



Chemical Institute



of Canada Edmonton Section

Presents on Tuesday 21 January 6:30 - 8:00 pm

Chemistry Department (E3-25)

Prof. Ratmir Derda

University of Alberta

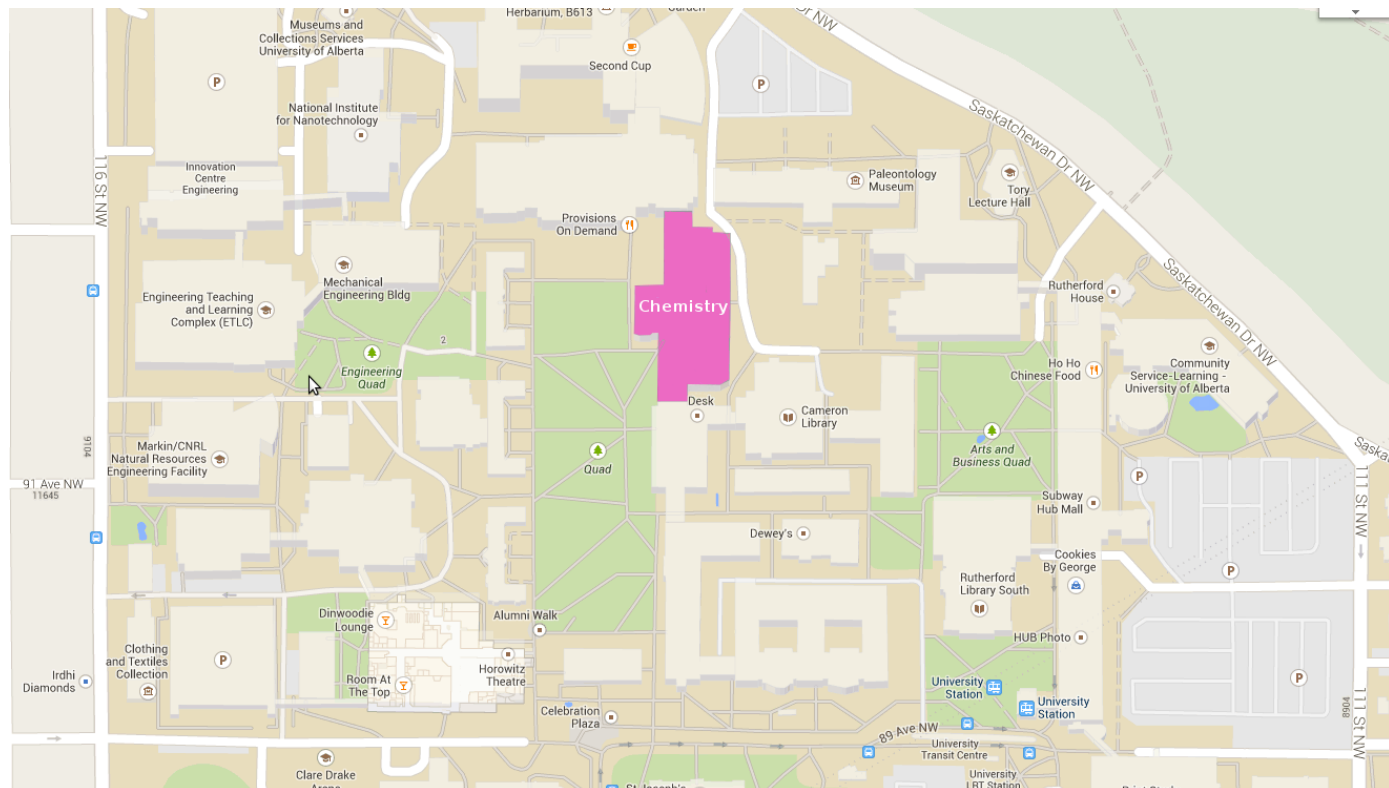
Genetically-Encoded Libraries of Chemicals

Abstract: Genetically-encoded libraries, in which each ligand is attached to a DNA tag, are increasingly used for ligand discovery. Natural translation of DNA, however, could yield only libraries of peptides made of 20 natural amino acids. In our lab, we expand diversity of genetic libraries using chemical post translational modifications. For example, we used N-terminal Ser oxidation to synthesize 10^9 of aldehyde-peptides and convert them to glycans in high yield. Alternatively, we alkylated Cys-containing libraries by unnatural azobenzene-linkers to generate genetically-encoded libraries of light-responsive small-molecules. Our group also develops optimized screening strategies that yield reproducible inhibitors with 48-hour turnaround time. Selection consists of 3-5 replicas of panning, multiple control experiments and next-generation sequencing of all experiments at once. Each experiment yields 10^5 sequences, from which we could extract statistically-significantly enriched "leads" using statistical analysis. With proper mathematical treatment, experiment can yield a ligand and S.A.R. for it at once. This approach to screening is unprecedented in genetically encoded library and it could change the way ligand design and discovery is performed.

Directions:

Gunning/Lemieux Chemistry Centre, Edmonton, AB

Location on Google Maps: <http://goo.gl/r82FHJ>



Room is Chemistry E3-25 (3rd floor)

3rd Floor of Gunning/Lemieux Chemistry Centre

