

Eukaryotic Cell Biology Laboratory

Workshop Spring 2023

Instructor: Luis Rodriguez, PhD

Contact: Email: Irodri17@gmu.edu Office Hours: By Appointment only.

Students must use their Mason email account to receive important University information, including messages related to this class. Online lectures will be held via blackboard collaborate during the scheduled course time.

Schedule Lectures: There will be 4 online lectures prior to our week-long work shop on Thursday Feb 2nd, 9th, 16th, and 22nd from 4:30-7:10 PM EST.
Lab: Monday-Friday March 13th – 17th, 9am -6pm Discovery Hall Rm 223

General University Catalog: <http://catalog.gmu.edu/>
University Policies: <http://universitypolicy.gmu.edu/>

Rationale:

This class will introduce you general to research design, to the techniques and practice of *in vitro* cell culture, and molecular biology assays which are traditionally used in translational research and genomic studies. These concepts and techniques will be applied to address the following hypothesis:

Can induction of HIF1 α signaling be useful as a therapeutic in lung cancer?

This class will consist of 4 online lectures where we will hold a weekly journal club and discuss topics related to the course hypothesis and assays. These lectures are followed by a full week of laboratory exercise March 14th – 18th. **Please plan on being in the lab from 9am-6pm during the week of the course.**

Grading:

1. Journal Club Presentation 25%

A PowerPoint presentation summarizing the hypothesis, methodology, and findings of a primary research article in the field of oxidative stress and lung pathology. During the first lecture you will be asked to chose from a variety of articles for you presentation.

2. Lab Report 50%

A complete laboratory report detailing your results and analysis of the data collected over the week. This report is to be written in the style of a primary research paper. Abstract, Introduction, Materials and Methods, Results, Discussion. A draft manuscript will be submitted for peer review as described below. Attention given to comments in peer review is expected of the final manuscript.

3. Peer Review 25%

All lab reports will be drafted and submitted for peer review by your classmates. Accordingly, each member of the class will write a thoughtful and constructive review of the lab report submitted to the instructor for grading and to the original author.

Schedule

	<u>Date</u>	<u>Topics</u>
1	Feb 3 rd	Course Introduction Oxidative Stress and Lung Injury
2	Feb 10 th	Metastasis and EMT in Lung Cancer
3	Feb 17 th	Angiogenesis and Lung Cancer
4	Feb 24 th	Model systems in Lung Cancer
5	March 13 th	Discussion: Introduction to Tissue Culture Lab: Cell maintenance, cell seeding, isolation of nucleic acids and protein
6	March 14 th	Discussion: Regulation of the cell cycle and apoptosis in cancer Lab: Small molecule challenge for ROS and Apoptosis Assays
7	March 15 th	Discussion: How to assay metastasis <i>in-vitro</i> Lab: QPCR and Viability Assays
8	March 16 th	Discussion: The application RNA, DNA, and Protein analysis Lab: Immunofluorescence, immunoblots, analysis of primary data
9	March 17 th	Discussion: Microscopy in molecular biology Lab: Imaging and quantification
10	April 21 nd	Draft Lab Report Due
11	April 22 rd	Peer Reviews are assigned
11	May 3 th	Peer Reviews Due
12	May 17 th	Final Lab Report due

Academic Integrity

THE HONOR CODE IS STRICTLY ENFORCED IN THIS CLASS.

The integrity of the University community is affected by the individual choices made by each of us. GMU has an Honor Code with clear guidelines regarding academic integrity. Three fundamental and rather simple principles to follow at all times are that: (1) all work submitted be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on a particular assignment, ask for clarification. No grade is important enough to justify academic misconduct. Plagiarism means using the exact words,

opinions, or factual information from another person without giving the person credit. Writers give credit through accepted documentation styles, such as parenthetical citation, footnotes, or endnotes. Paraphrased material must also be cited, using MLA or APA format. A simple listing of books or articles is not sufficient. Plagiarism is the equivalent of intellectual robbery and cannot be tolerated in the academic setting. If you have any doubts about what constitutes plagiarism, please see me.

Disability Accommodations

If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474, <http://ods.gmu.edu>. All academic accommodations must be arranged through the ODS