

As an Advanced Placement Biology student you will be asked to write a formal laboratory report for several laboratory investigations. As stated by the College Board's AP Biology curriculum "A formal report, or paper, provides an effective method for students to organize their work, and prepares them for doing research papers in scientific journals. Advantages of this type of report include the experience of writing clearly, as well as the opportunities for students to reflect on their work." Your summer assignment clearly outlined the aspects of scientific writing, and this outline is meant to reinforce and clarify what was presented in the reading. Please refer to this outline before beginning any formal lab report and ask questions if you are unclear. The first two lab reports will be formative grades. After everyone has had an opportunity to have their writing critiqued, the remaining lab reports will be summative grades. If you find you are receiving low scores on lab reports talk to me ASAP.

General Guidelines:

- Reports should be written in a normal (Times New Roman, Arial, or Cambria) font, 12pt, double spaced
- The title page should stand alone
- All other section headings should be labeled in bold and underlined

I. Title Page

- A. Title
 1. 10 lines from the top
 2. Larger Font (14-18pt)
 3. Should be as short as possible and as long as necessary to communicate to the reader the question being answered
- B. Your Name, Course Name, My Name, Class Period, *DUE* date
 1. 5 line spaces below title
 2. Single Spaced
 3. Each on its own line
 4. Do NOT use "by: *name*"

II. Abstract

- A. Concisely summarizes the question being answered, the methods used in the experiment, the result and the conclusion drawn
- B. No more than one paragraph

III. Introduction

- A. Two functions of an introduction
 1. Provide the context for your investigation
 2. State the question asked and the hypothesis tested in the study
- B. Review background information
 1. What is the objective of the study?
 2. What is the problem?
 3. How does the problem related to biology on a whole?
- C. When outside sources are used, they must be cited, including the book or lab guide handouts
 1. (Last Name, year) at the end of the sentence
 2. Never use direct quotes, paraphrase, but still cite your source.

IV. Materials and Methods

- A. Describes your experiment in such a way that it could be repeated
- B. NOT A LIST, should be written in narrative form, and past tense
- C. Materials should be included in narrative, not listed

V. Results

- A. Four components
 - 1. One or two sentences reminding the reader of the nature of the research
 - 2. One or more paragraphs that DESCRIBES (not discusses) the results
 - 3. Figures (graphs, diagram pictures)
 - 4. Tables
- B. Prepare tables and figures first
 - 1. Give each a number and title where only the first word is capitalized
 - 2. Computer generated tables and figures are preferred- if you would like help with this please ask during one of the early lab reports
 - 3. Refer to the figures and tables the same way you cite sources, at the end of the sentence
 - a. **Correct:** The data show that there was an increase in heart rate as the interval of physical activity was prolonged (Figure 1).
 - b. **Incorrect:** As you can see in Figure 1, there was an increase in heart rate as the interval of physical activity was prolonged.
- C. Describe, but do not discuss the results
 - 1. Note any meaningful trends in the data
 - 2. Address any discrepancies in the data

VI. Discussion

- A. Analyze and interpret the results of your experiment
- B. A good framework for planning your discussion:
 - 1. Restate your question, hypothesis, and prediction
 - 2. Answer the question
 - 3. Write down specific data that you will use to support your answer
 - 4. State whether your results did or did not support your hypothesis
 - a. NEVER USE THE WORD "PROVED"
 - b. Use words such as supported, refuted, remains unclear, etc.
 - 5. Write down what you know about the biology involved. How do your results fit with what you already know? What is the significance?
 - 6. How do your results support or conflict with previous work? Include references to this work.
 - 7. Clearly state your conclusion, but do not use the words "In conclusion..."
 - 8. List weaknesses you have identified in your experimental design that affected your results and any problems that arose during the experiment itself. Include one or two sentences ONLY if these problems affected your results
 - 9. Once you have numbers 1-8 listed on a scratch sheet of paper, compile them into several *simple, clear, concise* narrative paragraphs.

VII. References

- A. Make your reference page a separate page at the end of your report
- B. Title the section "References" NOT "Bibliography"
- C. Please refer to the summer assignment for reference formatting