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UC San Diego and Samsara Sciences Team Up to Advance Liver Tissue Models

Researchers at University of California, San Diego School of Medicine and Samsara Sciences, Inc., a wholly-owned subsidiary of Organovo Holdings, Inc., have entered into an agreement focused on the development of techniques and methods for the isolation and characterization of liver cells that will help drive new research on liver biology, drug safety and efficacy, and the treatment of liver diseases.

The UC San Diego School of Medicine team consists of scientists in the laboratory of Tatiana Kisseleva, MD, PhD, assistant adjunct professor in the Department of Surgery, and transplant surgeons directed by Alan Hemming, MD, professor and chief of transplantation and hepatobiliary surgery in the Department of Surgery.

In this collaboration, Kisseleva and her team will develop and optimize protocols for the isolation of specialized human liver cells. These cells will be used in Kisseleva's own research at UC San Diego School of Medicine and characterized extensively with respect to phenotype and function in a broad spectrum of laboratory and animal models.

Samsara, a company specializing in the procurement, characterization and qualification of human cells for use in biological and pharmaceutical research, will apply these technological advancements in the commercial supply of specialized cells for use in bioprinted tissues and other cell-based models used in drug testing, disease modeling, drug discovery and regenerative medicine research.

"This is a unique arrangement," Kisseleva said. "Samsara's resources will allow us to generate high-quality cells to conduct translational research on liver injury, cirrhosis and cancer, while Samsara benefits from our expertise in liver cell isolation and characterization."

While many efforts to better understand and treat liver injury and disease in laboratory experiments have focused solely on hepatocytes, the predominant cell type characteristic of liver tissue, Kisseleva and Samsara will focus more comprehensively on hepatocytes and the other supporting cells within the liver. Kisseleva and Samsara researchers, as well as others,

are finding that the presence of these supporting cells in culture, arranged in a way that's relevant to the human body, makes a significant difference in the way liver cells function and perform in laboratory experiments.

“We formed Samsara based on repeated observations that the functional performance of cell-based models is dependent to a large degree on the quality and phenotype of the input cells being used,” said Sharon Presnell, PhD, chief technology officer at Organovo and president of Samsara Sciences. “We’re extremely excited to be working with Dr. Kisseleva. As a leading expert in liver cell biology, she is well positioned to develop isolation and characterization strategies that yield stellate and other support cells that are ideally suited for use in 3D-bioprinted tissue applications.”

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