

Artificial blood vessels may help overcome challenges in organ transplantation

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Using sugar, silicone, and a 3D printer, bioengineers at Rice University and surgeons at the University of Pennsylvania have created an implant with an intricate network of blood vessels that points toward a future of growing replacement tissues and organs for transplantation.

The research may provide a method to overcome one of the biggest challenges in regenerative medicine, i.e., how to deliver oxygen and nutrients to all cells in an artificial organ or tissue implant that takes days or weeks to grow in the lab prior to surgery.

The new study was performed by a research team led by Jordan Miller, Ph.D., assistant professor of bioengineering at Rice, and Pavan Atluri, M.D., assistant professor of surgery at Penn. The study showed that blood flowed normally through test constructs that were surgically connected to native blood vessels. The study ("In vivo anastomosis and perfusion of a 3D printed construct containing microchannel networks") was published in [Tissue Engineering Part C: Methods](#).

"They don't yet look like the blood vessels found in organs, but they have some of the key features relevant for a transplant surgeon," said Dr. Miller. "We created a construct that has one inlet and one outlet, which are about 1 millimeter in diameter, and these main vessels branch into multiple smaller vessels, which are about 600 to 800 microns."

Read full, original post: [Scientists Create Functional Tissue Implant with Intricate Blood Vessel Network](#)