



# *Spring 2009 Seminar Series*

## *Department of Biomedical Engineering*

*Wednesday, February 11<sup>th</sup> @ 3PM in Steinman T-402*



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### **Environmental Regulation of Connective Tissue Cell Phenotype**

The specialized connective tissues of the musculoskeletal system form the architectural framework of the vertebrate body, serving important structural and mechanical roles. Injury and age-related changes often necessitate surgical intervention to restore function of these tissues. Alternative strategies attempting to engineer tissue replacements require a cell source as well as the ability to maintain the differentiated phenotype, which may be influenced by a variety of environmental factors, including biochemical signaling molecules, material substrates and mechanical loading. In this seminar, our efforts to induce human skin cells to differentiate along the cartilage and bone lineage pathways in chemically-defined culture environments will be presented within the context of cellular plasticity and tissue regeneration. In addition, the use of novel polysaccharide-based biomaterials and biomechanical stimulation to modulate the cartilage phenotype will be discussed, with particular focus on intervertebral disc repair.