BIVV001 Phase 1/2a Data Presented at ASH Underscore Potential for Once Weekly Dosing with Sustained High Factor Levels in Hemophilia A

Early data (n=2) show an unprecedented half-life of 44 hours with a single 65 IU/kg dose of BIVV001, significantly longer than the half-life observed with a short-acting recombinant factor VIII therapy

BIVV001 also demonstrated high factor VIII activity levels of 18.5% seven days post infusion

SAN DIEGO, Calif. – December 3, 2018 - Bioverativ Inc., a Sanofi company dedicated to transforming the lives of people with rare blood disorders, today presented new data from the EXTEN-A Phase 1/2a trial of BIVV001 (rFVIIIFc-VWF-XTEN) showing that a single 65 IU/kg dose of BIVV001 extended the half-life of factor VIII to an unprecedented 44 hours with high factor activity levels and was generally well tolerated. The data were presented in an oral session at the 60th Annual Meeting of the American Society of Hematology (ASH).

BIVV001 is a novel and investigational von Willebrand factor (VWF)-independent factor VIII therapy for people with hemophilia A that has the potential to provide protection in all treatment scenarios. Factor replacement therapy is the cornerstone of effective treatment of hemophilia A, as it naturally provides what is missing in the body (clotting factor VIII), and it has a consistent and well-characterized safety and efficacy profile.

“Longer prophylactic dosing intervals that offer maximum overall protection from bleeds are still an unmet need for people with severe hemophilia A,” said Barbara A. Konkle, M.D., Associate Chief Scientific Officer, Bloodworks Northwest and Professor of Medicine/Hematology, University of Washington, who presented the data at ASH today. “In these initial results, a single 65 IU/kg dose of BIVV001 resulted in a much greater half-life than traditional recombinant factor therapy, achieving an average factor activity level of 18.5% at seven days post infusion.”

Factor activity levels refer to the amount of factor VIII in a person’s blood, and they determine a person’s symptoms. Participants in the EXTEN-A trial have severe hemophilia A (<1%). Moderate hemophilia A is characterized by factor levels of 1-5%, and mild hemophilia A is from 6-49%.[i]

“We are very encouraged by these results, which suggest that BIVV001 has the potential to markedly improve the treatment paradigm for patients and physicians, and we look forward to learning more as the trial continues,” said Tim Harris, PhD., D.Sc., Executive Vice President of Research and Development at Bioverativ.

About the EXTEN-A Phase 1/2a Study

EXTEN-A is an ongoing Phase 1/2a, open-label, multicenter study to evaluate the safety and pharmacokinetics (PK) of BIVV001 in both a 25 IU/kg dose and 65 IU/kg dose cohort of subjects aged 18-65 years with severe hemophilia A.

The data presented at ASH include early results from the 65 IU/kg dose cohort (n=2) and the complete 25 IU/kg dose cohort (n=6). In the trial, subjects received a single dose of rFVIII followed, after a washout period, by either a single 65 IU/kg or 25 IU/kg dose of BIVV001. Primary endpoints include occurrence of adverse events and development of inhibitors. Secondary endpoints related to pharmacokinetic parameters were also presented. Key findings included (cut-off September 6, 2018):

- BIVV001 was generally well tolerated with no development of inhibitors.

- In the 65 IU/kg dose (n=2) cohort, a single dose of BIVV001 extended the half-life of factor VIII to 44 hours, a significant increase from the 17-hour half-life observed with rFVIII.
- Average factor VIII activity for subjects in this 65 IU/kg cohort was 39.6% at five days, and 18.5% at seven days post infusion of BIVV001.
- In the 25 IU/kg cohort (n=6), a single dose of BIVV001 extended the half-life of factor VIII to 38 hours, more than four times longer than the 9-hour half-life observed with rFVIII, with factor activity levels >5% at seven days.

Additional information about the EXTEN-A study can be found at ClinicalTrials.gov using identifier NCT03205163**.**

About BIVV001
BIVV001 (rFVIIIFc-VWF-XTEN) is a novel and investigational recombinant factor VIII therapy that is designed to extend protection from bleeds with prophylaxis dosing of once weekly for people with hemophilia A. BIVV001 builds on the company's innovative Fc fusion technology by adding a region of von Willebrand factor and XTEN polypeptides to potentially extend its time in circulation. It is the only therapy that has been shown to break through the von Willebrand factor ceiling, which is believed to impose a half-life limitation on current factor VIII therapies. BIVV001 was granted orphan drug designation by the Food and Drug Administration in August 2017.

About Hemophilia A
Hemophilia is a rare, genetic disorder in which the ability of a person's blood to clot is impaired. Hemophilia A occurs in about one in 5,000 male births annually, and more rarely in females. The World Federation of Hemophilia estimates that approximately 150,000 people are currently diagnosed with hemophilia A worldwide.[ii]

People with hemophilia A experience bleeding episodes that can cause pain, irreversible joint damage and life-threatening hemorrhages. Prophylactic injections of factor VIII can temporarily replace the clotting factor that is needed to control bleeding and prevent new bleeding episodes.[iii] The World Federation of Hemophilia (WFH) recommends prophylaxis as the optimal therapy as it can prevent bleedings and joint destruction.[iv]

About Bioverativ, a Sanofi company
Bioverativ, a Sanofi company, is dedicated to transforming the lives of people with hemophilia and other rare blood disorders through world-class research, development, and commercialization of innovative therapies. Bioverativ is committed to actively working with the blood disorders community, and its hemophilia therapies, when launched, represented the first major advancements in hemophilia treatment in more than two decades. For more information, visit www.bioverativ.com or follow @bioverativ on Twitter.

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[i] National Hemophilia Foundation, Hemophilia A. Available at https://www.hemophilia.org/Bleeding-Disorders/Types-of-Bleeding-Disorders/Hemophilia-A . Accessed May 17, 2018

[ii] World Federation of Hemophilia, Annual Global Survey 2016, published in October 2017. Available at: http://www.wfh.org/en/data-collection

[iii] World Federation of Hemophilia. About Bleeding Disorders – Frequently Asked Questions. Available at: http://www.wfh.org/en/page.aspx?pid=637#Difference_A_B. Accessed on: June 17, 2016

[iv] Guideline for the management of hemophilia, World Federation of Hemophilia, 2nd edition, http://www1.wfh.org/publications/files/pdf-1472.pdf. Accessed on December 2015