

Seminar in Molecular Mechanisms of Epigenetics

Health Sciences 475

Section: D100

Term: 2010 Summer

Instructor: Dr. Gratien Prefontaine

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Discussion Topics: COURSE DESCRIPTION: This course is designed to provide students with an in depth understanding of current advances in epigenetics and an appreciation of the experimental efforts and methodologies used to address the physical changes to chromatin that affect gene regulation. Following a short summary of concepts and general principles, we will discuss current understandings in how covalent modifications of chromatin are placed and readout by biological systems. Readings will be selected to emphasize biological systems that are sensitive to chromatin modifications that affect health and behavior.

COURSE OBJECTIVES: The main objectives of this course are to introduce students to current environmental human health concerns and the basic research being performed to address human health problems. At the end of the course, students should be able to evaluate peer-reviewed publications for content and rigour describing basic approaches using examples from the literature. In addition, students should demonstrate an understanding of the conceptual design of the basic molecular and biochemical approaches used to investigate human health. Students will be required to learn to critically review relevant literature and communicate these points by presenting their findings in an organized and scholarly fashion to their peers.

Course Topics:

Chromatin modifications

MicroRNAs

Chromatin remodeling

DNA methylation

Enzymes that place and erase epigenetic marks

Cellular proteins that read and interpret epigenetic marks

Control of gene regulation

Genes and environment/behavior DNA/chromatin structure

Epigenetics and heredity

Mammalian models

New technologies

COURSE FORMAT: The course will consist of student presentations of peer-reviewed research papers and written reports with critical analysis of the methods, data and interpretations.

Grading: 60 % student presentations, 30% written review papers, 10% class participation

Required Texts: Peer-reviewed articles from the current literature will be assigned.

Recommended Texts:

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Materials/Supplies:

Prerequisite/Corequisite: MBB 331, or permission of the instructor

Notes: The professor may make changes to the syllabus if necessary, within Faculty / University regulations.

This outline is derived from a course outline repository database that was maintained by SFU Student Services and the University's IT Services Department. The database was retired in 2014 and the data migrated to SFU Archives in 2015.