

Teacher's Guide for "Flow Blood Flow"

CT State Standards	National Science Standards
<p>C.16 Describe the Structure of the human digestive, respiratory and circulatory systems, and explain how they function to bring oxygen and nutrients to the cells and expel waste materials</p>	<p style="text-align: center;">Structure and Function in Living Systems</p> <p>The human organism has systems for digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination, for protection from disease. These systems interact with one another.</p>

- I. Vocabulary covered in "Flow Blood Flow"
 1. Artery – vessels which blood away from the heart
 2. Capillaries – tiny vessels (1 cell thick) which exchange carbon dioxide and oxygen
 3. Vein – vessels which carry blood back to the heart
 4. Atrium – the chambers of the heart that receive blood
 5. Ventricles – the chambers of the heart that pump blood out to the lungs and body
 6. Plasma – liquid part of blood
 7. White Blood Cells – blood cells which fight infection
 8. Platelets – cells responsible for forming blood clots
 9. Red Blood Cells – cells responsible for carrying oxygen

- II. Understanding the Cardiovascular System Concepts in "Flow Blood Flow"
 - A. The Purpose of the Cardiovascular System
 1. The refrain of the song explains the purpose of the cardiovascular system is to exchange gases with the lungs and to carry nutrients to the cells.

 - B. The Path of Blood (verse 1)
 1. Verse 1 of the song summarizes the path of blood. In the first loop, Blood travels via arteries to the lungs where oxygen is picked up and carbon dioxide is given away. This exchange takes place in the capillaries.

 2. In the second loop, the blood then travels back on a vein to the heart where it gets pumped out to the cells where it gives away its oxygen and picks up carbon dioxide.

 - C. The Components of Blood (Verse 2)

1. The second verse of the song addresses the major components of blood.
2. The major components are:
 - a. Plasma – liquid part of blood
 - b. White blood cells – fight infection
 - c. Platelets – form blood clots
 - d. Red blood cells – carry oxygen

D. Heart Rate and Exercise

1. The last part of verse 2 expresses the fact that heart rate increases when completing exercise. Heart rate will increase or decrease depending upon the activity or situation.

Student Worksheet for "Flow Blood Flow"

I. Match the following terms with the correct definition.

- | | |
|--------------------------|---|
| 1. ___ Artery | A. Chamber of the heart that pumps blood out |
| 2. ___ Vein | B. Liquid part of blood |
| 3. ___ Atrium | C. Fight infection |
| 4. ___ Ventricle | D. Form blood Clots |
| 5. ___ Capillaries | E. Vessels that carry blood away from the heart |
| 6. ___ White Blood Cells | F. Vessels that carry blood toward the heart |
| 7. ___ Red Blood Cells | G. Tiny vessels that exchange gases |
| 8. ___ Platelets | H. Chamber of the heart that receives blood |
| 9. ___ Plasma | I. Carry oxygen to cells |

II. Short Answer Questions – answer these questions using complete sentences.

1. What is the purpose of the cardiovascular system?

2. A scientist is experimenting with heart rate.

a. In the first experiment he tests a young man lifting weights over a period of 5 minutes and measures the heart rate before the activity and after it. What do you think will happen to the heart rate during experiment 1? (explain why you think so – talk about oxygen needs of the cells)

b. In the 2nd experiment the scientist test a young woman's heart rate before and after meditating. What do you think will happen to the heart rate during experiment 2? (explain why you think so)

3. Challenge – Sketch out a heart with its chambers along with the body's cells and the lungs. Summarize what occurs in path 1 and path 2.