PennState College of Engineering | BIOMEDICAL ENGINEERING

Seminar Series

Peter Galie

Assistant Professor of Biomedical Engineering

Rowan University

Development of Vascularized Scaffold for Spinal Cord Injury Repair

November 4 • 12:05 – 1:20 p.m.

ABSTRACT

Dr. Peter Galie's laboratory has developed methods to deliver microvasculature to the site of spinal cord injury to stimulate axon growth and mitigate inflammation. Their findings show that implanted microvasculature has the ability to guide the direction of host axons in a rodent model of spinal cord injury, providing a means to encourage infiltration and outgrowth in the rostral-caudal direction of the spinal cord. This approach is applicable to both acute and chronic spinal cord injury with delivery platforms that include preformed, transplantable conduits as well as injectable scaffolds. In preformed scaffolds, external stimuli including interstitial fluid flow is used to pattern capillary-scale microvasculature prior to transplantation. Recently, his laboratory has also employed 3D bioprinting as a means to define scaffold topology in these scaffolds. In injectable scaffolds, microvasculature is delivered to the injury site by combining endothelial cells and pericytes within self-assembling peptide hydrogels. They have demonstrated the ability to align these injectable hydrogels using magnetic fields following delivery into the animal, combining the benefits of pre-aligned conduits with the non-invasiveness of injectable scaffolds. Dr. Galie's lecture will discuss the lessons he and his team have learned from this work as well as current challenges in attempts to regenerate the injured spinal cord.

BIO

Dr. Peter Galie is an associate professor of biomedical engineering at Rowan University. Prior to joining Rowan, Dr. Galie served as a postdoctoral researcher in the physiology department at the University of Pennsylvania. His primary area of expertise is the fabrication of 3D vascular models to both investigate the contribution of hemodynamic factors to pathology and form the basis of vascularized scaffolds for regenerative applications. His work has been supported by the American Heart Association, the National Science Foundation, and the Nielsen Foundation.

Zoom link:
https://bit.ly/2V0dK3Y

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