

Biology 423L**Fall 2009****Instructor: Prof. Sarah Grant****Class Policies**

Meeting Time: There will be a lecture on Monday at 11:00 am each week in Wilson Hall room 128. The lecture will provide background for the experiment being carried out this week. In some cases we will have a guest lecture from one of our UNC Genetics professors to explain their research.

The laboratory groups will meet on Tuesday or Wednesday from 2:00 - 5:00 p.m. in Wilson Hall room 242 to carry out the experiments. The laboratories will generally require 2-3 hours but for several experiments it will be necessary to come in at other times to complete the experiment. The lab room will be open every weekday from 9-5.

Readings: Background readings will be assigned from Hartwell et al 2008 Genetics from Genes to Genomes 3rd edition. Additional readings and laboratory protocols will be provided by the instructor on the web site.

Web Page: url: <http://www.bio.unc.edu/courses/2009Fall/Biol423L>. This site will give you access to the syllabus, reading assignments and course handouts (copyright concerns may make it impossible to put some class materials on the web site).

Labs: Bring to class your own pencil, permanent felt-tip marking pen and a centimeter ruler. A lab notebook should be kept and a three ring binder is recommended. There will be no make-up labs (unless the university is closed due to inclement weather). Attendance: A doctor's certificate is required if labs are missed due to illness.

Preparation: Do assigned readings on the subject the week before lecture. Study the laboratory protocol before the beginning of each lab. Prepare a flow chart outlining the timing of the experiment before the lab class. You will find the flow chart helps you to organize your time during the lab period and to prepare to come in after lab period to finish the experiments when necessary.

Computer policy: You may bring your laptop to class or lab to take notes but you will not need to have a computer during the Monday lecture. You are forbidden to use your computer for non-class purposes during class. The lab room should be web accessible and we will be doing some computer exercises in the lab periods.

Exams: One midterm will be held in class on Monday Oct. 26. It will be worth 15% of the total grade. The final exam is worth 25%. Regrade policy. No exam written in pencil will be considered for a regrade under any circumstance. Regrade requests must be made within 1 week of getting back the exam. Requests must be made in writing.

Grades: 50% of the final grade will be based on laboratory performance and write-ups. 15% will be based on the midterm exam and 10% on a research paper. The final exam will be comprehensive and worth 25% of the final grade.

Lab Reports

Reports or other assignments will be required for each laboratory period and must be completed 2 weeks after each experiment. They must be handed to the TA at the beginning of the laboratory period. See below for report format. Reports are to be prepared individually even if the lab work was done by a group. In this case, each group member will prepare your own report using shared data.

Lab Report Format: The lab reports will be organized like a research paper for publication. Look at Proceedings of the National Academy of Sciences for examples. Type in 12 pt font. Modern research papers are generally written in active voice, example: “we prepared five liters of yeast extract” not “five liters of yeast extract were prepared”. Keep your results in the past tense and stick to one tense. In the text, write numbers up to nine as words and numbers of 10 or more as numbers. Always use numbers in tables. Latin scientific names are to be italicized and the Genus capitalized, e.g. *Homo sapiens*. Names of genes should be italicized but the names of RNA transcripts and proteins should not be italicized. Dominant alleles start with a capital letter and recessive alleles are written in small letters. Misspelling will not be tolerated. Use the spell check on your computer!

Cover sheet: In the top line, give your report a title reflective of the content. In a separate line write your name. Below that list any lab partners with whom you shared the data. In the last line type the date submitted.

Abstract: In a few sentences, state the nature of the problem addressed or the question to be asked in the experiment. Summarize the technique used to address the question and **state your major findings**.

Introduction: Clearly state the purpose of the lab and the specific scientific question that is being addressed. Introduce the model organism being used. Give relevant background information so that an educated reader will understand why this question is interesting. Provide background knowledge essential to understanding the experiment. Finally use the last paragraph to state how you have approached the question and briefly mention the main conclusion.

Materials and Methods: no lists! In most cases you may cite your lab handouts for the protocols. However you must describe any modifications made to the protocols in the handouts. Science builds on what has gone before. Therefore, scientists often refer to a protocol published elsewhere and describe only modifications that they made for the experiments presented.

Results: Present the findings of your experiments. Use tables and diagrams as much as possible. Photographs should also be included if they were made. Label all diagrams and tables so that it is clear what each lane or figure represents even without reading your text.

Introduce each section with the basic purpose of what you did. For example, “In order to determine the genetic map of the plasmid, we cut the DNA with the following restriction enzymes”. If a brief conclusion comes from the result presented, summarize it here. Save the discussion for the big stuff. Example: The frequency of yellow seedlings is presented in Table 1. Chi-square analysis is consistent with segregation of two alleles at a single locus.

Discussion: Describe the importance of your findings. Be sure to refer to the goals of the study as stated in your introduction. Explain deviations from expected results. However, if the deviations are due to an error in the protocol, I prefer that you state it briefly in the results. Discussion sections are for the meaning of your results and for you to speculate about new experiments that can be done. Please be brief here. For most experiments, this is the section where you state the conclusions you can make from the experiment.

References: If you have used primary literature in the report, list the references at the end using the style of the journal "Nature".

Questions: These are in your lab handouts or given to you by the TA. They are meant to assess your understanding of the principles underlying these labs and they will be graded according to correctness. They are a good example of the kinds of questions you can expect on the exams. Please clearly mark the answers to specific questions. Either make a section for answers to specific questions at the end of the report or underline the sentences in the text that answer a specific question.

Lab Reports will be due in the lab period 2 weeks after each exercise is finished. Refer to the syllabus. **Penalty for late lab reports.** 50% off if handed in by 5:00 pm. the following day. Otherwise it will not be graded and you will get 0 points. Medical emergencies will be taken into consideration if documented by a note from your doctor. If there is a good reason why you cannot hand in your report on time, discuss it with Dr. Grant by email or in person (preferably before the due date).

Graded Lab Reports will be handed back in the next lab period if at all possible.

Reports are graded from 25 points.

5 points for a clear well presented abstract and introduction.

10 points for clear and complete presentation of the data in the results section.

5 points for comprehensible and intelligent discussion,

5 points for participation in class so be there every lab period!

If there is a good reason for not being in the lab period, you may discuss it with Dr. Grant by email or in person (I will be more sympathetic if you tell me before the lab period that you will have to miss).