Molecular Genetics
UNIVERSITY OF TORONTO

DEPARTMENTAL SEMINAR

VINCENT TAGLIABRACCI, PHD

Michael L. Rosenberg Scholar in Medical Research
Associate Professor in the Department of Molecular Biology

University of Texas Southwestern

Expanding the kinome

Monday, March 3, 2025

4:10 PM - 6PM

University College (UC) Room 161

My laboratory has made major contributions to our understanding of non-canonical functions for protein kinases by discovering diverse and unanticipated biochemical activities that are performed by this protein superfamily. Protein kinases have been studied for decades and play important roles in many physiological and pathological processes. The textbook view is that these enzymes transfer phosphate from ATP to protein substrates in a process termed phosphorylation. However, my laboratory has overturned this paradigm by discovering new catalytic activities of atypical protein kinases and pseudokinases. For example, we discovered that the predicted pseduokinases SelO, SidJ and nsp12 catalyze AMPylation, polyglutamylation and mRNA capping, respectively. These results have revealed important new insights into the cellular response to oxidative stress and the pathogenic mechanisms employed by bacterial and viral pathogens. Our work on eukaryotic, prokaryotic, and viral kinases has exposed the catalytic versatility of the protein kinase fold and suggests that pseudoenzymes should be analyzed for alternative catalytic activities. I will discuss some new kinases that phosphorylate lipids.

HOST Dr. Anne-Claude Gingras