



Chemical & Physical Sciences

UNIVERSITY OF TORONTO

MISSISSAUGA

COLLOQUIUM SEMINAR SERIES

EXPLORING THE SCIENTIFIC METHOD,
OR LOSING YOUR MARBLES

featuring **David Cramb**

Professor & Dean of the Faculty of Science
Toronto Metropolitan University



Small molecules offer a unique opportunity to target structural and regulatory elements in therapeutically relevant RNAs, but understanding functional selectivity has been a recurrent challenge in small molecule:RNA recognition. RNAs offer less differentiating chemical functionality than proteins and sample multiple conformations that can individually impact function. We have used organic synthesis, machine learning and a variety of biophysical and cell-based assays to reveal patterns in the chemical and structural properties of bioactive RNA ligands as well as RNA topological space privileged for differentiation. We have applied these principles to several disease-relevant systems. For example, we were able to tune diiminazene-based small molecules to functionally modulate different RNA tertiary structures in the oncogenic long noncoding RNA MALAT1, leading to monofunctional degraders or tailored manipulation of RNA:protein interactions, respectively. We have also developed RNA-targeted antivirals for enterovirus (EV71) and SARS-CoV-2, revealing a novel allosteric mechanism of small molecule: RNA targeting.

Wednesday, March 19, 2025 | 3:15pm

Location: CC3150