BMB 585: Wistar Cancer Biology Course

Location: The Wistar Institute, 3601 Spruce St.
Time: Fall Semester 2021, Thursdays 2 - 4:00 pm, starting Sept 2nd. Koprowski/Berg.

Course Directors -
Dr. Maureen Murphy, Room 352, The Wistar Institute, **mmurphy@Wistar.org**
Dr. Kristy Shuda-McGuire, Room 221, **kshudamcguire@wistar.org**
Dr. Italo Tempera, Room 206, **itempera@wistar.org**

Course TAs: Dr. Bittany Lipchick, **blipchick@wistar.org**
Amanda Lee, **lee533@pennmedicine.upenn.edu**

The course will cover basic pathways and mechanisms of cancer development and progression as well as current approaches for the identification of therapies for the treatment of cancer. The class meets once per week and will begin with a 30-minute lecture on a cancer-relevant pathway. This will be followed by a ~20-minute small group exercise and a ~60-minute discussion and presentation of that week's assigned journal club paper. The paper's scientific focus will be directly related to the lecture and it will be posted on the class Canvas site a week in advance.

All students are expected to read the assigned paper prior to class, and to participate in class discussion. To promote discussion, students will be organized into groups at the beginning of the semester, with whom they will work until the mid-term. **Each group will be responsible for analyzing and presenting one figure from the paper**, although groups won't know which figure they're presenting until the class meets. Key points will include:

- What techniques were used to generate the data in the figure?
- What are the positive and negative controls?
- What are the important conclusions of the figure?
- Are there any problems with this conclusion, and what other techniques or experimental approaches could be used to solidify or corroborate the authors' conclusion?

Then **the entire class will discuss a** closing summary of the paper and address the following:

- What are the next steps of this research? How could this paper have been improved?

The mid term and final exam consist of short essays or questions related to the assigned papers. **The course is designed to provide students with an integrated learning platform, combining up-to-date basic mechanistic understanding of cancer pathways and cutting-edge molecular techniques, with particular emphasis on in-depth critical analysis of the current scientific literature.**

Prerequisites: Senior undergraduate or graduate level biochemistry and molecular biology, or prior acceptance by the Instructor.

Grading: Attendance and Class Participation 10%
Mid term exam 50%
Final Exam (not cumulative) 40%

Lectures:

Introduction to Cancer Biology	**MURPHY**	Sept 2
Key pathways and targets:		
The p53 tumor suppressor	**MURPHY**	Sept 9
Cancer Metabolism	**ALTIERI**	Sept 16
Hypoxia, Stress response and cancer	**KEITH**	Sept 23
The RAS pathway	**VILLANUEVA**	Sept 30
Cancer Metastasis	**CHEN**	October 7
FALL BREAK		Oct 14
MID TERM EXAM		Oct 21
Current hot topics in Cancer Biology:		
Metabolomics	**SCHUG**	Oct 28
Tumor Immunology/ Immunotherapy	**KEITH**	Nov 4
Cancer Genomics	**TIAN**	Nov 11
Epigenetics	**ASANGANI**	Nov 18
THANKSGIVING		Nov 25
Cancer Immunotherapy, CAR-T	**POSEY**	Dec 2
Viruses and Cancer	**TEMPERA**	Dec 9
FINAL EXAM		Dec 16