

Name: _____

7th grade Life Science

Circulatory System

California Science Standards:

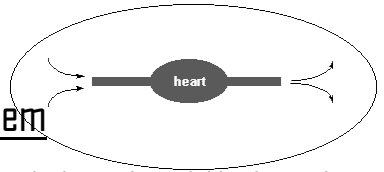
5a. Students know plants and animals have levels of organization for structure and function, including cells, tissues, organs, organ systems and the whole organism. 5b. Students know organ systems function because of the contributions of individual organs, tissues, and cells. The failure of any part can affect the entire system. 6j. Students know that contractions of the heart generate blood pressure and that heart valves prevent backflow of blood in the circulatory system. 7a. Select and use appropriate tools and technology to perform tests, collect data, and display data. 7b. Use a variety of print and electronic resources (including the World Wide Web) to collect information and evidence as part of a research project.

Inside this Lesson

How can you be so heartless!?! Organisms without a heart.	2
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Heart Anatomy—Color the areas that contain oxygen rich blood red and, for carbon dioxide rich (or oxygen poor) blood blue and label the parts. Use the names, on p. 7 to label parts.	8

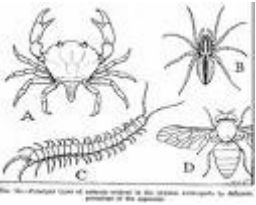


Open Circulatory System

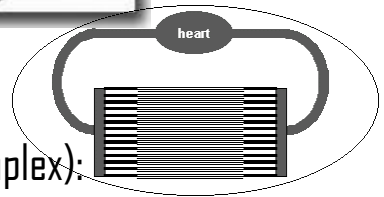


(a little more complex): Blood is pumped from the heart through blood vessels. The blood then leaves the blood vessels and fills the inside of the body. Organs are bathed in blood. There is no blood pressure in animals with open circulatory systems, and the animal moves its muscles to move blood through the body. This means the animal moves slowly so it can get enough oxygen for its cells.

Examples of animals with Open Circulatory Systems:



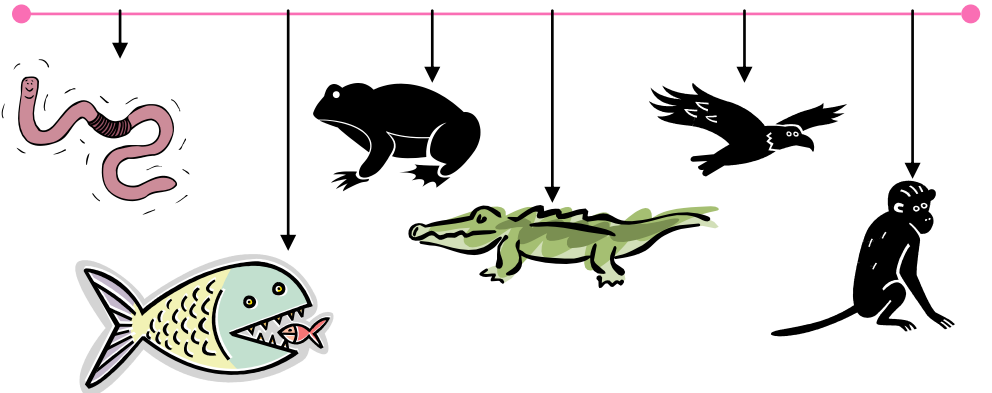
Arthropods
Most mollusks (not including cephalopods)



Closed Circulatory System (most complex):

Blood is pumped from the heart through blood vessels. Valves keep blood moving forward, as the heart pumps. This causes a strong blood pressure, oxygen is quickly carried to all of the organs. Cells inside the organs take in the oxygen and release carbon dioxide. The CO₂ goes into the blood and is taken back to the heart so it can leave the body. Examples of animals with Closed Circulatory Systems:

Segmented worms Fish Amphibians Reptiles Birds Mammals



Circulatory System

B N I N B C R X M C E U E M A

O X A I E E E R M C U R P A N

B F R I P G O L H X U Y F R I

S D J T B W Y I L S P C L G M

V Q I K D I N X S S L I A A A

X L U N S O H E O O H R T I L

E P U A D U R P S Q I C W D T

E O E E R P L E M C L U O T I

R F R N D E D L T A A L R X U

J M A O L S P H O X N A M H O

M R O W H T R A E M E T F N E

Y L S N E P O L N H Y I I A L

B D L P G V P K I T O O S I P

D N O C O M O G J A S N H R M

A C D B O N S L E S S E V A I

Z L H C Q L G K U O N Z O D S

M A M M A L F E S T J U K I K

C A R B O N D I O X I D E N P

Q A R T H R O P O D X O I C X

Words to search for:

- Amphibian
- Earthworm
- A _____ Echinoderm
- Arthropod
- Evolution
- Bird
- F _____
- Blood pres-
sure
- Flatworm
- B ____
- H _____
- Body
- Inside
- Carbon Diox-
ide
- Mammal
- C _____ Mollusk
- Circulation
- O _____
- Closed
- Organ
- Oxygen
- Cnidarian
- Reptile
- Complex
- Roundworm
- Diagram
- Simple
- Sponge
- Square pants
- Vessels

"PUMP YOUR BLOOD" SONG - VERSE ONE

Pump, pump, pumps your Blood.

The right atrium's where the process begins, where the CO₂ Blood enters the heart.

Through the tricuspid valve, to the right ventricle, the pulmonary artery, and lungs.

Once inside the lungs, it dumps its carbon dioxide and picks up its oxygen supply.

Then it's back to the heart through the pulmonary vein, through the atrium and left ventricle.

Pump, pump, pumps your Blood.

"PUMP YOUR BLOOD" SONG - VERSE TWO

Pump, pump, pumps your Blood.

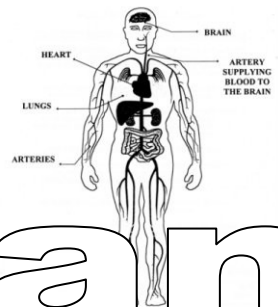
The aortic valve's, where the Blood leaves the heart, then it's channeled to the rest of the bod.

The arteries, arterioles, and capillaries too bring the oxygenated Blood to the cells.

The tissues and the cells trade off waste and CO₂, which is carried through the venules and the veins

Through the larger vena cava to the atrium and lungs, and we're back to where we started in the heart.

Pump, pump, pumps your Blood



Source: http://www.bloodbook.com/pump_your_blood.html

Human

Comparing Circulatory Systems

classification with animal picture

picture of system

gets oxygen through

open or closed

pumping organ

classification with animal picture	picture of system	gets oxygen through	open or closed	pumping organ
Birds & mammals		Lungs		heart
Reptiles				heart
Amphibians				heart
Fish		Lungs OR gills		Heart
Earth-worms		Skin		5 aortic arches
Mollusks				none
Arthropods (Insects)				none

Heart Parts

aorta - the biggest and longest artery (a blood vessel carrying blood away from the heart) in the body. It carries oxygen-rich blood from the left ventricle of the heart to the body.

inferior vena cava - a large vein (a blood vessel carrying blood to the heart) that carries oxygen-poor blood to the right atrium from the lower half of the body.

left atrium - the left upper chamber of the heart. It receives oxygen-rich blood from the lungs via the pulmonary vein.

left ventricle - the left lower chamber of the heart. It pumps the blood through the aortic valve into the aorta.

mitral valve - the valve between the left atrium and the left ventricle. It prevents the back-flow of blood from the ventricle to the atrium.

pulmonary artery - the blood vessel that carries oxygen-poor blood from the right ventricle of the heart to the lungs.

pulmonary valve - the flaps between the right ventricle and the pulmonary artery. When the ventricle contracts, the valve opens, causing blood to rush into the pulmonary artery. When the ventricle relaxes, the valves close, preventing the back-flow of blood from the pulmonary artery to the right atrium.

pulmonary vein - the blood vessel that carries oxygen-rich blood from the lungs to the left atrium of the heart.

right atrium - the right upper chamber of the heart. It receives oxygen-poor blood from the body through the inferior vena cava and the superior vena cava.

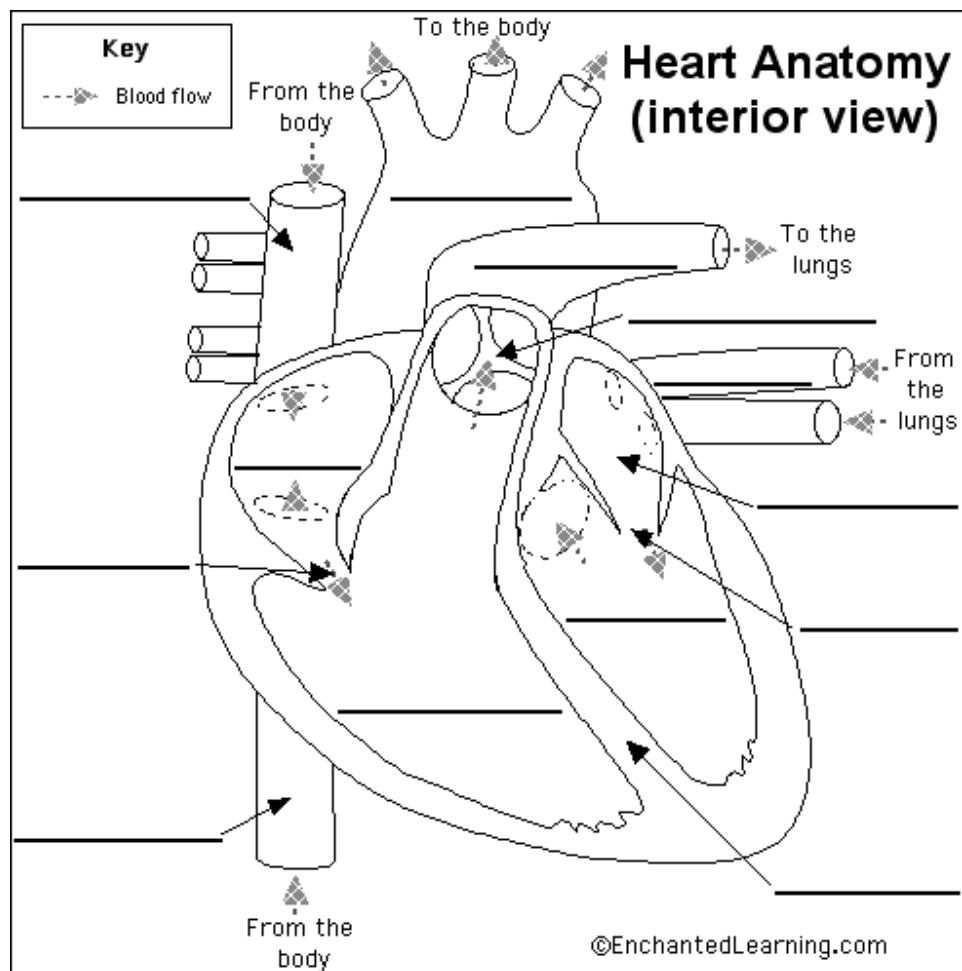
right ventricle - the right lower chamber of the heart. It pumps the blood into the pulmonary artery.

septum - the muscular wall that separates the left and right sides of the heart.

superior vena cava - a large vein that carries oxygen-poor blood to the right atrium from the upper parts of the body.

tricuspid valve - the flaps between the right atrium and the right ventricle. It is composed of three leaf-like parts and prevents the back-flow of blood from the

The heart is a fist-sized, muscular organ that pumps blood through the body. Oxygen-poor blood enters the right atrium of the heart (via veins called the inferior vena cava and the superior vena cava). The blood is then pumped into the right ventricle and then through the pulmonary artery to the lungs, where the blood is enriched with oxygen (and loses carbon dioxide). The oxygen-rich (oxygenated) blood is then carried back to the left atrium of the heart via the pulmonary vein. The blood is then pumped to the left ventricle, then the blood is pumped through the aorta and to the rest of the body. This cycle is then repeated. Every day, the heart pumps about 2,000 gallons (7,600 liters) of blood, beating about 100,000 times.



Right side of heart in your body

Left side of hear in your body