Celery Petrification

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Introduction

Many fossils are preserved through the process of petrification (also called mineralization). Petrification occurs when water carries minerals into the pore structures of parts of buried organisms, leaving the minerals behind. When the original organic material ultimately rots or dissolves, the minerals remain in the position of the original structures. Wood and bone are commonly fossilized in this manner. You can demonstrate how this happens by using the old capillary action demonstration; a piece of celery and dyed water. The colored water is our model for mineral-laden groundwater. When the dyed water is naturally sucked into the celery by capillary action, it mimics groundwater moving into the pore spaces of bones and plants, leaving minerals behind in the pore spaces as happens in petrification.

Grade Level : K-8

Time : 10 minutes in class or at home, and then overnight for the celery to soak up the dyed water.

Materials

- Clear gas or cup
- Water (enough to fill glass ¼ to 1/10 full)
- Dye to color the water (red or blue works best, avoid green or yellow)
- Fresh celery (with leaves) cut by teacher to appropriate length so that it won't knock over the glass when it is placed in the glass
- *Extra:* Chicken leg bone (cut or broken in half to show pores) or ham bone

Demonstration

- Fill the glass ¼ to 1/10 th full with water.
- Place a few drops of dye into the water and stir so that it has a deep color.
- Teacher should cut a piece of celery to a 4 to 6 inch length. Cut from the base so that leaves remain on top of the cut piece.
- Let students see the cut end of the celery to see the pore spaces. In some pieces of celery it will be difficult to see the vascular pores. That is OK, since it will make a nice comparison to what they see after the celery soaks up the colored water.
- Explain the idea of vascular tissues or have students look up the definition. Vascular tissues are easy to see in celery. Even if the pores are not easy to see in your cut piece, the elongate tubes that form the ridges along the outside of the celery are usually easy for students to see. You may want to take a second piece of celery and peel or cut away resistant strips of the vascular tissue to reinforce the concept. Tell students that both plants and bone have internal porous tissues. An old chicken bone (broken to see the pores inside the bone) or ham bone (if you can see the pores) can be used as a demonstration
- Place the celery in the colored water. Make sure that the celery doesn't tip over the glass or cup.
- Let the celery sit in the water until the dye soaks into the leaves of the celery. This may take overnight. If you want to make this an experiment, you can have students collect observational data at different times of the day, and chart the progress of the dye moving through the celery stalk.
- Let the students see the colored celery and examine the pores. The colored water models minerals in groundwater that fill porous material when it is buried. In nature, those minerals can sometimes harden before the organic parts of the organism rot, which preserves the original pore structure of a plant or animal's body part. This is called petrification.
- Compare to pictures of petrified fossils at the Kentucky Geological Survey's **pictures of different fossil types.**