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-htm/

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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.