CARNEGIE MELLON UNIVERSITY
BME 2022 SPRING SEMINAR SERIES

Exploring Neurovascular Interactions in Musculoskeletal Tissue Regeneration

PRESENTED BY

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SCHEDULE

Thursday,
February 3, 2022
(10:15AM-11:15AM)

Tissue engineering provides a viable means of regenerating bone and skeletal muscle tissues following injuries that lead to large volumetric defects. Our lab has developed advanced biomaterial and stem cell-based approaches to promote functional recovery following volumetric muscle loss and critical-sized craniofacial bone injuries. This presentation provides a broad overview of three areas of ongoing research: (1) My lab aims to regenerate vascularized and innervated skeletal muscle to treat volumetric muscle loss. I will present aspects of our biomaterial design and testing in murine models using grafts engineered with cell lines and human pluripotent stem cells. (2) I will present the findings from a study focused on designing biomaterials to guide vascularized bone regeneration in situ in minipigs using intraoperative protocols for combining autologous stem cells with advanced 3D-printed scaffolds. (3) Understanding the interaction between vascular cells and osteoprogenitors is critical for developing effective treatment methods. I will describe recent studies in which we developed a quantitative imaging platform for characterizing the spatial relationships between cell populations in the native murine calvarium.

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