Department of Electrical Engineering
COLLEGE OF Engineering and applied Science
SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: March 2, 2015

The Department of Electrical Engineering is pleased to offer the following research project for the summer of 2015. 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.

Design and development of portable biosensors

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Project Description

Imagine a device which has the capability of detecting early signs of cancer at your bedside. We are often told that early detection of cancer is <u>the only</u> certain way to defeat cancer.

Current diagnostic methods for cancer screening rely on sophisticated, bulky and expensive instrumentations. Also, patients are required to travel to hospitals or clinics for screening and therefore, the majority of patients don't get tested until something goes wrong with their health and it is too late.

In an effort to address these shortcomings, my research laboratory is focused on design and development of handheld and affordable sensors for medical diagnostic applications. We are utilizing the cutting edge nanotechnology and microfluidics along with resistive pulse electrical measurements to execute our sensors.

The role of undergraduate research assistant will be as follow:

Design and create simple reservoirs made of polymers (PDMS) for sample and electrolyte injection. Conduct preliminary and proof of concept electrical measurements for calibrating the device. Utilize simple mathematical software such as MATLAB to calculate and simulate the physical forces.