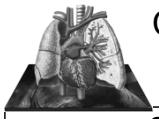
Functions

1. Transportation system by which _____, _____, _____, and _____ cells reach the body's cells, and waste materials are carried away.

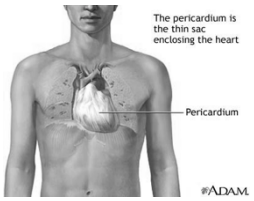
Circulation Types



_____Circulation	_____Circulation
Movement of blood from the _____, to the ____, and back to the heart again	Supplies nourishment to all of the _____located throughout the body, except for the heart and lungs
_____	_____

Pericardium

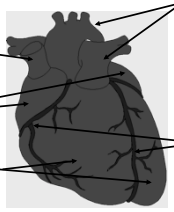
- Enclosed in a protective sac called the _____



The Heart

This is a **vein**. It brings blood from the body, except the lungs.

These are **arteries**. They carry blood away from the heart.



2 atria

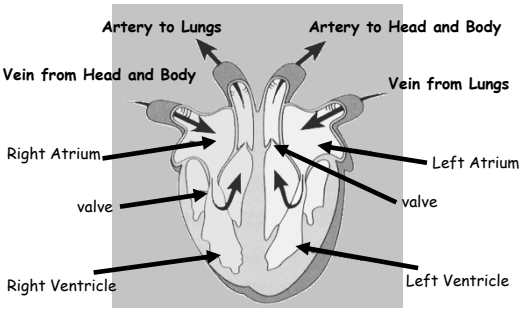
2 ventricles

Coronary arteries, the hearts own blood supply

The heart has four chambers

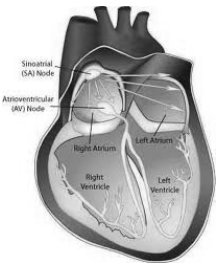
now lets look inside the heart

The Heart



Heart Beat

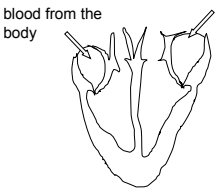
- Because the _____ paces the heart it is known as the _____.
  - Creates the electrical current that sets the pace for the heart
- The impulse spreads from the pacemaker to the rest of the atria.
- When the ventricle contracts, blood flows out.



http://www.youtube.com/watch?v=zdoSreUAthA

How does the Heart work?

STEP ONE



The heart beat begins when the heart muscles **relax** and blood flows into the atria.

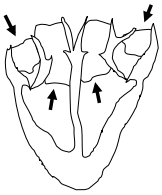
How does the Heart work?

STEP TWO

The atria then **contract** and the valves **open** to allow blood into the ventricles.

How does the Heart work?

STEP THREE

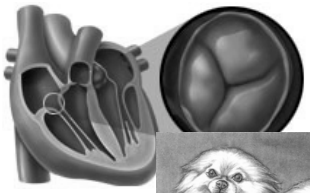


The valves **close** to stop blood flowing backwards.

The ventricles **contract** forcing the blood to leave the heart.

At the same time, the atria are **relaxing** and once again filling with blood.

The cycle then repeats itself.

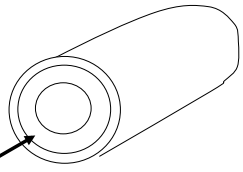


Close up of heart valve
Heart sounds are made by the valves as they open and close

http://hes.ucf.

The ARTERY

Arteries carry blood away from the heart.



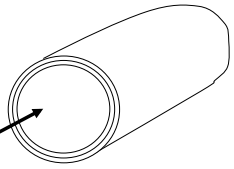
the elastic fibres allow the artery to ***stretch*** under pressure

thick muscle and elastic fibres

the thick muscle can contract to ***push*** the blood along.

The VEIN

Veins carry blood towards the heart.



veins have valves which act to stop the blood from going in the wrong direction.

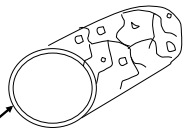
thin muscle and elastic fibres

body muscles surround the veins so that when they contract to move the body, they also squeeze the veins and push the blood along the vessel.

The CAPILLARY

Capillaries link Arteries with Veins

they exchange materials between the blood and other body cells.

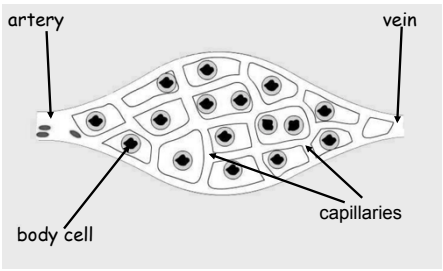


the wall of a capillary is only one cell thick

The exchange of materials between the blood and the body can only occur through capillaries.

The CAPILLARY

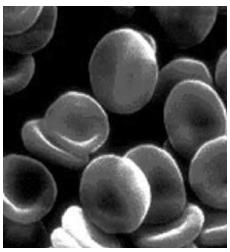
A collection of capillaries is known as a **capillary bed**.



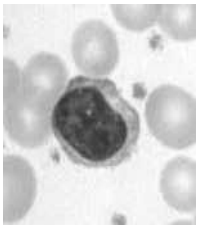
Blood

- Red Blood Cells
  - –**Function**: _____ _____
    - Most numerous type
    - Get color from hemoglobin
    - Disk shaped
    - Made in red bone marrow
    - Circulate for 120 days

About **5,000,000** Red Blood Cells in ONE drop of blood.



White Blood Cells



there are many different types and all contain a **big nucleus**.

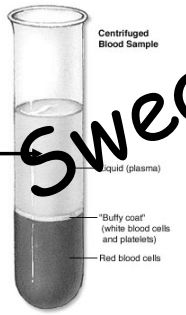
Function: Immune Cells. The two main ones are the **lymphocytes** and the **macrophages**.

macrophages 'eat' and **digest** micro-organisms .

some lymphocytes fight disease by making **antibodies** to destroy invaders by dissolving them.
other lymphocytes make **antitoxins** to break down poisons.

Plasma

A straw-coloured liquid that carries the cells and the platelets which help blood clot.



It also contains useful things like;

- carbon dioxide
- glucose
- amino acids
- proteins
- minerals
- vitamins
- hormones
- waste materials like **urea**.

Sweat!

SUMMARY

Arteries take blood _____ from the heart. The walls of an artery are made up of thick _____ walls and elastic fibres. Veins carry blood _____ the heart and also have valves. The _____ link arteries and veins, and have a one cell thick wall. Blood is made up of four main things _____, the liquid part of the blood; Red Blood Cells to carry _____; White Blood cells to protect the body from disease and _____ to help blood clot.