

# Troop Leader Resources

*Home Scientist Badge Program*



**The Tech**  
Museum of Innovation

201 S. Market St.  
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## Lab Summary

Science is all around us! Brownies begin by making raisins and pepper dance using the amazing properties of density and electricity. Next, they become kitchen chemists and use every day pantry items to experiment with delicious treats and blow up a balloon using no breath. Finally, Brownies will learn how science can be used to make toys by making their very own silly putty! (This program includes all 5 steps in the Home Scientist Badge and includes the badge).

## Grade Level: 2-3 (Brownies)

### Badge Outcomes:

1. Girls will become kitchen chemists and use a chemical reaction to create ice cream
2. Girls will create static electricity using balloons to make pepper “dance.”
3. Girls will dive into density by making raisins float, then sink, then float again.
4. Girls will make something bubble up by blowing up a balloon without using any breath.
5. Girls will play with science by making their own Silly Putty.

### Estimated Time: 2 hours

- Introduction: 5 minutes
- Activity 1 – “Create Static Electricity”: Make pepper “dance” and “bend water”: 10 minutes
- Activity 2 – “Dive into Density”: Dancing Raisins: 10 minutes
- Activity 3 – “Make Something Bubble Up”: Blow up a balloon without using your breath: 15 minutes
- Activity 4 – “Play with Science”: Homemade Silly Putty: 30 minutes
- Activity 5 – “Be a Kitchen Chemist”: Make your own ice cream: 40 minutes
- Clean-up and Wrap-up: 10 minutes

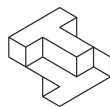
### Girl Scout Badge Connections:

Brownie Home Scientist Badge, *It's Your World-Change It! Brownie Quest*

- Step 2: Create Static Electricity-Make pepper “dance”
- Step 3: Dive into Density-Dancing raisins
- Step 4: Make Something Bubble Up-Blow up a balloon without using your breath
- Step 5: Play with Science-Homemade Silly Putty
- Step 1: Be a Kitchen Chemist-Make your own ice cream

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## Pre-Visit Vocabulary

These are words and concepts that we will discuss in the lab. Your students' experience will be enhanced if they are familiar with these terms prior to your visit.

- Static electricity: an electrical charge built up in an item due to friction.
- Friction: rubbing one surface on another.
- Particle: a very tiny piece.
- Attract: to pull closer.
- Repel: to push away.
- Density: how close together the molecules of an object are in their set space. i.e. an inflated balloon has gas molecules in it that are very far apart. Water has molecules that are more close together. When an inflated balloon is in a swimming pool, it floats because the molecules in the balloon are more spread out than the molecules in the water. The balloon has less density than the water.
- Carbon dioxide: a gas composed of carbon and oxygen; the air that we breathe out.
- Matter: what everything is made of; exists in three states: solid, liquid, and gas.

## **Post-lab Activities:**

Since this lab does all five steps of the badge, there are no post-visit activities. However, we have included a few links for additional information on some of the activities that were done in the lab. We also recommend trying out some of the other activity options listed in the Home Scientist Badge Booklet.

- Step 2: Create Static Electricity
  - Head to <http://wonderopolis.org/wonder/what-is-static-electricity> for a basic explanation of what static electricity is as well as some more fun activities using static electricity.
  - This Bill Nye clip gives a brief explanation of static electricity with a fun demonstration. <https://www.youtube.com/watch?v=Z-77IzaXGcg>
- Step 3: Dive into Density
  - This YouTube video has a great and simple explanation of density and why things sink or float. <https://www.youtube.com/watch?v=dcQR6vV1Sgo>
  - Here is another great activity on density. Try layering different liquids in a cylinder to see which is more or less dense than the other. <http://www.kiwicrate.com/projects/Rainbow-Density-Cylinder/737>
- Step 1: Be a Kitchen Chemist
  - Try out different flavors of ice cream in a bag. Different flavors can be made by trying different flavored extracts or adding fruit and other toppings half-way through the shaking process. You can also try using flavored milk!