



# BiophysTO Lunchtime Seminar Series

## Date

Thursday, Feb 13 2019  
12:00 – 1:00 pm

## Location

McLennan Physical  
Laboratories  
Room MP606  
60 St. George Street

## Dr. Jeffrey E. Lee

Department of Laboratory Medicine and Pathobiology  
University of Toronto

*Pizza and refreshments will be  
provided*

## ***Structural mechanisms of membrane fusion: from virus-cell to cell-cell***

The fusion of two membrane bilayers together is critical for many biological processes— from viral entry, fertilization (sperm-egg fusion), muscle differentiation (myoblast fusion), bone development (osteoclast fusion) and placenta formation (trophoblast fusion). The mixing of lipid bilayers is kinetically disfavored, which is generally attributed to a large force of hydration that maintains physical separation between the outer leaflets of two opposing membranes. Membrane-bound fusogens are required to catalyze membrane merger reactions. Much of what we know about these fusogens come from studies of fusion of viruses with host cells. Viruses encode an indispensable surface glycoprotein (GP) that act as molecular machines with dramatic conformational changes to facilitate membrane merger. Despite our extensive knowledge on viral-host membrane fusion, the mechanisms of cell-cell fusion are poorly defined. Our group uses X-ray crystallographic, biochemical and biophysical techniques to understand the diverse molecular mechanisms of membrane fusion. This seminar will specifically discuss our recent efforts in understanding sperm-egg and trophoblast cell-cell fusion, and its links to viral fusogens.

**Host: Dr. Walid A. Houry**



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