Cell and Molecular Biology – BISC 440 Lab – Spring 2020

Sect 1: Wed. 1:00-3:50pm

Sect 2: Wed. 10:00 am-12:50 pm

Instructor: Rabina Shrestha

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Description:

The laboratory segment of BISC 440 is designed to expose students to common molecular biology techniques and methods for observing cells and gene activity. The emerging field of molecular cell biology involves numerous techniques that are in widespread use across the biological spectrum, including medical research, forensic science, evolutionary biology, ecology and conservation biology, biochemistry, and pharmacology.

In this lab, students will use the basic tools of molecular biology to analyze gene and protein expression. Most experiments will take 2 – 4 weeks and will culminate in a complete laboratory report and exam. Detailed procedures for all experiments will be provided one week prior to the lab. Students are expected to have read the background materials and the procedure before coming to the lab.

Grades:

The laboratory component of BISC 440 counts for 25% of the final grade for the course. In the lab, there will be 2 exams (45% of lab), 3 sets of lab figures (45% of lab), and a participation grade (10% of lab).

ATTENDANCE IS REQUIRED. Each unexcused absence will result in 5 points deducted from your participation grade. If you know you will be absent due to court date, doctor's appt., interview, etc., you are expected to contact Glendin Pano and schedule attendance at another lab session for that week. If you arrive late to lab, after your group has begun the experiment, 3 points will be deducted from your participation grade.

Make up exams:

Students can make up exams immediately after the final exam **only** if they have documentation regarding their absence (i.e. doctor's note, court date, death certificate, etc.)

General Expectations:

Cell phones should be off/silenced and inside a bag. If you need a calculator for problems, you are welcome to use a calculator, not a phone. Food and drink are ***not*** allowed in the laboratory.

Students with Disabilities

The University of Mississippi is committed to the creation of inclusive learning environments for all students. If there are aspects of the instruction or design of this course that result in barriers to your full inclusion and participation, or to accurate assessment of your achievement, please contact the course instructor as soon as possible. Barriers may include, but are not necessarily limited to, timed exams and in-class assignments, difficulty with the acquisition of lecture content, inaccessible web content, and the use of non-captioned or non-transcribed video and audio files. If you are approved through SDS, you must log in to your Rebel Access portal at https://sds.olemiss.edu to request approved accommodations. If you are NOT approved through SDS, you must contact Student Disability Services at 662-915-7128 so the office can: 1. determine your eligibility for accommodations, 2. disseminate to your instructors a Faculty Notification Letter, 3. facilitate the removal of barriers, and 4. ensure you have equal access to the same opportunities for success that are available to all students."

Week	Lab
1 1/22	**Introduction** • Syllabus, Pipetting Skills and Lab groups
2 1/29	**pGLO Bacterial Transformation**
3 2/5	**Analyze Transformants;** Inoculate Cultures
4 2/12	**HIC Chromatography:** GFP Protein Purification ***pGLO/GFP Figures with detailed Figure legends due next week***
5 2/19	**LacZ Staining of Transgenic Embryos**: Localization of gene expression
6 2/26	**Analyze LacZ embryos**
7 3/4	**Immunohistochemistry**: Localization of proteins *in vivo*
8 3/11	**SPRING BREAK**
9 3/18	**Analyze Immuno-stained embryos** ***Lac Z and Immuno-Stain Figures with detailed Figure legends due next week***
10 3/25	**Proteomics:** Purification of fish proteins, SDS PAGE, and stain
11 4/1	**Western Blot**: SDS-PAGE and blot of fish proteins
12 4/8	**Lab Mid-Term Exam**
13 4/15	**Immunodetection**: Probe blot with anti-myosin light chain antibody
14 4/22	**Identification of Fish Proteins**: Standard Curve of SDS-PAGE and Analysis of Western Blots; Review ➢ ***Proteomics Figures with detailed Figure Legends due week of lab final***
15 4/29	**Final Cumulative Exam** Proteomics figures due

This schedule is subject to change at the discretion of the instructor to accommodate instructional and/or student needs.