

The Biological and Biomedical Joint Seminar Series

(Hosted by the departments of Molecular & Cellular Biology, Chemistry & Biochemistry, Cellular & Molecular Medicine, and Plant Sciences)

“Terra incognita of metabolite-protein interactome”

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Hosted By: Mark Beilstein and Ross Buchan



Living organisms are outstanding organic chemists, producing diverse small-molecule compounds that cover vast structural and functional diversity. Nevertheless, the metabolome remains largely terra incognita. First of all, we do not understand the full chemical complexity of even well-studied model organisms. Secondly, we often do not understand the metabolites' function, while new roles are constantly being assigned to central compounds such as amino acids and sugars. Because small molecules rarely work on their own but rather via interactions with proteins, following the proverbial "tell me who your friends are, and I will tell you who you are," identification of protein interactors can be used to unravel the function of a metabolite. During my talk, I will introduce an experimental approach developed in my group, enabling cell-wide identification of metabolite-protein-protein interactions. We combine classical biochemistry with state-of-the-art mass spectrometry metabolomic and proteomic methods and use computational tools to generate and mine metabolite-protein interaction networks. I will subsequently give examples of novel small-molecule regulators identified by our approach, focusing on proteinogenic dipeptides and their role as metabolic switches at the interface of proteostasis and central metabolism.

Zoom Link: <https://arizona.zoom.us/j/85848818129>

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