

## Role of the Heart (STEM activity)

**Purpose:** The heart muscle is about the size of a fist and pumps blood through veins and arteries. In this activity students learn about the action of a pump and the pressure differences between clean and clogged arteries.

**Discussion:** Fat is a part of a diet which can be good for our brain and for energy. However, some fats are better than others for our heart. While many things can cause heart problems, the cholesterol (LDL) found in animal fats is an important contributing factor that we can control through a healthy diet. LDL smears and sticks to the walls of our blood vessels and causes blockages. Good Cholesterol (HDL) found in plants like olives, olive oil, nuts, avocados and fish, for example, help remove LDL from our body.



**Lesson:** Using a small water bottle, demonstrate pumping water through an empty straw and a clogged straw to simulate issues of cholesterol and damage to arteries.

<b>Supplies:</b>	Dish pan	Empty Milk gallon for water	Empty small water bottles
	Playdoh	Plastic drinking straws that bend	Toothpicks
		Paper towels	Blood Pressure device

### Instructions:

Provide students with small empty water bottle, 1 straw, and playdoh or modeling clay. Have students fill the bottle with water and build a pump as shown in the picture using the playdoh and straw. It is easiest to wrap the straw with playdoh to create the lid.

When complete, the squeezing action forces water through the straw. Collect the water in a bucket, bowl, dish pan or aluminum pan.

Have students add a small amount of playdoh into their straw. Use a tooth pick to position the “clog”. After creating the plug, have students use their water pump.



**Questions:** *What is PRESSURE? Give examples of where you might measure Pressure.*

Pressure is a force on something else. Squeeze an arm or a bottle applies pressure or force. The heart muscle squeezes and that action places pressure forcing blood through the veins and arteries of the body. Common things you might measure for pressure... bicycle and car tires, blood pressure.

**How are the two pumps different? How do you think a blockage affects the heart?**

Have students describe how they worked and describe how they felt different. The clogged pump required more WORK or PRESSURE to move water through the straw. A clogged artery would require the heart to work harder to move blood through the body.