

AP Biology Lab Report

"One's philosophy is not best expressed in words; it is expressed in the choices one makes... and the choices we make are ultimately our responsibility." Eleanor Roosevelt

Make good choices in developing your IV and DV thus the paper will write itself.

Rubric: /100 points –

1 Abstract: In 1-2 paragraphs: hook me in! This is a book jacket description with the whole story. Tell me your hypothesis and why it is wonderful, tell me your IV and DVs. In words tell me what you found and why your data did or did not support the null hypothesis. Now, go for a great finish and remind me why your hypothesis is important. Hypothesis - usually written as "If the Independent variable then the dependent variable".

/20

2 Introduction: What has been done in the past, current thinking, then tie the past into why your hypothesis states the independent and dependent variables

/15

References in MLA format – noodlebib or easybib

/5

3 Materials - list all.

/10

4 Methods – what did you do, every step. I have to replicate this exactly....

/10

5 Data: start with raw data then can be in tables.

/10

6 Analysis: graphs, statistics (chi square) and error “The hypothesis was/was not supported by the data. The chi square was _____ with _____df thus the null hypothesis was/was not accepted (or rejected).

/20

7 Conclusion- In words tell me what you found, why you think it is so, and where to go from here

/10

Experimental Design Template: Pre-Lab Prep

Names: _____ Hour _____

Lab TITLE: (The effect of _____ on _____).

Hypothesis: (*State the cause and effect relationship between the IV and the DV. The hypothesis must be testable and measurable.*) _____

INDEPENDENT VARIABLE: (*What is the cause agent? What are you changing?*) _____

*The number of columns will vary depending on how many testing conditions exist in the experiment.

DEPENDENT VARIABLE: (*What is being measured? How will it be measured?*) _____

CONTROL GROUP: (*What is the experimental group being compared to?*) _____

EXPERIMENTAL CONSTANTS: (*Variables not altered during the experiment*):

One graph you expect to use drawn here with your hypothetical data:

Experimental Design Template: Lab Write-UP

Name: _____ **Date:** _____ **Hour** _____

Abstract: Spoiler Alert! You tell your findings here in a one to two paragraph synopsis. This is the part that most will read. It is written with the following flow: what was found previously, why is your experiment important, what did you do (your hypothesis), **what did you find**, what did you conclude. This should be 200 words maximum. When thinking abstract: think of a book jacket with the summary from start to end in 1-2 paragraphs.

Introduction: Here is where you talk about what previous research has been done. Reference the research. This should be a few paragraphs at a minimum. Now, state why there is a need for your study. "Previous research has shown that AP Biology students do better if they took AP Biology in Mrs. Rizzo's class. The aim of the study is to focus on why: are these students smarter than others?" (Note of my experience: no one but your advisor reads this part).

Citations: Use easybib or another citation site. Citations go under the introduction.

References are in MLA format. I know, it looks weird. Here are some samples of how to cite within the intro:

Gibbons (1998) states that genetic studies of human and chimpanzee genomes have shown that at least 98.5% of the DNA sequences are the same.

Notice that both the author's name and the date of the publication are mentioned within the sentence itself. The date is important because it is possible that you have used multiple sources from the same author and this allows the reader to determine which of those sources was used here.

The other way to cite an author is to list the citation at the end of the sentence. For instance:

Genetic studies of human and chimpanzee genomes have shown that at least 98.5% of the DNA sequences are the same (Gibbons 1998).

Materials and Methods: The reader should be able to replicate your experiment using your methods. Start with materials as a sub heading. Now state who, what, where, why and how. Pictures of your apparatus or experimental condition are helpful.

Data: Start with raw data, please put it in a well labeled table. DO NOT PUT ANY ANALYSES HERE - this means if you had to think, don't put it here.

Analysis: Look at your data in different ways, use averages, medians... What do the results look like over time, between experimental conditions? Use graphs. Multiple graphs of different data sets are appropriate. In addition, a chi square is mandatory once you have

learned about this tool. Analysis using a chi square will ALWAYS be written in the following manner: "The $\chi^2 =$ _____, with _____ degrees of freedom; with a p value of $<.05$ the null hypothesis was _____"rejected or accepted)".

Conclusion: Give a brief synopsis of what was done in the past, why this research needed to be done, and what you found. Your results were either SUPPORTED or REJECTED you did not PROVE anything. Now, tell me your thoughts. Why did you get the results you did? What do you think of your results? What could you have done better?