Lab 4: Scientific Writing Workshop

Communication is a key part of science and important in any career path. Science is shared with the public often in the form of writing. However, there are many steps that a scientist must go through before his or her ideas can be shared with the world. Today, you will mimic this process that all scientists must go through to make their discoveries known to the world. You have prepared a draft lab report of your Osmosis lab findings for today's lab. Congratulations, you've accomplished the first step! Next comes the important part – ***revision***. Drafts are read by friends and colleagues, and many changes are made before the paper is submitted to a scientific journal for publication. Once received by the journal, the paper is sent out to peers in the scientific community who will review the paper and comment on its strengths and weaknesses. Inevitably, the paper goes through several more rounds of editing before it is published. Though the exercises you will complete as part of this Scientific Writing Workshop focus on scientific writing, this process is applicable to any written form of communication, from a business report to a book of poems.

The main components of a scientific paper are :

- Abstract
- Introduction
- Methods
- Results
- Discussion
- Literature cited.

This Scientific Writing Workshop will allow you to engage in the processes of becoming familiar with these sections of a paper, as well as draft writing, peer review, and editing.
This lab period is designed to give you general tips and specific suggestions that will help you prepare your final Osmosis lab report (worth 20 points of your lab grade). Make the most of this opportunity! Take notes, read your peer's draft carefully and thoughtfully, and participate in the class discussions. The more you actively engage in today's activities, the easier it will be to revise your draft and prepare a quality final lab report.

<u>Instructions for Preparing the Final Lab Report</u>

Please see the Osmosis lab report grading rubric and Chapter 9 of "A Short Guide to Writing about Biology," by J.A. Pechenik (posted as a pdf on Blackboard).

Instructions for Preparing the Final Lab Report (cont.)

In addition, your final lab report should include the following:

- Clear evidence of revision
- Changes based on peer review
- Improved overall clarity and quality of writing

Your final report must be *turned in to your TA during next week's lab.* Please staple the peer-review form (that you receive from your reviewer today) to your final lab report.

Week of	**Laboratory Investigation**	**Assignment Due**
Feb 3	Osmosis Lab	read the lab manual and supplemental reading (Chapter 9), pdf
Feb 10	Scientific Writing Workshop	Lab Report Draft (***bring 1 paper copy for peer review***)
Feb 24	Photosynthetic Pigments Lab	2nd Draft Osmosis Lab Report due
March 16	Mendelian Genetics Lab	TAs return 2nd draft reports, with feedback, to students during lecture
March 23	Seedless Non-vascular plant lab	Final Draft Osmosis Lab Report due by 4PM, in 111 Jeffords (TA's mailbox). Please Include all work (including both draft 2 and draft 1) with the final lab report.

Grading Rubric

Draft Submission:	10 points
Peer Review:	5 points (completed during lab on week 3) –
Final Lab Report:	20 points. Remember that the comments made during the peer review are important to consider as you prepare your final draft. The rubric below is only a brief representation of what should be included in your final lab report.

Note: **If you earn 5 or less points on your draft**, you are strongly encouraged to seek help of the UVM Writing Center, at 105 Bailey Howe Library (http://www.uvm.edu/wid/writingcenter/).

Before we start peer reviewing, let's take some time to think about the major components of a lab report and the main contents of each section. Break into groups and answer the following 5 questions with your lab partner(s). Refer to the supplemental reading (Chapter 9 – Writing Laboratory and Other Research Reports") to help you answer the questions.

1) Describe the key differences between the Results and Discussion sections of a lab report.

2) What is the purpose of the Introduction?

3) Make a list of the key details that should go into your Osmosis Methods section.

4) ***What pieces of data do you think will be important to include in your Results section? How will you present these results? Describe the graph, table, etc. you plan to use. Ask your TA for help if you need it – presenting your data clearly is a difficult part of writing!***

5) ***What is an abstract? Explain the components of a well-written abstract. How is an abstract different from an introduction?***

Now it is time to swap your lab report drafts and begin the peer review process. Thoroughly read your peer review partner's report. Feel free to make comments as you go along. It may be helpful to read the report once, then go back and read again before you begin commenting. We'll spend the next 30 minutes and 1 hour peer reviewing, so take your time and provide helpful comments. ***You will be graded on the quality of your peer review.***

For each section on the Peer Review Form, **provide a rating from zero to five for the components listed.** Zero indicates they failed to include that component, five indicates that there is little room for improvement. In the comments section, *provide at least one constructive comment for each section that will help the writer improve their lab report*. To be helpful, you should indicate not only *what* the weakness is, but *how* the writer a can improve their draft when they revise it (see example below). Any *typos or grammatical mistakes should be circled on the draft and not included on the peer review form*. Finally, you should describe in a few sentences your overall assessment of the draft highlighting its greatest strengths and weaknesses.

*Constructive Comment Example: "*Your results section includes all of the data from the lab, but there is no clear rationale for why each analysis was performed. It would be better to include a sentence at the beginning of each paragraph where you present a result that clearly states the specific question addressed by the analysis."

Peer Review Form

Reviewer name: _____

Name of student whose draft you are reviewing: _____

At the end of your review, please indicate a score (1 – 5; 1 is poor, 5 is excellent) for each section

GENERAL REQUIREMENTS	COMMENTS	SCORE
Complete (title, abstract, introduction, methods, results, discussion)		
Clarity of writing (how easily you can understand the ideas presented)		

Score:_____

TITLE & ABSTRACT	COMMENTS	SCORE
Title describes the specific topic analyzed		
Abstract is written concisely		

Rationale for why the analysis was performed is given		
Methods are stated briefly, key results and main conclusions are described		

Score:_____

INTRODUCTION	**COMMENTS**	**SCORE**
Includes a description of the broader topic		
Explains how the concepts of the broader question apply to the system studied		
Hypothesis is clearly stated		

Background information is relevant and complete		

Score:_____

METHODS	**COMMENTS**	**SCORE**
Complete description of materials and methods used to conduct Osmosis lab (put this in your own words, **do not plagiarize** and simply copy the lab manual)		
Enough detail given that another research could repeat the analyses		
Does not include irrelevant information		

Score:_____

RESULTS	**COMMENTS**	**SCORE**
Results are presented in a clear, organized fashion		
Complete presentation of results of experiments involving dialysis tubing (model cell) in terms of diffusion, osmosis and water potential.		
Data is presented clearly and figures are properly labeled		
Figure legends are descriptive enough to understand the data presented		
Results are described, ***but not interpreted***		

Score:_____

DISCUSSION	**COMMENTS**	**SCORE**
States whether the data support/do not support the hypothesis		
Sufficient explanation given for why the data do/do not support the hypothesis		
Alternative interpretation of the data provided		
Clearly describes how the results fit into the broader question being addressed		

Score:_____

OVERALL ASSESSMENT OF REPORT

Before you leave: Give your peer review form and lab report to your TA. You TA will provide additional comments and return the peer review form and lab report to you.