

UNIVERSITY *of* DELAWARE
BIOMEDICAL ENGINEERING
SEMINAR

NOVEMBER 2, 2015

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COLUMBIA UNIVERSITY***“A Paradigm for Functional Tissue Engineering
of Articular Cartilage”***

Articular cartilage is the specialized connective tissue that covers the ends of the bones that comprise our diarthrodial joints (e.g., knee and hip), and serves a critical load bearing and lubrication function. Absent of blood vessels, cartilage exhibits a poor intrinsic healing capacity after injury. The aim of our laboratory has been to engineer clinically-relevant articular cartilage grafts for repair of damaged and diseased joints. In this effort, several strategies have been employed to promote development of mechanically functional tissue including applied dynamic loading bioreactors and growth factor optimization. In addition to surviving the demanding physical environment, engineered cartilage grafts implanted in pathologic joints must often survive a harsh chemical environment. To address the latter, we have explored strategies to precondition developing cartilage constructs to proinflammatory cytokines, as well as for co-delivery of cells and dexamethasone-laden polymer carriers in engineered cartilage. While these complementary research thrusts were first developed using bovine cells, our team has made significant strides toward translation to cells of a large preclinical animal model (canine), and more recently to human cells.

10:30am in 322 ISE Lab. *Refreshments served at 10:15am.*