

Heart Dissection



Learning Objectives

- Human body systems have basic structures, functions, and needs.
- Students will understand the parts and functions of the heart and circulatory system.

State Standards Addressed

- 4th grade – Colorado State Life Science Standard 1: All living things share similar characteristics, but they also have differences that can be described and classified.
- 5th grade – Colorado State Life Science Standard 1: All organisms have structures and systems with separate functions.
- 5th grade – Colorado State Life Science Standard 2: Human body systems have basic structures, functions, and needs.
- 6th grade – Colorado State Life Science Standard 1: Changes in environmental conditions can affect the survival of individual organisms, populations, and entire species.
- 7th grade – Colorado State Life Science Standard 2: The human body is composed of atoms, molecules, cells, tissues, organs, and organ systems that have specific functions and interactions.
- 7th grade – Colorado State Life Science Standard 4: Photosynthesis and cellular respiration are important processes by which energy is acquired and utilized by organisms.
- 8th grade – Colorado State Life Science Competency: Analyze the relationship between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection.

Important Heart Facts and Vocabulary

The Importance of the Heart: Just like a city with alleys and roads, your body has blood vessels, arteries and veins that help move things around. Most of the cells inside of your body do not move. If a cell is hungry or needs to get rid of waste, it can't simply move itself to the part of your body where it needs to go. Instead, your body must bring the food to your cells and take the waste away from them. Using billions of tiny tubes, your body is constantly pumping blood throughout your body. On the way through your body, your blood is loaded with the things that your body needs, like food, oxygen, and other chemicals. On the way back, your blood is full of things that the cells of your body need to get rid of, like waste or carbon dioxide. The job of your heart is to pump blood through your body.

Four-chambered heart: Your heart is divided into two sides separated by a septum. The left side of your heart is filled with oxygen-rich blood, while the right side of your heart is filled with oxygen-poor blood. Each side of your heart is further broken into two chambers known as the atrium and the ventricle. Each side of the heart has an atrium and a ventricle for a total of four

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chambers. Essentially, all mammals have hearts with four “rooms” in them: the right atrium, right ventricle, left atrium, and left ventricle.

Aorta: the largest artery in the body, originating from the left ventricle of the heart and extending down to the belly. It carries oxygen-rich blood to all parts of the body through systemic circulation.

Artery: the blood vessels (tubes) that carry blood away from the heart.

Left Atrium: Oxygen-rich blood comes from your lungs and enters this “room” (chamber) of your heart before it passes into the left ventricle.

Left Ventricle: Oxygen-rich blood comes into this “room” (chamber) and your powerful heart then pumps oxygen-rich blood out of it, through the aorta, and all throughout the body.

Pulmonary Circulation: One phase of the circulatory/vascular system, this is the movement of blood from the heart, to the lungs to drop off carbon dioxide and fill up with oxygen, and back to the heart again.

Right Atrium: This “room” (chamber) takes in the oxygen-poor blood after it has gone through your body delivering oxygen. The right atrium then pumps the blood into your right ventricle.

Right Ventricle: This “room” (chamber) pumps the oxygen-poor blood to your lungs, where your blood again fills up with oxygen and returns to your heart in the left atrium.

Systemic Circulation: One phase of the circulatory/vascular system, this is the movement of nourishment (oxygen-rich blood) from the heart, to all of the tissue located throughout your body, and back to the heart with oxygen-poor blood.

Vein: the blood vessels (tubes) that carry blood towards and into the heart.

Vena Cava: the large vein that carries de-oxygenated blood from the lower half of the body into the right atrium of the heart.

Optional (and Highly-Recommended) Pre- and Post-Lab Activities

Circulatory/Vascular System Rap: Visit the website below to listen to a song that offers a brief and fun overview of what the circulatory system is all about.

http://teachertube.com/viewVideo.php?title=Circulatory_System&video_id=196915

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Vocabulary Review: Label a ball with the following words:

- right atrium
- right ventricle
- left atrium
- left ventricle
- lungs
- systemic circulation
- pulmonary circulation
- oxygen-rich blood
- oxygen-poor blood
- blood
- circulatory system
- heart
- artery
- vein
- aorta
- vena cava

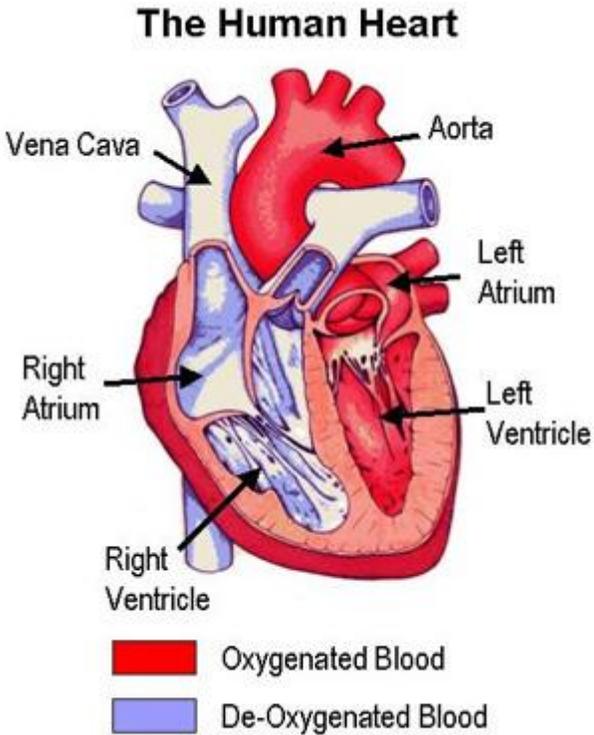
Have students stand in a circle and toss the ball across the circle to a friend. The friend selects one of the words that their fingers are touching and describes the meaning of the word.

Heart-isms: Invite kids to look up idioms or fun facts about the heart and circulatory system to share with their classmates.

How Hard the Heart Works: The heart pumps 2½ ounces (70.8 grams) of blood at every beat. That's almost a gallon a minute, a quarter cup at a time. Have a student use a quarter cup measuring cup to transfer a gallon of water from one bucket into another (or into a sink) to see if he/she can do it. It's tough, and it's an indicator of how hard the heart works, even when you're just sitting.

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Heart Drawing: Kids can label the blank heart diagram below, draw arrows showing the flow of blood, and color the heart to show when the blood has lots of oxygen, and when it doesn't.



1. Label the heart diagram with the following words:
 - right atrium
 - right ventricle
 - left atrium
 - left ventricle
 - artery
 - vein
 - aorta
 - vena cava
2. Find the two chambers, or “rooms” that hold oxygen-rich blood from the lungs and color them red.
3. Find the two chambers, or “rooms” that hold oxygen-poor from the body blood and color them blue.
4. Draw a red arrow showing the direction that oxygen-rich blood flows through the heart.
5. Draw a red arrow showing the direction that oxygen-rich blood flows through the heart.

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