

9-12 Activities Lettuce

Experiment



Georgia Performance Standards Addressed:

- SCSh1
- SCSh3
- SB1

Materials Needed:

- Lettuce Leaves
- Beakers, Cups, or Bowls
- Water
- Salt
- Food Coloring
- Black Pepper
- Worksheets (included)

Time Needed:

1 hour

Goal: Students will learn how materials move in and out of a cell.

Objectives:

- Students will use a lettuce leaf to discover the function of a cell membrane.
- Students will try to figure out what would be allowed into a cell through predictions, observations, and explanation.
- Students will do an experience to show the movement of water into and out of the cell.
- Students will be able to state that the cell membrane lets materials in and out of a cell.

Lesson Outline:

- 1.) Students will make predictions about what would happen if they placed a piece of lettuce into a salt solution, into a solution of food coloring and water, and into a mixture of water and black pepper.
- 2.) Students will immerse a piece of lettuce in each of these solutions and make observations.
- 3.) Students will answer questions and draw conclusions from the experiment.

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Hot Chalk Lesson Plans
<http://lessonplanspage.com/sciencelettucecelldiffusionandselectivebarrierproject712-hm/>

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Name _____ Date _____

Fill in the following chart before and after your experiment:

	Salt Solution	Food Coloring	Water and Black Pepper
Prediction			
Observation			

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Answer the following questions:

- 1.) Explain what happened to the lettuce leaves after being placed into various liquids.
- 2.) What can go into and out of a lettuce leaf?
- 3.) Using a lettuce leaf to represent a cell membrane, can everything go into a cell?
- 4.) A leaf is a collection of many cells. What did you observe when you added food coloring?
- 5.) Will changing the amount of salt in the solution affect the amount of water in the lettuce leaf? Design an experiment to test this hypothesis.
- 6.) When working on the experiment, you used salt on the lettuce leaf. Explain how salt can be used in the preservation of food.
- 7.) Use reference materials to investigate how we used diffusion and selective barriers in our experiment.