Spark Therapeutics and Pfizer Announce Publication in The New England Journal of Medicine of Interim Data from Phase 1/2 Clinical Trial of Investigational Gene Therapy for Hemophilia B

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Annualized bleeding rate (ABR) among 10 participants was reduced 97 percent following SPK-9001 administration, while factor IX concentrate use collectively was reduced 99 percent by 1.95 million international units (IU) during the 492-week cumulative follow-up period

Spark Therapeutics (NASDAQ:ONCE), a fully integrated gene therapy company dedicated to challenging the inevitability of genetic disease, and Pfizer Inc. (NYSE:PFE), today announced that The New England Journal of Medicine has published interim data as of July 25, 2017, from the Phase 1/2 clinical trial of SPK-9001, an investigational gene therapy for hemophilia B. With a cumulative follow-up of 492 weeks' observation of the first 10 adult male participants, the mean steady-state factor IX activity was 34 percent of normal (range of 14-81 percent) following a single administration of investigational SPK-9001. The annualized bleeding rate (ABR) was reduced 97 percent, from a mean rate of 11.1 events per year before vector administration to 0.4 events per year after vector administration (p=0.02), while factor IX concentrate use was reduced 99 percent (p=0.004).

“People who live with hemophilia today face a lifelong need for vigilant monitoring and recurrent factor concentrate infusions to prevent spontaneous, potentially life-threatening bleeds and to protect their joints. The discipline required to execute the usual prophylactic regimen can exact a heavy toll on quality of life, and these regimens result in significant costs to patients, families and the health care system,” said Katherine A. High, M.D., president and head of Research and Development at Spark Therapeutics and co-author of the paper. “The data suggest a one-time infusion of SPK-9001 has the potential to safely sustain factor IX coagulant activity level that may result in the termination of baseline prophylaxis factor infusions, significantly reduce bleeding, and nearly eliminate the need for exogenous factor IX concentrate infusions.”

In this open-label, non-randomized, multicenter Phase 1/2 clinical trial, there were no serious adverse events during or following infusion of SPK-9001, and no participants experienced thrombotic events or developed factor IX inhibitors. Two participants developed an asymptomatic and transient increase in liver enzymes that resolved with a tapering dose of oral corticosteroids. One participant with severe joint disease has administered factor for suspected bleeding, but overall factor use for this participant was 91 percent lower than before SPK-9001 infusion.

Please refer to the paper, “Hemophilia B Gene Therapy with a High Specific Activity Factor IX Variant,” for the full description of the design and interim results of this study.

About Hemophilia B Hemophilia, a rare genetic bleeding disorder that causes the blood to take a long time to clot because of a deficiency in one of several blood clotting factors, is almost exclusively found in males. People with hemophilia are at risk for excessive and recurrent bleeding from modest injuries, which have the potential to be life threatening. People with severe hemophilia often bleed spontaneously into their muscles or joints, or rarely into other critical closed spaces such as the intracranial space, where bleeding can be fatal. The incidence of hemophilia B is one in 25,000 male births. People with hemophilia B have a deficiency in clotting factor IX, a specific protein in the blood. Hemophilia B also is called congenital factor IX deficiency or Christmas disease. The current standard of care requires recurrent intravenous infusions of either plasma-derived or recombinant factor IX to control and prevent bleeding episodes. There exists a significant need for novel therapeutics to treat people living with hemophilia.

About the SPK-FIX Program and SPK-9001 SPK-9001 is a novel investigational vector that contains a bio-engineered adeno-associated virus (AAV) capsid and a codon-optimized, high-activity human factor IX gene enabling endogenous production of factor IX.

Spark Therapeutics and Pfizer entered into a collaboration in December 2014 for the SPK-FIX program, including SPK-9001, under which Spark Therapeutics is responsible for conducting all Phase 1/2 studies for any product candidates, while Pfizer will assume responsibility for pivotal studies, any regulatory activities and potential global commercialization of any products that may result from the collaboration.

About Spark Therapeutics At Spark Therapeutics, a fully integrated company committed to discovering, developing and delivering gene therapies, we challenge the inevitability of genetic diseases, including blindness, hemophilia and neurodegenerative diseases. We have successfully applied our technology directed to the retina and liver, and currently have four programs in clinical trials or under regulatory review, including the first potential gene therapy for a genetic disease in the United States and product candidates that have shown promising early results in patients with hemophilia. At Spark, we see the path to a world where no life is limited by genetic disease. For more information, visit www.sparktx.com, and follow us on Twitter and LinkedIn.

Cautionary note on forward-looking statements This release contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, including statements regarding the company's SPK-FIX program. The words ‘‘anticipate,’’ ‘‘believe,’’ ‘‘expect,’’ ‘‘intend,’’ ‘‘may,’’ ‘‘plan,’’ ‘‘predict,’’ ‘‘will,’’ ‘‘would,’’ ‘‘could,’’ ‘‘should,’’ ‘‘continue’’ and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Any forward-looking statements are based on management's current expectations of future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in, or implied by, such forward-looking statements. These risks and uncertainties include, but are not limited to, the risk that: (i) our lead SPK-FIX product candidate, SPK-9001, may not produce sufficient data in our Phase 1/2 clinical trial to warrant further development; (ii) our overall collaboration with Pfizer may not be successful; (iii) we may not receive any additional milestone payments from Pfizer; and (iv) any one or more of our product candidates in preclinical or clinical development will not successfully be developed and commercialized. For a discussion of other risks and uncertainties, and other important factors, any of which could cause our actual results to differ from those contained in the forward-looking statements, see the "Risk Factors" section, as well as discussions of potential risks, uncertainties and other important factors, in our Annual Report on Form 10-K, our Quarterly Reports on Form 10-Q and other filings we make with the Securities

and Exchange Commission. All information in this press release is as of the date of the release, and Spark undertakes no duty to update this information unless required by law.

About Pfizer: Working together for a healthier world® At Pfizer, we apply science and our global resources to bring therapies to people that extend and significantly improve their lives. We strive to set the standard for quality, safety and value in the discovery, development and manufacture of health care products. Our global portfolio includes medicines and vaccines as well as many of the world's best-known consumer health care products. Every day, Pfizer colleagues work across developed and emerging markets to advance wellness, prevention, treatments and cures that challenge the most feared diseases of our time. Consistent with our responsibility as one of the world's premier innovative biopharmaceutical companies, we collaborate with health care providers, governments and local communities to support and expand access to reliable, affordable health care around the world. For more than 150 years, we have worked to make a difference for all who rely on us. We routinely post information that may be important to investors on our website at www.pfizer.com. In addition, to learn more, please visit us on www.pfizer.com and follow us on Twitter at @Pfizer and @Pfizer_News, LinkedIn, YouTube and like us on Facebook at Facebook.com/Pfizer.

Pfizer Disclosure Notice: The information contained in this release is as of Dec. 6, 2017. Pfizer assumes no obligation to update forward-looking statements contained in this release as the result of new information or future events or developments.

This release contains forward-looking information about SPK-9001 and the SPK-FIX program, including their potential benefits, that involves substantial risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statements. Risks and uncertainties include, among other things, the uncertainties inherent in research and development, including the ability to meet anticipated clinical study commencement and completion dates as well as the possibility of unfavorable study results, including unfavorable new clinical data and additional analyses of existing clinical data; risks associated with initial data, including the risk that the final results of the Phase 1/2 study for SPK-9001 and/or additional clinical trials may be different from (including less favorable than) the initial data results and may not support further clinical development; the risk that clinical trial data are subject to differing interpretations, and, even when we view data as sufficient to support the safety and/or effectiveness of a product candidate, regulatory authorities may not share our views and may require additional data or may deny approval altogether; whether regulatory authorities will be satisfied with the design of and results from our clinical

studies; whether and when any applications may be filed with regulatory authorities for SPK-9001; whether and when regulatory authorities may approve any such applications, which will depend on the assessment by such regulatory authorities of the benefit-risk profile suggested by the totality of the efficacy and safety information submitted and, if approved, whether SPK-9001 will be commercially successful; decisions by regulatory authorities regarding labeling and other matters that could affect the availability or commercial potential of SPK-9001; and competitive developments.

A further description of risks and uncertainties can be found in Pfizer's Annual Report on Form 10-K for the fiscal year ended December 31, 2016 and in its subsequent reports on Form 10-Q, including in the sections thereof captioned "Risk Factors" and "Forward-Looking Information and Factors That May Affect Future Results", as well as in its subsequent reports on Form 8-K, all of which are filed with the U.S. Securities and Exchange Commission and available at www.sec.gov and www.pfizer.com.

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