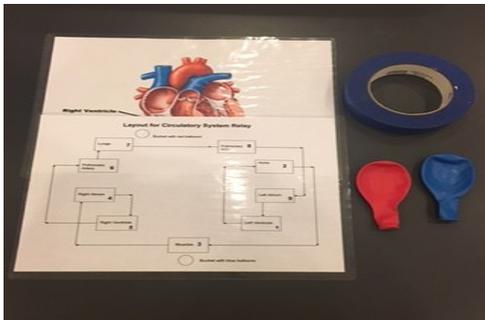


# Circulatory System

Why is important to get oxygen into your blood cells?

## MATERIALS



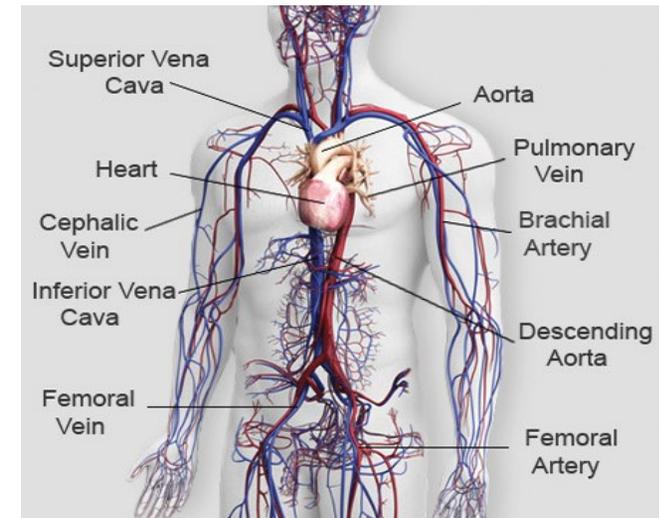
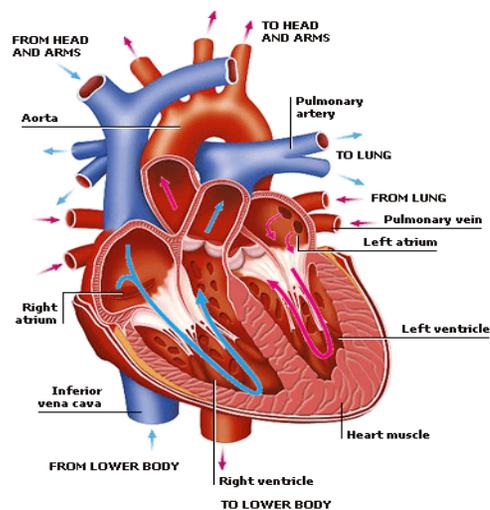
- ❖ Circulatory Relay Diagram
- ❖ Blue Painters Tape
- ❖ Red Balloons
- ❖ Blue Balloons
- ❖ Laminated Pictures of the Heart, Muscles and Lungs

## Do the Experiment!

1. Use the diagram and blue painters tape to lay out the path and parts of the heart for the circulatory relay race.
2. Place the blue balloons at the muscles and the red balloons at the lungs. Red balloons represent the oxygenated blood cells while the blue represent carbon dioxide loaded blood cells that have given away their oxygen.
3. Follow the arrows around the relay race carrying the blue balloons until you reach the lungs. Exchange your blue balloon for a red and continue around the relay race.
4. Once you have completed the relay race the next person can begin, be sure to record how long it takes each person to maneuver the relay race.
5. After the first round of races, link arms with two or three friends and try and complete the course together. You are now a blood clot. Don't let go of your friends—if you do, you have to start over. Think about why a blood clot is a dangerous thing in your body.
6. Now ask two of your friends to stand facing each other, on the tape, between the right ventricle and the pulmonary artery. Start the relay race again, but this time there is a new rule. The first person to run the race should be able to get between the two people easily. Before the next person runs, the two people should move closer together. The next runner might have to squeeze through, but they still will get through. As each runner goes, the two people should get closer together. They represent a blocked artery. How might this be a problem?
7. Have an adult show you how to check your pulse. Count how many times your heart beats in one minute. Now run the relay ten times fast. Check your pulse again. What happened?

## DID YOU KNOW...

Your heart is the most important muscle in your body. It is situated a little to the left in the center of your chest and is about the size of your fist. There are approximately 600 different muscles in your body, but the heart is so important because it constantly pumps the blood that flows to the other muscles in your body. Your blood provides oxygen and many of the nutrients your body needs as well as carry off waste that is dangerous. When you hear a heart beat what you are actually hearing is the heart filling with blood and then pushing that blood outwards. Your heart is like a pump, or two pumps in one. The right side of your heart receives blood from the body and pumps it to the lungs. The left side of the heart does the exact opposite: It receives blood from the lungs and pumps it out to the body. A normal resting pulse for adults is 60-100 beats per minute while an active pulse rate averages 100-170 beats per minute.



## CHALLENGE

1. Diagram and label all of the parts of the human heart. The diagram above can assist you.
2. Which body system(s) requires the oxygen that the circulatory system delivers?
3. What are some diseases that occur in the circulatory system?

**STEAM Challenge:** On average the heart rate of a human at rest is 60-100 beats per minute. An elephant's heart rate is 25-35 beats per minute. What is the difference in heart rate between an elephant and human? A mouse has a heart rate of 450-750 beats per minute! What is the difference in heart rate between a human and a mouse?