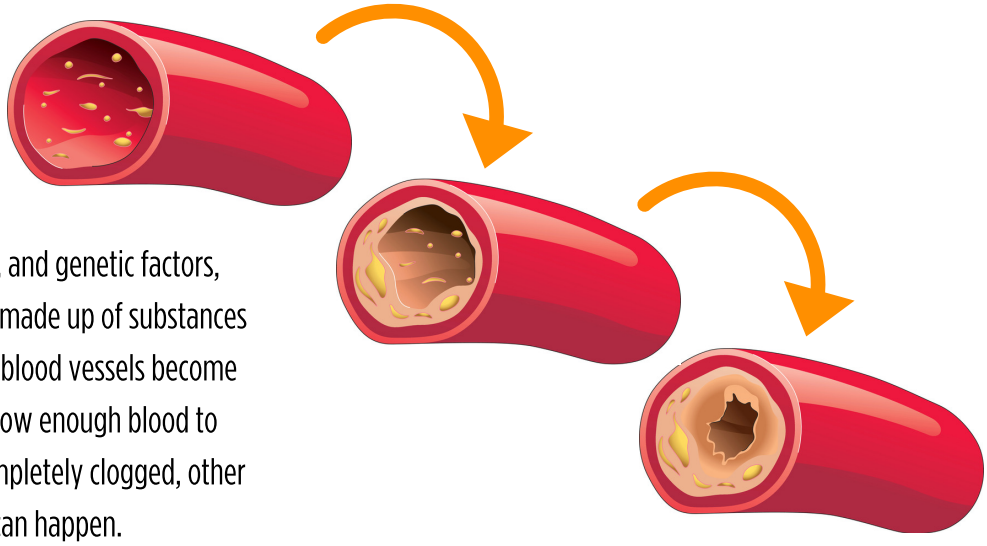
When Blood Vessels Get Clogged



Plaque Build Up

Over time, due to poor diet, lack of exercise, and genetic factors, plaque builds up in blood vessels. Plaque is made up of substances found in blood. When plaque builds up, the blood vessels become narrower. Narrower blood vessels do not allow enough blood to pass through. If a blood vessel becomes completely clogged, other heath problems, like the ones listed below can happen.

Heart Attack

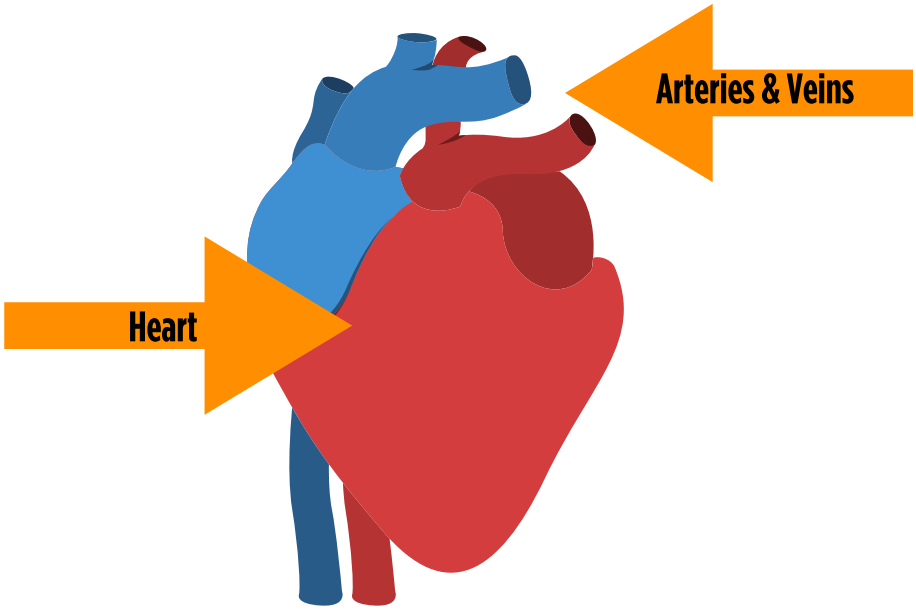
When a blood vessel in the heart becomes clogged, a person has a heart attack.

Stroke

When a blood vessel in the brain becomes clogged, a person has a stroke.

Model of a Heart

Take a look at how the model you will create today compares to a human heart.



Testing Blood Flow Through Arteries

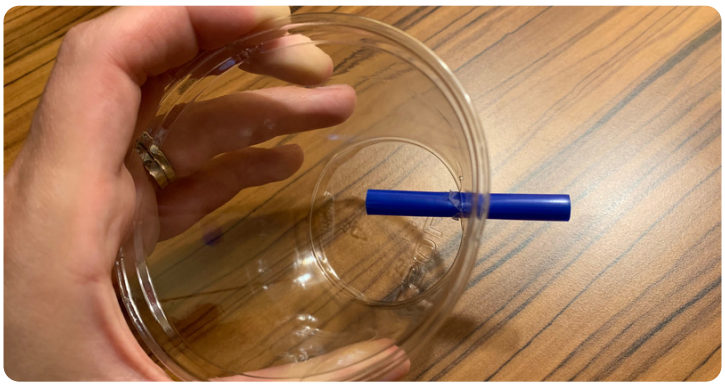
Step 1: Creating your Models

Collect materials from your teacher. You will need two straws, two cups, clay, a ruler, and scissors.

Using a ruler and scissors, cut each straw so that it is 2 inches in length.

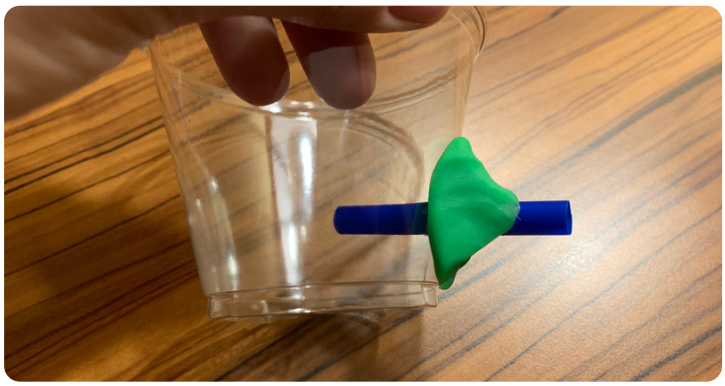
Use the scissors to carefully create a hole in both of the cups. The hole should be about a half inch from the bottom of the cup.

Insert the wider of the two straw into one of the cups. About half of the straw should be in the cup and about half of the straw should be outside of the cup.

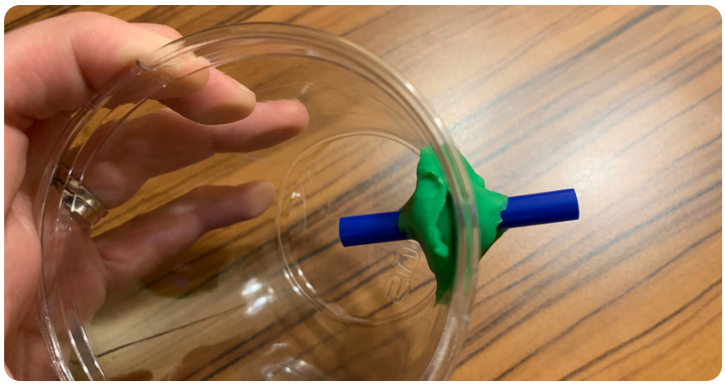


Measuring Blood Flow

Use some of your clay to stick the straw in place and seal up any extra space in the hole.

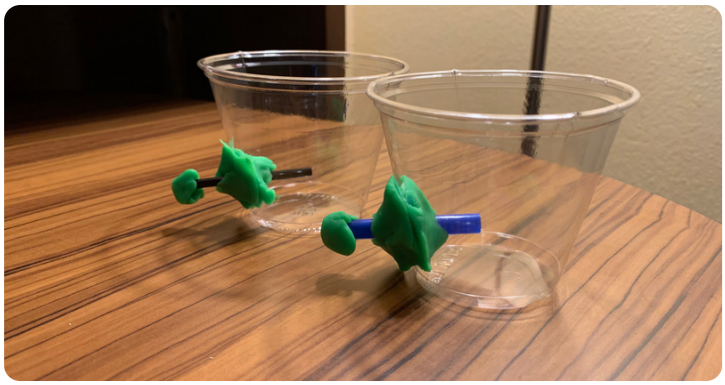


Make sure the hole is sealed on both the inside and the outside of the cup.



Repeat the steps for the narrower straw and secure it in the second cup. Note: Be careful to put the cup holes in as close to the same spot as you can.

Use remaining clay to create clay caps to seal the outside end of both straws closed. Note: You will need to be able to remove and replace the caps quickly.

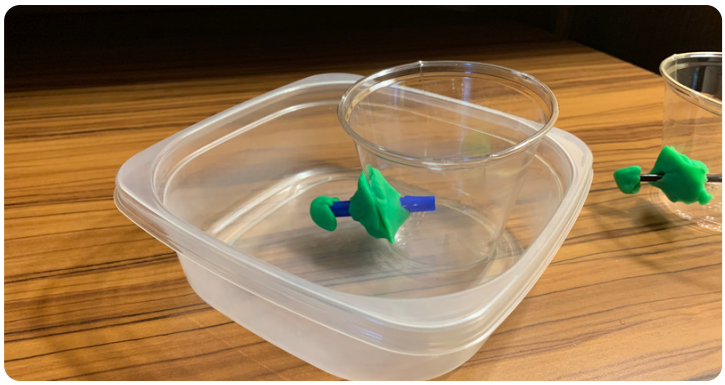


Measuring Blood Flow

STEM CAREER ADVENTURES

Step 2: Conducting Your Test

Grab a metal or plastic tray from your teacher. Place one (or both, if they fit) of your artery models in the tray.



Grab a small paper or plastic cup and use scissors to cut the cup so it is only about 1/2 an inch tall. This will be the collection cup for the “blood” that travels through your arteries.

Make sure the cup can fit under each artery. If the cup cannot fit, cut it down a little more.Note: While you are testing two arteries, you are only using one small collection cup.

Set the empty collection cup under the larger artery.Ask your teacher to fill your heart cup with "blood".

Measuring Blood Flow

Collect a stopwatch and assign a group member to be the timer. Make sure the timer knows how to work the stopwatch. When you are ready, multiple steps will need to happen at once. One partner should pull the clay cap off of the artery. One partner should start the stopwatch.

Allow the stopwatch to run until the entire collection cup is full. Once the collection cup is full, stop the timer and replace the clay cap on your artery.

- Record the time it took to fill the collection cup on your data table.
- Empty the collection cup and place it beneath the smaller artery.
- Ask your teacher to fill your heart cup with blood.
- Start the timer and remove the clay cap at the same time.
- Stop the timer when the collection cup is full and replace the clay cap.
- Record your results in the data table.

STEM CAREER ADVENTURES

Data Table

Record the results from your test below.

	Smaller Artery	Larger Artery
Time to fill collection cup		
Other Observations		

Which blood vessels allowed for faster/more blood flow?

Which heart do you think is healthier?