Rigor and Reproducibility in Cancer Biology (Winter 2025)

Course Data
Number: CB_7800
Title: Rigor and Reproducibility in Cancer Biology
Credit-hours: 1
Meeting Day: Wednesday
Meeting Time: 10:30 am-11:20 am
Meeting Place: 1st floor conference room 1124 at Elliman
Department: Cancer Biology Program, Department of Oncology
School/College: School of Medicine, Wayne State University
Type: Lecture

Course Description

This is an advanced level course designed for Cancer Biology graduate students conducting cancer research. Students will take this course after they take the online CITI program training and university-wide ethic training. The objective of this course focuses on "Training in Methods for Enhancing Reproducibility" in the cancer biology area. The students will receive training in scientific reasoning, rigorous research design, relevant experimental methods, consideration of relevant biological variables such as sex, authentication of key biological and/or chemical resources, quantitative approaches, and data analysis and interpretation in cancer biology field. The course is comprised of 11 lectures, given on Wednesdays. Each lecture will consist of 45 min of teaching and 15 min for discussion.

Learning Outcomes
The students will be able to:

- Understand and utilize rigor and reproducibility in managing and recording data in cancer research
- Summarize and present research outcomes in a manner consistent with rigor and reproducibility in research papers and fellowship applications
- Identify improper ethical practices in cancer research and understand how to initiate awareness of these practices to the mentor, department, and university, as appropriate
- Apply appropriate ethical judgment when conducting cancer research
- Initiate and utilize strategies of mentoring that keep an open line of communication between mentor and mentee, thus fostering productive and responsible student development, and consistent with concepts of responsible conduct of research
- Apply ethical practices specific to the field of cancer biology in line with new scientific trends, technologies, use of human material and translational approaches for potential conduct of clinical trials

Course Topics and Schedule

IMPORTANT NOTE: The schedule and topics may change as the course unfolds. Changes will be posted on Canvas.

Jan. 15	Introduction to Integrity in Science	Dr. Mary Zhang
Jan. 22	Scientific Misconduct (Students presentation and discussion)	Dr. Mary Zhang
Jan. 29	Publication and Peer Review Process	Dr. Kristen Purrington
Feb. 5	Statistical analysis in Cancer Research	Dr. Seongho Kim
Feb. 12	Human subject research -IRB, clinical trials	Dr. Frank Cackowski
Feb. 26	Artificial Intelligence (AI) in Medicine and Biology	Dr. Suzan Arslanturk
Mar. 5	Experimental design, results recording and objectivity in data analyses	Dr. Abdo Najy
Mar. 10- Mar. 16	SPRING BREAK	
Mar. 19	Conflict of Interest	Dr. Zeng-Quan Yang
Mar. 26	Mentoring/Conflict Resolution (Student presentation and discussion)	Dr. Mary Zhang
Apr. 2	Animal Research- animal models and IACUC	Dr. Lisa Polin
Apr. 9	Scientific Misconduct at WSU	Dr. Philip Cunningham

Course Instructor ***Name***	***Office***	***Phone***	***Email***
Mary Zhang, Ph.D.	HWCRC 716	313-576-8672	zhangx@karmanos.org

Attendance

Attendance is mandatory, although exceptions can be made for reasons such as illness or family emergency.

Student Evaluation

The components of student evaluation are weighted as follows:

Class attendance and participation (70%)
An essay on a reported case of science lack of integrity. Describe the case and address what would have been the ways to prevent it and solve it. (30%)

Grading is on a satisfactory/unsatisfactory basis.