance in a Phase 2b efficacy clinical trial (342 patients). Innovate completed the End of Phase 2 Meeting with the FDA and is preparing to launch our Phase 3 registration clinical trials for celiac disease in the first half of 2019, subject to the receipt of financing. Nearly 600 subjects have been exposed to larazotide in clinical trials, and a safety profile comparable to placebo has been demonstrated. Larazotide has received Fast Track designation from the FDA for celiac disease.

About Non-Alcoholic Fatty Liver Disease (NAFLD) and Non-Alcoholic Steatohepatitis (NASH):

Nonalcoholic steatohepatitis (NASH) is a severe disease of the liver caused by inflammation and a buildup of fat in the organ. In the United States, NASH affects up to approximately 2-5% of the population. An additional 10-30% of Americans have fat in their livers, but no inflammation or liver damage, a condition called Non-alcoholic fatty liver disease (NAFLD) or "fatty liver." The underlying cause of NASH is unclear, but it most often occurs in persons who are middle-aged and overweight or obese. It has been shown that chronic liver diseases, including NAFLD and NASH, may cause perturbations in the epithelial lining of the gut, and disrupt barrier integrity, causing a normal intestine to become more permeable. This "leaky gut" could cause passage of unwanted toxins and antigenic components to "cross-talk" to the liver via the blood circulation causing inflammation and damage to hepatocytes. This gut-liver axis is an emerging area of research in chronic liver diseases.

About Alcoholic Liver Diseases (ALD) and Alcoholic steatohepatitis (ASH)

Alcoholic liver disease (ALD) comprises a spectrum of conditions arising from excessive alcohol intake, from reversible fatty liver to acute alcoholic hepatitis, chronic fibrosis and cirrhosis and hepatocellular cancer (HCC). ALD, including progression from alcoholic fatty liver to alcoholic steatohepatitis (ASH) is characterized by hepatic inflammation which could lead to a chronic form leading to cirrhosis and in some cases hepatocellular carcinoma. In addition, severe ASH (with or without cirrhosis) can lead to alcoholic hepatitis, which is an acute clinical presentation of ALD that is associated with liver failure and high mortality.³ The Global Burden of Disease (GBD) project estimated there were more than 1.2 MM deaths in 2016 due to cirrhosis and chronic liver disease, of which more than one quarter were related to alcoholic liver diseases.⁴ Patients with severe ASH may develop the acute clinical entity of alcoholic hepatitis, a disease characterized by jaundice and liver failure. Of the patients who survive alcoholic hepatitis, 70% will develop cirrhosis. By contrast, 40% of patients with alcoholic liver cirrhosis may also develop alcoholic hepatitis (acute-on-chronic disease), which has very high mortality rate.⁵

About Innovate Biopharmaceuticals, Inc. (Nasdaq: INNT):

Innovate is a clinical stage biotechnology company focused on developing novel therapeutics for autoimmune and inflammatory diseases. Innovate's lead drug candidate, larazotide acetate, has a mechanism of action that renormalizes the dysfunctional intestinal barrier by decreasing intestinal permeability and reducing antigen trafficking, such as gliadin fragments in celiac disease, and bacterial toxins and immunogenic antigens in nonalcoholic steatohepatitis (NASH). In several diseases, including celiac disease, NASH, Crohn's disease, ulcerative colitis, irritable bowel syndrome (IBS), type 1 diabetes mellitus (T1DM), chronic kidney disease (CKD), the intestinal barrier is dysfunctional with increased permeability.

Forward Looking Statements

This press release includes forward-looking statements including, but not limited to, statements related to the development of drug candidates, our plans to raise capital, our operations and business strategy. The forward-looking statements contained in this press release are based on management's current expectations and are subject to substantial risks, uncertainty and changes in circumstances. Actual results may differ materially from those expressed by these expectations due to risks and uncertainties, including, among others, those related to our ability to obtain additional capital on favorable terms to us, or at all, including, without limitation, to fund our current and future preclinical studies and clinical trials; the success, timing and cost of our drug development program and our ongoing or future preclinical studies and clinical trials, including, without limitation, the possibility of unfavorable new clinical and preclinical data and additional analyses of existing data, as well as the risks that prior clinical and preclinical results may not be replicated; the lengthy and unpredictable nature of the drug approval process; and our ability to commercialize our product candidates if approved. These risks and uncertainties include, but may not be limited to, those described in our Quarterly Report on Form 10-Q filed with the SEC on November 13, 2018, and in any subsequent filings with the SEC. Forward-looking statements speak only as of the date of this press release, and we undertake no obligation to review or update any forward-looking statement except as may be required by applicable law.

SOURCE: Innovate Biopharmaceuticals, Inc.

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