

# **BIMM134 – The Biology of Cancer Winter 2019**

## **Lectures:**

Center Hall Room 119  
Tuesdays/Thursdays; 3:30 – 4:50 PM  
January 9 – March 15

## **Discussion Sections:**

Wednesday – 12-1 CSB 001  
Friday – 12-1 CSB 001

**Instructor:** Eric Bennett, Ph.D.  
email - e1bennett@ucsd.edu  
Office Hour: Wednesday 1-2 pm,  
Natural Sciences Building, Room 6105

## **“Required” Textbook:**

The Biology of Cancer – 2<sup>nd</sup> Edition  
Robert A. Weinberg

## **Exams:**

**Midterm I: January 31**, in-class  
**Midterm II: February 28**, in-class  
**Final: March 19 3PM**, 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
Elena Turkalj	eturkalj@ucsd.edu	Wednesday – 12-1 CSB 001 Friday – 12-1 CSB 001

**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 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.

Submission of the research synopses will be through the course TritonEd portal. Synopses emailed to either myself or the IA will not be accepted.

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 Objectives:**

### **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 8 - Introduction to Cancer	Chapter 2 – tBoC Pgs 31-44;59-69
January 10 – Genetic variability and heterogeneity in Cancer	pdf on course website Chapter 11 – tBoC Pgs 439-474
January 15 – Tumor Viruses	Chapter 3 - tBoC
January 17 – Human Cellular Oncogenes	Chapter 4 - tBoC
January 22 – Tumor Suppressors	Chapter 7 – tBoC
January 24 – Loss of proliferation control I RTKs – Ras	Chapter 5 – tBoC Chapter 6 - tBoC Pgs 175-193
January 29 - Loss of proliferation control II – Cell cycle	Chapter 8 – tBoC Pgs 231-254
<b>January 31 – Midterm - I</b>	
February 5 – Loss of feedback inhibition –	Chapter 6 – tBoC Pgs 193-202 pdf on course website
February 7 – Avoiding cell growth suppressive signals – Senescence	Chapter 10 – tBoC pdf on course website
February 12 – Avoiding cell growth suppressive signals – p53	Chapter 9 - tBoC Pgs 331-378
February 14 - Avoiding cell growth suppressive signals – Apoptosis I	Chapter 9 - tBoC pdf on course website
February 19 - Avoiding cell growth suppressive signals – Apoptosis II	Chapter 9 - tBoC pdf on course website

February 21- Cancer and Stem Cells  
Guest Lecture – Robert Signer, Ph.D.

February 26 - Genomic instability and DNA  
damage

Chapter 12 – tBoC

February 28 – Midterm 2

March 5 - The Cancer Microenvironment and  
Angiogenesis

Chapter 13 – tBoC

March 7 – Metastasis

Chapter 14 – tBoC  
Pgs 641-694

March 12 – Cancer Metabolism

pdf on course website

March 14 – Cancer Immunology

Chapter 15 - tBoC

March 19 – Final Exam 3PM