

# Sue Lunte

## **Culture and Stimulation of Macrophage Cells (RAW 264.7) for the Production of Reactive Nitrogen and Reactive Oxygen Species**

This research project will focus on the culture and stimulation of murine macrophage cells (RAW 264.7) for use in microchip electrophoresis devices, where reactive nitrogen and reactive oxygen species will be monitored by amperometry and fluorescence detection. While graduate students in the lab will work on the optimization of the separation and detection schemes of the microchip electrophoresis devices, the REU students will focus on the cell culture and stimulation. Once the REU student has gained proficiency with the cell culture techniques, they will chemically stimulate the macrophage cells with lipopolysaccharide and phorbol myristate acetate to produce nitric oxide and superoxide, respectively. The students will then work along side a graduate student to perform the separation and detection of the analytes from the stimulated cells. Performing these stimulations will make a significant contribution to our long-term project goals which are to monitor the production of peroxynitrite, as well as other reactive nitrogen/oxygen species, produced by single macrophage cells. By participating in this project, the REU student will gain experience in proper cell culture methods and protocols. Also, while working along side the graduate students to perform the analysis of the stimulated cells, the REU student will be introduced to analytical methods such as electrophoretic separations, electrochemistry, and fluorescence detection.