

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 <u>www.ngsslifescience.com</u>

	Name:		_ Row: _
Plant Growth Homeostasi	is Lab	Date:	Period
Driving Question: In this lab, you will be discovering how a degrows. Design an experiment to test how the	-	_	
	er and graduated cyling lent determined solutio		
Background: There are many processes involved in order chloroplast), cellular respiration (performed for plants to grow. On top of the processes cellulose from their glucose. This process is make up the cell wall of plant cells.	d by mitochondria), and just listed, plants need	d cell division are all requal to make larger polymers	uired s like
Hypothesis:			
Procedures: Number each step and be as	detailed as possible.		
Variablase			
Variables: Independent: Constants:	Dependent:		

Control Group:

Data Table:					
D	<i>Experiment</i> ate		Observation		
		morgae (cm)			
	Control Gr	oup:			
D	ate	Height (cm)	Observation		
	aphing: <i>Create</i> perimental Eri		vith 2 lines on 1 graph (experimental & control groups)		
Do	nclusion: you <u>confirm</u> or at <i>evidence</i> sup		confirmed or rejected your hypothesis?		
An	alysis Question	1S:			
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				
exp	erimental group	p?			

4. Predict why that process was altered (disrupted) _____