

BIOLOGY 4454/5454

LABORATORY PREPARATIONS

Dr. Jim Bidlack

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You will be required to participate in one (1) lab preparation for this class. You will work with other undergraduate students in your class, along with graduate students designated as lab assistants. Your assignment is to design, prepare, and implement a lab for the class that will take place on LAB DAY as specified on the syllabus.

Your instructor will assign you to a group at the beginning of the semester. You should get together with your group outside of class to design and prepare the lab. The following steps should be followed by your group:

- Obtain your lab group assignment from the instructor. There will be five labs for the course including: 1) DNA isolation and analysis, 2) protein extraction and electrophoresis, 3) organelle isolation and enzymology, 4) transformation using plasmids and detection of gene expression, and 5) DNA fingerprinting or PCR analysis.
- Designate a leader who will be responsible for individual assignments and communicating with the instructor. This may be a graduate student in your group, but it could also be an undergraduate student if that's what the group decides.
- Review preliminary procedures for your assigned experiment and use these materials to develop a 3-hour laboratory for the class. Be assured that all experiments have been successfully implemented during previous semesters and it was, in fact, students from Molecular Cell Physiology who developed the experiments and provided preliminary procedures.
- Explore the laboratory preparation area to determine what equipment and supplies will be needed for the experiment. You will need to locate equipment, order any needed supplies three weeks in advance, make reagents, and assist in the implementation of the experiment when the class attempts it.
- Run through the lab at least once before it is used in class. Your instructor will be available upon request to help you.
- Modify the procedures, if necessary, and submit a handout for the laboratory that will be distributed to the students at least one week before the class does the experiment.
- Provide a short (10 minutes or less) presentation on the day the class does the experiment. Assist students in class with the experiment and ensure that everyone is involved.
- After the class completes the lab, put away equipment and supplies, clean glassware, and make sure the classroom and preparation areas are as neat (if not neater) as they were before the experiment was started.
- Order any supplies that have been exhausted or that will be needed for future class, and provide recommendations, if needed, for new equipment needs.
- Submit a final electronic copy of the revised laboratory procedures. A cover page must include the names of all individuals who participated in the group.
- Your grade will be based upon: 1) amount of equitable group participation, 2) content of the lab as it applies to Molecular Cell Physiology, 3) logistics (can it be done and how easily the students are able to complete the experiment(s), and 4) results and what students learn from the lab.