

Electroanalytical Eavesdropping on Cellular Communication

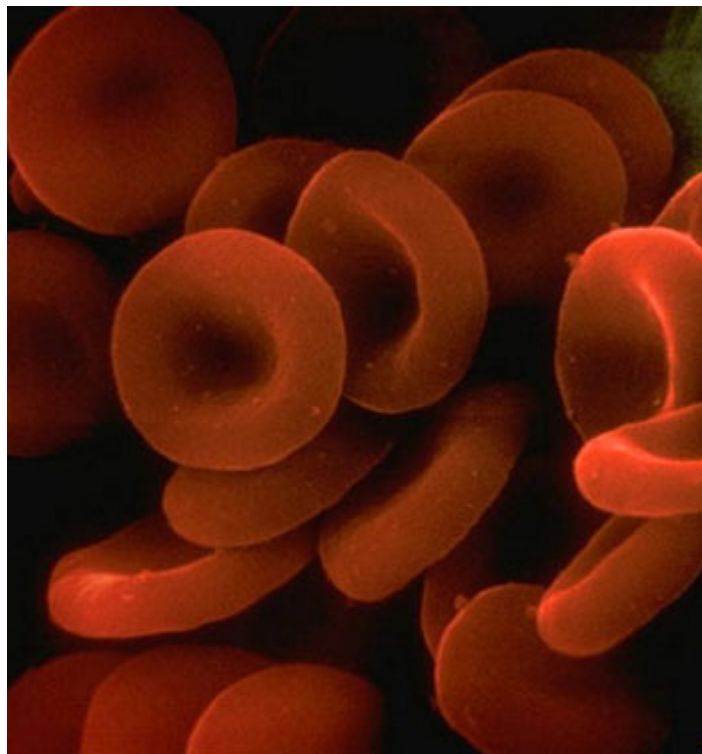
March 3, 2011

4:00PM - 5:00PM

123 Nieuwland Science Hall

Christy Haynes (University of Minnesota)

Host: Paul Bohn



This talk will focus on the use of single cell microelectrochemical measurements to study (1) blood platelets and (2) immune cell nanoparticle toxicity. Blood platelets are critical players in the process of hemostasis but, based on their small size and propensity to activate, real time single cell measurement of chemical messenger secretion has never been accomplished. Herein, microelectrochemical techniques reveal the concentration of chemical messengers stored in and the kinetics of chemical messenger release from individual platelets, including considerations of how extracellular and membrane manipulations influence platelet behavior. The same electrochemical techniques that reveal fundamental insight about blood platelets can also be used for applied studies of nanoparticle toxicity. In this case, carbon-fiber microelectrochemistry is used to probe critical cell function in immune system cells following exposure to engineered nanoparticles. The insight gained reveals how nanoparticles interact with cells as well as potential avenues to avoid this interaction in next generation nanoparticle-containing products.