



Challenge: DIFFUSION IN THE KITCHEN

The Scoop: Diffusion is the process in which small particles move across a porous barrier from a level of high concentration to low concentration (this is called a *gradient*). Diffusion happens everywhere; from gases mixing in the air we breathe to molecules passing across cell membranes in our bodies. In this challenge, you'll experiment with different types of concentrated liquids and observe diffusion happening right in your kitchen!

What You'll Need:

- A bowl or small pot
- Zip-close plastic sandwich bags
- Salt
- Sugar
- Food coloring
- A tablespoon

The Challenge: You'll be setting up gradients in the kitchen and letting particles diffuse across a plastic bag "membrane."

1. Fill a plastic bag about $\frac{1}{2}$ way with water and zip it closed.
2. Add 3-4 drops of food coloring and add it to the bag, then close it again and shake gently to mix. Make sure the bag is completely closed!
3. Place the bag into the bowl or pot, and add enough tap water to fully cover the bag.
4. Leave the bowl on the counter for 24 hours.
5. After 24 hours, note what you see; what does the water inside the bag look like? In the bowl?
6. Repeat the experiment, but this time, add 3 tablespoons of sugar or salt to the bag instead of food coloring; after 24 hours, taste the water in the bowl and inside the bag and note your results; did anything change?

Stuff to Think About:

- Since the plastic bag was completely closed, what do you think happened to cause the change you saw?
- What kinds of particles might be important to diffuse across a cell membrane into or out of our body's cells?