

CTSC 5140

Epigenetics & Epigenomics – Impact on Translational Research and Future Medical Practice

Faculty: Tamas Ordog, M.D. and Keith Robertson, Ph.D.

Credits: 2

Quarter: Fall (odd years)

Prerequisites: None

Overview

The goal of this introductory course is to expose students to Epigenetics and Epigenomics, which are promising to become an important foundation of modern medicine, including individualized health care delivery. In this course, students will discuss molecular mechanisms underlying epigenetic events, the tools for the design and execution of research in this discipline, how to generate and analyze data and the application of Epigenomics to diagnostic and therapeutic treatments. The course will consist of didactic evidence-based lectures and class discussions, writing exercises, and critical research literature, which aim at gaining a deeper insight on the impact of Epigenomics to human health.

Objectives

- To explain fundamental epigenetic mechanisms underlying the regulation of gene expression, inheritance, DNA modification, the RNA world, and chromatin complexes
- To identify epigenetic syndromes
- To apply Epigenomics design, methods, applications, and analyses of data
- To utilize Epigenomics as a diagnostic tool and for the production of therapeutic targets
- To understand integration of large scale Epigenomics data to systems biology and medicine

Evaluation

This course will evaluate students based on class attendance and participation as well as two exams.

Students will be expected to spend approximately two to four hours per week on content from this 1-credit course.

Additional online modules related to this topic are available through the [Continuous Professional Development website](#).

For specific dates and times this course is provided, please see the [quarterly detailed course schedule](#).