

# MOLECULAR STRUCTURE AND FUNCTION PROGRAM SEMINAR

## Dr. Corrie daCosta

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*Dr. daCosta is a candidate for a staff position in the Molecular Structure & Function Program*

### ***Unravelling Drug Mechanisms One Molecule at a Time***

**Abstract:** Functional studies examining the interaction between a drug and its receptor will be used to demonstrate the power of single-molecule measurements. Many drugs target ion channels, which are transmembrane proteins that regulate the electrical excitability of cells. Most ion channels are oligomeric proteins, assembled from several homologous subunits. This oligomeric architecture means that ion channels often contain multiple drug-binding sites, leading to a fundamental question: How many of the available drug sites are required for the action of the drug? Using a single-molecule approach, which allows us to monitor the activity of individual channels with a defined number of intact drug sites, we have determined the number of drug molecules required to alter the function of a homopentameric channel. Our approach extends single-molecule measurements to the single-subunit level, allowing us to determine the contributions of individual subunits to oligomeric protein function.

**Date :** Monday, February 10, 2014

**Time :** 1:00 - 2:00 pm

**Location :** Room 02.9320 (Event Room 1, 2<sup>nd</sup> Floor)

SickKids Peter Gilgan Centre for Research and Learning (PGCRL),  
686 Bay Street

**Host: Dr. P. Lynne Howell**

**Pizza Lunch will be provided**

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