**CSB471H1F – FOUNDATIONAL DISCOVERIES IN GENOME BIOLOGY AND BIOINFORMATICS**

24S

**Lecturer:**

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**Prerequisite:** BCB330Y1/BCH441H1/CSB352H1/CSB472H1/EHJ352H1/MGY428H1 or permission of the instructor

Foundational Discoveries in Genome Biology and Bioinformatics is based on close reading of key research articles in genome biology and bioinformatics. The format is interactive and requires students to contribute actively during class meetings. Groups of one to four students will be assigned to present context, figures, data, methods and impact from a number of research articles during the semester. Based on the readings, groups of one to four students will propose new genome technologies or datasets and new bioinformatics software or databases.

**Readings may include research articles in the following areas:**

1. Genome Biology
   1. Whole genome duplications
   2. Global gene expression changes
   3. Genome-scale analysis of conserved non-coding sequences, Tissue-specific enhancers
   4. Global analysis of genetic variation
   5. Single-cell gene expression measurements
2. Bioinformatics
3. Genome Browsers
4. Short read mapping and RNA-seq analysis
5. Gene set enrichment analysis and multiple testing
6. Predicting miRNA targets
7. Clustering and visualizing protein-protein interactions

**Reading**

Articles will be provided through the course website ([https://q.utoronto.ca](https://q.utoronto.ca/)).

**Evaluation**

The grading is based on participation and attendance, in class presentations and writing assignments.