



Western University
Department of Physics and Astronomy

PHYSICS & ASTRONOMY COLLOQUIUM

Date: **Thursday, 30th November 2017**
Time: **1:30 p.m.**
Location: **Physics & Astronomy Seminar Room 100**

Dr. Cecile Fradin

Department of Physics & Astronomy
McMaster University

“Proteins drilling holes in lipid membranes: The influence of the membrane physical parameters”

ABSTRACT

The elimination of unwanted cells is essential to the survival of all living organisms. This process is under the control of a set of proteins called Bcl-2 family proteins. When receiving certain signals, they drill holes in the outer membrane of mitochondria, an event sentencing the cell to death. We are interested in the influence of the physical properties of the membrane (surface charge, thickness, order parameter, spontaneous curvature) on the pore formation process. We study minimal reconstituted systems comprised of liposomes with varying lipid composition and both an activating protein (Bid) and a pore formation protein (Bax). We use fluorescence and scattering methods to quantitatively characterize the pore formation pathway. Our measurements show that certain lipid compositions, and thus certain membrane properties, affect specific steps in the pathway. Surface charge influences the initial recruitment of Bid to the membrane, while lipid tail disorder helps the insertion of both Bid and Bax into the membrane. Thus the physical properties of the mitochondrial membranes can be used by the cell as an additional way of regulating cell death.

COFFEE + light snacks will be available in the Atrium, 2nd floor, at 1:15 p.m.