Cancer Biology 101 (癌症生物學導論, DMS 224200)
Monday M5

Instructor:

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Course Description:

If you want to understand how cancer starts and spreads, this course is for you. This course is also a useful introduction to cancer biology for undergraduate students from diverse backgrounds. Some biology knowledge will be helpful but not required. We'll talk about the origins of cancer and the genetic and cellular basis for cancer. The factors that have been implicated in triggering cancers and research directions for cancer therapy will also be covered.

Primary Resources:

Cancer A-Z, American Cancer Society
Understanding Cancer Series, National Cancer Institute
CancerQuest.org, Emory University
Learn.Genetics, University of Utah
Recent publications investigating human cancer

Course Requirements and Expectations:

- Students are required to read the course materials (reading assignments and slides). If you read the materials before each class, discussions will be more meaningful, and learning will increase. Expect to spend a minimum of 30 minutes reading per week.
- Each student must submit at least 1 question about each Lecture, following Twitter traditional 140-character limit. Questions are to be submitted to iLMS 24 hours before the Lecture (i.e. 1:20 pm Sunday).
- Each student will participate in a group presentation and the final exam during the term.

Grading:

- Participation (submit questions about each Lecture to iLMS, asking/answering questions and/or joining in discussions) **50%** (35%+15%)
- Student Group Presentations **25%**
- The Final Exam **25%**

Table of Contents:

Unit 1: Origins and Overview.
- The History of Cancer
- What is Cancer?

Unit 2: The Biological Building Blocks
- Basic Genetics (Mutation, DNA Repair, and Recombination)
- Epigenetics, Gene Expression and Regulation (Transcription and Translation, Signal Transduction Pathways)

Unit 3: Cancer Genes
- Oncogenes
- Tumor-Suppressor Genes

Unit 4: Death and Life: Apoptosis and Tumorigenesis
- The Apoptosis Pathway
- "Death Receptors"
- Tumorigenesis

Unit 5: Breast Cancer 101
- About Breast Cancer
- Breast Cancer Research Examples (Molecular Subtypes, Cell-to-cell Variation)

Unit 6: Student Presentations