



GNET 801/Pathology 801:

Cell Cycle Regulation and Cancer

Fall Semester, 2020

Tuesdays 2:00-5:00 pm via Zoom

Course Directors:

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Synopsis: This journal club-style course will cover: genetic and molecular events that regulate normal cell cycle progression, how cell cycle deregulation leads to cancer, and how understanding cancer cell cycles reveals opportunities for targeted therapy and precision medicine. We will follow development of the cell cycle field chronologically, illustrating how current concepts and paradigms have evolved through scientific inquiry. This will be a perfect starting point for students that would like to know more about the cell cycle and cancer, but have no prior knowledge of these fields. The course organizers strive to create a fun and friendly environment that recapitulates the feel of a lab meeting. Everyone will be encouraged to participate fully in the group discussion.

Course Objectives: In addition to providing a thorough understanding of the cell cycle, a major goal is to teach the 'scientific method' – the process by which scientists identify problems, formulate testable hypotheses, collect experimental data, and eventually establish new models of biological processes. The scientific method will be illustrated by studying the cell cycle field, yet is *applicable to any field of study*. Students will have the opportunity to improve their oral presentation skills. The course also incorporates a mini grant-writing 'boot-camp' to help students develop persuasive strategies for marketing their scientific proposals. *This course will help students to develop skills that will be required throughout their scientific careers.* Course content is derived solely from primary literature and updated every year to reflect evolving paradigm shifts in the field, new technologies, and the interests of enrolled students. Grades will be based solely on in-class performance and take-home assignments. There will be no final exam.

Key words: Cell cycle, signal transduction, oncogenes, tumor suppressors, DNA damage, checkpoints, genome maintenance, carcinogenesis, cancer, therapy

Prerequisites: Enrollment in a graduate program or permission of the course directors.