New Paper Defines Breakthroughs in Vascular Tissue Engineering

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DURHAM, N.C., Oct. 9, 2020 /PRNewswire/ -- A new manuscript published in the highly cited scientific journal *Science* (also known as *Science Magazine*) reveals great strides in the field of regenerative medicine and vascular tissue engineering.

"***The Evolution and Development of Bioengineered Blood Vessels***" by Laura E. Niklason, M.D., Ph.D., and Jeffrey H. Lawson, M.D., Ph.D., offers a detailed history of regenerative medicine from the 1980's to the present, including new technology advances like human acellular vessels (HAVs) that are currently being investigated in human clinical trials. Dr. Niklason (Founder) and Dr. Lawson (CEO) represent Humacyte, Inc., a tissue engineering and regenerative medicine company developing groundbreaking, investigational HAV's.

According to the paper, preferred bioengineered blood vessels like the HAVs, containing a high-quality extracellular matrix of human origin should result in a stable, durable, infection-resistant, long-lasting therapeutic product with the potential to repopulate and remodel with patients' own cells after implantation. Vessels such as these may have the power to drastically improve the lives of millions of people with kidney failure, artery disease, and traumatic injuries. The rapid growth of regenerative medicine technologies means that vessels such as the HAV may soon become mainstream in patient care. Specifically, the company's bioengineered blood vessels (HAV's) are being tested as a conduit for hemodialysis in patients with end-stage renal disease and as bypass grafts in patients with peripheral arterial disease. Additionally, the company's HAV technology platform is being explored as a treatment for patients with traumatic vascular injuries. Humacyte has been in contract with the United States Department of Defense since 2017 to examine HAV's impact on treating civilian and military traumatic events, such as automobile crashes, industrial accidents, and battlefield injuries.

"It's powerful and enlightening to behold the growth of regenerative medicine technologies over the last 40 years, particularly with cardiovascular technologies," said Dr. Niklason. "We have laid the scientific and technological groundwork to produce truly therapeutic vascular products, at scale."

Humacyte's investigational vessels are grown *in vitro*, resulting in a consistently available, reproducible product with known specifications and attributes such as length, diameter, and durability.

"In clinical practice, having an immediately available, off-the-shelf vascular conduit that is durable and resistant to infection would be a remarkable addition to vascular surgery," Dr. Lawson said. "This will help make procedures easier, safer, and better for our patients."

Science has been the official journal of the American Association for the Advancement of Science (AAAS) since 1900. It's recognized as a leading global academic journal, with an estimated readership of more than 500,00 people, and reportedly accepts less than 7% of submitted articles for publication.

About Humacyte

Humactye, Inc. is a privately held regenerative medicine company based in Durham, North Carolina that develops engineered human blood vessels known as HAVs (human acellular vessels). The company leverages its innovative, proprietary platform technology to design and produce lifesaving, long-lasting, cost-effective biological vascular therapies without requiring any cells or tissue from patients. These efforts, if approved, would benefit people with End-Stage Renal Disease (ESRD), peripheral arterial disease (PAD), and traumatic injuries, and could potentially help patients needing vascular reconstruction and Coronary Artery Bypass Grafting (CABG). Humacyte was co-founded in 2004 by Laura Niklason, M.D., Ph.D., a world leader in cellular therapies/regenerative medicine and Nicholas Greene Professor of anesthesiology and biomedical engineering at Yale University; Dr. Shannon Dahl; and molecular biologist Dr. Juliana Blum. Visit humacyte.com for more information.

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