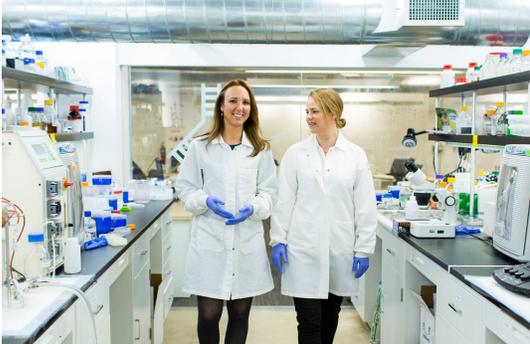


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Prellis Biologics Building 3D-Printed Organ Technology

First product aimed at diabetes treatment



Prellis Biologics founders Dr. Melanie Matheu and Dr. Noelle Mullin PHOTO: PRELLIS BIOLOGICS

By **HEATHER MACK**

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Lasers, holograms and cells. Those are the building blocks that Prellis Biologics Inc. is using to create three-dimensional printing of human tissue, with the ultimate goal of producing organs for transplant.

Of course, it is more complicated than that. But the 10-month-old company has distilled the complex process enough to have filed three provisional patents and secured a \$1.8 million seed round led by True Ventures.

The funding follows Prellis Biologics' four-month stint with the IndieBio accelerator, during which the company received \$250,000. Founders Melanie Matheu and Noelle Mullin still work at the San Francisco lab with their team, which has developed a novel method of printing microvasculature, or the smallest systems of blood vessels in the body.

It is a new development in 3-D bioprinting. Other and considerably larger companies such as Organovo Holdings Inc. and EnvisionTEC have succeeded in selling 3-D printed cells and tissue for medical testing and research, but Prellis's custom-built technology developed a method to keep those tissues alive.

The company's four employees start with material from biological suppliers, then use stem cell technology to generate more of a particular type of cell. Microscopic images of the cells are used to write software around a specific cell structure that is translated to a holograph image, giving high-powered lasers the blueprints to then build collagen scaffolding around cells.

That framework allows cells to receive the oxygen and nutrients they need to stay alive. From there, Prellis says it can work up to thicker tissues to create functional organs. Along the way, it hopes to join with medical research centers and pharmaceutical companies to popularize the use of 3D-printed human tissue for drug development and the creation of human antibodies.

“It is a complex problem to get tissues organized in the right way and get cells in the right place to perform a certain function,” said Chief Executive Officer Ms. Matheu, whose background lies in laser-based imaging and cell biology. “The last hurdle in human tissue engineering was to create these tiny blood vessels that feed organs.”

Prellis Biologics has filed three provisional patents. One is for the microscope and laser-based prototype to visualize the structures, one is for the collagen-based building material for the microvasculature and one is for the tissue Prellis will print for the clinical development of the functional unit of the pancreas that produces insulin. Those units could potentially be transplanted in people with Type 1 diabetes and eliminate the need for insulin injections.

The latter material is slated for animal studies by the middle of 2018, but building a whole organ is projected to take three to five more years.

“They have multiple deliverables along the way in their mission to eliminate organ donor wait lists, and as they get well-defined to facilitate tests and other research, there should be some very interesting steps along the way,” said True Ventures Partner Rohit Sharma, who led the investment and will take a board position.

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