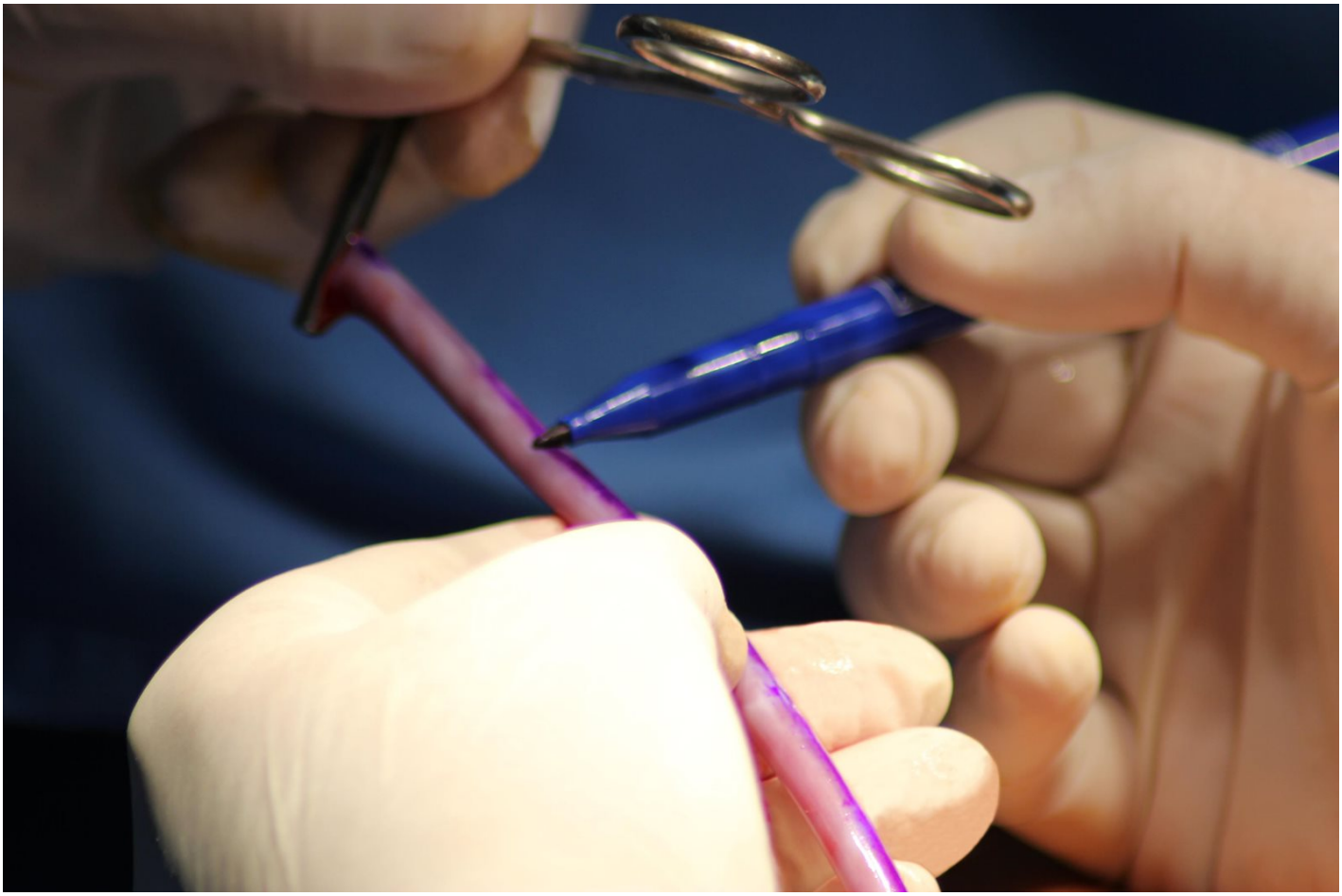
Tissue Tech Regenerative Medicine To Fight Disease

University of Minnesota



What if you could grow your own healthy tissue to repair an injury or fight disease? Enter TRUE™ Tissue technology. Developed by Dr. Robert Tranquillo at the University of Minnesota in Minneapolis, TRUE Tissue is a regenerative, engineered tissue tech created from cells isolated from donor tissue and is 100% natural. The donor cells are removed using detergents in a final step yielding an "off-the-shelf" regenerative matrix in the form of tubes that can be used as vascular grafts or combined to form heart valves, among many potential uses.

While other regenerative medicine contains synthetic polymer-based scaffolds that slowly degrade in the body and may lead to adverse immune response, **TRUE™ Tissue** technology, licensed by Vascudyne, a biotechnology trailblazer in regenerative medicine, is biological: nothing synthetic or artificial is in the biomaterial at any stage of its production.

Vascudyne has accelerated its commercialization and is working to get the technology into the hands of surgeons to benefit the millions of patients in need of replacement and repair tissues.

Tranquillo and his team have developed and fine-tuned this technology for decades, with the help of NIH funding,

establishing its unique properties and regenerative potential. Tranquillo, key team member Dr. Zeeshan Syedain, and colleagues demonstrated the distinct advantages engineered tissue technology holds over existing therapies in a plethora of peer-reviewed publications of in vitro and pre-clinical in vivo studies.

In 2021, the TRUE™ Tissue technology reached two major milestones. In a groundbreaking study, Tranquillo and his team used this hybrid of tissue engineering and regenerative medicine to create heart valves that can grow with the recipient. When implanted in lambs, the research team showed that the tri-tube valves worked better than current animal-derived valves, with valve growth and almost none of the calcification that the other valves showed. Up until now, researchers have not been able to develop a heart valve that can grow and maintain function for pediatric patients. The only accepted options are valves made from chemically treated animal tissues that often become dysfunctional due to calcification and require replacement because they don't grow with the child, often requiring up to five (or more) open heart surgeries until a mechanical valve is implanted in adulthood. This requires them to take blood thinners the rest of their lives.

"If we can get these valves approved someday for children, it would have such a big impact on the children who suffer from heart defects and their families who have to deal with the immense stress of multiple surgeries," Tranquillo said. "We could potentially reduce the number of surgeries these children would have to endure from five to one. That's the dream."

In July 2021, Vascudyne also announced the successful first human use of TRUE Vascular Graft in end-stage renal disease patients requiring hemodialysis access. The first clinical procedures were performed by Adrian Ebner, MD, director of Endovascular and Cardiovascular Surgery at Sanatorio Italiano in Asuncion, Paraguay, as part of an early feasibility study.

University of Minnesota's Technology Commercialization team has supported the technology since 1997, when the first invention disclosure on the technology was received. The office has pursued broad patent protection of the technology, helped secure translational funding to advance the science, and licensed the technology portfolio that led to the creation of Vascudyne as a startup company. The team continues to support Tranquillo's new ideas that may further expand this platform technology by enabling additional new products that would solve unmet medical needs and potentially transform patient lives in other clinical areas.

Vascudyne was founded by Jeff Franco and Kem Schankereli, who licensed the engineered tissue technology from the University of Minnesota in 2017.

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