

Veterinary Physiology and Pharmacology
Seminar Series Presents:



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Engineered Biomaterials for Regeneration Medicine, Therapeutic Delivery and Additive Manufacturing

Friday, January 24th 2:00 pm
VENI 101C

Abstract: Biomaterials engineered with tunable biophysical properties, specific biochemical cues, and complex architecture have emerged as powerful tools for regeneration medicine. These cues are required to induce regeneration by modulating extracellular microenvironment for *in situ* tissue repair. In this talk, I will outline some of the biomaterial approaches that we have developed to control and direct the body's regenerative capacity for tissue-specific regeneration. Specifically, we have utilized genome wide sequencing assays (transcriptomics) to understand complex cell-biomaterials interactions. These omics-based approaches provide an unbiased global view of the cellular activity with pivotal insights about the affected cellular pathways to optimize synthetic biomaterials for tissue engineering. In addition, I will discuss biomaterials loaded with bioactive cues that prime endogenous cells to perform tissue-specific regeneration. Furthermore, I will also show some of our recent work on 3D bioprinting to develop physiologically relevant tissue structures for disease modeling (vascular pathophysiology) and tissue engineering (bone and cartilage regeneration).