BioMarin Doses First Patient in Global GENEr8-1 Phase 3 Study of Valoctocogene Roxaparvovec Gene Therapy for Severe Hemophilia A

Second Phase 3 Study, GENEr8-2, to Begin at the Start of 2018

SAN RAFAEL, Calif., Dec. 19, 2017 /PRNewswire/ -- BioMarin Pharmaceutical Inc. (NASDAQ: BMRN) announced today that it has dosed the first patient in the global GENEr8-1 Phase 3 study with the 6e13 vg/kg dose for valoctocogene roxaparvovec (formerly BMN 270), an investigational gene therapy for the treatment of patients with severe hemophilia A. This is the first of two Phase 3 studies in the global Phase 3 program to dose a first patient.

"We are thrilled to have enrolled the first patient in this potential registration-enabling study for gene therapy in severe hemophilia A," said Hank Fuchs, M.D., President, Worldwide Research and Development at BioMarin. "I am proud of the effort that BioMarin has made to move this breakthrough therapy rapidly into Phase 3 bringing this one-time treatment one step closer to patients."

The global Phase 3 program includes two studies with valoctocogene roxaparvovec, one with the 6e13 vg/kg dose (GENEr8-1) and one with the 4e13 vg/kg dose (GENEr8-2). Both Phase 3 GENEr8 studies will be open-label single-arm studies to evaluate the efficacy and safety of valoctocogene roxaparvovec. GENEr8-2 will enroll the first patient at the start of 2018. The primary endpoint in both studies will be based on the FVIII activity level achieved following valoctocogene roxaparvovec, and the secondary endpoints will measure annualized FVIII replacement therapy use rate and annualized bleed rate.

BioMarin will also begin a Phase 1/2 Study with the 6e13kg/vg dose and with approximately 10 patients who are AAV5 positive. The first patient is expected to enroll in the first half of 2018.

Regulatory Status

The U.S. Food and Drug Administration (FDA) granted valoctocogene roxaparvovec Breakthrough Therapy Designation. The FDA's Breakthrough Therapy Designation program is intended to facilitate and expedite development and review of new drugs to address unmet medical need in the treatment of a serious condition. To qualify for Breakthrough Therapy Designation, preliminary clinical evidence must show that that the drug may demonstrate substantial improvement over existing therapies.

The European Medicines Agency (EMA) has granted access to its Priority Medicines (PRIME) regulatory initiative for valoctocogene roxaparvovec. To be accepted for PRIME, an investigational therapy has to show its potential to benefit patients with unmet medical needs based on early clinical data. PRIME focuses on medicines that may offer a major therapeutic advantage over existing treatments, or benefit patients with no treatment options. These medicines are considered priority medicines within the European Union (EU).

BioMarin's valoctocogene roxaparvovec has also received orphan drug designation from the FDA and EMA for the treatment of severe hemophilia A. The Orphan Drug Designation program is intended to advance the evaluation and development of products that demonstrate promise for the diagnosis and/or treatment of rare diseases or conditions.

Gene Therapy Manufacturing

BioMarin has constructed one of the largest gene therapy manufacturing facilities in the world, which is located in Novato, California. Good Manufacturing Practices (GMP) production of valoctocogene roxaparvovec has commenced and will support pivotal clinical development activities and anticipated commercial demand. This facility is capable of supporting approximately 2,000 patients per year, and the production process was developed in accordance with International Conference on Harmonisation guidance for Pharmaceuticals for Human Use facilitating worldwide registration with health authorities.

About Hemophilia A

Hemophilia A, also called factor VIII (FVIII) deficiency or classic hemophilia, is a genetic disorder caused by missing or defective factor VIII, a clotting protein. Although it is passed down from parents to children, about 1/3 of cases are caused by a spontaneous mutation, a new mutation that was not inherited. Approximately 1 in 10,000 people is born with Hemophilia A. People living with the disease are not able to form blood clots

efficiently and are at risk for excessive bleeding from modest injuries, potentially endangering their life. People with severe hemophilia often bleed spontaneously into their muscles or joints. The standard of care for the 43 percent of hemophilia A patients, who are severely affected, is a prophylactic regimen of Factor VIII infusions three times per week. Even with prophylactic regimens, many patients still experience spontaneous bleeding events that result in progressive and debilitating joint damage.

About Gene Therapy

Gene therapy is a form of treatment designed to fix a genetic problem by adding a corrected copy of the defective gene. The functional gene is inserted into a vector, containing a small DNA sequence, that acts as a delivery mechanism, providing the ability to deliver the functional gene to cells. The cells can then use the information to build the functional proteins that the body needs, potentially reducing or eliminating the cause of the disease. Currently, in the United States, gene therapy is available only as part of a clinical trial.

About BioMarin

BioMarin is a global biotechnology company that develops and commercializes innovative therapies for patients with serious and life-threatening rare and ultra-rare genetic diseases. The company's portfolio consists of five commercialized products and multiple clinical and pre-clinical product candidates. For additional information, please visit www.BMRN.com. Information on BioMarin's website is not incorporated by reference into this press release.

Forward-Looking Statement

This press release contains forward-looking statements about the business prospects of BioMarin Pharmaceutical Inc., including, without limitation, statements about the development of BioMarin's valoctocogene roxaparvovec program generally, the timing and results of the planned clinical trials of valoctocogene roxaparvovec and statements regarding the company's gene therapy manufacturing facility and its ability to support anticipated commercial demand. These forward-looking statements are predictions and involve risks and uncertainties such that actual results may differ materially from these statements. These risks and uncertainties include, among others: results and timing of current and planned preclinical studies and clinical trials of valoctocogene roxaparvovec; the content and timing of decisions by the U.S. Food and Drug Administration, the European Commission and other regulatory authorities; our ability to successfully manufacture the product candidate for the preclinical and clinical trials; and those other risks detailed from time to time under the caption "Risk Factors" and elsewhere in BioMarin's Securities and Exchange Commission (SEC) filings, including BioMarin's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017, and future filings and reports by BioMarin. BioMarin undertakes no duty or obligation to update any forward-looking statements contained in this press release as a result of new information, future events or changes in its expectations.

Contact:

Investors:	*Media:*
Traci McCarty	*Debra Charlesworth*
BioMarin Pharmaceutical Inc.	BioMarin Pharmaceutical Inc.
(415) 455-7558	(*415) 455-7451*

SOURCE BioMarin Pharmaceutical Inc.
