

# Flower Science

Vascular plants, like wildflowers, have a complex system used to transport water and food throughout the plant, similar to our system of veins that move blood through our bodies.

This

experiment explores the role of different tissues in the plant, while creating a beautiful bouquet!



## Key terms

Vascular Plants- plants with specialized cells, used to transport food, water, and nutrients, such as pine trees, ferns, and flowering plants

Non-vascular Plants- plants that do not have specialized transport cells, such as mosses, liverworts, and hornworts

Xylem- specialized transport cells of vascular plants that move water from roots to the rest of the plant

Phloem- specialized transport cells of vascular plants that move food produced in the leaves to the rest of the plant

## Materials

At least 3 white (or very pale color) flowers, you can always use more if you like!

At least 3 glasses or jars to keep the flowers in

Water

Food coloring

Ruler (optional)

Scissors

Hand lens (optional)

## Procedure

1. Obtain a few white or pale color flowers (your backyard is a great place to find wildflowers, just be sure to ask permission before cutting flowers)
2. Fill each glass/jar about halfway with water, adding 3 drops of food coloring (whatever colors you want) to the water, get creative! You can use all different colors and create a rainbow bouquet, or make a bunch of the same color flowers.
3. With the scissors, and adult supervision, cut each flower stem about  $\frac{1}{2}$  inch from the bottom and place the flower in your colored water glasses/jars. At least 1 inch of the stem should be submerged.
4. Check your flowers every hour for 1 day. Make observations and be sure to write them down! See below for guidance on your observations.

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## Guiding Questions

1. Form a hypothesis: What do you think the flowers will look like after 1 day sitting in the dye? Why do you think?
2. Each hour you check your flower, measure \_\_\_\_\_ how far through the petals the dye has moved. Does the dye stop moving \_\_\_\_\_ after \_\_\_\_\_ length of time, or does the color become more intense? When did the flowers stop taking up the dye?
3. How do you think the dye is moving through the flower? Is it through the xylem or phloem?
4. Why would we suggest using white or pale color flowers? Do you think the experiment would work with darker colors, why or why not?
5. How do you think nonvascular plants move their food and water without xylem and phloem?
6. Cut a stem of a flower just as you did for your experiment. Use your hand lens to look at the cut stem, what do you see? You may be able to see the xylem and phloem organized in bundles inside the stem. It might look something like this:

## Dicot stem

