

**BMS 622 CANCER BIOLOGY  
COURSE DESCRIPTION AND REQUIREMENTS 2009**

**Meeting Time and Place:** Mondays and Wednesdays, 2:00 to 3:30 PM, East Campus, Cancer Research Center, Massry Auditorium. First Class: January 21, 2009

**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).
- Two exams will be given, each worth 25% of the final course mark. There will be several assignments and/or presentations throughout the semester which will count for 25% of the mark. A cumulative final exam will be worth 25% of the final course grade. Exam format will be combination of multiple choice, short answer and essays; some portions may be "take-home"

**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. Recommended text: The Biology of Cancer by Robert Weinberg (2006). Available 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 us know if you have trouble accessing these files at any time.

**Course Coordinators:**

Dr. JoEllen Welsh, Professor, Departments of Environmental Health Sciences & Biomedical Sciences, Room 122G CRC, East Campus. 591-7232 or [jwelsh@albany.edu](mailto:jwelsh@albany.edu)

Dr. James Figge, Adjunct Associate Professor, Department of Biomedical Sciences. [jjf06@health.state.ny.us](mailto:jjf06@health.state.ny.us)

**BMS 622 Cancer Biology Lecture Schedule  
Spring, 2009**

**Jan 21, 26: Introduction to Cancer Biology**

- Definitions
- Pathology
- Epidemiology

**Jan 28 – Feb 11: Molecular Basis of Cancer I: DNA Damage and Repair**

- Chemical Carcinogens
- Radiation Carcinogenesis (example: Chernobyl – Figge)
- DNA Repair (Begley)

**Feb 16, Feb 18: No class, Break**

**Feb 23 – Mar 9: Molecular Basis of Cancer II: Cancer Genes**

- Definition and Identification of Oncogenes (2)
- Definition and Identification of Tumor Suppressor Genes (2)
- Familial Cancers (Tenniswood)
- DNA viruses and Cancer (Figge)

**Mar 11 – EXAM I**

**Mar 16: Cell Biology of Cancer Overview: Hallmarks of Cancer**

**Mar 18 - 23: Cell Biology of Cancer I:**

- Cell Cycle Control (Conklin)
- Immortality and Senescence (Conklin)

**Mar 25 - 30: Cell Biology of Cancer II:**

- Negative Growth Regulation
- Apoptosis

**Apr 1 - 6: Cell Biology of Cancer III:**

- Cancer Stem Cells (Sell)
- Cancer Immunology (Sell)

**Apr 8,13: No class, Break**

**Apr 15, 20: Cell Biology of Cancer IV: Progression**

- Angiogenesis
- Metastasis

**EXAM II – take home**

**Apr 22: Clinical Aspects of Cancer I**

- Diagnosis, Grading & Staging
- Treatment Strategies

**Apr 27: Clinical Aspects of Cancer II**

- Principles of Chemotherapy (Schneider)
- Drug Resistance (Schneider)

**Apr 29 – May 4: Clinical Aspects of Cancer III**

- Novel Therapies & Clinical Trials
- Prevention Strategies