Biology 350 **The Biology of Cancer** **Spring 2020**

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

David Foster
Office: 432 Belfer Researrh Building, 413 East 69th Street
Phone: (212) 896-0441
E-mail: foster@genectr.hunter.cuny.edu
Office Hr: Tue 2-3:30

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
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:

Exam I	40%
Exam II	40%
Proposal	20%

Approximate Schedule

Jan	27	M	Cancer History & Epidemiology I
Jan	30	Th	Cancer History & Epidemiology II
Feb	3	M	Cancer History & Epidemiology III
Feb	6	Th	Cell Culture I
Feb	10	M	Cell Culture II
Feb	13	Th	Hematopoiesis and Differentiation
Feb	20	Th	The Cell Cycle I
Feb	24	M	The Cell Cycle II
Feb	27	Th	Apoptosis I: Programmed cell death mechanisms
Mar	2	M	Apoptosis II: In Cancer
Mar	5	Th	Signal Transduction I: Basics: hormones and receptors
Mar	9	M	Signal Transduction II: β-adrenergic response
Mar	12	Th	Signal Transduction III: Phospholipases, Lipid second messengers
Mar	16	M	Signal Transduction IV: Receptor tyrosine kinases, SH2, recruitment
Mar	19	Th	Exam I
Mar	23	M	Cancer genetics I: Retroviruses & Oncogenes
Mar	26	Th	Cancer genetics II: Tumor suppressor genes & DNA tumor viruses
Mar	30	M	mTOR
Apr	2	Th	Colon Cancer – progression - Wnt Signaling
Apr	6	M	Tumor promotion – dietary connection?
Apr	20	M	Tumor Cell Metabolism – an Achiles' Heel?
Apr	23	Th	DNA repair and hereditary cancer
Apr	27	M	Senescence and Immortality – Telomerase
Apr	30	Th	Angiogenesis & Metastasis
May	4	M	Tumor Immunology I
May	7	Th	Tumor Immunology II
May	11	M	Treatment of cancer in the 21st century
May	14	Th	Exam II
May	21	Th	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.