

**COLLEGE OF ENGINEERING
Biomedical Engineering**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 1, 2006

The Department of Biomedical Engineering is pleased to offer the following research project for the summer of 2006. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and if possible, develop a timetable for the twelve-week research period.

The Effect of fibroblast-mediated Scaffold Contraction on Capillary Assembly in Vitro

**Professor Daria A. Narmoneva
Assistant Professor
Department of Biomedical Engineering
University of Cincinnati, Cincinnati, Ohio 45221-0048
Tel. (513)556-3997**

Email daria.narmoneva@uc.edu

Summary: A critical issue in engineering or regenerating tissues and organs is to create an adequate blood supply to maintain live cells and promote tissue growth. However, attempts to recreate a native-like capillary network in engineered tissues have been largely unsuccessful, mostly due to incomplete understanding of the mechanisms governing capillary growth and the complexity of cell-cell and cell-matrix signaling. Mechanical interactions between cells and a surrounding extracellular matrix strongly influence capillary formation. One of the mechanisms associated with increased tissue stiffness and impaired capillary growth is fibroblast-mediated matrix contraction. This contraction occurs during wound healing process and scar formation in many types of response to injury, including heart remodeling after myocardial infarction and skin wound healing. The goal of the student's project will be to characterize the effect of increased scaffold stiffness due to fibroblast-mediated scaffold contraction on in vitro angiogenesis, cell-cell interactions and endothelial cell survival.