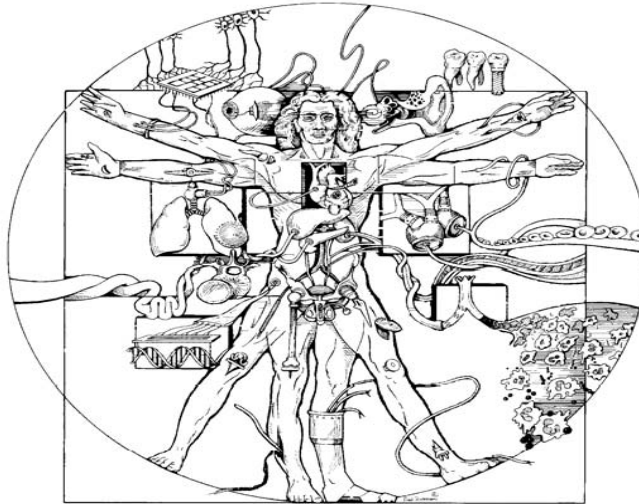


# Biomedical Engineering Seminar



**Biomedical Engineering is proud to announce the  
Doctoral Defense of  
Jennifer Elster  
The University of Arizona**

## **“Quantification and Tracking of Transplanted Satellite Cells”**

**Abstract:** Satellite cells are adult stem cells that contribute to hypertrophy and repair in muscles. It is hypothesized that in muscular dystrophy, the satellite cells population is depleted at a very early age, due to repeated muscle damage and repair. Cell transplantation is a potentially useful therapy for muscle diseases, but the lack of an efficient delivery system has hindered its application. Although much work remains to enhancing the viability of in vitro expanded myoblasts derived from satellite cells, a second important hurdle is the systemic delivery of satellite cells to multiple sites (all muscles, in the case of muscular dystrophies). Preliminary experiments suggest that the chemokine stromal cell-derived factor -1(SDF-1) and its receptor, CXCR4, as well as hepatocyte growth factor (HGF) and the c-met receptor could be involved in targeting satellite cells to damaged muscle. In vitro and in vivo experiments are being undertaken to explore the physiological role of these two signaling systems in directed migration and to determine if these chemokine and growth factors can be manipulated to enhance efficacy of cell-based therapies involving skeletal muscle satellite cells. Evaluation of cell survival and cell migration to sites of injury require both cell tracking and quantification of cell number. Techniques in cell tracking include labeling cells with Indium 111 and sequential in-vivo imaging of the host post transplantation of satellite cells. Without in-vivo imaging techniques cell fate studies require sequential animal sacrifice with histological sectioning. This not only increases the number of animals used but also adds a significant inter-animal variability to their assessment. The determination of cell fate after transplantation will have a major impact on cell therapy for treatment of muscle disease as well as other stem cell therapies.

**Tuesday, May 26<sup>th</sup>, 2009**

**12:40 pm**

**Keating 103**

Host: Ron Allen (621-7626)

*Persons with a disability may request a reasonable accommodation by contacting the Disability Resource Center at 621-3268 (V/TTY). Requests should be made as early as possible to allow time to arrange the accommodation*