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**BIOENGINEERED VEINS OFFER NEW HOPE ON HORIZON FOR PATIENTS
LACKING HEALTHY VEINS FOR CORONARY BYPASS SURGERY OR DIALYSIS**

More than 500,000 patients could potentially benefit from this new technology each year

RESEARCH TRIANGLE PARK, N.C., Feb. 2, 2011 – The day when a surgeon can pull a new human vein “off the shelf” for use in life-saving vascular surgeries is now one step closer to reality. New research published in the current issue of the journal *Science Translational Medicine* demonstrates the efficacy of tissue-engineered vascular grafts (TEVGs) that are immediately available at the time of surgery and have decreased potential for infection, obstruction or clotting. The bioengineering method of producing veins reported in the newly published research shows promise in both large and small diameter applications, such as for Coronary Artery Bypass Graft (CABG) surgery and for vascular access in hemodialysis.

Coronary Artery Bypass Graft (CABG) Surgery

The American Heart Association Update on Heart Disease Statistics reports that in 2007, in the U.S., just over 400,000 coronary bypass procedures were performed. Patients requiring bypass surgery may not have suitable veins or arteries available and are not candidates for synthetic grafts because of the size needed for grafting.

“This new type of bioengineered vein allows them to be easily stored in hospitals so they are readily available to surgeons at the time of need,” said Alan P. Kypson, M.D., Associate Professor of Cardiothoracic Surgery, Brody School of Medicine, at East Carolina University, also an author of the paper. “Currently, grafting using the patient’s own veins remains the gold standard. But, harvesting a vein from the patient’s leg can lead to complications, and for patients who don’t have suitable veins, the bioengineered veins could serve as an important new way to provide a coronary bypass.”



Kidney Hemodialysis

According to statistics published by the National Kidney Foundation, 320,000 patients are on chronic hemodialysis. Each year, 110,000 new patients develop renal failure requiring dialysis, and the number is growing by three percent per year. More than half of dialysis patients lack the healthy veins necessary and must undergo an arteriovenous graft (AV graft) placement in order to have bloodstream access for hemodialysis.

“Most AV grafts that are placed for hemodialysis access are comprised of a synthetic material, which suffers from significant drawbacks including a high rate of infection, or a propensity for occlusion due to thrombosis and intimal hyperplasia,” said Jeffrey H. Lawson, M.D., Ph.D., Associate Professor of Surgery at Duke University School of Medicine and an author of the research. “Due to high complication rates, each AV dialysis graft requires an average of 2.8 interventions over its lifetime just to keep it functioning. Hence, there is a huge clinical need for a functionally superior, off-the-shelf, AV graft that suffers from fewer complications than current materials.”

The research was conducted by scientists from Duke University, East Carolina University, Yale University, and Humacyte, and was funded by Humacyte, a leader in regenerative medicine. Overseeing the research and senior author of the article was Laura Niklason, M.D., Ph.D., founder of Humacyte, and Professor of Anesthesiology and of Biomedical Engineering at Yale University. Niklason is a recognized authority in regenerative medicine for arterial engineering and was leader of the team that recently created a functioning rat lung in a laboratory.

“Not only are bioengineered veins available at the time of patient need, but the ability to generate a significant number of grafts from a cell bank will allow for a reduction in the final production costs, as compared to other regenerative medicine strategies,” added lead author Shannon L. M. Dahl, Senior Director of Scientific Operations and Co-Founder of Humacyte, Inc. “While there is still considerable research to be done before a product is available for widespread use, we are highly encouraged by the results outlined in this paper and eager to move forward with additional study,” Dahl said.



About The Research

In this research, bioengineered veins were generated in a bioreactor, decellularized, and stored up to 12 months in refrigerated conditions. Then bioengineered veins (3-6mm in diameter) demonstrated excellent blood flow and resistance to occlusion in large animal models for up to one year.

About Humacyte

Humacyte, a privately held company, is primarily focused on developing products for vascular disease and for dermal filling and soft tissue repair. The company uses its innovative and proprietary platform technology to engineer human, extracellular matrix-based tissues that can be shaped into tubes, sheets, or particulate conformations, with properties similar to native tissues. These can then be used in many specific applications, with the potential to significantly improve treatment outcomes for a variety of patients, including those with diabetes and on hemodialysis. The company's proprietary technologies are designed to result in off-the-shelf products that can be utilized in any patient. The company Web site is www.humacyte.com.

Forward-Looking Statement

Information in this news release contains "forward-looking statements" about Humacyte. These statements, including statements regarding management's projections relating to future results and operations, are based on, among other things, management's views, assumptions and estimates, developed in good faith, all of which are subject to known and unknown factors that may cause actual results, performance or achievements, or industry results, to differ materially from those expressed or implied by such forward-looking statements.

Dr. Lawson has served as a consultant for Humacyte and has also received research support from the company through Duke University.

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