**General Lab Report Guidelines**

This guide provides the structure for a scientific report. This report is to be written in standard scientific format. The general flow of the narrative is with sections entitled Introduction, Materials and Methods, Results, Discussion, and References. Additional help on the mechanics of writing can be found at the University Writing Support Center located in 095 Lommen Hall or in room 112 in the Library (see <https://www.mnstate.edu/write/> for schedule).

*For your first report on the big bluestem lab, the Title and Introduction have been provided for you. You will write the Methods, paste in your data lab 1 figures and results text for the Results, and write the Discussion and References sections. See the Bluestem Lab Report Template and work from there.*

Introduction

The introduction is organized into the following parts. Note how the focus in the introduction goes from the general to the specific. Also, no quotes! Science papers rarely include direct quotes.

* + Opening section: a general statement or two about the “big-picture” phenomenon under study
  + System section: a sentence or two about the study system under study
  + Comparison section: a sentence or two that cites (using correct format) several peer-reviewed sources that studied something similar. Use this format for citing references within the text of the Introduction: e.g. (Anderson, 1979), (Burthe *et al.* 2006), (Lochmiller and Deerenberg, 2000)
  + Study question section: a sentence that describes the specific study question(s) tested in this study.
  + Hypotheses section: a sentence that describes the hypotheses being tested.

Materials and Methods

The materials and methods section is a paragraph or two that describes how the experiment was done, and how the data were analyzed. There should be enough detail that another scientist could replicate the experiment but do not go into excessive detail or provide lists of materials used.

* Summarize the methods of the lab in complete sentences (not steps or bullets).
* Be concise, but also specific.
  + Include site locations and descriptions
  + Include scientific names of species
  + Include dates of data collection
* Make sure you write this in past tense.
* Make sure you include the methods for the entire experiment, not just the role you and your partner had, or your lab section had in the data collection.
* Include information on the analysis of the data (i.e. what statistical tests you used and the program you used to calculate them)

Results

The results section is where the analysis of all the data are reported, as figures and tables (definitions: tables have columns and rows, figures do not). The results section is also where the outcomes of statistical comparisons are reported. The reasons *why* you got these results are not discussed (yet). This is saved for the aptly named Discussion section!

Discussion

The discussion is where the results are interpreted. The structure of the Discussion is the opposite to the structure of the Introduction. In the Discussion, the focus progresses from the specific result back to the general framework and big picture. Therefore, the Discussion starts with a brief restatement of the main finding. However, do not restate the t-test results, the means, or reference the figures. Also, no quotes! Science papers rarely include direct quotes.

* + A brief restatement of the main findings of the experiment. Were your hypotheses supported or refuted by the results?
  + Interpret your findings; explain why you might have gotten the results that you got. Be sure to think about multiple reasons that might explain your results.
  + Evaluate the confidence you have in your conclusions about the data. Consider other factors involved in your experiment that either were difficult to control, or you neglected to control that may have had an effect on the results. Also consider the sample sizes – were they adequate? What about the quality of data collection?
  + Comparison to the literature: how do your findings compare to other research? Use the format (author, year). For example: “Infectious diseases have received a lot of study (Anderson 1979, Lochmiller and Deerenberg 2000, Burthe *et al.* 2006).”
  + Suggest one or more future experiments based on your findings.

References

Scholars use information from verified sources. Here is where the sources cited in the text of the report are listed in standard CSE (Council of Science Editors) format (if you have questions, google CSE and look for examples).

* + There must be a 1:1 match between sources cited in the text of the report and references listed in the references section
  + Do not spell out first names
  + Do not use quotes or underlines
  + Arrange references in alphabetical order

When citing references use this format:

*Generalized example* - Lastname, FM. Year. Title of article. Name of Journal, volume: pp-pp.

*Real example* - Anderson, RM 1979. Population biology of infectious diseases. Nature 280: 361-367.