Beam Therapeutics to Present New Preclinical Data from Base Editing Pipeline at ASGCT 25th Annual Meeting

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CAMBRIDGE, Mass., May 02, 2022 (GLOBE NEWSWIRE) -- Beam Therapeutics Inc. (Nasdaq: BEAM), a biotechnology company developing precision genetic medicines through base editing, today announced that the company will present new preclinical data from several programs across its base editing portfolio at the American Society of Gene and Cell Therapy (ASGCT) 25th Annual Meeting. The meeting is being held May 16-19, 2022, in Washington, DC.

Beam's presentations showcase a key component of the company's long-term strategy: making early and deliberate investments in preclinical assessments to better understand levels of editing required to generate therapeutic responses and to potentially restore physiological function. Updated findings to be presented at the meeting include data from two of the company's *in vivo*, liver-targeted programs – BEAM-301, its base editing program in development for the treatment of glycogen storage disease type Ia (GSDIa), and its base editing program in development for the treatment of alpha-1 antitrypsin deficiency (Alpha-1). In addition, Beam will present research highlighting its proprietary lipid nanoparticle (LNP) delivery capabilities for potential *in vivo* delivery to both T cells and natural killer (NK) cells, which could have broad applications in both immunology and oncology.

"Beam research continues to advance on many fronts in parallel, including both *ex vivo* and *in vivo* programs as well as novel delivery technologies, and we are excited to present new preclinical findings at ASGCT," said Giuseppe Ciaramella, Ph.D., president and chief scientific officer of Beam. "Updated data from our BEAM-301 *in vivo* candidate for GSDIa continue to show potent and durable liver editing that translated into improved metabolic parameters and survival in a mouse model of homozygous GSDIa, combined with a favorable off-target profile, providing further support for its advancement toward IND-enabling studies this year. In addition, updated data from our Alpha-1 program demonstrate Beam's capabilities to optimize base editing for a challenging target site, achieving significantly improved editing potency and therapeutically relevant levels of gene correction in a clinically relevant dose range."

Dr. Ciaramella added, "Lastly, we've leveraged our proprietary LNP capabilities to deliver mRNA to immune cells both *ex vivo* and *in vivo. In vivo* delivery of mRNA encoding therapeutic transgenes such as CARs to T and NK cells could circumvent certain critical challenges associated with current-generation autologous CAR-T therapies, potentially complementing our existing platform for multiplex-edited allogeneic *ex vivo* CAR-T therapies. Collectively, this research is exciting for Beam and the entire gene editing field, bringing us closer to delivering important new disease-modifying therapies to patients suffering from a wide range of severe diseases."

Details of the presentations are as follows:

Title: *Single, systemic administration of BEAM-301 mitigates fasting hypoglycemia and restores metabolic function in a transgenic mouse model of glycogen storage disease type Ia*
Date & Time: Monday, May 16, 2022, from 4:15-4:30 p.m. ET
Data Summary: GSDIa is an autosomal recessive disorder caused by mutations in the G6PC gene that disrupt a key enzyme, glucose-6-phosphatase (G6Pase), involved in maintaining glucose homeostasis. Inhibition of G6Pase activity results in low fasting blood glucose levels that can be fatal. Beam is advancing BEAM-301, composed of a guide RNA and an mRNA encoding an adenine base editor (ABE) delivered via LNP, which aims to directly correct the R83C mutation, one of the primary disease-causing mutations of GSDIa. Beam has previously shown editing efficiencies of approximately 60% in liver extracts, with survival of a GSDIa mouse model to three weeks of age without hypoglycemia-induced seizures. Today's data build on those findings, showing that in a GSDIa mouse model, treated mice, which otherwise have poor survival outcomes if left untreated, grew normally to at least 35 weeks following administration of BEAM-301, with survival ongoing in the study. Notably, as low as single digit percentage base-editing rates were sufficient to restore physiologically relevant levels of hepatic G6Pase activity, normalize serum metabolites, and most importantly, prevent hypoglycemia during a 24-hour fast. In addition, preliminary off-target assessments have suggested a favorable profile of BEAM-301.

Title: *Optimized base editing reagents yield more potent genetic correction in a mouse model of alpha-1 antitrypsin deficiency* (poster M-123)
Date & Time: Monday May 16, 2022, from 5:30-6:30 p.m. ET
Data Summary: Alpha-1 is a rare, inherited genetic disorder that can cause progressive lung and liver disease. It is most commonly caused by a G-to-A point mutation – referred to as the PiZ mutation – within the SERPINA1 gene, which produces alpha-1 antitrypsin (AAT) protein. In healthy individuals, the AAT protein is secreted from the liver and, in circulation, protects the lungs from damage. In individuals with the PiZ mutation, AAT is misfolded, preventing secretion and resulting in damaging build-up in the liver, as well as loss of its protective function in the lungs. Previous studies conducted by Beam, have shown the ability of LNP-delivered base editing reagents to correct the PiZ mutation in the livers of mouse models, suggesting the potential of Beam's base editors to treat both lung and liver manifestations of the disease. In updated research to be presented at ASGCT, Beam scientists sought to optimize both the ABE and the guide RNA used to correct the disease-causing PiZ mutation, with the improvements over the original reagents leading to a greater than two-fold increase in editing potency and therapeutically relevant increases in circulating AAT in mice treated at clinically relevant doses (<1mg/kg). Further, similar results were seen in adult mice dosed at greater than 37 weeks, a treatment context more similar to what might be encountered in a clinical setting.

Title: *Efficient LNP delivery of mRNA in vivo and in vitro to T and NK cells* (poster Tu-107)
Date & Time: Tuesday May 17, 2022, from 5:30-6:30 p.m. ET
Data Summary: Chimeric antigen receptor (CAR) T cell therapy has demonstrated tremendous therapeutic potential in the treatment of some cancers, but certain challenges such as complex manufacturing and logistics associated with autologous therapies, immunological rejection of

allogeneic therapies, cost of goods, and patient lymphodepletion prior to receipt of the therapy limit the utility of current approaches. Leveraging its proprietary LNP screening and delivery technology, Beam researchers evaluated the potential to deliver mRNA directly to T and NK cells *in vivo* to overcome these challenges. In mouse models, dose dependent expression of reporter proteins in T and NK cells was observed following a single intravenous LNP dose. LNP transfection was further evaluated in several additional studies, showing:

- In human cells, *ex vivo* delivery of LNP resulted in reporter protein expression in over 90% of T cells and 70% of NK cells.
- In an *in vivo* humanized mouse model, reporter protein expression was observed in approximately 10% and 20% of T and NK cells in bone marrow, respectively, and 40% of both T and NK cells in the spleen.
- In non-human primates, reporter protein expression was observed in up to 7% of bone marrow T cells.

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 presentations at ASGCT, our plans, and anticipated timing, to initiate IND-enabling studies; the therapeutic applications and potential of our technology, including with respect to GSDIa, Alpha-1, CAR-T and CAR-NK cells, and LNPs, including our ability to deliver base editors to target organs in and beyond the liver; 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, 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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