Safi Biotherapeutics Awarded NIH STTR Grant to Improve Blood Transfusion Safety

Safi to bulk manufacture Children's Hospital of Philadelphia's iPSC-derived RBCs with rare antigen profiles as diagnostic tools for alloimmunized patients

CAMBRIDGE, MA, UNITED STATES, April 24, 2025 /EINPresswire.com/ -- Safi Biotherapeutics, a biotechnology company producing stem-cell derived, human red blood cell (RBC) products for civilian and military transfusion needs, today announced it received a Small Business Technology Transfer (STTR) grant from the National Institutes of Health Heart, Lung and Blood Institute (NHLBI) to fund a collaboration with Children's Hospital of Philadelphia (CHOP). The grant will fund proof-of-principle studies for scaling the production of RBCs with rare, cell surface antigen profiles to use as novel blood banking reagents that allow identification of currently undetectable RBC antibodies in donor blood. A favorable outcome in these studies could lead to improved donor selection and safer transfusions, especially for those patients with sickle cell disease. Research at CHOP will be led by the laboratory of Stella T. Chou, M.D., Chief of the Division of Transfusion Medicine and attending physician in the Division of Hematology.

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> *Safi CEO and Co-Founder Doug McConnell*

The Chou laboratory, focused on regenerative blood cellular therapy, has developed modified human induced pluripotent stem cells (iPSCs) as a renewable source of RBCs with rare or uncommon cell surface antigen profiles to help ensure compatibility of donor blood used to transfuse alloimmunized patients. Safi will leverage its leadership in stem cell-derived blood manufacturing to seek to produce the Chou laboratory's

RBCs at scale and viable economics.

“There is a significant unmet need for novel blood banking reagents to identify compatible blood for patients who are alloimmunized, who face severe and sometimes fatal consequences if infused with blood that is not appropriately matched. Due to a lack of reagent RBCs for donor testing as well as the presence of rare antibodies that testing cannot currently detect, frequently transfused patients are at an increased risk for adverse transfusion reactions,” said Dr. Chou. “Our collaboration with Safi is an important step toward potentially enabling the production of our lab’s iPSC-derived RBCs at scale, to meet the needs of patients and improve lives.”

“We are pleased to partner with Dr. Chou, a preeminent expert in human hematopoietic cell development, and her laboratory at CHOP on this proof-of-principle to scale the manufacture of these innovative, iPSC-derived human RBCs ultimately designed to help chronically transfused patients who are alloimmunized, including those with sickle cell disease,” said Doug McConnell, Chief Executive Officer and Co-Founder of Safi Biotherapeutics. “This grant from the National Institutes of Health, along with prior grants we have received from the U.S. Department of Defense, allow critical research to meet the need for a readily available and appropriately matched blood supply for both civilian and military needs. We look forward to working closely with Dr. Chou and her team in an effort to develop this important diagnostic tool.”

RBC transfusion is a critical medical therapy, with over 10 million units transfused per year in the United States alone. A common complication of RBC transfusion is alloimmunization, or the formation of antibodies to antigens on donor RBCs that the recipient lacks; this is particularly problematic for patients with sickle cell disease (SCD), among whom approximately 20% require chronic RBC transfusions, often monthly or greater. Many of these chronically transfused patients tend to have less common blood types and can develop alloimmunizations over the course of their transfusions that make it challenging to identify appropriately matched RBC units. Identification of the precise antibody target is critical for selection of donor units, transfusion effectiveness, and patient safety.

About Safi Biotherapeutics

Safi Biotherapeutics produces stem-cell derived, human RBCs with the goal of providing a highly characterized cell therapy product at industrial scale and viable economics for civilian and military transfusion needs. Safi’s manufacturing blueprint for RBC production is the most advanced in the industry, and the company’s readily addressable markets include chronic transfusion indications such as sickle cell disease and acute transfusion settings such as civilian and military hospitals during critical times of need. Safi leadership, comprised of industry and cell therapy veterans from DARPA, Vertex Pharmaceuticals, and Loughborough University in the United Kingdom, launched the company in 2020 as part of the U.S. Department of Defense On-Demand Blood program.

For more information on Safi, visit https://safi.bio/ or follow us on LinkedIn.

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