**Course Code:** MMG 1356H

**Course Title:** Membrane Proteomics in Biomedical Research

**Course Location:** TBD

**Course Time and Date:** TBD, usually November (12-2pm)

**Course Instructor(s):** Oliver Ernst and Igor Stagljar

**Instructor Contact Information (email):**

oliver.ernst@utoronto.ca

igor.stagljar@utoronto.ca

**Course description:**

This course will cover the fundamentals of membrane proteomics from a structural, biochemical and genetic standpoint. Among these will be cryo-EM, crystallography, NMR, and EPR methods as well as mammalian membrane two-hybrid screening and mass-spectrometry based methods. A number of *in vivo* approaches to the discovery of drugs that modulate biological systems will also be covered. Finally, the techniques used for the development of antibodies against membrane proteins with therapeutic potential will be introduced.

The course will be completed in a total of 12 hours in two-hour blocks, and will run over two weeks. In-class sessions will include lectures by professors and presentations by students on current literature. Classes will involve discussion of research papers.

**Course schedule (previous offering):**

Lecture 1:

Oliver Ernst, “Tackling G-protein-coupled receptors proteins by crystallography, cryo-EM and EPR”

Lecture 2:

Scott Prosser, “Ligand and fragment screening of membrane receptors by NMR”

Lecture 3:

Aled Edwards, “Structural Proteomics of Membrane Proteins”

Lecture 4:

Igor Stagljar, “Application of the Mammalian Membrane Two-Hybrid assay to identify EGFR inhibitors in non-small cell lung cancer”

Lecture 5:

Stephane Angers, “Application of functional genomic and proteomic approaches to study the Wnt signalling pathway”

Lecture 6:

Sachdev Sidhu, "Synthetic antibodies for clinically relevant membrane proteins"

**Enrolment limit: 24**

**Method of evaluation: : (% breakdown. Must add up to 100%)**

Student presentation 50%

Assignment 25%

Participation in class 25%