

incredible!

American Egg Board

Grades K–5

The Naked Egg

Watch an egg shed its shell with this simple experiment that demonstrates an acid-base reaction and osmosis!

What You Need

- raw egg
- tall glass or beaker
- vinegar



What You Do

1. Place the egg in the glass or beaker, then cover the egg with vinegar.
2. Observe the egg. What do you notice?
3. Move the glass to a spot where it won't be disturbed. Leave the egg in the vinegar for 24 hours.
4. The next day carefully drain the vinegar from the glass. Then cover the egg with fresh vinegar.
5. Move the glass back to its safe spot and keep it there for the next seven days. Observe what happens to the eggshell, paying particular attention to the bubbles forming on the eggshell's surface.
6. After the week is up, carefully pour out the vinegar and rinse the egg with water. The eggshell will have completely disappeared by now, leaving a translucent egg that is slightly larger than before.



Step 1



Step 5



Step 6

Use a strainer or slotted spatula in Steps 4 and 6 to drain the vinegar from the glass. Be careful about using a spoon as it may cause the fragile egg to break.

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Why It Happened

When the egg is covered with vinegar, bubbles will appear on the outside of the eggshell. Eggshells are primarily made of calcium carbonate. The calcium carbonate reacts with the acetic acid in vinegar and causes the release of carbon dioxide gas that can be seen as bubbles on the eggshell. This chemical reaction causes the eggshell to dissolve. The egg is larger after being soaked in the vinegar for several days because of a process called *osmosis*. Osmosis causes some of the vinegar to move through, or *permeate*, the egg's membrane, which causes the egg to enlarge.

To see another demonstration of osmosis, put the naked egg in a beaker of water that has been tinted with food coloring. The egg is about 90% water, while the substance in the beaker is 100% water. The water in the beaker will move into the egg through the membrane to equalize the amount of water inside and outside the egg. The egg will swell as osmosis occurs!

Eggs are a great food choice no matter where you live. Find out more about egg dishes across the globe with the reading worksheet, "Eggs Around the World".

