UCLA Engineering
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BIOENGINEERING

PRESENTS

"Deriving network parameters for understanding drug effects"

THURSDAY, November 18th, 2021
12:00 – 1:00 PM
Zoom Link: https://ucla.zoom.us/j/96241974712

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ABSTRACT:

Advances in materials science, biomolecule delivery, and cell biology has enabled significant innovations within the field of tissue engineering and regenerative medicine over the past few decades. Nonetheless, minimal translation of tissue engineering-based therapeutics to the clinic has occurred. A significant challenge within tissue engineering is the difficulty in regenerating complex tissues with a heterogeneous structure and multiple cell types. To address this challenge, my research group is developing innovative polymeric biomaterials that can mimic the complex microenvironment of musculoskeletal tissues. Specifically, I will discuss our recent efforts in the following areas: 1) using magnetic fields to spatially control electrospun fiber alignment in order to create materials with gradients in fiber alignment that mimic the structure of musculoskeletal interfacial tissues; 2) using reversible DNA handles to temporally control peptide presentation to improve our understanding of cell-material interactions; and 3) combining these techniques for independent spatial control over chemical and structural signals towards simultaneous regeneration of multiple tissue types.

BIOGRAPHY:

Julianne Holloway is an Assistant Professor of Chemical Engineering at Arizona State University (ASU) and an associate faculty member within the Biodesign Institute's Center for Molecular Design and Biomimetics. Prior to ASU, Julianne completed her Ph.D. in Chemical Engineering at Drexel University and her postdoctoral training at the University of Pennsylvania. Julianne's research group integrates biomaterial design with innovative manufacturing to control and direct stem cell behavior for tissue engineering and regenerative medicine applications. Julianne is also committed to service, including recent election to the American Institute of Chemical Engineers (AIChE) Board of Directors, serving on the Editorial Board of *Regenerative Biomaterials*, and as a past Associate Scientific Advisor for *Science Translational Medicine*. Her contributions have been recognized through several awards, including: AIChE's 35 Under 35 Award, AIChE's John C.

Chen Leadership Award, Mayo Clinic-ASU Alliance Faculty Summer Fellow, National Institutes of Health NRSA Postdoctoral Fellowship, and others.