# Lab Reports

A lab report formally presents your research findings to someone who needs or is otherwise interested in that information. Investigative lab reports are most common for college students, and they are typically structured as follows.

## Structuring the Lab Report

The specific requirements for a lab report vary from instructor to instructor, from lab to lab, and from discipline to discipline. You should always follow the guidelines provided by your instructor or your lab, but there are some common features that appear in most lab reports.

### **Title**

The title of your lab report, like the titles of all scientific papers, should be detailed, specific and informative. Use the title to indicate the study’s main topic and to set your study apart from others in the field so that an audience interested in your study’s topic may easily find your paper among many listed in a research database.

### **Abstract**

Your abstract should clearly and concisely summarize the important aspects of your entire report, i.e. your purpose, scope, methods, results and conclusions. Make your abstract a stand-alone document by avoiding references to figures or tables in the full report. Ensure that the abstract is accessible to your target audience, which may mean limiting your use of jargon. The abstract should generate interest to read the entire paper. Make sure the abstract and the paper are aligned in content by including only information present in the full report. Using the fewest words possible per idea, include key results and highlights from each section of the paper. Most abstracts are between 100-250 words; be sure to check your assignment or journal guidelines for the specified word count. Although informative abstracts are most commonly used, longer structured abstracts are standard for clinical journals. Check the requirements of your assignment or journal for specifications of abstract type.

### **Introduction**

Your introduction tells your audience why you conducted the experiment, gives important background information about it, and describes relevant hypotheses. Investigative lab reports should use a funnel structure for the introduction by starting with background information, identifying a problem or unknown, articulating the study’s central question or purpose, and indicating the experimental approach. Depending on the field, the introduction may also include a brief discussion of the study’s results and significance.

### **Materials and Methods**

This section describes the experiment itself. Your Materials and Methods section should be detailed enough to allow someone else to duplicate the experiment. List all materials used, indicate subjects if applicable, and detail the experimental procedure and design, including a discussion of controls and variables. Use chronological order when discussing experimental details. For studies using subjects, also include the number of overall subjects, the number of subjects receiving treatment, the selection process for subjects, and subject details such as sex and age.

### **Results**

Your results section presents your data and, as such, it forms the center of your report. If your data are poorly presented, then the rest of the report does not matter. Report your study’s findings, including control results. Make sure to make your data meaningful to your target audience by including explanations for data given in figures and tables. Keep in mind that while the results section is for presenting the results, you will wait until the discussion section to explore the implications of your findings.

### **Discussion**

This section interprets your results in light of standing hypotheses, etc. It is typically the longest section of a lab report, and it is often the most important part of a college lab report because it demonstrates that you are thinking about and understanding the material. Clarify your contribution by describing what is new to your findings. Use a pyramid structure that begins with your specific findings and interpretation, transitions to situating the work within the field by comparing and contrasting the study’s findings to those of other studies, continues to summarize results and address any limitations or discrepancies in the study, and ends with an assertion of the study’s significance to the field. You may also suggest future experiments that may address gaps in the study design or may explore further the new information your study has revealed.

### **References**

You should include full citation information for all reference material, both within the text through in-text citations and at the end of the document in a Reference List. Check with your instructor about what style guide you should use (CSE, APA, etc.).

**Further Resource:** Hofmann, Angelika H. Scientific Writing and Communication: Papers, Proposals, and Presentations. 3rd ed. Oxford UP, 2017.