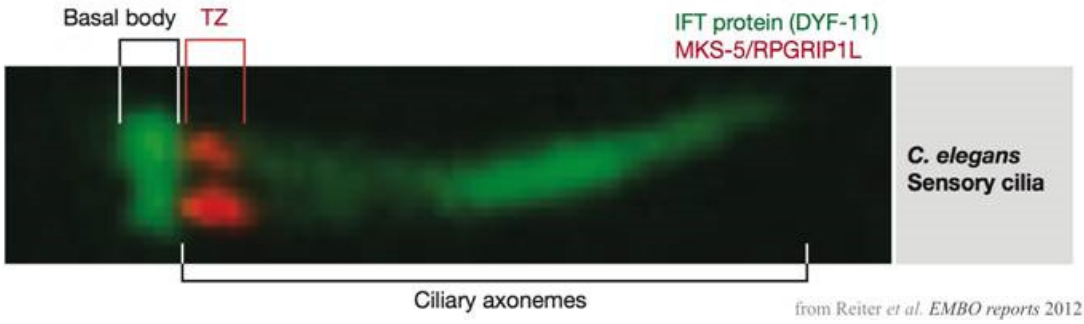
GUEST SPEAKER SEMINAR

Molecular Genetics
UNIVERSITY OF TORONTO

Formation and function of the transition zone, a specialised ciliary gate required for cellular signalling



Cilia are thought to harbour a membrane diffusion barrier ('ciliary gate') at their proximal-most subdomain, termed transition zone (TZ), that compartmentalizes signalling proteins. How this gate is assembled and functions remains largely unknown. I will present evidence that *C. elegans* MKS-5 (human Rpgrip1L/Mks5) acts as an assembly factor for over 10 different TZ proteins to form the characteristic TZ ultrastructure, including Y shaped axoneme-to-membrane connectors. These proteins form two distinct modules, consisting of Meckel syndrome (MKS)- and Nephronopthisis (NPHP)-associated disease (ciliopathy) proteins, that collectively seal the ciliary compartment. MKS-5 establishes a CIliary Zone of Exclusion (CIZE) at the TZ enriched in the phosphatidylinositol 4,5-bisphosphate (PIP2) lipid signaling molecule, and confines various signalling proteins; disrupting this compartmentalisation impairs signal transduction. We propose a model whereby MKS-5 modulates the assembly of MKS/NPHP module components into a TZ that functionally restricts signalling machinery within the sensory organelle.

Dr. Michel Leroux
Simon Fraser University

Host: Dr. Brian Ciruna

Date: Thursday August 1, 2013
Time: 4:00 p.m.
Place: Medical Sciences Building
1 King's College Circle
Room 4171