



## Curiosity Guide #206

### Liquid Forces

Accompanies Curious Crew, Season 2, Episode 6 (#206)

#### Colored Celery

Investigation #10

#### Description

Change the color of a vegetable through the principle of capillary action!

#### Materials

- Fresh stalk of celery
- Green food coloring
- Glass of water

#### Procedure

- 1) Add water to the dish. Fill it about  $\frac{1}{4}$  full.
- 2) Add enough food coloring to make the water dark green.
- 3) Cut the bottom of the celery so that it is straight and flat.
- 4) Stand the celery up in the solution.
- 5) Leave the celery in the solution for 24 hours.
- 6) What do you notice?

#### My Results

## Explanation

The celery stalk has tiny tubes that travel up through it. Air pressure in the room presses down on the water. The water then begins to climb up those tubes using **adhesion** and **cohesion**. Water sticks to the celery molecules because of adhesion. Water molecules follow and stick to other water molecules because of cohesion.

The process of moving liquids by adhesion and cohesion is called **capillary action**. The dark green liquid made it to the leaves and changed their color.

**Something else to try:** This can also be done with a freshly cut carnation flower. Try using different colors of food coloring!

**More to think about:** Have you ever wondered how a plant gets water? Plants use liquid forces to have the water delivered right to them. Water that is in the soil will move and be attracted to other things, like the plant's roots. That is called adhesion. When the water droplets move toward the roots, other water droplets will follow because the droplets are attracted to each other. That is called cohesion. As the water moves up through the plant using adhesion and cohesion, we call the process capillary action. Plants sure are really dependent on liquid forces. Keep experimenting!

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