BioMarin Announces 12 Presentations at the International Society on Thrombosis and Haemostasis (ISTH) 2021 Virtual Congress

Findings to be Presented from Ongoing Studies of Valoctocogene Roxaparvovec Represent Largest and Longest Development Program for any Gene Therapy in Hemophilia A

SAN RAFAEL, Calif., July 2, 2021 /PRNewswire/ -- BioMarin Pharmaceutical Inc. (NASDAQ: BMRN) today announced three oral presentations and nine poster presentations related to valoctocogene roxaparvovec, an investigational gene therapy for the treatment of adults with severe hemophilia A, at the International Society on Thrombosis and Haemostasis (ISTH) 2021 Virtual Congress being held July 17-21, 2021. Notably, these presentations will include highlights from the Phase 3 GENEr8-1 trial, the largest gene therapy trial in Hemophilia A, and five years of clinical follow-up from the Phase 1/2 study, both of which continue to demonstrate prolonged hemostatic efficacy without the need for other treatment for hemophilia A.

"We are proud of the consistent and dramatic bleed control results to date, based on both long-term extension studies of at least five years, and the largest and most definitive gene therapy study in Hemophilia A. We look forward to the scientific presentations of the growing body of evidence for valoctocogene roxaparvovec and ensuing discussions at this important meeting," said Hank Fuchs, M.D., President, Worldwide Research and Development at BioMarin.

BioMarin's presentations at ISTH include:

Platform Presentations

Efficacy and Safety of Valoctocogene Roxaparvovec Adeno-associated Virus Gene Transfer for Severe Hemophilia A: Results from the Phase 3 GENEr8-1 Trial

Professor Margareth C. Ozelo, Hematology and Transfusion Medicine, Internal Medicine Department - School of Medical Sciences of UNICAMP, University of Campinas-UNICAMP

Monday, July 19, 2021, 11 AM-12 PM EDT

Hemostatic Response is Maintained for up to 5 Years Following Treatment with Valoctocogene Roxaparvovec, an AAV5-hFVIII-SQ Gene Therapy for Severe Hemophilia A

Professor Michael Laffan, faculty of Medicine, Department of Immunology and Inflammation at Imperial College London, Director of the Hammersmith Hospital Haemophilia Centre
Wednesday, July 21, 2021, 10-11 AM EDT

Investigation of Early Outcomes Following Adeno-associated Viral Gene Therapy in a Canine Hemophilia Model
Dr. Paul Batty, Department of Pathology and Molecular Medicine, Queen's University
Wednesday, July 21, 2021, 1-2 PM EDT

Poster Presentations

Poster #	Title and Authors
LPB0022	Global seroprevalence of pre-existing immunity against various AAV serotypes in people with haemophilia A Klamroth R, Hayes G, Andreeva T, Suzuki T, Hardesty B, Shima M, Pollock T, Slev P, Oldenburg J, Ozelo M, Castet S, Mahlangu J, Peyvandi F, Kazmi R, Leavitt A, Callaghan M, Pan-Petesch B, Quon D, Li M, Wong WY.
PB0663	A savvy approach in clinical trial recruitment for the SAAVY (Seroprevalence of AAV AntibodY) study in the era of COVID-19: Designing for a prospective, observational study in the United States during a global pandemic Valentino L, Vaghela M, Lauw M, Dela Cerda G, Jones M, Hinds D, Newman V, Leal-Padinas F, Rotellini D, Schafer K, Pipe S.
PB0488	Exploring the level of congruence between patient- and physician-reported anxiety and depression in persons with haemophilia A Burke T, Shaikh A, Pedra G, Hawes C, Camp C, O'Hara J.
PB0468	Examination and validation of a patient-centric joint metric: "PROBLEM JOINT"; empirical evidence from the CHESS Paediatrics dataset Burke T, Rodriguez-Santana I, O'Hara J, Chowdary P, Curtis R, Khair K, McLlaughlin P, Noone D, O'Mahoney B, Pasi J, Skinner M.

PB0452	Real-world clinical and patient-centric outcomes in people with haemophilia A in France: Combined findings from the CHESS and CHESS II studies Shaikh A, Burke T, Hawes C, Duport G, O'Hara J, Camp C.
PB0487	Real-world clinical and patient-centric outcomes in people with haemophilia A in Germany: Combined findings from the CHESS and CHESS II studies Shaikh A, Burke T, Hawes C, Becker T, Brandt S, O'Hara J, Camp C.
PB0464	Real-world clinical and patient-centric outcomes in people with haemophilia A in Italy: Combined findings from the CHESS and CHESS II studies Shaikh A, Burke T, Hawes C, Lupi A, O'Hara J, Camp C.
PB0456	Real-world clinical and patient-centric outcomes in people with haemophilia A in Spain: Combined findings from the CHESS and CHESS II studies Shaikh A, Burke T, Hawes C, O'Hara J, Camp C.
PB0479	Real-world clinical and patient-centric outcomes in people with haemophilia A in the United Kingdom: Combined findings from the CHESS and CHESS II studies Shaikh A, Burke T, Hawes C, McKeown W, Morgan D, O'Hara J, Camp C.

Founded in 1969, the ISTH is the leading worldwide not-for-profit organization dedicated to advancing the understanding, prevention, diagnosis and treatment of thrombotic and bleeding disorders. The ISTH is an international professional membership organization with more than 7,700 clinicians, researchers and educators working together to improve the lives of patients in more than 110 countries around the world. Among its highly regarded activities and initiatives are education and standardization programs, research activities, meetings and congresses, peer-reviewed publications, expert committees and World Thrombosis Day on 13 October.

Regulatory Status

BioMarin resubmitted a Marketing Authorization Application (MAA) to the European Medicines Agency (EMA) on June 25, 2021. In May 2021, the EMA granted the Company's

request for accelerated assessment. Accelerated assessment potentially reduces the time frame for the EMA Committee for Medicinal Products for Human Use (CHMP) and Committee for Advanced Therapies (CAT) to review a MAA for an Advanced Therapy Medicinal Product (ATMP). A CHMP opinion is anticipated in the first half of 2022.

The MAA submission includes safety and efficacy data from the 134 subjects enrolled in the Phase 3 GENEr8-1 study, all of whom have been followed for at least one year after treatment with valoctocogene roxaparvovec, as well as four and three years of follow-up from the 6e13 vg/kg and 4e13 vg/kg dose cohorts, respectively, in the ongoing Phase 1/2 dose escalation study.

In the United States, BioMarin intends to submit two-year follow-up safety and efficacy data on all study participants from the Phase 3 GENEr8-1 study to support the benefit/risk assessment of valoctocogene roxaparvovec, as previously requested by the Food and Drug Administration (FDA). BioMarin is targeting a Biologics License Application (BLA) resubmission in the second quarter of 2022, assuming favorable study results, followed by an expected six-month review by the FDA.

The FDA granted Regenerative Medicine Advanced Therapy (RMAT) designation to valoctocogene roxaparvovec in March 2021. RMAT is an expedited program intended to facilitate development and review of regenerative medicine therapies, such as valoctocogene roxaparvovec, that are intended to address an unmet medical need in patients with serious conditions. The RMAT designation is complementary to Breakthrough Therapy Designation, which the Company received in 2017.

In addition to the RMAT Designation and Breakthrough Therapy Designation, BioMarin's valoctocogene roxaparvovec also has 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.

Robust Clinical Program

BioMarin has multiple clinical studies underway in its comprehensive gene therapy program for the treatment of hemophilia A. In addition to the global Phase 3 study GENEr8-1 and the ongoing Phase 1/2 dose escalation study, the Company is actively enrolling participants in a Phase 3b, single arm, open-label study to evaluate the efficacy and safety of valoctocogene roxaparvovec at a dose of 6e13 vg/kg with prophylactic corticosteroids in people with hemophilia A. The Company is also running a Phase 1/2

Study with the 6e13 vg/kg dose of valoctocogene roxaparvovec in people with hemophilia A with pre-existing AAV5 antibodies, as well as another Phase 1/2 Study with the 6e13 vg/kg dose of valoctocogene roxaparvovec in people with hemophilia A with active or prior FVIII inhibitors.

About Hemophilia A

People living with hemophilia A lack sufficient functioning Factor VIII protein to help their blood clot and are at risk for painful and/or potentially life-threatening bleeds from even modest injuries. Additionally, people with the most severe form of hemophilia A (FVIII levels <1%) often experience painful, spontaneous bleeds into their muscles or joints. Individuals with the most severe form of hemophilia A make up approximately 45 to 50 percent of the hemophilia A population. People with hemophilia A with moderate (FVIII 1-5%) or mild (FVIII 5-40%) disease show a much-reduced propensity to bleed. The standard of care for adults with severe hemophilia A is a prophylactic regimen of replacement Factor VIII infusions administered intravenously up to two to three times per week or 100 to 150 infusions per year. Despite these regimens, many people continue to experience breakthrough bleeds, resulting in progressive and debilitating joint damage, which can have a major impact on their quality of life.

Hemophilia A, also called Factor VIII deficiency or classic hemophilia, is an X-linked 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 have Hemophilia A.

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 six commercialized products and multiple clinical and pre-clinical product candidates. For additional information, please visit www.biomarin.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: (i) the

development of BioMarin's valoctocogene roxaparvovec program generally, (ii) the impact of valoctocogene roxaparvovec gene therapy for treating patients with severe hemophilia A, (iii) the anticipated timing of a CHMP opinion in the first half of 2022, (iv) our plans in the U.S. to submit two-year follow-up safety and efficacy data on all study participants from the GENEr8-1 study in response to FDA's request for these data to support their benefit-risk assessment of valoctocogene roxaparvovec, (v) our target Biologics License Application (BLA) submission date in the second quarter of 2022, assuming favorable study results, followed by an expected six-month review procedure by the FDA, and (vi) the potential approval and commercialization of valoctocogene roxaparvovec for the treatment of severe hemophilia A, including timing of such approval decisions.

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, including final analysis of the above interim data; any potential adverse events observed in the continuing monitoring of the patients in the Phase 1/2 trial; the content and timing of decisions by the FDA, the European Commission and other regulatory authorities, including the potential impact of the COVID-19 pandemic on the regulatory authorities' abilities to issue such decisions and the timing of such decisions; the content and timing of decisions by local and central ethics committees regarding the clinical trials; BioMarin's ability to successfully manufacture valoctocogene roxaparvovec; 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 March 31, 2021, 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.

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