Beam Therapeutics to Present First Research Highlighting Approach to Develop Non-Genotoxic Conditioning Regimens for Patients with Sickle Cell Disease Ahead of Autologous Transplant

June 27, 2022

CAMBRIDGE, Mass., June 27, 2022 (GLOBE NEWSWIRE) -- Beam Therapeutics Inc. (Nasdaq: BEAM), a biotechnology company developing precision genetic medicines through base editing, today announced that new research highlighting the company's internal efforts to develop improved transplant conditioning regimens for patients with sickle cell disease (SCD) undergoing hematopoietic stem cell transplantation (HSCT) will be presented today, June 27, 2022, at 4:00 p.m. CEST at the Federation of American Societies for Experimental Biology (FASEB) Genome Engineering Conference by Nicole Gaudelli, Ph.D., director, head of gene editing at Beam. The conference is being held from June 26-30, 2022, in Lisbon, Portugal.

Beam is advancing two *ex vivo* base editing programs for SCD: BEAM-101, which incorporates base edits that are designed to mimic single nucleotide polymorphisms seen in individuals with hereditary persistence of fetal hemoglobin, and BEAM-102, which directly edits the causative HbS point mutation to recreate a naturally occurring normal human hemoglobin variant, HbG-Makassar. In the second half of 2022, Beam plans to initiate patient enrollment in its clinical trial with BEAM-101 and to submit an investigational new drug application for BEAM-102.

Beam has laid out a long-term strategy to support broad accessibility of base editing treatments for patients with SCD and other hematologic diseases. A key component of this strategy is focused on improving the safety of conditioning regimens, a required pretreatment for patients receiving *ex vivo* gene editing treatment via autologous transplant. Today's conditioning regimens rely on nonspecific chemotherapy or radiation, which are associated with significant toxicities, including genotoxicity, primary or secondary malignancy, and organ toxicities including infertility. With a goal of overcoming this, Beam has leveraged its base editing capabilities to develop a potentially non-genotoxic approach that combines antibody-based conditioning with multiplex gene edited hematopoietic stem cells (HSCs) called ESCAPE, or Engineered Stem Cell Antibody Paired Evasion.

"As we execute on our long-term strategy to develop base editing treatments for SCD, we are excited to share new findings around our pre-clinical research to identify improved conditioning regimens for patients ahead of autologous transplant," said Giuseppe Ciaramella, Ph.D., president and chief scientific officer of Beam. "The findings being presented today showcase the first data from our efforts to advance an improved non-genotoxic conditioning approach, coupling a monoclonal antibody with multiplex base edited HSCs that both 'ESCAPE' antibody binding and contain disease-corrective edits to potentially ameliorate the clinical manifestations of SCD. By exploiting the unique multiplex capabilities of base editing in these next-generation conditioning and cell-engineering approaches, we aim to develop a curative treatment for patients with SCD that avoids the safety and fertility concerns associated with current conditioning regimens. These findings are a major step forward in our efforts to enable potentially highly efficacious conditioning options for patients with SCD and could significantly increase the probability of success of non-genotoxic conditioning, which is a key priority in the field. We look forward to rapidly advancing this work as part of our long-term strategy to bring safer and more effective options forward for patients with SCD."

New antibody-based conditioning agents have shown promise in targeting CD117, an optimal conditioning target for eliminating HSCs, but such antibodies generally cannot discriminate between host (disease-carrying) and transplanted (disease-corrected) cells, and therefore are designed with short half-life or dosed at low concentrations well before transplant. To potentially solve for this and other safety concerns associated with current conditioning regimens, Beam scientists developed ESCAPE, whereby an edit-antibody pair targeting CD117 was designed to enable edited HSCs to function normally but escape the binding of the conditioning antibody. This strategy is intended to allow the conditioning antibody to continue clearing older unedited host cells while selectively allowing new edited cells to proliferate in the body during engraftment.

The findings show that *in vitro* the ESCAPE antibodies bound to wild-type CD117, blocked binding of its ligand and led to depletion of unedited cells, while enriching for edited cells which were generally not bound by the antibody. High levels of editing efficiency were demonstrated with both a single CD117 edit and simultaneous CD117 and BEAM-101 edits (~85% multiplex editing). Beam has also developed a CD117 editing strategy with greater than 75% editing efficiency that is also compatible with an edit to correct the sickle mutation and generate HbG-Makassar, Beam's strategy with its BEAM-102 program. Relative to a control, ESCAPE reduced cell viability of unedited cells while maintaining CD117 edited cells *in vitro*, suggesting utility as a conditioning agent with a selective advantage to edited HSCs post-transplant.

About Beam Therapeutics
Beam Therapeutics (Nasdaq: BEAM) is a biotechnology company committed to establishing the leading, fully integrated platform for precision genetic medicines. To achieve this vision, Beam has assembled a platform that includes a suite of gene editing and delivery technologies and is in the process of building internal manufacturing capabilities. Beam's suite of gene editing technologies is anchored by base editing, a proprietary technology that is designed to enable precise, predictable and efficient single base changes, at targeted genomic sequences, without making double-stranded breaks in the DNA. This has the potential to enable a wide range of potential therapeutic editing strategies that Beam is using to advance a diversified portfolio of base editing programs. Beam is a values-driven organization committed to its people, cutting-edge science, and a vision of providing life-long cures to patients suffering from serious diseases.

Cautionary Note Regarding Forward-Looking Statements
This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Investors are cautioned not to place undue reliance on these forward-looking statements, including, but not limited to, statements related to: our presentation at FASEB; our plans, and anticipated timing, to initiate patient enrollment in our BEAM-101 clinical trial and to submit an investigational new drug application for Beam-102; the therapeutic applications and potential of our technology, including with respect to improved conditioning regimens and sickle cell disease; and our ability to develop life-long, curative, precision genetic medicines for patients through base editing. Each forward-looking statement is subject to important risks and uncertainties that could cause actual results to differ materially from those expressed or implied in such

statement, including, without limitation, risks and uncertainties related to: our ability to develop, obtain regulatory approval for, and commercialize our product candidates, which may take longer or cost more than planned; our ability to raise additional funding, which may not be available; our ability to obtain, maintain and enforce patent and other intellectual property protection for our product candidates; the potential impact of the COVID-19 pandemic; that preclinical testing of our product candidates and preliminary or interim data from preclinical studies and clinical trials may not be predictive of the results or success of ongoing or later clinical trials; that enrollment of our clinical trials may take longer than expected; that our product candidates may experience manufacturing or supply interruptions or failures; risks related to competitive products; and the other risks and uncertainties identified under the headings “Risk Factors Summary” and “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2021, under the heading “Risk Factors” in our Quarterly Report on Form 10-Q for the quarter ended March 31, 2022, and in any subsequent filings with the Securities and Exchange Commission. These forward-looking statements speak only as of the date of this press release. Factors or events that could cause our actual results to differ may emerge from time to time, and it is not possible for us to predict all of them. We undertake no obligation to update any forward-looking statement, whether as a result of new information, future developments or otherwise, except as may be required by applicable law.

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Source: Beam Therapeutics