

THE WISTAR INSTITUTE

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Cancer Biology

University of Pennsylvania BMB/GCB 585

Semester: Fall 2022

Day and Time: Thursdays 1:30-4pm

Location: Koprowski/Berg Conference Room

The Wistar Institute, 3601 Spruce Street, Philadelphia, PA 19104

Course Directors:

Dr. Kristy Shuda McGuire, Dean of Biomedical Studies kshudamcguire@wistar.org

Dr. Italo Tempera, Associate Professor, Gene Expression & Regulation and Associate Director,
Cancer Research Career Enhancement itempera@wistar.org

Teaching Assistants:

Dr. Sarah Alp, Postdoctoral Fellow salp@wistar.org

Andrew Milcarek, PhD Student amilcarek@wistar.org

Course Description:

The course will cover key 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 45-minute lecture followed by group discussion and presentation of that week's assigned journal article. 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 discussions. To promote discussion, students will be organized into groups at the beginning of the semester, with whom they will work until the midpoint of the semester. **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 exams consist of short-answer 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 one of the course directors.

Grading:

Attendance and Class Participation 10%

Exams 3 x 30% = 90%

Schedule:

Introduction to Cancer Biology	Shuda McGuire	September 1
The RAS Pathway	Villanueva/Guterres	September 8
The p53 Tumor Suppressor	Murphy	September 15
Cancer Metabolism	Altieri	September 22
Metabolomics	Schug	September 29
Fall Break		October 6
Exam I		October 13
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Cancer Metastasis	Chen	October 20
Tumor Microenvironment and Immunology	Keith	October 27
Cancer Immunotherapy	Claiborne	November 3
Exam II		November 10
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Cancer Epigenetics	Gardini	November 17

Thanksgiving Break

November 24

Cancer Genomics

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December 1

Viruses and Cancer

Tempera

December 8

Exam III

December 15

Please reach out with any questions. We look forward to working with you!