CONCEPTS IN CANCER BIOLOGY (CAMB 512)
OVERVIEW AND SYLLABUS

Fall 2022
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 4 thematic blocks: *Intro to Cancer Biology*, *Genome Regulation, Stress Responses and Microenvironment,* and *Cancer Etiology*. 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 -minute student led presentation of a primary research paper and 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 DIRECTORS:

Donita Brady, bradyd@pennmedicine.upenn.edu
Peter Choi, choip@chop.edu
David Feldser, dfeldser@upenn.edu

THEME I: INTRO TO CANCER BIOLOGY and SIGNAL TRANSDUCTION		
Thur, Sept 1	Course Introduction	All Directors
Thur, Sep 8	Hallmarks of Cancer	Brian Keith
Thur, Sep 15	Oncogenes and Tumor Suppressors in Cancer	David Feldser
Thur, Sep 22	Kinases and Cancer (major pathways)	George Burslem
THEME II: GENE REGULATION		
Thur, Sep 29	Epigenetics of Cancer1 (DNA/RNA methylation)	Kathrin Bernt
Thur, Oct 6	Epigenetics of cancer 2 (Histone modification)	Thomas De Raedt
Thur, Oct 13	Genome integrity 1 (Guardians of the Genome)	Craig Bassing
Thur, Oct 20	Genome integrity 2 (Disruptors of the Genome)	Brad Johnson
Thur, Oct 27	Translational regulation in cancer	Crystal S Conn
THEME III: STRESS RESPONSES		
Thur, Nov 3	Unfolded Protein & Integrated Stress Response in Cancer	Crystal S Conn
Thur, Nov 10	Intro to Cancer metabolism	Katy Wellen
Thur, Nov 17	Oxygen in Cancer	Celeste Simon
Thur Nov 24	No Class (Thanksgiving Break)	
Thur, Dec 1	Targeting Autophagy	Ravi Amaravadi
THEME IV: CANCER ETIOLOGY		
Thur, Dec 8	Cancer Is A Disease Of Development Gone Awry	Ben Stanger
Thur, Dec 15	Tumor progression and metastasis	Karin Eisinger