

Biology 1B, Section 124

Discussion and Lab, Spring XXXX

GSI contact info:

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Office hours: Mondays at 10am or by appointment

Office: VLSB XXXX (office hours will be held in 0000)

Meeting times:

Lectures: MWF at 8AM in 2050 and 2040 VLSB

Labs: Section 124, Wed. at 2-5PM in 2007 VLSB

Discussion: Section 124, Fri. at 1PM in 2030 VLSB

Required text: Biology 1B lab manual, 20th edition by Mike Moser

My teaching philosophy:

I am here at Berkeley because I love biology. I want to do all I can to make the material covered in this course come alive for you all so that you might love it the way that I do. I will do my best to put the material for this course in a more global context so that you can understand why learning about ecology, evolution and plant morphology is important. I like having an interactive classroom, so do not hesitate to ask me questions. Be bold in lab and discussion and answer questions that I pose to you. The only stupid question is the one that is not asked. I would like you all to give me feedback throughout the semester so that I can best help you succeed in this course.

Attendance:

I expect everyone to attend all lectures, labs and discussion sections for this course and to complete the reading in a timely fashion. *Please review your lecture notes before coming to discussion and read the upcoming lab before coming to the lab.* If you miss a lecture or discussion section, you are responsible for obtaining the notes and handouts from a classmate. Please be punctual to discussion and lab sections.

Do not miss lab unless you absolutely have to! Unless you have a medical or family emergency, you must notify me *in advance* if you plan on missing lab. Attending and participating in the lab exercises is how you learn the material. If you do miss lab, assignments must be made up by the end of the week. The GSI of the lab section you attend must sign your lab to acknowledge that you attended and participated. *You must attend a lab section in order to receive credit for the lab.* If you attend another lab section, you are responsible for coordinating with your group to complete the assignment for that week.

Academic honesty:

I encourage you all to consult outside resources in order to complete your assignments. If you choose to use an outside source, *you must cite the source.* Outside sources include websites, pictures off the internet, and other textbooks. Failure to properly cite outside sources will result in a zero on the assignment and I am required to report you to Mike Moser. So...when in doubt, cite, cite, cite!

Group work:

You will be assigned to a group of 4-5 students early in the semester. Unless otherwise specified, each group will turn in one assignment per lab. I understand that not everyone can contribute equally to every assignment; although I expect each group member to make some contribution to each lab. For each write-up note the percent contribution scores that accurately reflect the amount of work you think you did for a given lab. This way you can track each group member's overall contribution to assignments over the course of the semester. Everyone in the group is responsible for the work that is turned in regardless of his/her level of contribution. This group contract must be signed and included on the front of all lab reports. Reports without signatures from everyone will not be accepted.

For essays and report write-ups, you must turn in both a rough draft and a final draft of the paper *in hard copy*. One group member, who was not one of the primary authors, must edit and proof read the rough draft. Remember that everyone in the group receives the same grade, so make sure you agree with the content of every lab that is turned in with your name attached. If you are having trouble with a member of your group, please note it on your contracts and let me know *immediately* so that I can intervene.

Quizzes:

The quizzes are designed to help you review the material from lecture well before the midterms and to understand the labs. Any material from the lectures, lab, or discussion section could be on the quizzes. Additionally, I may, on occasion, quiz you to make sure you have read and understood the lab before coming to section. If you have any questions about lecture or lab, let me know so I can help you and so you will perform well on these quizzes. Please use these quizzes as a learning tool. They aren't meant to stump you!

I will be giving both announced and unannounced quizzes throughout the semester. These quizzes will be administered during the first 10 minutes of lab or discussion. Latecomers will not be given a full 10 minutes to complete the quizzes. *There will be no make-up quizzes.*

Grading:

Of the 700 points you could potentially score in this course, 250 of those points will come from lab. Of the lab points, the breakdown will be as follows:

- 60 points from ecology labs
- 60 points from the plant morphology labs
- 60 points from the evolution labs
- 10 points from the library exercise
- 30 points weekly quizzes
- 30 points enrichment assignment
- 250 lab points

I will weight each of the labs and each of the quizzes more or less equally.

All GSIs for Bio 1B are required to maintain an 85% mean for their section, so if there are differences in grading style among GSIs, remember that we are all "standardized" so you won't be disadvantaged by having a "hard grader."

I generally return extensive comments with your lab report. Please use those comments when re-writing reports or studying to improve your understanding. If you are unclear about what I mean, please let me know!

Contacting me, emailing, and exchanging papers:

I encourage everyone to come speak with me to discuss any questions, problems or concerns you might have. If your questions are not addressed during class time, please visit me during my office hours. You may also visit a different GSI during his or her office hours if that would make you more comfortable. The office hour schedules will be posted soon. You may also contact me via email to ask questions or to schedule an appointment if you have a conflict during my office hours. I may anonymously forward my responses to your email questions to the entire class if they are applicable to everyone. I am usually difficult to reach by phone; however, as a last resort, you may call me in my lab in VLSB.

It is imperative that you check your email regularly and let me know if you aren't receiving the emails I am sending out. *I will use email as my primary form of communication.* Feel free to email me and/or the entire class with questions on the material. Although I do not check my email regularly over the weekend, I make sure to check it at least once a day during the week.

If you need to give me any papers outside of class time, you may place them in the locked slot box labeled 124 in room 2013. I will place any additional handouts in the open slot box labeled 124 in room 2013. I will only make enough copies for students in our section, so please only take one copy.

Enrichment Project

Due date: May 9 th in discussion section

For your enrichment project, I would like you to read and write about biology. I have selected chapters from four of my favorite biology books for you all to read. Although each book uses biological terms that you have encountered in this course, none of them is as technical as the textbook. In fact, most of the readings I have selected are meant for everyday people to read and they are quite funny.

Each book I have chosen addresses concepts that we will cover in this course. I would like you to **select and read all the suggested sections from ONE of the FOUR books** listed below. Once you have read the selection, I would like you to reflect on what you have learned in a **BRIEF** essay (maximum 3 pages double spaced, 12 font). In that essay, I would like you to explain how the reading either exemplifies, supports, or refutes one of the major concepts we have talked about in lecture, lab or discussion. You must evaluate the author's argument using information from lecture and lab. The best essays will relate the reading *in its entirety* to one or two major concepts we have covered in the course. Summaries of either the book or the class material are insufficient. I am looking for a synthesis and analysis of the two. Go out of your way to integrate different ideas from the whole book together. These essays will be graded on:

1. How well you demonstrate an understanding of the text.
2. How well you integrate **all** parts of the reading assignment. In other words, I have chosen particular chapters for particular reasons and I want you to show me that you have read all the assigned chapters and recognized the dominant themes found therein.
3. How well you link the enrichment readings to the major concepts we have covered in the course. These concepts may include but are not limited to: theories of evolution, sexual selection, biodiversity, population dynamics, symbiosis, competition, the interaction of climate and biomes, microevolution, and natural history. It is imperative that you connect the reading to what we've learned in class and discuss whether the reading supports what you've learned, deepens your understanding of what you've learned, provides important examples for what you've learned, etc.
4. How well written the essay is. I am looking for essays with a clear argument, main point, or thesis. I am reading 30 of these essays, so if your writing is unclear or if your essay is poorly structured, I'm not going to spend a lot of time trying to figure out what you mean. Get a friend or classmate to proofread your essay before handing it in.

I will give each group a binder of all the readings for this project. You are responsible for returning the readings to me in discussion on May 9 th.

Please choose one of the following 4 reading assignments for your enrichment assignment. I have made selections that should take you about the same amount of time to read (shorter assignments correspond to more difficult texts), so choose a book that interests you, not the one with the fewest pages assigned. I recommend that you look at some reviews online to get a better sense of the topics covered in the books. If you're stumped on how to start writing your essay, come see me WELL IN ADVANCE so we can talk about ideas.

1. Gould, Stephen Jay. 1980. *The Panda's Thumb: More Reflections on Natural History*. Penguin Books, England.

Chapter 1—"The Panda's Thumb" pp. 19-25
Chapter 8—"Caring Groups and Selfish Genes" pp. 72-78
Chapter 9—"A Biological Homage to Mickey Mouse" pp. 81-91
Chapter 10—"Piltdown Revisited" pp. 92-104
Chapter 14—"Women's Brains" pp. 127-132
Chapter 17—"The Episodic Nature of Evolutionary Change" pp. 149-154
Chapter 20—"A Quahog is a Quahog" pp. 170-177
Chapter 21—"An Early Start" pp. 181-188
Chapter 27—"Nature's Odd Couples" pp. 231-239
Chapter 28—"Sticking up Marsupials" pp. 240-245
Chapter 29—"Our Allotted Lifetimes" pp. 249-253
Chapter 30—"Natural Attraction: Bacteria, the Birds, and the Bees" pp. 254-261
Chapter 31—"Times' Vastness" pp. 262

2. Dawkins, Richard. 1976. *The Selfish Gene*. Oxford University Press, Oxford, England.

Chapter 2—"The Replicators" pp. 12-20
Chapter 3—"Immortal Coils" pp. 21-45
Chapter 4—"The Gene Machine" pp. 46-65
Chapter 6—"Family Planning" pp. 109-122
Chapter 7—"Battle of the Generations" pp. 123-139
Chapter 13—"The Long Reach of the Gene" pp. 234-266

3. Forsyth, Adrian and Ken Miyata. 1995. *Tropical Nature: Life and Death in the Rain Forests of Central and South America*. Simon and Schuster. New York, New York.

Introduction: A Temperate View of Tropical Life pp. 1-6
Chapter 1—"In the Realm of the Tropics" pp. 7-16
Chapter 2—"Fertility" pp. 17-30 Chapter 3—"Canyons of Light" pp. 31-40
Chapter 6—"Listen to the Flowers" pp. 65-76
Chapter 9—"Creeping Socialists" pp. 103-114
Chapter 11—"Artful Guises" pp. 125-138
Chapter 13—"Jerry's Maggot" pp. 153-168
Chapter 15—"Night Walks" pp. 185-196
Chapter 16—"The Eternal Tropics" pp. 197-206
Chapter 17—"Paradise Lost?" pp. 207-218

4. Judson, Olivia. 2002. *Dr. Tatiana's Sex Advice to All Creation*. Henry Holt and Company, New York.

Part I: Let's Slip the Whores of War pp. 7-9

Chapter 1—"A Sketch of the Battle Field" pp. 9-20

Chapter 2—"The Expense is Damnable" pp. 21-39

Part II: The Evolution of Depravity pp. 93-94

Chapter 6—"How to Make Love to a Cannibal" pp. 95-104

Chapter 8—"Hell Hath No Fury" pp. 122-131

Chapter 10—"Till Death Do Us Part" pp. 152-156 **Part III: Are Men Necessary? Usually, but Not**

Always pp. 167-168

Chapter 11—"The Fornications of Kings" pp. 169-186

Chapter 12—"Eve's Testicle" pp. 187-211

Chapter 13—"Wholly Virgin" pp. 212-232

A Guide to Writing Lab Reports GSI—Tasha Teutsch

Writing lab reports is a bit of an art form. Some might say that it lacks art altogether because its goal is to be as clear, concise and straightforward as possible. Short, active-voice sentences are usually best. Lab reports follow a strict format, and figuring out what goes into each section can be tricky. Organize your paragraphs so that the first sentence of each is a real topic sentence. All of the other sentences in the paragraph should then relate to the topic sentence.

My hope is by the end of this course, everyone will know exactly what information should be included in each section of the report. Please stop by the library and look at a few articles in scientific journals so you can become familiar with the format. Ask me if you would like me to show you some samples of scientific writing.

For our class, lab reports should include a cover sheet, abstract, introduction, materials and methods, results, discussion, literature cited, and appendix. Please type your reports double spaced in a standard, 12-point font with 1-inch margins. Don't bother messing around with the fonts to make your report longer or shorter. What's most important is that you write up the report well and concisely. I will grade your reports based on your understanding of the concepts and in the clarity with which you present them. I suggest that every group see me in the beginning to make sure they are on the right track. I would be happy to discuss the format and a scientific writing style both in and out of class.

Cover sheet

Please write the name of the lab and the date on the front of your contribution agreement and attach it to the front of your lab report.

Abstract

The abstract can be written last and it should capture the essence of the entire experiment. That means that it should at least touch upon the introduction, materials and methods, results and discussion. It should *briefly* describe what was done, why it was done, what happened, and what that might mean. The abstract should be box indented or in another font. Abstracts are short (usually less than 250 words) and they are often the only part of the paper that readers will look at, so make it good!

Introduction

The introduction should capture the reader's interest, especially in the first few sentences. This section should introduce the subject of the report, its importance and the relevant concepts needed to understand the experiment. The most important thing is that you have a well-defined question that the study addresses. A format for the introduction that works well is to start by discussing the general topic, then to narrow down to your question, ending with the specific hypothesis to be tested (without saying "the hypothesis we are testing is..."). The introduction should be written in the present tense.

Materials and Methods

This section describes how you went about testing the hypotheses. Although you need to provide sufficient information so that the reader could repeat the experiment, you should not get bogged down in details. For example, I don't care what color labels you used to mark your treatment groups. Decide which details to include by determining whether they might affect the outcome of the experiment. Describe the methods in the past tense, as you did them rather than how they should be done in the future (save such comments for the discussion). Refer to the lab manual where appropriate and note where the things you did in lab differed from the manual's protocol.

Results

The results section should be *written in regular paragraph form* (even if they are very short paragraphs) and they should describe the outcome of the experiment. I like to think of the results section as telling a story about what you did and what happened as a result. The text should draw attention to the most

important data and should be understandable independently of the graphs and tables. Although the text should be understandable separately from the graphs and tables, they should all be referenced in the text. For example, you could say "After comparing the relative chlorophyll content of the three plants, we found that *Arabidopsis thaliana* had relatively higher mean chlorophyll content of 58.28 $\mu\text{g chl cm}^{-2}$ than the other two species tested (Table 2)." Leave out any interpretation as to the meaning of your results. Let the reader be the judge of the results; then present your conclusions in the discussion section.

Include your graphs and tables after the text portion of the results. Both tables and graphs should have a title and legend (titles are not legends and vice versa!) that describe the source of the data. Table legends belong above the table and figure legends typically go below the graph or figure. The tables and legends should be understandable without the text of the results section. All tables and graphs should be titled and numbered sequentially, and the axes of the graphs should be well labeled with clearly marked units. Examples are included at the end of this guide (Table 1 and Fig.1).

Discussion

Finally, the discussion section draws conclusions as to what happened. Interpret the results in view of the purpose of the experiment. Experiments should not be declared as a success or a failure. If you are unable to draw clear conclusions, discuss the possible reasons for this and suggest ways in which the experiment could be improved in the future. It is important here to compare methods, discuss difficulties, list the sources of error and explain how important each source of error may be. The discussion is a very important section. It is your chance to show how well you understood the purpose of the lab, the results and the techniques involved.

Literature cited

List any publications referred to in your paper alphabetically by first author. Do not use footnotes for references. Include parenthetical citations in the text by putting (author's last name, date) at the end of the sentence. If you did not use any outside sources, you do not need to include this section.

Use the following formats for a book:

Teutsch, Natasha M. 2002. How to be a Brilliant Scientist. Berkeley Publishing Company. Berkeley, CA.

And for a journal article:

Teutsch, Natasha M., and Doe, John E. 2002. Do feet really smell? *Journal of Suspicious Odors*. 50:1241-1250.

Appendix

Use appendices to include calculations, sets of raw data, etc.

Things I look for when evaluating reports:

1. Is the objective of the project clear? There should be a clear statement of the question/hypothesis at the end of the introduction
2. Does the introduction set up the objective, so that the reader would be interested in the results of the experiment?
3. Are the methods accurate and sufficient?
4. Are the results clearly presented?
5. Does the conclusion explain the results in a logical and coherent manner? Creative and insightful interpretations or suggestions for improving the experiments are given extra points.
6. Is all the information presented in the report organized into the proper section?

Table 1: Summary of four measures of herbivory in the conservation and general use zones of Glover’s Reef Atoll in Belize. The *Thalassia* blades were collected from twice the halo width. Average *Thalassia* blade length and average number of bites per blade were compared between zones. Halo width was analyzed using the Mann Whitney U test ($U=0.5$, $m=4$, $n=3$, $p < 0.05$). Percent algal cover was also analyzed using the Mann Whitney U test ($U=0$, $m=4$, $n=3$, $p=0.03$).

	Zone 1: Conservation zone		Zone 2: General use zone	
Herbivory	Mean	Std. Dev.	Mean	Std. Dev.
<i>Thalassia</i> blade length at 2 x halo width	24.5 cm	6.29	14.6 cm	3.38
Number of bites per <i>Thalassia</i> blade	1.12	0.20	0.57	0.06
Width of halo	1.75 cm	2.06	5.67	2.08
Percent algal cover	88%	7.26	2.3%	2.5