BME Seminar
Friday, March 24, 2017
ITE 336 at Storrs & Videoconferenced to UCHC CG-079B
12:00-12:50 pm

“Harnessing the Inflammatory Response for Tissue Regeneration”

Presented By: Dr. Kara L. Spiller, Assistant Professor of Biomedical Engineering, Science, and Health Systems, Drexel University

Abstract: The inflammatory response plays a major role in the body’s response to injury, disease, or implantation of a biomaterial. When the inflammatory response functions normally, it can be a powerful force that promotes tissue repair and regeneration, but when it goes awry, disease takes hold and healing is impaired. The goal of the Biomaterials and Regenerative Medicine Laboratory at Drexel University is to understand the mechanisms by which the inflammatory response orchestrates successful tissue regeneration and to develop novel biomaterial strategies that apply these principles to situations in which tissue regeneration is impaired. In particular, we focus on the behavior of the macrophage, which can rapidly change behavior in response to environmental stimuli to promote inflammation (M1), tissue deposition (M2a), or remodeling (M2c). Through their dynamic phenotypic changes, macrophages function as major regulators of healing. Current projects focus on tracking macrophage phenotype changes in the healing (or lack thereof) of human tissues in order to develop new diagnostics or targeted immune-therapies in regenerative medicine, and design of novel drug delivery strategies that harness macrophage behavior to promote tissue regeneration and healing in a diverse array of tissues.

Biography: Dr. Kara Spiller is an Assistant Professor in Drexel University's School of Biomedical Engineering, Science, and Health Systems. Dr. Spiller received bachelor's and master's degrees in biomedical engineering from Drexel University in 2007. As an NSF Graduate Research Fellow, she conducted her doctoral research in the design of semi-degradable hydrogels for the repair of articular cartilage in the Biomaterials and Drug Delivery Laboratory at Drexel and in the Shanghai Key Tissue Engineering Laboratory of Shanghai Jiao Tong University. After completing her PhD in 2010, she conducted research in the design of scaffolds for bone tissue engineering on a Fulbright fellowship in the Biomaterials, Biodegradables, and Biomimetics Research Group at the University of Minho in Guimaraes, Portugal. She then conducted postdoctoral studies towards the development of immunomodulatory biomaterials for bone regeneration in the Laboratory for Stem Cells and Tissue Engineering at Columbia University, before returning to Drexel in 2013. Her current research interests include biomaterial-host interactions, the design of immunomodulatory biomaterials, and international engineering education.