



# COLOR DANCING MILK

By Scarlett & Mr. Bear

You've possibly heard the phrase "opposites attract" before. But did you know that there's more to the story? Not only do opposites attract, but "sames repel." That is a common pattern we see in science with magnets and electricity.

It's true. All substances are made up of tiny little lumps of matter, called molecules. And molecules are made up of even tinier particles called atoms. Those atoms contain even smaller particles that have positive and negative charges. Opposite charges—positive and negative—attract each other, while the same charges repel, or push away. These push and pull forces between charges cause molecules to move. And in this experiment, we're going to observe some molecular movement in a very fun and colorful way! The charges in the milk, soap, and food coloring in this experiment are going to interact, resulting in forces that will get the colors moving. **Happy experimenting!**

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## Materials



- a deep plate with rim
- dish soap
- food coloring
- milk
- a small paper cup
- cotton swab

2

## Pour in Milk



Fill the plate with milk until the entire surface is covered. It doesn't have to be very deeply filled.

3

## Add Color



Holding the food coloring close to the surface of the milk, slowly add a few drops of one of the colors near the center of the circle.

4

## Add More Color

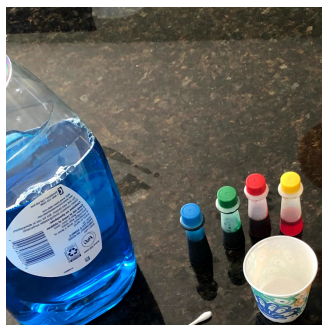


Add additional food coloring spots to the surface of the milk—as many as you'd like!

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5

### Add Soap to Cup



Pour some dish soap into the paper cup so that the cotton swab can be dipped to coat it.

6

### Dip the Swab



Dip the cotton swab into the dish soap so that the tip is covered. Let any excess drip off before removing.

7

### Move the Swab



Bring the cotton swab with the soap near the surface of the milk but don't touch the milk with it yet.

8

### Count Down!



Regardless of where the cotton swab is, or how much food coloring you used, count down 3, 2, 1 before touching the milk.

**Be sure to take a before picture!**

9

### Touch the Milk



Gently touch the dish soap to the surface of the milk, but don't dunk the cotton swab. Watch what happens as the colors move away from the soap!

**Be sure to take an after picture!**

✓

### Repeat!



You can redip a dry end of a cotton swab in more soap and touch it to another spot on the plate to make patterns. Try holding it to the surface for a longer time to see what happens.

## Time to Share!

When you make your color-dancing milk, you can try different arrangements of the food coloring dots on the milk, and different touchdown spots for the soap on the cotton swab, to produce different color patterns.

Then, head over to the American Chemical Society for extension ideas to try, and to learn about what's going on in this experiment, at: [j.mp/colormovement](http://j.mp/colormovement)

Scarlett & Mr. Bear would LOVE to see your design! Share your experiment photos & videos to our [@ScienceWithScarlett Facebook Page!](#)

