

# Biology Lab Report Sample

## What is the purpose of scientific papers?

Scientific papers are written to communicate current research findings or ideas within the scientific community. These papers also allow others to understand and repeat your experiments. Like other forms of writing you've done in college, writing in your science course helps you develop the ability to think logically, organize ideas, and communicate those ideas clearly. This handout will show you how to format a biology lab report and what is usually required in each section.

**NOTE: Please consult your professor for preferred formatting requirements.**

### Title Page

Running Head: DESCRIPTIVE TITLE OF YOUR EXPERIMENT

Descriptive Title of Your Experiment

Your Name

Course Section

Date of Experiment

Name(s) of Lab Partner(s)

- All text in the title page should be in size 12 font, Times New Roman.
- Capitalize all letters in your experiment's title at the top of every page.
- "Running head:" is on page 1 only.
- All text in the report is double-spaced.
- All pages are numbered.

- Some professors **require** a Table of Contents after the Title Page.
- If required, list the title of each section and page number(s).

# Biology Lab Report Sample, Cont'd

DESCRIPTIVE TITLE OF YOUR EXPERIMENT

2

## Introduction

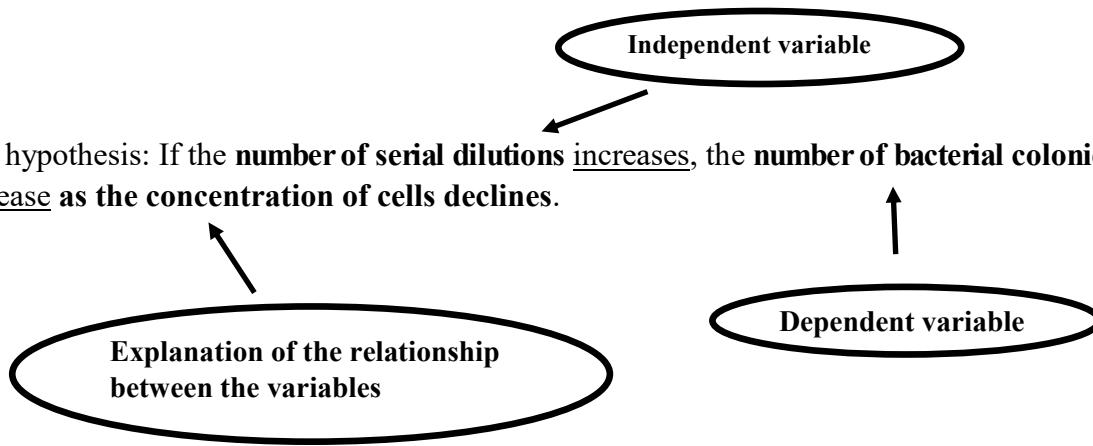
The introduction gives background information on why your experiment is important and clearly states the issues that will be addressed in the rest of the report. Since it provides the structure for the entire report, it is a good idea to write the other sections of your report first, and then write the introduction. Your introduction should include:

- \_\_\_\_\_ At least 2 paragraphs.
- \_\_\_\_\_ A clear statement of the specific question or issue addressed.
- \_\_\_\_\_ A logical argument as to why the question or issue was addressed.
- \_\_\_\_\_ Specific hypotheses and a rationale for those expectations.
- \_\_\_\_\_ References or examples to support all statements of fact or opinion.

The **hypothesis** is what you propose will happen in the experiment. Usually it is the last sentence of the introduction and can be stated in the following structure:

If...(independent variable)...., then (dependent variable)....

Example hypothesis: If the **number of serial dilutions** increases, the **number of bacterial colonies** will decrease as the **concentration of cells** declines.



# Biology Lab Report Sample, Cont'd

DESCRIPTIVE TITLE OF YOUR EXPERIMENT

3

## Materials and Methods

Use the information you recorded in your lab notebook as a guide to write this section in paragraph format. Provide enough information so that the reader could repeat the experiment, but not so much that it distracts the reader from understanding the overall experiment.

Here is an example of having too much information:

First, we obtained a 10 mL beaker. We used a yellow p20 pipette to take out 12.0  $\mu$ L of the sample, which was then added to the beaker.

Here is an example with just enough information:

12.0  $\mu$ L of the sample was transferred to a 10 mL beaker.

Also keep in mind the following guidelines:

- Experimental design is clear and complete.
- Rationale for each step is clearly indicated.
- Precision of all measurements is indicated.
- Brief description is included of how data were analyzed (i.e. calculations made, statistical tests used).

# Biology Lab Report Sample, Cont'd

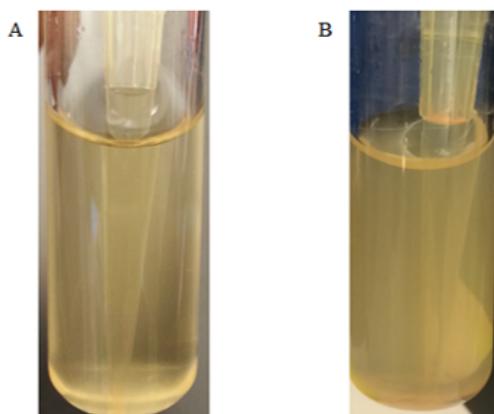
DESCRIPTIVE TITLE OF YOUR EXPERIMENT

4

## Results

In paragraph format, write exactly what you observed. Lead the reader to your figures and cite them within your text. Present your data in the form of tables, graphs, and pictures. Be sure to include a descriptive title and legend or caption for each figure you include in the paper. Don't forget statistics and p-values, if calculated, for data.

Example: "Following inoculation of the KBT-1 strain, red growth was concentrated at the bottom of the tube with no turbidity throughout (Figure 2)." \*



Remember to distinguish your figures by labeling them.  
(Ex. A and B)

Include a legend below your figures to objectively describe them.

Figure 2. Growth of Mutant KBT-1 (A) and Wild-Type NRC-1 (B) after Inoculation. After one week of incubation, the red growth of KBT-1 was concentrated at the end of the pipette tip; but the rest of the liquid media lacked turbidity throughout. Growth of the NRC-1 strain resulted in turbidity throughout the tube and a thin pink layer on the surface of the liquid media.

\*Source: Nguyen, Dalena. "Genotype Changes Phenotype: IS Elements Affect Gas Vesicle Production in *Halobacteri*a". Massasoit Community College.

Remember:

- Results are written in past tense.
- All general statements are supported with reference to data.
- Major results are presented in words, but meanings/implications are not discussed yet (saved for discussion section).

# Biology Lab Report Sample, Cont'd

DESCRIPTIVE TITLE OF YOUR EXPERIMENT

5

(Results, cont.)

Each figure or table has an informative caption or legend.

Tables and figures are numbered in the same order as referred to in the paper.

## Discussion

The “Discussion” section differs from the “Results” section, where you simply report what you saw. In the “Discussion” section, you **interpret** your results in order to explain why and how you obtained those results. State whether the results support your hypothesis. Then, make conclusions throughout your discussion, but always base your interpretation on evidence rather than feelings or guesses. Answer questions like the following:

- Why did you get the results you got? What happened? What could have caused your results?
- Not all experiments are perfectly conducted, so what are some experimental errors that could have skewed your results?
- What were the strengths and weaknesses of the experiment? How did each weakness possibly affect the results?
- What further experiments can be done to confirm your data? What additional questions should be posed? How should the present study be modified in the future?

## Conclusion

Not all Biology professors require a separate conclusion. However, if your professor does then try to answer these questions: What do you conclude from your experiment? Are your results reasonable? Did something crazy happen? (Ex. No bacterial growth happened when it should have.) Compare the expected results against your actual results. Unlike in writing for English courses, your conclusion does not restate or support your hypothesis. In other words, it's OK to be wrong.

# Biology Lab Report Sample, Cont'd

DESCRIPTIVE TITLE OF YOUR EXPERIMENT

6

## References

Citations are provided for every reference cited in the report and are in APA format. Please consult the Writing Center's "APA Sample Paper" or Purdue Owl website for information on citing different materials.

## Other Science Writing Tips

- ⇒ Be clear, concise, and specific. Don't write about feelings. Avoid wordiness and unnecessary details. Focus on observations.
- ⇒ Avoid personal pronouns ("I" or "we").
- ⇒ When formulating your hypothesis, think of it as creating a thesis statement. It should be the guiding statement of your paper.
- ⇒ Write your entire paper with your hypothesis and objectives in mind. Your results and discussion sections should refer to those in order to maintain the focus of the paper.
- ⇒ Write your entire paper in the past tense (except when making suggestions for the future in your discussion section).
- ⇒ Visit the science tutors in the ARC for help with content and the writing tutors for help with writing concerns (i.e. clarity, grammar, formatting).

Source for handout:

Pechenik, J. A. (2001). *A Short Guide to Writing About Biology* (4th ed.). New York: Addison-Wesley.