How to Write a Laboratory Report.

Objectives

1. Write a laboratory report in a scientific manner.
2. Rewrite a laboratory report in a scientific manner.

Introduction :

Being able to write a coherent account of an event is important for people working in any field. Biology lab reports should be considered as much an exercise in this art as are English themes or history term papers. While great eloquence in style is not crucial, clarity and conciseness are.

A lab report indicates several things: how well you can carry out an experiment, how well you understood what you did in lab, how methodically and logically you can present your results and conclusions, and whether you have thought carefully about your results and consulted references which will help you to interpret them.

Aim for clarity and thoroughness as well as good grammar, correct spelling, and proper sentence structure when you write lab reports.

Format of a Lab Report:

Introduction: This statement should indicate clearly what ideas are being investigated and state specifically what the purpose of your experiment is. If you do several experiments in one lab, the purpose of each should be given. Do not merely copy what is in the lab manual: present the purpose in your own words. For many experimental labs, you should frame a hypothesis that you intend to test.

Materials and Methods: Ask your lab instructor whether you should write out the entire methods and materials section or whether you should merely state "as in lab manual". If written out, the materials you used and the method followed should be written clearly and with enough detail so that another person could perform the experiment based on what you have written. Don't just copy the lab manual methods section: use your own words and perhaps improve on the way the manual explains techniques! No results should be included here.

Results: Here you should include all tables, graphs, diagrams, or whatever else helps to illustrate what happened in the experiment. Descriptive observations may supplement the data. All drawings should show accurately what you saw: they should not be copied from other sources. Do not try to interpret your data in this section (see discussion), but do state in words what each graph, table or whatever shows, and what are the main patterns present in the data.

Discussion: This section includes an interpretation of your results and a discussion of what these results mean. If something did not turn out the way you would have expected, discuss that here. If you think your experiment could have been designed differently for better results, tell how you could have improved on it. You can also discuss your results in comparison to others in the lab or in books or published articles (see below for how to do that).

References: In scientific reports, footnotes are not usual (as they are in many history papers, for instance). Instead, we refer to a book or article from which we gained information as follows: "Typical RQ values which have been obtained in different germinating seeds range from 0.5 to l.0 (Street & Opik. l975, p. l5). This statement might appear in the discussion of an experiment such as the one that you will perform when you study respiration. At the end of your lab report, you would give the full reference to the book or article, and if you used several articles, you would give them in alphabetical order by the first author's last name. Suppose you had used the book above (by H.E. Street and Helgi Opik) or a textbook. At the end of your lab report you would list (under the subheading References:):

Campbell, Neil A. 1996. Biology (4th ed.) Benjamin/Cummings Publ. Co., Redwood City, CA.

Street, H.E. & Helgi Opik. l975. The Physiology of Flowering Plants. American Elsevier Publishing Co., New York.

If you have used an article from a journal, the proper format would be similar to the above when you refer to it in the text, and in the references at the end you would state, for instance:

Bjorkman, Olle & Joseph Berry. 1973. High-Efficiency Photosynthesis. Scientific American 229: 80-93.

(note: journal titles can be abbreviated if certain conventions are followed: Scientific American becomes Sci. Am.)

Plagiarism: Plagiarism refers to the copying of statements (whether exact words or paraphrased) or ideas of others without acknowledging where you obtained them. It is a very serious crime in the world of academia and, no matter what the customs were in your former schools, you need to learn how to properly acknowledge where you got your information. Often, you will simply acknowledge information as we did above, showing where you found the details of seed RQ values. If you use the exact words of the author you must make that clear by using quotes: for instance, 'Street & Opik (1975) state on p.17 that "The RQ is therefore clearly not a value determined by one single process, but the resultant of a number of biological reactions involving oxygen and carbon dioxide." For the most part, though, you should not directly quote others -- put the idea into your own words. You will show how well you understand a concept if you do that!

Plagiarism may also refer to the copying of papers or lab reports (etc.) and that is an equally serious crime to that of not acknowledging an idea or fact which you may have obtained from a book. Lab partners should **NEVER**, copy each others' lab reports. You may do an

experiment together, and accumulate data; however, the analysis and presentation of results done individually, and lab reports should clearly reflect your own attempt to make sense out of what you did in lab. Of course students may consult with each other when they are trying to analyze data - that is very different form copying lab reports! Usually, your own judgment will tell you how to (and how often to) acknowledge a source of information, but if in doubt, ask your instructors.