

MMG1317H - Special Topics in Advanced Cancer Proteomics

Course Organizer: Michael Moran

Instructors: Michael Moran, Hannes Röst, Brian Raught, Thomas Kislinger,

Dates: Tentative: Wednesdays 23 October 2024 – 27 November 2024 [6 weeks]

Time: Tentative: 10 AM – Noon

Place: Peter Gilgan Centre for Research and Learning (room to be determined)

Enrollment: TBD approx. Max enrollment ~8 students

Synopsis:

The premise the course is that cancer is largely a product of the sequence-to-phenotype continuum: DNA-to-RNA-to-Proteome-to-Phenotype (i.e. cancer). The course comprises a series of lectures delivered by leading proteomics experts and researchers. Students will learn about mass spectrometry-based proteomics including spectral analysis, and tissue proteome profiling, and determination of protein-protein interaction networks. Innovative high-content proteomics technologies will be introduced that have been developed and applied to systematically interrogate proteomes for signatures associated with disease, cell regulation, and drug responsiveness. During the final two sessions, students will make individual presentations of an assigned paper.

Syllabus:

Week 1. Wed 30 Oct 2024: Cancer proteome profiling (Michael Moran)

Week 2. Wed 23 Oct 2024: Data Independent Analysis (Hannes Röst)

Week 3. Wed 06 Nov 2024: Mapping protein interactions and intracellular organization with proximity-dependent biotinylation (Brian Raught)

Week 4. Wed 13 Nov 2024: Cancer Biomarker Discovery (Thomas Kislinger)

Week 5. Wed 20 Nov 2024: Student presentations

Week 6. Wed 27 Nov 2024: Student presentations

Each lecture (weeks 1 through 4) will include an interactive presentation in which questions and comments from students are encouraged. The final two sessions (weeks 5 and 6) will comprise student-led seminars based on assigned publications. Students will receive a reading list on or before the first lecture. Student grades are based largely on participation in the weekly sessions and their individual presentations.

Course Evaluation:

Participation in lectures – 40%

Student presentation – 60%