Biology 350 **The Biology of Cancer** **Spring 2019**

M,Th 9:45 - 11:00; 510 HN

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Recommended Text: The Biology of Cancer 2nd Ed. 2013 Robert A. Weinberg

Topics:

Cancer – What it is…. And, is not	Chap 1.1 – 1.6, 2.7 – 2.11 (page 39 at the moment)
Cell Culture	Chap 3.1, 4.1 - 4.2, 5.1
Cell Cycle Regulation	Chap 8; Article
Apoptosis	Chap 9
Signal Transduction	Chap 5, 6
Oncogenes	Chap 3, Chap 4
Tumor Suppressor	Chap 7
Cell Senescence / Immortality	Chap 10
Multistage Carcinogenesis and Colon Cancer	Chap 11
Tumor Promotion	Chap 11
Tumor Cell Metabolism	Chap 2-6, Article
DNA Repair	Chap 12
Angiogenesis	Chap 13
Metastasis	Chap 14
Tumor Immunology	Chap 15
Treatment of Cancer	Chap 16

Grading will be as follows:

Midterm	40%
Proposal	20%
Final	40%

Approximate Schedule:

Jan 28	M	Cancer History & Epidemiology I	
Jan 31	Th	Cancer History & Epidemiology II	
Feb 4	M	Cancer History & Epidemiology III	
Feb 7	Th	Cell Culture I	
Feb 11	M	Cell Culture II	
Feb 14	Th	Hematopoiesis and Differentiation	
Feb 21	Th	The Cell Cycle I	
Feb 25	M	The Cell Cycle II	
Feb 28	Th	Apoptosis I:	Programmed cell death mechanisms
Mar 4	M	Apoptosis II:	In Cancer
Mar 7	Th	Signal Transduction I:	Basics: hormones and receptors
Mar 11	M	Signal Transduction II:	β-adrenergic response
Mar 14	Th	Signal Transduction III:	Phospholipases, Lipid second messengers
Mar 18	M	Signal Transduction IV:	Receptor tyrosine kinases, SH2, recruitment
Mar 21	Th	Exam I	
Mar 25	M	Cancer genetics I:	Retroviruses & Oncogenes
Mar 28	Th	Cancer genetics II:	Tumor suppressor genes & DNA tumor viruses
Apr 1	M	mTOR	
Apr 4	Th	Colon Cancer – progression - Wnt Signaling	
Apr 8	M	Tumor promotion – dietary connection?	
Apr 11	Th	Tumor Cell Metabolism – an Achiles' Heel?	
Apr 15	M	DNA repair and hereditary cancer	
Apr 18	Th	Senescence and Immortality – Telomerase	
Apr 29	M	Angiogenesis & Metastasis	
May 2	Th	Tumor Immunology I	
May 6	M	Tumor Immunology II	
May 9	Th	Treatment of cancer in the 21st century	
May 13	M	Exam II	
May 20	M	Proposals due	

Learning outcomes: Students will have the opportunity learn how the disease of cancer intersects with all aspects of human biology. They will also have the opportunity to see how the causes of this disease are not what you learn from media exposure.

Required readings: A comprehensive text on the Biology of Cancer (Weinberg, 2013) is recommended to assist in the understanding of lecture material. A Cell Biology text would also work, but you would have to work to find the appropriate material.

Method of evaluation: Two exams are given that are based entirely on lecture material. Students are also asked to generate a research proposal based on some aspect of cancer research that excited them.

Plagiarism policy: Plagiarism is generally not a problem in that the proposal students are asked to write involves forward thinking. A previously published paper can be used to deconstruct the work into a proposal that could have been used to obtain the funding needed for the final product.