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Fate Therapeutics Unveils Preclinical Findings of Newly-Identified Small Molecule Modulator Combination for Ex Vivo Programming of Mobilized Peripheral Blood

Expression of Genes Involved in T-cell Function and Hematopoietic Stem Cell Engraftment Significantly Increased

SAN DIEGO, Dec. 6, 2014 (GLOBE NEWSWIRE) -- Fate Therapeutics, Inc. (Nasdaq:FATE), a biopharmaceutical company engaged in the discovery and development of adult stem cell modulators to treat orphan diseases, released preclinical data today highlighting the pharmacological properties of *ex vivo* programmed hematopoietic cells sourced from mobilized peripheral blood at the 56th Annual Meeting and Exposition of the American Society of Hematology (ASH). Using a newly-identified combination of two small molecule modulators, scientists from Fate Therapeutics demonstrated that both T-cells and CD34+ cells from mobilized peripheral blood can be modulated *ex vivo*, with preclinical evidence pointing to the programmed hematopoietic cells having improved therapeutic potential.

"While hematopoietic stem cell transplantation has proven curative potential, a significant need remains to reduce the morbidity and mortality associated with the procedure, including the risk of T-cell mediated complications such as viral infections, graft vs. host disease and delayed immune reconstitution," said Christian Weyer, M.D., M.A.S., President and Chief Executive Officer of Fate Therapeutics. "We are excited that our *ex vivo* programming platform has identified a combination of small molecule modulators that promote the supra-physiologic activation of genes implicated in the cell cycle, immune tolerance and anti-viral properties of T-cells, as well as in the survival, proliferation and engraftment potential of CD34+ cells. We believe these findings form a compelling scientific basis to support the clinical evaluation of *ex vivo* programmed mobilized peripheral blood in patients undergoing hematopoietic stem cell transplantation for the treatment of hematologic malignancies."

The data are being presented today during a poster presentation entitled "*Ex Vivo Modulation of Mobilized Peripheral Blood: Characterization of HSC and T-Cell Responses to Small Molecule Modulation,"* and expand and build upon the clinical development of the Company's lead product candidate, PROHEMA®. PROHEMA, an *ex vivo* programmed hematopoietic cellular therapeutic which uses FT1050 (16,16 dimethyl prostaglandin E_2 , or dmPGE$_2$) to pharmacologically modulate umbilical cord blood, is currently being investigated in a Phase 2 clinical trial in adult patients and a Phase 1b clinical trial in pediatric patients with hematologic malignancies undergoing umbilical cord blood transplantation. As part of its continuing evaluation of the modulatory effects of FT1050 on hematopoietic cells, Fate Therapeutics identified a second small molecule modulator, referred to as FT4145, that synergizes with FT1050 to further enhance the pharmacological properties and the *in vivo* therapeutic potential of CD34+ cells and T-cells.

Gene expression analysis of CD34+ cells sourced from mobilized peripheral blood co-modulated with FT1050 and FT4145 showed a ~60-fold increase in the expression of the key homing receptor CXCR4, and *ex vivo* programmed CD34+ cells demonstrated a statistically significant increase in engraftment in preclinical models as compared to unmodulated cells. Additionally, genome-wide expression analysis of the T-cell compartment of mobilized peripheral blood, including CD8+, CD4+ and regulatory T-cells, revealed the induction of genes involved in cell cycle (*e.g.*, CCND1, CCNE1), immune tolerance (*e.g.,* DUSP5, FLT1) and anti-viral properties (*e.g.,* CD55, EFNB2). Additionally, following a five-day culture in the presence of activating beads, T-cells co-modulated with FT1050 and FT4145 were found to have reduced proliferation rates and decreased cell-surface protein expression of ICOS, a key T-cell activation marker, relative to unmodulated cells.

Collectively, these preclinical findings point to the therapeutic potential for *ex vivo* programmed hematopoietic cells to mitigate T-cell mediated complications and improve outcomes in patients undergoing hematopoietic stem cell transplant with mobilized peripheral blood as a cell source. Mobilized peripheral blood is the predominant cell source used in hematopoietic stem cell (HSC) transplantation.

About Fate Therapeutics, Inc.

Fate Therapeutics is a clinical-stage biopharmaceutical company engaged in the discovery and development of pharmacologic modulators of adult stem cells to treat severe, life-threatening diseases. The Company's approach utilizes established pharmacologic modalities, such as small molecules, and targets well-characterized biological mechanisms to program the fate and enhance the therapeutic potential of adult stem cells. The Company's lead product candidate, PROHEMA®, is an *ex vivo* programmed hematopoietic stem cell, or HSC, therapeutic, which is currently in clinical development for patients undergoing HSC transplantation. The Company is also applying its reprogramming modulators to develop human induced pluripotent stem cell-derived cellular therapeutics, and evaluating the *in vivo* programming of muscle satellite stem cells using its Wnt7a-based

protein analogs for muscle regeneration. Fate Therapeutics is headquartered in San Diego, CA. For more information, please visit www.fatetherapeutics.com.

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 therapeutic potential of PROHEMA® and *ex vivo* programmed mobilized peripheral blood, the Company's plans with respect to PROHEMA and other product candidates, and anticipated research and development activities relating to the *ex vivo* programming of hematopoietic cells, including T-cells. These and any other forward-looking statements in this release 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 risks that the results of PROHEMA observed in prior preclinical and clinical development may not be replicated or may cause unanticipated adverse effects in current or subsequent clinical trials of PROHEMA, the risk of cessation or delay of any clinical development activities for a variety of reasons (including additional information that may be requested or additional obligations that may be imposed by the FDA, any difficulties or delays in patient enrollment in current and planned clinical trials, and any adverse events or other negative results that may be observed in these trials), or the risk that we are unable to conduct or complete preclinical and clinical activities necessary to advance any additional hematopoietic cellular therapeutic product candidates, including any candidates derived from mobilized peripheral blood. 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 risks and uncertainties detailed in the Company's periodic filings with the Securities and Exchange Commission, including but not limited to the Company's Form 10-Q for the quarter ended September 30th, 2014, and from time to time the Company's other investor communications. Fate Therapeutics is providing the information in this release as of this date and does not undertake any obligation to update any forward-looking statements contained in this release as a result of new information, future events or otherwise.

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