BMS 622 CANCER BIOLOGY
COURSE DESCRIPTION AND REQUIREMENTS 2011

Meeting Time and Place: Mondays and Wednesdays, 2:00 to 3:30 PM, East Campus, Cancer Research Center, Room TBA depending on class size. First Meeting: January 19, 2011

Short Description: This course will present an overview of the cancer development process at the cellular and molecular level, including regulatory networks involved in growth control and tissue organization and an introduction to animal, cell and molecular techniques for studying progression, treatment and prevention of cancer.

Specific Course Objectives:

- To gain an appreciation of the complexity of the cancer development process at the cellular and molecular level.
- To provide students with an understanding of regulatory networks involved in growth control and tissue organization. This will primarily be achieved through the study of changes observed when these networks are disturbed in cancer cells.
- To gain exposure to whole animal, cell culture and molecular techniques for studying progression, treatment and prevention of cancer.
- To develop fundamental concepts of cancer identification, etiology and epidemiology.
- To understand the cellular and molecular basis of current strategies for cancer prevention and treatment.

Course Format and Grading:

- The course format will include lectures, discussions and activities (readings, web site work, case studies, presentations).

- Three exams (most likely take-home format) will be required, each worth 25% of the final course mark. Participation, written assignments and/or presentations throughout the semester will count for 25% of the mark. Details on exams will be provided in class.

Course Materials:

Textbooks and Readings: In this course, we will predominantly utilize review articles and research papers. We will also rely on various web sites for activities and information. If you don't have a cancer biology textbook, : *The Biology of Cancer* by Robert Weinberg (2006) is recommended and can be obtained in paperback online (Amazon and others) for about $85.

WebFile: Powerpoints, lecture notes, and supplemental information or readings will be posted prior to each lecture. The formats will be Powerpoint, Word or PDF. Please let me know if you have trouble accessing these files at any time.

***Course Director*:** Dr. JoEllen Welsh, Professor, Departments of Environmental Health Sciences & Biomedical Sciences, Room 304D CRC, East Campus. 591-7232 or jwelsh@albany.edu

Participants
Dr. Doug Conklin – Associate Professor, BMS
Dr. Jim Figge - Adjunct Associate Professor, BMS
Dr. Ramune Reliene – Assistant Professor, EHS
Dr. Stewart Sell – Professor, BMS

BMS 622 Cancer Biology Lecture Schedule
Spring, 2010

Jan 24-26: Introduction to Cancer Biology

- Jan 24: Definitions & Pathology (Sell)
- Jan 26: Modeling cancer in vitro and in vivo (Welsh)

Jan 31 – Feb 28: Molecular Basis of Cancer I: DNA Damage and Repair

- Jan 31 Mutagenesis assays (Reliene)
- Feb 2 Radiation and Chemical Carcinogenesis (Welsh)
- Feb 7: Cellular responses to DNA damage (Welsh)
- Feb 9: Papers & case studies (Welsh)
- Feb 14 Population example: radiation carcinogenesis – Chernobyl (Figge)

EXAM 1

Feb 21-23 (No class, Break)

Feb 28 – Mar 9: Molecular Basis of Cancer II: Cancer Genes

- Feb 28 Oncogenes (Welsh)
- Mar 2 Tumor Suppressor Genes
- Mar 7 Familial Cancers (Welsh)
- Mar 9-14 Papers & Case studies (Welsh)

EXAM 2

Mar 16 – April 13: Cell Biology of Cancer

- Mar 16 Overview: Cancer Networks (Welsh)
- Mar 23: Cell Cycle Control (Conklin)
- Mar 28: Immortality and Senescence (Conklin)
- Mar 30: Cancer Metabolism (Conklin)
- April 4: Negative Growth Regulation: Differentiation and Apoptosis (Welsh)
- April 6: Papers & Case studies (Welsh)
- April 11 Tumor Stem Cells (Sell)
- April 13 Tumor Immunology (Sell)

Apr 18-25 – No class, Break

May 2: Targeted Therapies and Clinical Trials (Welsh, Figge)

EXAM 3