THE COMPONENTS OF A SCIENTIFIC LABORATORY REPORT

Revised 6/27/01

A laboratory report informs the reader of the results and conclusions as a result of experimentation. In addition to informing the reader, a well-written lab report should enable the reader to precisely repeat the experiment. The various components of a lab report help it to achieve its goals. The required components of a laboratory report include:

- **Title**
- **Abstract**
- **Introduction**
- **Materials and Methods**
- **Results**
- **Discussion**
- **Bibliography**

Most important, each part of your lab report must be clearly written in the

3rd person, past tense!

TITLE:

The title must be long enough to specifically indicate what the report is about and to generate interest for the reader. In addition, titles that are too short are not acceptable. It may be easier to write the title after the report has been written. "Prevalence of *Borrelia burqdorfi* Among Deer Ticks at Norrie Point" would peak the interest of the reader and also imply that sufficient research had been done to create the report.

ABSTRACT:

An Abstract is written when the report has been completed. It is placed after the Title Page and is a summary of the entire report. The abstract should clearly convey information contained in the report without reading it in its entirety. It should not be more than 250 words.

INTRODUCTION:

A good introduction does exactly what the word implies – it poses the problem being investigated. In the laboratory, the instructor or the textbook usually poses those questions. These questions become the objectives of the experiment. A comprehensive introduction also includes background information about the problem being studied. In preparing the report, other sources should be consulted, such as: laboratory manuals, textbooks, and Internet/library resources.

MATERIALS AND METHODS:

This section of the report should allow the reader to repeat the experiments performed. Be specific about the materials used and provide precise measurements. The materials and methods section of your report may resemble the procedure in the laboratory manual except that it should be paraphrased and in the past tense.

RESULTS:

This section of your report may actually include little writing. Typically, data is displayed within tables or graphs. These formats allow the reader to clearly understand the relationships between different kinds of data. During experimentation, cause and effect relationship may have been noted (e.g., when the temperature was increased, the reaction rate also increased). These types of relationships suggest a logical format for a table or a graph. Be sure to label: table columns, axes of graphs, and include titles.

Statistical analyses of data should be included within this section. Examples include: a Chi-square analysis, best-fit analysis, percentage yield or other calculations as requested by your instructor or lab protocol. Interpretation of the results obtained should not be made within this section.

DISCUSSION:

The discussion section is the most important portion of a laboratory report. It should clearly *explain* the results of your experimentation and answer any questions posed earlier. Reasonable conclusions should be drawn, but it is important not to conclude more than data allows. For example, demonstrating that temperature increases the rate of one reaction does not allow you to conclude that an increase in temperature increases the rate of all reactions. In addition, if the results of the experiment were not as expected, state possible reasons/sources for the anomaly.

Your discussion should be based on scientific fact(s) and should explain the actual results. It should not be an emotional discourse about your project. Readers of scientific reports do not care if you like the experiment or were happy with the end results.

BIBLIOGRAPHY:

It is important to include a bibliography including all sources of information for the report. Information used in the report should be cited, even if the information is paraphrased. When the report has been completed, it should be carefully proofread- emphasis on style, content, spelling, grammar and detail. The Writing Center is an excellent on-campus resource.

Stay organized – any report you write, especially a scientific report must be organized and accurate.

Sample Bibliographic Entries

For a journal article:
Author(s); Title of article, *Name of Journal*; volume; page numbers; date
{e.g. Godfrey, HP; Canfield , LS; Kindler,H; Production of a fibronectin-associated lymphokin by cloned mouse T cells; *J. Immunology* 141, 1508, (1988)

For a book:
Author(s); Title; edition; (City, State; Publisher; Year); Page Number(s)
{e.g. Mader, Sylvia S; Human Biology; 7th edition (Dubuque, IA; Wm. C. Brown Publishers; 2000); pgs.10-17}

For a handout or a pamphlet:
Handout: Title; Course; Date
{e.g. Handout: Components of a scientific lab report. Biology 101; April 1, 1999}

Internet Resource:
Title; URL; Date Downloaded/Printed
{e.g. Allied Health and Biological Sciences; http://www.sunydutchess.edu/ahbs/; June 27, 2001

- Other examples can be found within The St. Martin's Handbook, available in the library and at the college bookstore.