Rubric for News Report Assignment

Writing-Intensive
Plant Physiology and Microscopy Lab

Luis Vidali – Biology and Biotechnology

Plant Physiology

Course Overview
- Lecture style with student presentations (M,T,Th,F)
- 20 students
- 6 teams with 3-4 students each
- No TA
- Two PLAs recruited to provide writing feedback

- **First Essay-Individual (1 page)**
  - *Goals*:
    - First impression of writing skills
    - Student expectations
- **Last Essay-Individual (1 page)**
  - *Goals*:
    - Compare with first assay
    - Obtain feedback

- **News Article - Individual**
  - *Goals*:
    - Read, analyze, and synthesize primary literature
    - Peer to peer instruction
  - Based on a research article
  - Each team member has a different article
  - 2-3 pages assignment
  - Includes one figure
  - Feedback for Draft
    - One team member
    - One PLA and instructor
  - Rubric provided

Example of News Report Assignment

Scientists Ensnared By the SNARE Proteins
By Chloé Emery

A recent study, published in "The Plant Journal" by the Society for Experimental Biology, conducted by German scientists for the Center for Plant Molecular Biology and the Max Planck Institute for Plant Breeding Research, draws a connection between the SNARE protein *sec22* and the integrity of Golgi stacks as well as gametophyte development. The *sec22* gene holds an essential role in early secretory traffic between the Endoplasmic Reticulum and the Golgi.

Membrane traffic is a contributing factor to plant growth and development, as it maintains the endomembrane system and transports proteins to their action sites within the cell. In this study, scientists compared wild-type Arabidopsis, a flowering plant, to mutant Arabidopsis with *sec22* alleles inserted.

Figure 1: Illustration of cisternae stacking with proper *sec22* function and loss of *sec22* function

Rubric for News Report Assignment

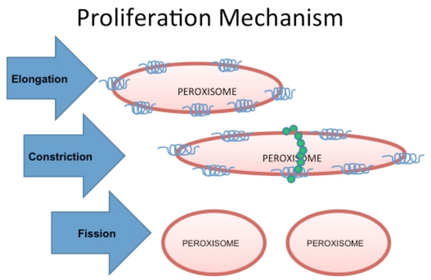
Criteria and Points (15 TOTAL)

NEWS REPORT

- Draft of News Report (3 pts.)
- Did you provide feedback to another member of your team (1)
- Was your **headline** accurate, concise, and active? (1)
- Did your **lead** accurately and concisely (1 sentence) cover the **major finding**/s of the report? Are other important findings summarized **accurately** elsewhere? (2)
- Do we know **who did or sponsored** or published the study? (1)
- Do you put the study in a larger societal context or signal **the importance or relevance of the study** for readers? Are the implications or consequences or next steps discussed briefly? (1)
- Do you provide some **quotation** from another article to comment on the issue or the study and refrain from inserting your own opinion? (1)
- Is language **accessible** for a 12th grade reader or less (plain English, defined terms)? (1)
- Do you provide a **general sentence or two that explains the methods, subjects, or materials**? (1)
- Does your **visual** (Figure) help summarize the information? (1)
- Is the piece well **organized**? (1)
- Is the **sentence level writing clear**, concise, and graceful, with NO mechanical errors (news articles must be proofread many times!) (1)

- **Video Project - Team**
  - *Goals*:
    - Convert complex information to a simple presentation
    - Use writing as the basis for an alternative medium of communication
  - Based on the News Article topic
  - Designed a storyboard draft
  - Feedback from two PLAs and instructor
  - Feedback from ATC (Sophia Burke and Jim Monaco)
  - Final video 3-5 min

Example Slide from Video



Current Biology Style Dispatch

Cell Biology: ESCRTing Trouble Out!

Calcium entry through a plasma membrane defect leads to the local recruitment of endosomal complex required for transport (ESCRT) proteins. These proteins are hypothesized to drive an outward bending of the affected plasma membrane, forming a small bud that is then shed from the cell, along with the troublesome defect.

Paul L. McNeil

Plasma membrane defects are created *in vivo* under physiological conditions that generate mechanical stress. The most well-studied example is skeletal muscle undergoing eccentric contraction exercise: this generates maximal levels of mechanical stress on muscle fibers and a dramatic rise in the incidence of plasma membrane disruption [1]. Pathological conditions can also produce disruptions, including of course traumatic injury and electrical shock. Moreover, bacteria liberate pore-forming toxins — proteins that lodge in the host cell plasma membrane, where, as multimeric transmembrane arrays, they form channels for abnormal

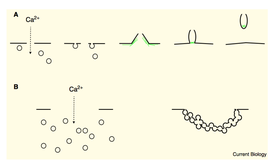


Figure 1. Repair of small and large plasma membrane disruptions.

- **Outcomes**
  - Feedback system works well
  - Use Dispatch format in the future
  - Students get stressed during video preparation
    - The students enjoy the final project
    - Start video project earlier
  - Increasing repository of videos

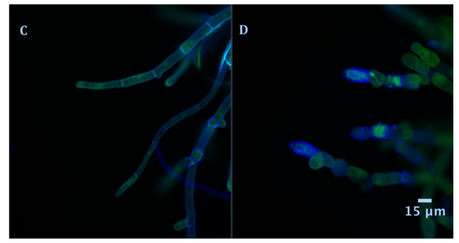
Microscopy Lab

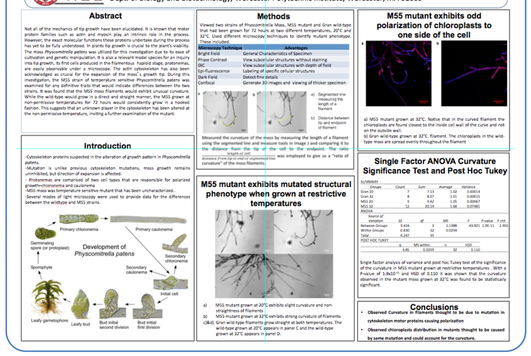
Course Oerview
- 1 hour lecture a week and 3 hours lab a week
- 6 students
- 3 teams with 2 students each
- No TA
- 1 PLA (maintain cell lines only)

- **First Essay-Individual (1 page)**
  - *Goals*:
    - First impression of writing skills
    - Student expectations
- **Last Essay-Individual (1 page)**
  - *Goals*:
    - Compare with first assay
    - Obtain feedback

- **Weekly Lab Reports - Team**
  - *Goals*:
    - Learn to write a scientific report
      - Emphasis on figures to support written results
      - Literature research and proper citation
    - Learn to write collaboratively
    - Peer to peer feedback
  - Describe and analyze week's experiments
  - Incremental work toward final project
  - Feedback from two students and instructor

Example of Figure from Weekly Report





- **Poster Presentation -Team**
  - Goal: Learn to design and present a scientific poster
  - Assemble figures for final report
  - Template provided
  - Feedback on the research

- **Final Project Report -Team**
  - *Additional goals:*
    - Report original research (inquiry based)
    - Apply quantification and statistics
    - Emphasis on discussion
  - Use of single model system to increase focus
  - Rubric provided

Rubric for Final Report

Introduction (20 points)	**Materials & Methods (8 points)**
-Introduces reasons for the project (2pts) -Summarizes and explains background concepts: *Microscopy:* *Kohler illumination (2pt)* *Resolution (2p)* *Dark field or Phase (2pt)* *DIC (2pt)* *Fluorescence(2pt)* *Confocal (2pt)* -Introduction about Physcomitrella *(3pts)* -States Objective or goals of the project (3pts)	-How to make slides (2 pts) -Culture conditions and stains (2pta) -Types of microscopes, filters, cameras, and lenses (2 pts) -Methods used to quantify (2pt)
Results (25 points)	**Discussion (16 points)**
Text (5 pts) -Introduces all tables and figures and directs reader to tables and figures (2pts) -Highlights key point(s) of figures (2) -Organized logically (1) **Figures and Tables (6 pts)** -Are all figures/tables properly titled? (2 pts) -All are figures/tables properly formatted? (2 pts) -Scale bar is correct? (2 pts) **Completion of Results (14 pts)** -All results present: *Various types of microscopy shown. (3 pts)* *Types of lenses and microscopes specified. (5pts)* *Representative images describing what was measured. (3 pts)* *Graph or table with the results (3 pts)* *Statistics (2pts)*	-Brief summary of why you are doing the research (2pts) -Explain why your results are or are not conclusive (statistics) (2 pts) -What type of microscopy is better to determined your data (2pts): -What type of mutation do you think you have? (2pts) -What is the importance of having a WT control? (2pts) -What type of experiments would you continue to perform in the future? (2pts) -How do your results fit into the biology of *Physcomitrella*? (2pts) -What are the main conclusions of your work? (2pts)
Mechanics (4 points) -Spelling, format, and grammar, title page	**References (5 points)** -Use of in text citation (1) -Quality (authored sources, valid sources sought, no wiki/about/ask.com) (2) -Quantity (enough sources to synthesize necessary background information) (1) -Consistent and complete reference style (1)

- **Outcomes**
  - Feedback system works well
  - Challenging to propose and test hypotheses
    - Novel and complex subject
  - Challenging going from weekly reports to final report
    - What to include and what to leave out?