

Biology 313

Molecular and Cellular Laboratory
SPRING SEMESTER 2021

1 Credit

INSTRUCTOR: Dr. Scott Grieshaber

OFFICE: Room 133 Gibb

EMAIL: scottg@uidaho.edu

OFFICE HOURS: By appointment

TA: Travis Chiarelli

OFFICE: LIFE 167

EMAIL: tchiarelli@uidaho.edu

OFFICE HOURS: By Appointment

Section 1 – T 8:30-11:20; LIFE 167

Section 2 – T 2:30-5:20; LIFE 167

TA: Ashley Farre

OFFICE: LIFE 167

EMAIL: afarre@uidaho.edu

OFFICE HOURS: By Appointment

Section 3 – R 8:30-11:20; LIFE 167

Section 4 – R 2:30-5:20; LIFE 167

TA: Sierra Beach

OFFICE: LSS 167

EMAIL: beac7858@vandals.uidaho.edu

OFFICE HOURS: By Appointment

Section 5 – W 2:30-5:20; LIFE 167

Lab Sections:

1—T 9:30-12:20; LIFE 167

2—T 2:30-5:20; LIFE 167

3—R 9:30-12:20; LIFE 167

4—R 2:30-5:20; LIFE 167

5—W 2:30-5:20; LIFE 167

Lab Introduction:

313 Lab is a hands on Cellular and Molecular biology lab focused around two experiments that you will conduct. The first experiment uses yeast to test the mutagenicity of a substance. You will provide the substance so start thinking now! In the past preserved meat has successfully increased the mutation rate. In the second experiment you will combine bioinformatics, genomics and genetics to design and test a hypothesis about gene expression during the cell cycle.

Lab Expectations:

A provisional lab manual is made available at the onset of the course. Finalized protocols will be published in BBlearn by Friday 5 PM the week before lab. Students are expected to read over the material before lab to familiarize your selves with the protocols to be performed and to prepare for a possible quiz before lab concerning the day's material.

Learning Outcomes:

At the end of this course students should be familiar with basic research techniques in cell and molecular biology such as polymerase chain reaction (PCR), RT-PCR and the use of antibody reagents.

Students will know how to use a pipetman, pour and load an agarose gel, make dilutions and stain tissues. Students will know how procedures they perform work at a mechanistic level.

Students will know how to plate microorganisms and be familiar and capable of performing sterile techniques.

Students should be able to design a hypothesis and associated experiments based on mutagenesis or differential gene expression. 12-16 is spring break

Lab Over View/Lab schedule (week of)

Week	Lab	Location
1/18	No Lab	No Lab
1/25	Introduction and microscopy	In Lab
2/01	Immunohistochemistry	In Lab
2/08	Cell Surface Receptors	In Lab
2/15	Mutagenesis I	In Lab
2/22	ELISA	In Lab
3/1	Mutagenesis II	In Lab
3/8	Practicum Exam I	In Lab
3/15	Spring Break	
3/22	Informatics	Online
3/29	Cell Fractionation	In Lab
4/5	Mitosis	In Lab
4/12	RNA isolation	In Lab
4/19	RTPCR, qPCR	In Lab
4/26	Electrophoresis	In Lab
5/3	Practicum Exam II	In Lab
5/10	NO LAB—Finals Week	

Breakdown of Assignments

Points

Assignments	Points
1 st exam	100
2 nd exam /Final exam	100
Weekly lab notebook check	100
Lab quizzes (6)	100
Total	400

Grading

Grades will be based solely upon the percentage of total points you have accumulated.

Percentage	Grade
>90	A
80	B
70	C
60	D
<60	F

Notebook check At the end of each lab section you will show your lab notebook to your TA who will verify that your notebook is complete and that your work space is properly cleaned.

Unexcused absence

Labs and quizzes cannot be made up if you are absent

- One absence will result in your final grade being lowered by one level (for example B to C)
- Two absences will directly result in failure of the course.

Rules for the course

- You must read the lab manual section you will cover for the day before coming to class to familiarize yourself with the procedure for the day.
- Quizzes will be based on this material and given on random lab days before labs begin and concern basic material from that days lab period or previous labs.
- Plagiarism is a form of academic dishonesty; any student that plagiarizes another writer will receive a grade of “F” for the course. If you have any doubts about what constitutes plagiarism, see me (also see rules of the course below).
- Safety is very important. We will work with a number of potentially harmful chemicals in this lab. Therefore it is important for you to wear safe clothing and protective equipment:
- Students working with hazardous chemicals in laboratories must wear closed-toe shoes, long pants or skirts which fully cover the legs, and a lab coat. Students shall confine long hair and secure loose clothing and jewelry before beginning work. Students will utilize personal protective equipment (PPE) such as gloves and eye protection appropriate for working with specific materials.

Guidelines

- Closed-toe shoes are shoes that completely cover the feet and are well secured on to the foot
- Long pants are trousers, slacks or pants that extend from the employees waist to the top of their shoes
- Long skirts are skirts or skorts that extend from the employees waist to the top of their shoes
- Lab coats are lightweight coats worn for the express purpose of protecting an employee’s skin and clothing from chemical splashes. The fiber content of a laboratory coat must be appropriate for the chemicals in use. Use all-cotton lab coats when working with flammable materials. Use flame-resistant (FR) lab coats when working with pyrophorics outside of a glove box.
- Long hair is any length of hair that could become entangled in equipment or dangle into chemicals or flames during work
- Loose clothing is items such as loose-fitting sleeves, scarves, sweatshirt drawstrings and other clothing items that could become entangled in equipment or dangle into chemicals or flames during work.
- Jewelry are items such as necklaces, earrings, bracelets or watches that could become entangled in equipment or dangle into chemicals or flames during work

Academic Honesty

The rules for this course are outlined in the “Student Code of Conduct” for the University of Idaho. The most important of these rules are listed below:

ARTICLE II--ACADEMIC HONESTY.

1. Cheating on classroom or outside assignments, examinations, or tests is a violation of this code. Plagiarism, falsification of academic records, and the acquisition or use of test materials without faculty authorization are considered forms of academic dishonesty and, as such, are violations of this code. Because academic honesty and integrity are core values at a university, the faculty finds that even one incident of academic dishonesty seriously and critically endangers the essential operation of the university and may merit expulsion. [rev. 7-98]

2. The operation of UI requires the accuracy and protection of its records and documents. To use, make, forge, print, reproduce, copy, alter, remove, or destroy any record, document, or identification used or maintained by UI violates this code when done with

intent to defraud or misinform. Entrance without proper authority into any private office or space of a member of the faculty, staff, or student body is a violation of this code.

3. Instructors and students are responsible for maintaining academic standards and integrity in their classes. Consequences for academic dishonesty may be imposed by the course instructor. Such consequences may include but cannot exceed a grade of "F" in the course. The instructor should attempt to notify the student of the suspected academic dishonesty and give the student an opportunity to respond. The notice and the opportunity may be informal and need not be in writing. Penalties for any disciplinary infraction must be judicially imposed. [See [1640.02 C-5](#)] [rev. 7-98]

Disability Support Services

Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Room 306 in order to notify your instructor(s) as soon as possible regarding accommodation(s) needed for the course.

- 885-6307
- email at <dss@uidaho.edu>
- website at <www.uidaho.edu/dss>

Students should present a completed and signed Accommodation Checklist for the current semester, from our office when requesting accommodations. If they do not, please refer them to the Disability Support Services office (Idaho Commons, Room 306) to obtain one. If you have any questions regarding a student(s) with a disability(s), or how to best work with a particular student in class, please contact our office.

For excused absences

Labs can be difficult to reset up so for absences that are excused we require the following.

Find one research papers using the technique outlined in the missed lab assignment and summarize how the technique was used in each paper.

Include a description of controls and conclusions from the experiment. The description should be 2-3 pages double spaced, one inch margins font size 11.