

Topic: Plant Growth Homeostasis Lab

Summary: Students will learn how to disrupt homeostasis in plants and use this disruption to understand biological processes.

Goals & Objectives: Students will be able to integrate how many processes are involved for plants to grow. Students will be able to design a guided inquiry experiment.

NGSS Standards: HS-LS1-4, LS1-5, LS1-6, LS1-7
Common Core: RST 9.10.3, 9.10.5, 9.10.7
Common Core: WST 9.10.1b, 9.10.1e, 9.10.2a, 9.10.7, 9.10.9

Time Length: 5 partial periods for writing procedures, watering and observations, graphing, and writing the conclusion

Prerequisite Knowledge: Students should have already been introduced to the following concepts: cell division, photosynthesis, sugars, cellular respiration, and metabolism.

Materials:

- Grow light
- Graduated cylinder for measuring amount of water / solution
- Germinated seeds, preferably seeds that grow fast like the Mung Bean
- Pot / beaker or other container to hold soil
- Cola or energy drink solution
- Coffee solution
- Fake urea solution (ammonia)
- Sugar solution
- Weak acid solution (vinegar)
- Saline solution

Accommodations: Students with an IEP should work in a group with strong experimental design skills. Notes about the main concepts can be provided so they have easy access to science concepts.

Editable DOCX File and Answer Key:

Available at www.ngsslifescience.com

Data Table:

Experimental Group:

Date	Height (cm)	Observation

Control Group:

Date	Height (cm)	Observation

Graphing: Create a line graph with 2 lines on 1 graph (experimental & control groups)

Experimental Errors:

Conclusion:

Do you confirm or reject your hypothesis? _____
What *evidence* supports why you confirmed or rejected your hypothesis?

Analysis Questions:

1. What is the main purpose of photosynthesis? _____
2. Predict the main process plants use to grow taller? _____
3. What process in the plant was altered (usually disrupted) when you used the solution in your experimental group? _____
4. Predict why that process was altered (disrupted) _____
