



Vertex Pharmaceuticals and CRISPR Therapeutics Amend Collaboration for Development, Manufacturing and Commercialization of CTX001™ in Sickle Cell Disease and Beta Thalassemia

April 20, 2021

- Under terms of amended agreement, Vertex to lead worldwide development, manufacturing and commercialization of CTX001-
- Revised agreement provides Vertex with 60% and CRISPR with 40% of program economics-
- CRISPR to receive \$900 million upfront payment with potential for additional \$200 million milestone payment upon CTX001 regulatory approval -

BOSTON and CAMBRIDGE, Mass. and ZUG, Switzerland, April 20, 2021 (GLOBE NEWSWIRE) -- [Vertex Pharmaceuticals Incorporated](#) (NASDAQ: VRTX) and [CRISPR Therapeutics](#) (NASDAQ: CRSP) today announced that the companies have amended their collaboration agreement to develop, manufacture and commercialize CTX001, an investigational CRISPR/Cas9-based gene editing therapy that is being developed as a potentially curative therapy for sickle cell disease (SCD) and transfusion-dependent beta-thalassemia (TDT). With this revised agreement, Vertex will deploy the breadth of its established global capabilities and proven experience in manufacturing, development, regulatory, and commercialization to maximize the potential for CTX001 to transform the lives of tens of thousands of patients in the U.S., Europe and other countries. CRISPR Therapeutics will continue to support the development of CTX001 and invest in further innovation to maximize its potential.

Under the terms of the amended agreement, Vertex will lead global development, manufacturing and commercialization of CTX001 with support from CRISPR Therapeutics. Vertex will be responsible for 60% of program costs and will receive 60% of profits from future sales of CTX001 worldwide, representing a 10% increase in program economics compared to the previous agreement. CRISPR will be responsible for 40% of costs and will receive 40% of profits. Additionally, CRISPR will receive a \$900 million upfront payment, with potential for a \$200 million payment upon the first regulatory approval of CTX001.

"Cell and genetic therapies are key to our strategy of developing transformative therapies for serious diseases, and this agreement is an important next step in cementing our leadership in these modalities as we bring forward our broad gene and cell-based therapeutics portfolio. As we take the lead on CTX001, we want to acknowledge the foundational contributions by the team at CRISPR Therapeutics," said Jeffrey Leiden, M.D., Ph.D., Executive Chairman of Vertex. "Our increased investment in our partnership with CRISPR is based on the compelling clinical profile of CTX001, which shows its potential to be a durable cure for patients with SCD and TDT, and the rapid progress that we and our partners at CRISPR have made toward registration and commercialization. We see a significant commercial opportunity for CTX001, and we believe we will be able to further enhance that opportunity by fully leveraging the breadth of Vertex's capabilities – including our established and proven R&D and commercialization expertise in serious diseases – to bring CTX001 to more patients around the world, more quickly."

"Working with Vertex, we have made tremendous progress with CTX001, the first CRISPR/Cas9-based therapy to demonstrate proof of concept in the clinic and together we have broken new ground in the treatment of genetic diseases. We have now dosed more than 30 patients with CTX001, with longest follow-up beyond two years, and we are on track to complete enrollment in both clinical trials this year," said Samarth Kulkarni, Ph.D., Chief Executive Officer of CRISPR Therapeutics. "Given the transformative results and momentum that we have generated with this program, we are adopting a new operating model to enable a globally coordinated launch of CTX001, leveraging Vertex's best-in-class global capabilities and leadership in development, manufacturing, and commercialization to enable this medicine to reach all patients that can benefit from it as quickly as possible. We remain deeply committed to the Sickle Cell and Thalassemia patient communities and look forward to continued success in our partnership with Vertex."

The transaction is subject to customary closing conditions and clearances, including clearance under the Hart-Scott Rodino Antitrust Improvements Act.

About CTX001

CTX001 is an investigational, autologous, *ex vivo* CRISPR/Cas9 gene-edited therapy that is being evaluated for patients suffering from TDT or severe SCD, in which a patient's hematopoietic stem cells are edited to produce high levels of fetal hemoglobin (HbF; hemoglobin F) in red blood cells. HbF is a form of the oxygen-carrying hemoglobin that is naturally present at birth, which then switches to the adult form of hemoglobin. The elevation of HbF by CTX001 has the potential to alleviate transfusion requirements for patients with TDT and reduce painful and debilitating sickle crises for patients with SCD.

Based on progress in this program to date, CTX001 has been granted Regenerative Medicine Advanced Therapy (RMAT), Fast Track, Orphan Drug, and Rare Pediatric Disease designations from the U.S. Food and Drug Administration (FDA) for both TDT and SCD. CTX001 has also been granted Orphan Drug Designation from the European Commission for both TDT and SCD, as well as Priority Medicines (PRIME) designation from the European Medicines Agency (EMA) for SCD.

Among gene-editing approaches being investigated/evaluated for TDT and SCD, CTX001 is the furthest advanced in clinical development.

About the CRISPR-Vertex Collaboration

CRISPR Therapeutics and Vertex entered into a strategic research collaboration in 2015 focused on the use of CRISPR/Cas9 to discover and develop potential new treatments aimed at the underlying genetic causes of human disease. CTX001 represents the first potential treatment to emerge from the joint research program.

About Vertex

Vertex is a global biotechnology company that invests in scientific innovation to create transformative medicines for people with serious diseases. The

company has multiple approved medicines that treat the underlying cause of cystic fibrosis (CF) — a rare, life-threatening genetic disease — and has several ongoing clinical and research programs in CF. Beyond CF, Vertex has a robust pipeline of investigational small molecule medicines in other serious diseases where it has deep insight into causal human biology, including pain, alpha-1 antitrypsin deficiency and APOL1-mediated kidney diseases. In addition, Vertex has a rapidly expanding pipeline of genetic and cell therapies for diseases such as sickle cell disease, beta thalassemia, Duchenne muscular dystrophy and type 1 diabetes mellitus.

Founded in 1989 in Cambridge, Mass., Vertex's global headquarters is now located in Boston's Innovation District and its international headquarters is in London. Additionally, the company has research and development sites and commercial offices in North America, Europe, Australia and Latin America. Vertex is consistently recognized as one of the industry's top places to work, including 11 consecutive years on Science magazine's Top Employers list and a best place to work for LGBTQ equality by the Human Rights Campaign. For company updates and to learn more about Vertex's history of innovation, visit www.vrtx.com or follow us on Facebook, Twitter, LinkedIn, YouTube and Instagram.

Vertex Special Note Regarding Forward-Looking Statements

This press release contains forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995, including, without limitation, statements made by Dr. Leiden and Dr. Kulkarni in this press release, and statements regarding: (i) the status and clinical progress of the CTX001 clinical program; (ii) the expected therapeutic benefits of CTX001, including the potential for CTX001 to transform the lives of patients; (iii) the potential closing of the transaction; (iv) future activities of the parties pursuant to the amended collaboration, (v) the potential benefits of the amended collaboration, and (vi) the commercial potential of CTX001. While Vertex believes the forward-looking statements contained in this press release are accurate, these forward-looking statements represent the company's beliefs only as of the date of this press release and there are a number of risks and uncertainties that could cause actual events or results to differ materially from those expressed or implied by such forward-looking statements. Those risks and uncertainties include, among other things, that the transaction is subject to certain conditions, including the expiration of the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act, that data from a limited number of patients may not be indicative of final clinical trial results, that Vertex may not realize the potential benefits of the amended collaboration, and that data from the company's development programs, including the CTX001 program, may not support registration or further development of its potential medicines in a timely manner, or at all, due to safety, efficacy or other reasons, and other risks listed under the heading "Risk Factors" in Vertex's annual report filed with the Securities and Exchange Commission and available through the company's website at www.vrtx.com and on the SEC's website at www.sec.gov. You should not place undue reliance on these statements. Vertex disclaims any obligation to update the information contained in this press release as new information becomes available.

About CRISPR Therapeutics

CRISPR Therapeutics is a leading gene editing company focused on developing transformative gene-based medicines for serious diseases using its proprietary CRISPR/Cas9 platform. CRISPR/Cas9 is a revolutionary gene editing technology that allows for precise, directed changes to genomic DNA. CRISPR Therapeutics has established a portfolio of therapeutic programs across a broad range of disease areas including hemoglobinopathies, oncology, regenerative medicine and rare diseases. To accelerate and expand its efforts, CRISPR Therapeutics has established strategic collaborations with leading companies including Bayer, Vertex Pharmaceuticals and ViaCyte, Inc. CRISPR Therapeutics AG is headquartered in Zug, Switzerland, with its wholly-owned U.S. subsidiary, CRISPR Therapeutics, Inc., and R&D operations based in Cambridge, Massachusetts, and business offices in San Francisco, California and London, United Kingdom. For more information, please visit www.crisprtx.com.

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CRISPR Therapeutics Forward-Looking Statement

This press release may contain a number of "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including statements made by Dr. Kulkarni and Dr. Leiden in this press release, as well as statements regarding CRISPR Therapeutics' expectations about any or all of the following: (i) the status and clinical progress of the CTX001 clinical program and development timelines for product candidates under development by CRISPR Therapeutics and its collaborators; (ii) the timing of the potential closing of the transaction, future activities of the parties pursuant to the collaboration and the potential benefits of CRISPR Therapeutics' collaboration with Vertex; and (iii) the therapeutic value, development, and commercial potential of CRISPR/Cas9 gene editing technologies and therapies. Without limiting the foregoing, the words "believes," "anticipates," "plans," "expects" and similar expressions are intended to identify forward-looking statements. You are cautioned that forward-looking statements are inherently uncertain. Although CRISPR Therapeutics believes that such statements are based on reasonable assumptions within the bounds of its knowledge of its business and operations, forward-looking statements are neither promises nor guarantees and they are necessarily subject to a high degree of uncertainty and risk. Actual performance and results may differ materially from those projected or suggested in the forward-looking statements due to various risks and uncertainties. These risks and uncertainties include, among others: the transaction is subject to certain conditions, including the expiration of the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act, CRISPR Therapeutics may not realize the potential benefits of the collaboration, the potential that clinical trial results may not be favorable; uncertainties about regulatory approvals and that future competitive or other market factors may adversely affect the commercial potential for CRISPR Therapeutics' product candidates; the potential impacts due to the coronavirus pandemic such as (x) delays in regulatory review, manufacturing and supply chain interruptions and (y) the timing and progress of clinical trials; uncertainties regarding the intellectual property protection for CRISPR Therapeutics' technology and intellectual property belonging to third parties, and the outcome of proceedings (such as an interference, an opposition or a similar proceeding) involving all or any portion of such intellectual property; and those risks and uncertainties described under the heading "Risk Factors" in CRISPR Therapeutics' most recent annual report on Form 10-K and in any other subsequent filings made by CRISPR Therapeutics with the U.S. Securities and Exchange Commission, which are available on the SEC's website at www.sec.gov. Existing and prospective investors are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date they are made. CRISPR Therapeutics disclaims any obligation or undertaking to update or revise any forward-looking statements contained in this press release, other than to the extent required by law.

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