BIMM134 – The Biology of Cancer
Winter 2018

Lectures:
Center Hall Room 101
Tuesdays/Thursdays, January 9 – March 15
8:00 – 9:20 AM

Discussion Sections:
Monday – 10-11; York 3000A
Monday – 5-6; Center 207
Wednesday – 8-9; Center 207
Thursday – 5-6; HSS 2154
Thursday – 6-7; HSS 2154

Instructor: Eric Bennett, Ph.D.
email - e1bennett@ucsd.edu
Office Hours: Tuesday and Wednesday 2-3 pm,
Natural Sciences Building, Room 6105

"Required" Textbook:
The Biology of Cancer – 2nd Edition
Robert A. Weinberg

Exams:
Midterm I: February 1, in-class
Midterm II: March 1, in-class
Final: March 22 8AM, comprehensive

Final grade breakdown
Midterm I – 30%
Midterm II – 30%
Final – 35%
In class participation – 5%

Exam policy:
There will be **NO** makeup exams.

You are required to take all exams without exception.

Midterm exam re-grade requests will be allowed. Requests will need to be made in writing no later than 1 week prior to date at which graded exams are returned to the class. Re-grade requests must be typed and printed and appended to the original exam. Email requests will not be allowed and all re-grading decisions are final.

Instructional Assistant: (Discussion sessions to be held in Weeks 2 thru 10)

Name	Email Address	Sessions
Danielle Garshott	dgarshot@ucsd.edu	M, 10-11; W, 8-9
Taron Ayrapetyan	tayrapet@ucsd.edu	Th, 5-6; Th, 6-7
Yunlin Zhang	yuz184@ucsd.edu	M, 5-6

Email policy:
Use the instructional assistant as your primary contact point for questions - I will attempt to answer short and direct clarification questions as long as you include BIMM134 in subject line of the email. Long open-ended emails will likely receive either no response or a short response. I will respond to emails only once a day so if you don't receive an immediate response, wait.

Cancer Research Seminar Extra Credit:

You must check in with either myself or an Instructional Assistant before or after the seminar.

You also must submit a half-page synopsis of the research seminar within 48 hours of attending the seminar (trust me, you will want to write it while the seminar is fresh in your mind). See "Outline for writing cancer biology research seminar synopses" document for guidelines in constructing your written synopses.

The first seminar that you attend will count for the entirety of your participation score for the class (5% of the total)

Each subsequent seminar you attend and write a synopsis for, you will receive 10 bonus points to be applied to any exam (basically two free questions) up to a maximum of 20 points (i.e. once you attend three seminars there will be no more extra credit).

Course Learning Goals:

I. Understand the heterogeneity and complexity associated with human cancers.

- **Key Concepts**
  - **What extrinsic and intrinsic factors lead to cancer initiation?**
  - **What cell types contribute to cancer initiation?**
  - **How does the surrounding tumor microenvironment as well the interactions between the tumor and other body systems impact cancer formation?**

II. Understand the molecular features that drive cancer formation.

- **Key Concepts**
  - **How do cells lose the ability to control their growth?**
  - **What cellular signaling pathways are commonly perturbed during cancer formation?**
  - **What defects in cellular and molecular failsafe mechanisms expose vulnerabilities to cancer formation?**

III. Understand the genetic basis for cancer formation

- **Key Concepts**
  - **How does cancer result from genetic clonal evolution?**
  - **What molecular pathways prevent genetic alteration?**
  - **How does genetic alteration lead to cancer formation and chemoresistance?**
  - **How is our current genetic understanding of cancer being used to treat specific cancers?**

IV. Understand the experimental basis for historical and current discoveries in cancer biology.

- **Key Concepts**
  - **How were/are oncogenes and tumor suppressors discovered?**
  - **Who were scientists responsible for historically significant discoveries in cancer biology?**
  - **How are current cancer research efforts reshaping our view of cancer?**

BIMM134
Biology of Cancer

Lecture subject	Reading
January 9 - Introduction to Cancer	Chapter 2 – tBoC Pgs 31-44;59-69
January 11 – Tumor Viruses	Chapter 3 - tBoC
January 16 – Human Cellular Oncogenes	Chapter 4 - tBoC
January 18 – Tumor Suppressors	Chapter 7 – tBoc
January 23 – Loss of proliferation control I RTKs – Ras	Chapter 5 – tBoC Chapter 6 - tBoC Pgs 175-193
January 25 - Loss of proliferation control II – Cell cycle	Chapter 8 – tBoC Pgs 231-254
January 30 – Genetic variability and heterogeneity in Cancer Geoff Wahl Guest Lecture	pdf on course website Chapter 11 – tBoC Pgs 439-474

February 1 – Midterm - I

February 6 – Loss of feedback inhibition –	Chapter 6 – tBoC Pgs 193-202 pdf on course website
February 8 – Avoiding cell growth suppressive signals – Senescence	Chapter 10 – tBoC pdf on course website
February 13 – Avoiding cell growth suppressive signals – p53	Chapter 9 - tBoC Pgs 331-378

February 15 - Genomic instability and DNA damage I	Chapter 12 – tBoC
February 20 - Genomic instability and DNA damage II – Inder Verma – Guest Lecture	pdf on course website
February 22- Avoiding cell growth suppressive signals – Apoptosis I	Chapter 9 - tBoC pdf on course website
February 27 - Avoiding cell growth suppressive signals – Apoptosis II	Chapter 9 - tBoC pdf on course website

March 1 – Midterm 2

March 6 - The Cancer Microenvironment and Angiogenesis	Chapter 13 – tBoC
March 8 – Metastasis	Chapter 14 – tBoC Pgs 641-694
March 13 – Cancer Metabolism Reuben Shaw Guest Lecture	pdf on course website
March 15 – Cancer Immunology	Chapter 15 - tBoC

March 22 – Final Exam 8AM