

CURIOSITY AT HOME

OSMOSIS EGGS



Watch eggs grow and shrink in this eggstraordinary eggssperiment! Explore the process of osmosis as you observe water move through an egg's membrane.

Note: This experiment takes place over a few days.

MATERIALS

- 2 eggs
- Four clear glasses or jars
- White vinegar
- Corn syrup (alternative option: simple syrup solution made by heating equal parts sugar and water)
- Food coloring
- Water
- Spoon
- Science notebook or paper
- Something to write with

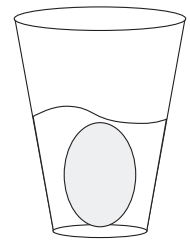
PROCEDURE

- Place each egg in a clear glass or jar. Cover with white vinegar and let stand for 48 hours.
- Make some observations at various points over the 48 hours. What do you notice is happening inside the jars? Write or draw your observations in your science notebook.
- After 48 hours, prepare your two remaining glasses/jars.
 - Fill one jar with corn syrup.
 - Fill the other jar with water and a few drops of food coloring. Stir.
- Using a spoon, carefully remove each egg from vinegar and gently rinse with water. Be very careful not to puncture the membrane – ask an adult for help if needed!
- Transfer one egg into the jar of corn syrup and the other into the jar of colored water.

Experiment continued on next page...



White Vinegar



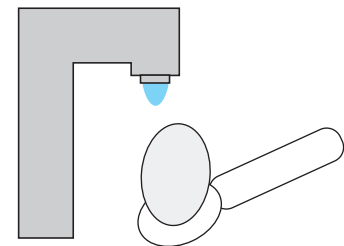
White Vinegar



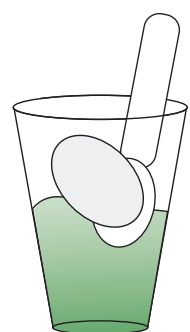
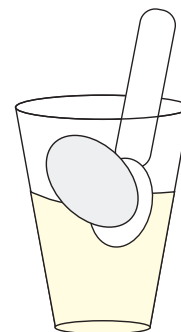
Corn Syrup



Food Coloring



Remove eggs and gently rinse with water.



Transfer one egg into each solution.



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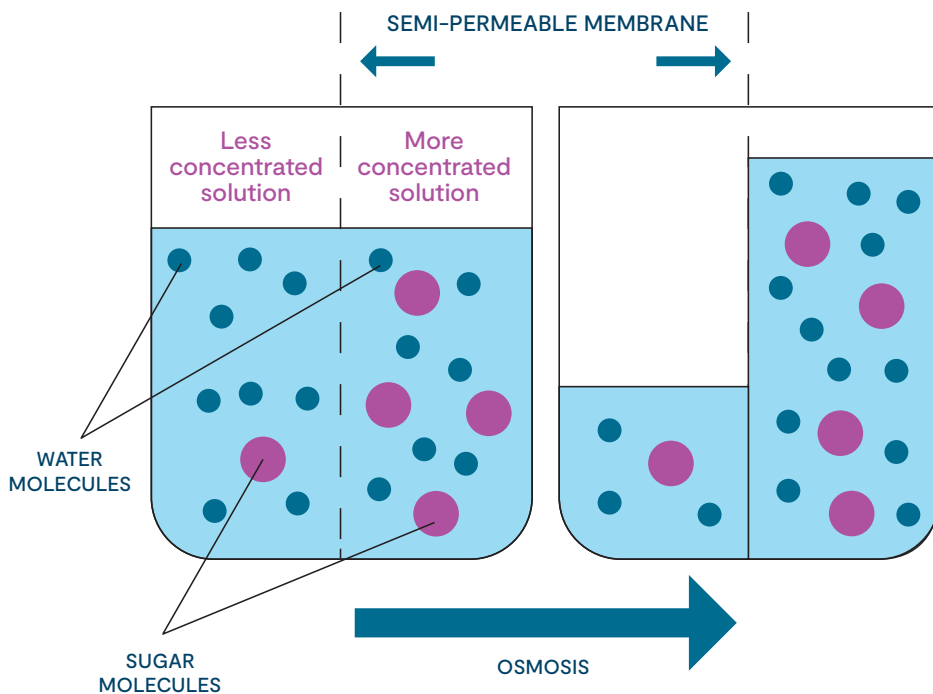
PROCEDURE *continued...*

- Make some initial observations in your science notebook. Draw each egg in its jar and write down what you see.
- Come back in an hour and make more observations—draw or write down what you see.
- Leave eggs for 24 hours. Draw or write your observations.

DID YOU KNOW

Osmosis is the movement of water from areas of higher concentration to areas of lower concentration. Submerging an egg in vinegar causes the acetic acid in the vinegar to break down the calcium carbonate eggshell, exposing the egg's membrane. The membrane of the egg allows water to pass through without letting the contents of the egg escape, much like how the cells in our body work.

In the jar with colored water, there is a higher concentration of water outside the egg, so the water flows into the egg, causing it to swell. Since the concentration of water is lower in the corn syrup than in the egg, water flows out of the egg causing it to shrink and shrivel.



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K–2 GRADE EXPLORATION

Here are some questions you can explore together:

- Compare your eggs now to your original shelled egg. What differences do you see? Think about size, shape, color, and texture.
- What do you think would happen if you left the eggs in colored water or corn syrup for a longer time?
- In the beginning of the experiment, the vinegar dissolved the eggshell. What else can you dissolve in vinegar? Try some chalk or a shell—both have similar ingredients to an eggshell.
- Have you ever been swimming and your hands became wrinkly or pruney? How does this relate to our experiment?



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3–5 GRADE EXPLORATION

- What would happen if you placed your shrunken egg in plain water overnight? Write your predictions in your science notebook, try the experiment, and record your results! What happened to make these changes occur?
- Experiment with your plain eggs by soaking them in other solutions. What happens if you put an egg in salty water?
- In our original experiment, the vinegar dissolved the eggshell. What else can you dissolve in vinegar? Try some chalk or a shell—both have similar ingredients to an eggshell.
- Have you ever been swimming and your hands became wrinkly or pruney? How does this relate to our experiment?



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6–8 GRADE EXPLORATION

- Draw a diagram of your egg in the corn syrup. In what direction is osmosis occurring (the movement of water molecules across the membrane)? Draw arrows on your diagram to indicate the direction of movement.
- Draw a diagram of your egg in the colored water. In what direction is osmosis occurring? Draw arrows on your diagram to indicate the direction of movement.
- What could you do to return your eggs to their original de-shelled size and shape?
- When the eggs were originally placed in vinegar, the acetic acid in the vinegar dissolved the calcium carbonate in the eggshell. The bubbles created are the carbon dioxide gas produced in this process. Experiment with placing other solids in vinegar. Try a rock, a shell, and a piece of chalk. What do you observe? What can you conclude about the makeup of these items?
- Prepare three glasses or jars with varying concentrations of salt. Place a freshly de-shelled egg from the vinegar soak into each jar. Observe over several hours, and again after 24 hours. Does the salt concentration affect the rate of osmosis?



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