SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: March 1, 2010

The Department of Biomedical Engineering is pleased to offer the following research project for the summer of 2010. 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.

<u>PROJECT TITLE:</u> Angiogenic Microenvironment to Enhance Capillary Formation of Diabetic Endothelial Cells.

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Project Description

Angiogenesis is a complex multi step process that includes migration, proliferation and formation of new lumen structures by endothelial cells, which later become capillaries. Insufficient angiogenesis is a major factor contributing to impaired wound healing of diabetic ulcers, which are responsible for more than $10.9 billion of health care costs annually. The goal of our research is to develop a new approach to treat chronic diabetic ulcers by modifying the microenvironment of the ulcer using a novel angiogenic scaffold material. The objective of the summer WISE project will be to investigate the role of diabetes in altering angiogenic potential of endothelial cells. Two types of experiments will be performed: 1) the migration capability of endothelial cells isolated from diabetic mice towards an angiogenic stimulus will be compared to that of the cells from wildtype mice in vitro culture in the normal and high-glucose conditions; 2) the experiments will be performed to determine if angiogenic peptide nanoscaffold is able to augment or improve endothelial cell migration in the 3D environment.