

# CONCEPTS IN CANCER BIOLOGY (CAMB 512)

## OVERVIEW AND SYLLABUS

Fall 2024  
10:15 – 11:45  
Thursdays, BRB 701

**COURSE GOALS:** Introduce fundamental principles and emerging concepts in cancer biology. Develop conceptual mastery for how these principles and concepts were shaped through experimentation, as well as their implications, limits, and caveats. Hone your ability to identify key experiments and messages within primary literature and lead a group discussion.

**COURSE DESCRIPTION:** The course is divided into 6 thematic blocks: *Cancer Biology*, *Genome Integrity*, *Cancer Genomics*, *Stress Responses and Metabolism*, *Tumor Microenvironment*, and *Cancer Treatment*. Each meeting will showcase a faculty member lecture that highlights historical experimental breakthroughs and emerging concepts in the indicated field. Lectures will run for 45 minutes followed by a 20-minute student led presentation of a primary research paper and 10-15 minute discussion.

**READING ASSIGNMENTS:** Two-weeks prior to their lecture, faculty will assign a review that provides relevant background as well as a primary research paper that will be presented by a designated student and discussed by all. The faculty will also provide two discussion questions on the paper. EVERYONE IS REQUIRED to read these materials before each lecture.

**STUDENT PRESENTATIONS:** The presentation should be less than 20 min. Students should prepare slides that:

- 1) Set the stage for the work done in the paper,
- 2) Review the key experimental approaches and methods used,
- 3) Highlight the most critical discovery(ies) of the paper.

**DISCUSSION:** Two designated students (not the presenter) will lead the discussion after the paper is presented; one for each question. The discussion should initially be centered on the question provided by the faculty and the discussion leader's role is to begin the discussion and help moderate it. We welcome additional points of discussion provided by discussion leaders and are happy to follow whatever tangents that arise. The total discussion portion is less than 20 minutes.

**COURSE GRADE:** The course grade will be based on 75% participation, 25% presentations.

**DISSEMINATION of INFORMATION:** All communication will happen over Slack.

**COURSE DIRECTOR:** Bobby Bowman, [Robert.Bowman@Pennmedicine.upenn.edu](mailto:Robert.Bowman@Pennmedicine.upenn.edu)

**COURSE SCHEDULE:**

Date	Facul	Topic
<b>THEME I: CANCER BIOLOGY</b>		
8/29/24	Bobby Bowman	Course Introduction
9/5/24	David Feldser	Oncogenes
9/12/24	David Feldser	Tumor Suppressors
9/19/24	George Burslem	Growth Signaling Pathways
9/26/24	Bobby Bowman	Cancer Stem Cells
10/3/24	Qing Chen	Tumor progression and metastasis
<b>THEME II: GENOME INTEGRITY</b>		
10/10/24	Roger Greenberg	DNA maintenance/damage/repair
10/17/24	Kathrin Bernt	Cancer Epigenetics Part 1
10/24/24	Liling Wan	Cancer Epigenetics Part 2
10/31/24	Guilherme Nader	Nuclear mechano-transduction
<b>THEME III: CANCER GENOMICS</b>		
11/7/24	Timour Baslan	Intro to Cancer Genomics I
11/14/24	David Schultz	Functional Genomics- Precision Oncology
11/21/24	Peter Choi	Cancer Genomics Workshop
11/28/24	No class Thanksgiving	
12/5/24	Dana Silverbush	Single Cell Genomic Methodologies
12/12/24	Bobby Bowman	Computational Genomics workshop II

