HB *Physarum polycephalum* Investigation Lab Write-up Expectations

- Make a copy of the lab report template file (1 per table group) found on the class website.
- Then share the file with each other AND with Dawkins.
- Keep track of your sources, you'll cite them in **APA** format.

Lab Write-up Scoring:

• Title	_____/2
• Section #1 (Introduction)	_____/12
• Section #2 (Methods)	_____/8
• Section #3 (Results)	_____/10
• Section #4 (Discussion)	_____/12
• References	*no credit for write-up if missing*
• Spelling/Grammar/Neatness	_____/6
	Total: _____/50

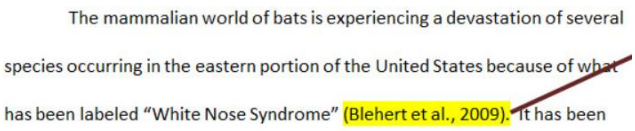
Title

- *Effective titles include your independent and dependent variables and clearly describe what you tested, and the species used.*
- *Write this in the present tense.*
- *Avoid "vs." and "How…" in your title.*

1st Section: Introduction

- *Remember to avoid using the first person (I, we, us, our group) throughout this entire write-up.*
- *This section should be written mostly in the present tense.*
- *Roughly 500-700 words.*

- Start this section with a background discussion of why this experiment was conducted and what the aims of this investigation were.
- Present the prior research into *Physarum polycephalum* that is relevant to our research question.
  - The papers we read the first day of this investigation are linked on the website for your use or search for additional research papers online.
  - Cite your sources as you present the research. Example of how to do APA in-text citations:
    - https://phoenixcollege.libguides.com/BIO182/apacitinghelp



- This section should end with a restatement of the HYPOTHESES of your experiment (ex. "It is hypothesized that…")

2nd Section: Methods

- *This section should be written in the past tense (the experiment was already run).*
- *Roughly 300-400 words.*
- *Remember, no reference to self (no I, we, our group, my…)*

- Describe, **in paragraph form**, the general procedure of our investigation. Include the:
  - Independent and dependent variables
  - Experimental and control groups
  - At least 5 relevant constant variables
  - Your analysis plan (how the dependent variable was measured/used in analysis, including how the statistical analysis of the collected data was conducted)

3th Section: Results

- *This section should be written in the past tense (your data were already collected) unless referring to a data table or graph (see below).*
- *Roughly 200-400 words.*

- Present and explain the experimental data.
  - Discuss the **numerical trends (use numbers!)** seen in the data you collected as well as your qualitative observations.
    - You are only presenting the numerical trends in this section. You will discuss the relevancy and make interpretations of the numeric trends in the Discussion section.
  - Refer to your data table(s) and graph. (ex. "As seen in Table 1….")
  - Also include pictures of the results and refer to them (ex. "As seen in Figure 2…")
  - Incorporate the results of your statistical test(s) into this section.
    - Example of how to incorporate statistics the results of your statistical test(s):

The average decrease of blood pressure measured in the experimental drug group of 10.7mmHg was significantly different from the average decrease of blood pressure in the placebo group of 2.3mmHg (unpaired t-test, p=0.002).

4th Section: Discussion

- *This section will include a mix of past, present and future tense depending on whether you are referring to something that already happened, something in the present, or something to be done in the future.*
- *Roughly 500-700 words.*
- *In this section you will connect the main findings (not data) of our investigation with class concepts and additional information you have learned about Physarum polycephalum.*
  - *You have already presented numeric trends in the previous Results section; the use of numbers is generally not appropriate in the discussion section of a scientific paper.*
- *Use transitions to make this section discussion based.*

- Begin this section with a statement if the experimental hypotheses was supported or not supported by the data you collected.
  - Remember to avoid saying "prove," "correct," "true," or "false" in science. Our experiments either support or do not support our hypotheses. Science is an ongoing process!
- Connect your experimental findings with the prior research presented in the Introduction section.
  - Feel free to do and add additional relevant research about *Physarum* to your Discussion.
- Also present the strengths and limitations of your investigation in terms of if you were able to reliably answer your research question.
- Finally describe a "next logical step" experiment that would build on your findings.

References Section

- Use the Citation Machine website to ensure correction formatting.
  - https://www.citationmachine.net/apa/cite-a-journal