

# Department of Anatomy & Cell Biology Seminar Series

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## **GTPase regulation of the Golgi apparatus**

The Golgi complex is the central sorting station for nearly a third of all proteins in eukaryotic cells, but how cells regulate the flow of material through this organelle remains poorly understood. The Golgi must successfully traffic hundreds of membrane and luminal proteins to several different sub-cellular destinations including the plasma membrane, endosomes, lysosomes, and the endoplasmic reticulum. Protein and membrane traffic into and out of the Golgi is controlled by GTPases of the Arf and Rab families that function by recruiting effector proteins to generate, transport, and tether membrane vesicles and tubules. The master regulators of these essential GTPase pathways are the GEF proteins that must “decide” where and when to activate their substrate GTPases. The Golgi Arf-GEFs and Rab-GEFs are large, conserved multi-domain proteins and multi-protein complexes, suggestive of complex regulatory behavior. In this talk I will present recent work from our laboratory using cryoEM to determine the structures of multiple Golgi Arf-GEFs and Rab-GEFs “caught in the act” of activating their GTPase substrates. The structures reveal how these GEFs interact with the organelle membrane, how their activity is controlled, how they identify their substrates, and how the membrane surface itself plays a key role in their behavior.



**Wednesday, Jan. 18, 2023**  
**11:30am - 12:30pm**

 Room 1/12 - Strathcona  
Anatomy and Dentistry  
Building

Hosted by: Christian Rocheleau, PhD



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