

Biology 155a  
Project Laboratory in Genetics and Genomics  
Writing Assignment 7

The Research Paper: Materials and Methods

Now we will turn to the Materials and Methods section of the paper.

This section describes the specific details of your experiments. As a result, it should provide enough information about the techniques you used to allow the reader to both judge whether the data justify your conclusions and, if desired, replicate your experiments. It is always written in the past tense, as it describes exactly what you did. For example, “The plates were incubated overnight at 37°C.”

This portion of a research paper is usually divided into sections labeled with appropriate subheadings to indicate a specific method (*i.e.*, PCR or Western Blotting). Usually these subheadings are arranged chronologically based on the order of the experimental results presented in the Results section. **DO NOT** present or discuss your results in this portion of the paper. Instead, this section is meant to be a “how to” guide to your experiments.

How much detail is required? You should provide sufficient detail so that a reader could order the materials you used and replicate the experiments. If a published account is already available (for example, bacterial transformation, PCR, sequencing), the technique itself need not be described in detail again, but you must provide enough information about how you performed the experiment so that it can be independently replicated in another laboratory. For example, in a discussion of PCR, you must provide information about the primers and thermal cycling conditions used, but you do not need to describe how PCR is done. In addition, for all experiments, the name and manufacturer of reagents (including enzymes, bacterial strains, kits, columns, *etc.*) and relevant instrumentation/equipment must be provided. This section should also include sample sizes or number of replications, strain and plasmid names, and other factors known to affect the particular experiment (*e.g.*, temperature, pH, *etc.*).