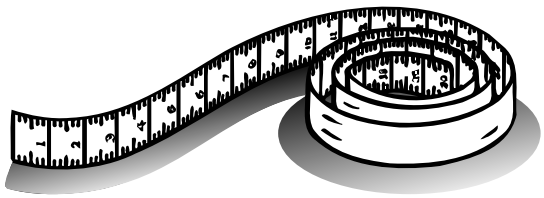
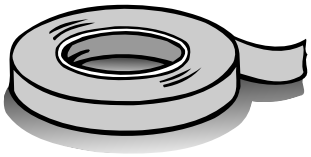
Chapter Science Investigation Name _____

Cell Processes

What You Need


boiled egg

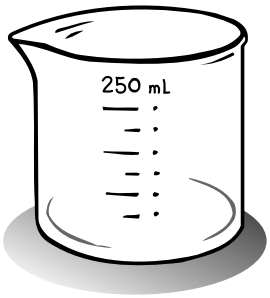

measuring tape


masking tape

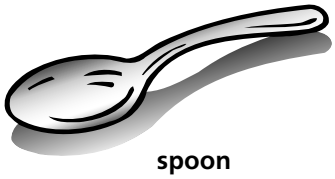

two glass jars with lids


white corn syrup

white vinegar



250-mL beaker


spoon

Find Out

Do this activity to see how a cell membrane allows a cell to take in and remove materials.

Process Skills

Measuring
Communicating
Observing
Inferring
Experimenting

Time

- 30 minutes on the first day
- 20 minutes two days later
- 20 minutes four days later

What to Do

1. Label the jars "A" and "B." **Measure** 200 mL of vinegar into jar A and **record** this amount of vinegar.

2. Place the measuring tape around the center of the egg to find the circumference of the egg. **Record** the measurement.

3. Carefully place the egg in the vinegar. Put the top on the jar and leave it for two days.

Safety! ***Wash hands well after handling the egg.***

4. After two days, remove the egg from the vinegar with a spoon and carefully rinse it with water. Use the measuring tape to find the circumference of the egg. **Measure** the vinegar remaining in the jar by pouring it into the beaker. **Record** your measurements.

5. **Measure** 200 mL of syrup into jar B. Place the egg in the jar of syrup. Put the lid on the jar and leave it for two days.

6. With the spoon, carefully remove the egg from the syrup. Rinse it with water. Use the measuring tape to find the circumference of the egg. **Measure** the syrup remaining in the jar by pouring it into the beaker. **Record** your measurements.

Modeling Cell Processes				
	Jar A Vinegar		Jar B Syrup	
	Starting Measurement (Beginning Day)	Ending Measurement (After Two Days)	Starting Measurement (Beginning Day)	Ending Measurement (After Two Days)
Circumference of the Egg				
Amount of Liquid Left in the Jar				

Conclusions

1. What happened to the shell of the egg?

2. What happened to the size of the egg after remaining in vinegar?

3. What happened to the size of the egg after remaining in syrup?

4. What part of the egg controlled what could enter and leave the egg?

New Questions

1. The egg was being used as a model of a cell. Explain what this experiment shows about the working of a cell.

2. Based on what you know about diffusion, **infer** why the liquids moved into and out of the egg by explaining the differences in the concentration of the liquids on each side of the cell membrane.

Name _____

ACTIVITY

Investigating Pond Water Organisms

Predict what kind of organisms you might find in the pond water.

Draw the organisms you see on your slide.

Name _____

Conclusions

1. Compare your prediction with your observations.

2. How many cells made up the organisms you observed?

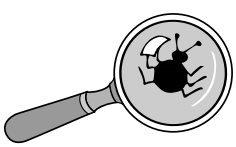
3. What parts did these organisms use for movement?

Asking New Questions

1. Would you expect to see the same kinds of organisms in tap water as you did in the pond water? Why? What kinds of further information would be helpful to support your conclusion or to answer new questions that you have?

2. Based on the kind of microscope that you used, did you view cells more like Janssen, Leeuwenhoek, or Hooke did many years ago?

Name _____



ACTIVITY

Comparing Plant and Animal Cells

Predict how the onion skin cells will be similar to and different from cheek cells.

Draw what you see in each type of cell. **Label** the cell parts.

Slide A **Slide B**

Name _____

Conclusions

1. Compare your prediction with your observations.

2. Did slide A contain plant or animal cells? Slide B?

3. How could you tell you were looking at plant cells?

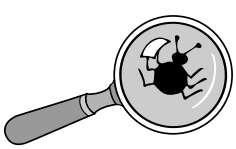
4. How could you tell you were looking at animal cells?

Asking New Questions

1. What are the functions of the cell parts that you labeled?

2. Based on your observations of the plant and animal cells, how might lettuce cells compare to cat cells?

Name _____



ACTIVITY

Investigating Osmosis

What do you **observe** about the texture and color of the potato slices?

Predict what will happen in each of the beakers. **Record** your predictions in the chart.

What happened to the color and texture of each potato slice? **Record** your results in the chart.

	Prediction	**Observations**
Beaker 1		
Beaker 2		
Beaker 3		

Name _____

Conclusions

1. Compare your prediction with your observations.

2. Did osmosis occur between the cells in the potato slices and their environment in each beaker? How do you know?

3. Was there a higher concentration of water in the potato cells or in the salt solution in beaker 1? How do you know?

Asking New Questions

1. Develop a testable question based on your observations in this activity.

2. Plan and conduct a simple investigation based on your question and write instructions that others can follow to carry out the procedure.

3. Prepare a report of your investigation that includes the tests conducted, data collected, or evidence examined, and the conclusions drawn.