University At Albany Creates Living Duplicate Of Eye Tissue

University of Albany

With the costs of developing a new drug or medical device now averaging more than $2.5 billion, companies large and small are constantly looking to embrace concepts that shorten the timelines, reduce risk, conserve resources and save money for both preclinical research and clinical trials.

Dr. Susan Sharfstein and Dr. Yubing Xie, Professors at the University at Albany, College of Nanotechnology Science & Engineering, developed a process that creates a living duplicate of a filter-like tissue in the eye called the trabecular meshwork. The artificial tissue mimics the natural tissue, providing a useful model for testing medications and treatments as a less expensive, less complex alternative to animal models for preclinical trials. This fundamental innovation provided the foundation for Humonix Biosciences, which has already seen its services used by major industry players, including Aerie Pharmaceuticals, Broadwing Bio, and Nicox.

Recognizing the potential value of their platform technology, Sharfstein submitted a disclosure to the technology transfer office at the Research Foundation for The State University of New York. A team comprising intellectual

property, legal and business development experts evaluated the disclosure for patentability and marketability and obtained the patent. They also worked with Sharfstein to identify target customers and validate the idea of using 3D human tissue models to de-risk the development of ophthalmic treatments.

Early in the customer discovery phase, Sharfstein received a SUNY Technology Accelerator Fund (TAF) seed grant to develop a proof-of-concept and prototype. TAF seed grants and investments are awarded through a competitive process that evaluates each technology for innovativeness, market potential, and financial viability. The goal of TAF is to make SUNY discoveries more attractive for licensing and increase their readiness for federal non-dilutive funding and innovation programs.

Karen Torrejon, Sharfstein's graduate student and a co-inventor of the trabecular meshwork technology, collaborated with several other students to found a company called Glauconix Biosciences. Using the trabecular meshwork as a prototype, the startup created a 3D human tissue model that can be used to decrease time and labor costs in drug development and trials.

Recently rebranded from Glauconix to Humonix to reflect its potential beyond glaucoma, the model system helps screen, identify and validate the unique mechanism of action of the most effective ophthalmic drug candidates, more accurately and efficiently than traditional pre-clinical testing.

Since its founding, Humonix has received grant funding from the New York Business Plan Competition, the National Science Foundation Small Business Innovation Research program, and investment groups Eastern New York Angels and Excell Partners.

"TAF was integral to making those subsequent achievements possible," said Torrejon, who is now the company's Chief Scientific Officer. "This grant helped us to validate the commercial potential of this technology, which led to the launch of our flagship 3D model for glaucoma."

The company has active projects studying vascular and fibrotic tissue models and has plans to develop 3D lung tissue models for applications focused on pulmonary fibrosis and pulmonary hypertension.

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