**BIO 102 Cell & Molecular Biology Laboratory Syllabus**

**Spring 2023**

**Instructors:**

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| **Prof Jaime Blair** Section A (Tuesday Lab)  TA: Kyra Caffrey | **Prof Pablo Jenik**  Section B (Wednesday Lab)  TA: Zainab Akram | **Prof David Roberts**  Section C (Monday Lab)  TA: Zainab Akram  Section D (Thursday lab)  TA: Kate Henderson | **Prof Marcus Wagner**  Section E (Friday Lab)  TA: Andy Hoang |

Experimental methods in biology are diverse and change rapidly as new technologies arise. This semester you will learn and practice the fundamental techniques used to address experimental questions in cell and molecular biology, including microscopy, spectrophotometry, nucleic acid and protein extraction methods, and gel electrophoresis; you will also gain knowledge in how to collect and analyze data reliably and accurately. The lab schedule has been designed to complement lecture topics, and introductory material will be covered at the beginning of each lab module to help you connect theory with practice. We will also emphasize the importance of scientific communication, both as oral presentations and as written assignments.

**Cell & Molecular Biology Laboratory will consist of four modules** (see schedule below):

* Visualization of cells using light and immunofluorescence microscopy
* Enzymatic properties of yeast alcohol dehydrogenase
* Tracking *armadillo* splice variants using PCR and gel electrophoresis methods
* Visualizing Armadillo protein variants using immunoblotting methods

**Expectations:**

Lab attendance is **mandatory;** every week you will be working collaboratively with your lab group on carefully planned and time-sensitive activities. Please let your instructor know at the beginning of the semester if you anticipate any official excused absences (these are rare). Consistent attendance and active engagement with the lab exercises are crucial to achieving the learning objectives of this course; in the unlikely event that you must miss a lab (due to illness or other emergency situation), you must notify your lab instructor within 24 hours and make every effort to attend a lab section on another day. ***An unexcused absence will result in an automatic 5% reduction in your final Bio102 grade.*** Note that lab begins promptly at **1:30 pm**. For your safety, eating or drinking is not permitted in the lab; please store all water bottles, coffee mugs, backpacks, laptops, tablets, cell phones, etc. on the shelves by the door. Also, please wear closed-toed shoes at all times in the lab (no sandals). You are expected to **print out and read the lab protocol (available on Canvas) before lab**; please keep a lab notebook to record your experiments and data.

**Evaluation**:

Laboratory assignments account for 25% of your final BIO102 grade. Please note all due dates listed below; late assignments will be penalized **10% of their point value** for every day they are overdue. If there are circumstances that merit an extension, discuss them with your instructor as soon as possible. Quizzes will be given at the beginning of the lab period; please talk to your lab instructor about any testing accommodations.

**Academic Resources:**

As stated in the Course Catalog, academic honesty is integral to our shared mission of scholarly conduct and intellectual integrity. You are encouraged to review the College’s [Policies and Procedures concerning Academic Honesty](https://www.fandm.edu/catalog/academic-honesty). Be proactive! The best way to avoid making a bad decision is to plan ahead and take advantage of campus resources (Q&SC, Writing Center, Wellness Center, Academic Support Services). Suspected cases of academic dishonesty will be discussed with the Dean of Students as needed and may result in a loss of credit for the assignment. Your lab instructor will discuss the appropriate level of collaboration given the nature of lab work, and how to cite sources as needed in your assignments.

**ORGANISMS USED IN THE BIO102 LAB:**

We will work with the following organisms: *Drosophila melanogaster* (fruit flies), mouse fibroblast cells L929

**Lab Schedule (subject to change):**

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| --- | --- | --- | --- |
| **Week** | **Date** | **Topic** | **Assignment due** |
| 1 | 1/17 - 1/20 | **No Lab** |  |
| 2 | 1/23 - 1/27 | Lab 0: Introduction to Cell & Molecular Biology Lab (pipetting, dilutions, BCA) |  |
| 3 | 1/30 - 2/3 | Lab 1: Visualizing Cells via Microscopy, Week 1 |  |
| 4 | 2/6 - 2/10 | Lab 1: Visualizing Cells via Microscopy, Week 2 | Lab 1 Group Presentations |
| 5 | 2/13 - 2/17 | Lab 2: Enzymatic Properties of Alcohol Dehydrogenase, Week 1 | Lab 1 Quiz |
| 6 | 2/20 - 2/24 | Lab 2: Enzymatic Properties of Alcohol Dehydrogenase, Week 2 |  |
| 7 | 2/27 - 3/3 | Lab 2: Enzymatic Properties of Alcohol Dehydrogenase, Week 3 |  |
| 8 | 3/6 - 3/10 | Lab 3: Tracking *armadillo* Splice Variants via PCR, Week 1 | Lab 2 Assignment Due  Lab 2 Quiz |
| 9 | 3/13 - 3/17 | **No Lab (Spring Break)** |  |
| 10 | 3/20 - 3/24 | Lab 3: Tracking *armadillo* Splice Variants via PCR, Week 2 |  |
| 11 | 3/27 - 3/31 | Lab 4: Visualizing Armadillo Proteins via Immunoblot, Week 1 | Lab 3 Assignment Due  Lab 3 Quiz |
| 12 | 4/3 - 4/7 | Lab 4: Visualizing Armadillo Proteins via Immunoblot, Week 2 |  |
| 13 | 4/10 - 4/14 | Lab 4: Visualizing Armadillo Proteins via Immunoblot, Week 3 |  |
| 14 | 4/17 - 4/21 | Lab 4: Visualizing Armadillo Proteins via Immunoblot, Week 4 | Lab 4 Assignment Due  Lab 4 Quiz |
| 15 | 4/24 - 4/27 | **No Lab** |  |

**Lab Assignments include:**

8% Lab Quizzes (4 quizzes at 2% each)

3% Lab 1: Immunofluorescence Group Presentation

5% Lab 2: Enzyme Kinetics Research Summary

4% Lab 3: PCR Analysis Group Worksheet

5% Lab 4: Immunoblot Figure and Caption

for 25% of your total BIO102 course grade