

# TRANPIRATION EXPLORATION

## Challenge

To determine if plants sweat

## Materials

- freshly picked green leaves
- plastic sandwich bags with zip closure— 1 per leaf
- hairdryer or direct sun (takes more time)

## Procedure

1. **Pick** a variety of green leaves from plants in and around your neighborhood.
2. **Place** one leaf in each sandwich bag and seal the back using the zip closure.
3. **Use** the hair dryer set on low to carefully heat the bag. Or, if you have time, place the bag in sunlight for 2-3 hours. (This alternative is of course more natural!)
4. **Examine** the surface of the inside of the bag. What do you see? Why?

## Going further

Does the amount of water in each bag differ according to type of leaf? What conclusions can you draw about the tree or plant based on this?

Watch water travel through a plant by placing a cut stalk of celery in a glass of water colored with food coloring. Let the celery sit overnight and see what happens!

## Science Scoop

*Humans lose water through skin pores in response to heat. When our bodies get hot, our bodies respond by perspiring (or sweating). Since your body needs water to survive, it is very important to stay hydrated—especially on hot days.*

*Plants also need water to survive. Plants put down roots into the soil to draw water and nutrients up into the stems and leaves. Not unlike people, some of the water consumed by plants is also returned to the air. In plants this process is called **transpiration**.*

*In transpiration, water leaves plants through small pores (called **stoma** or **stomata-pl**) on the underside of leaves, where the water is changed to vapor and released into the atmosphere.*

*Transpiration rates vary widely depending on weather conditions. If it is hot, transpiration rates go up. Air temperature cause the stomata on the plants to open, so if it is hot plants will lose more water. If the air is humid, plants will lose less water. Wind and air movement also cause plants to loose more water.*

*Most of the time, plant transpiration is pretty much an invisible process. Even though you can't see the process happening, the loss of water from plants through transpiration is an important part of the **water cycle**. Scientists believe that about 10% of the moisture found in the atmosphere comes from transpiration.*

