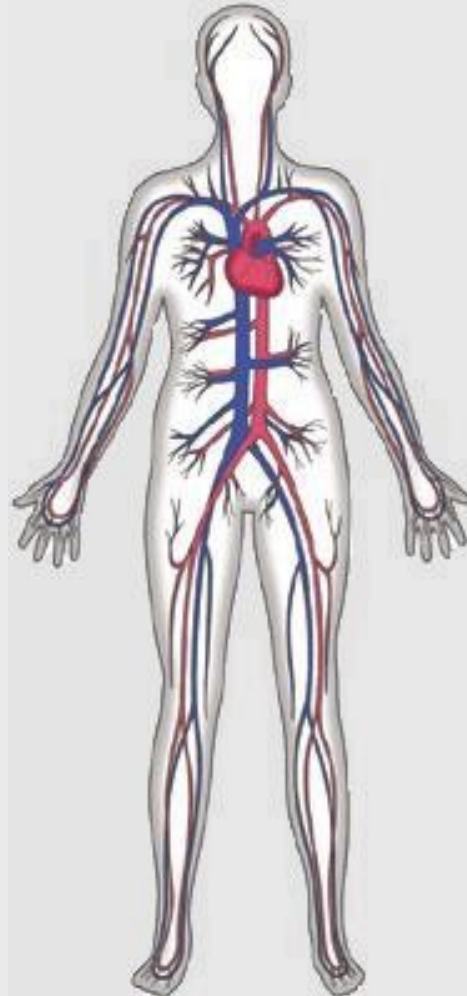


Circulatory System

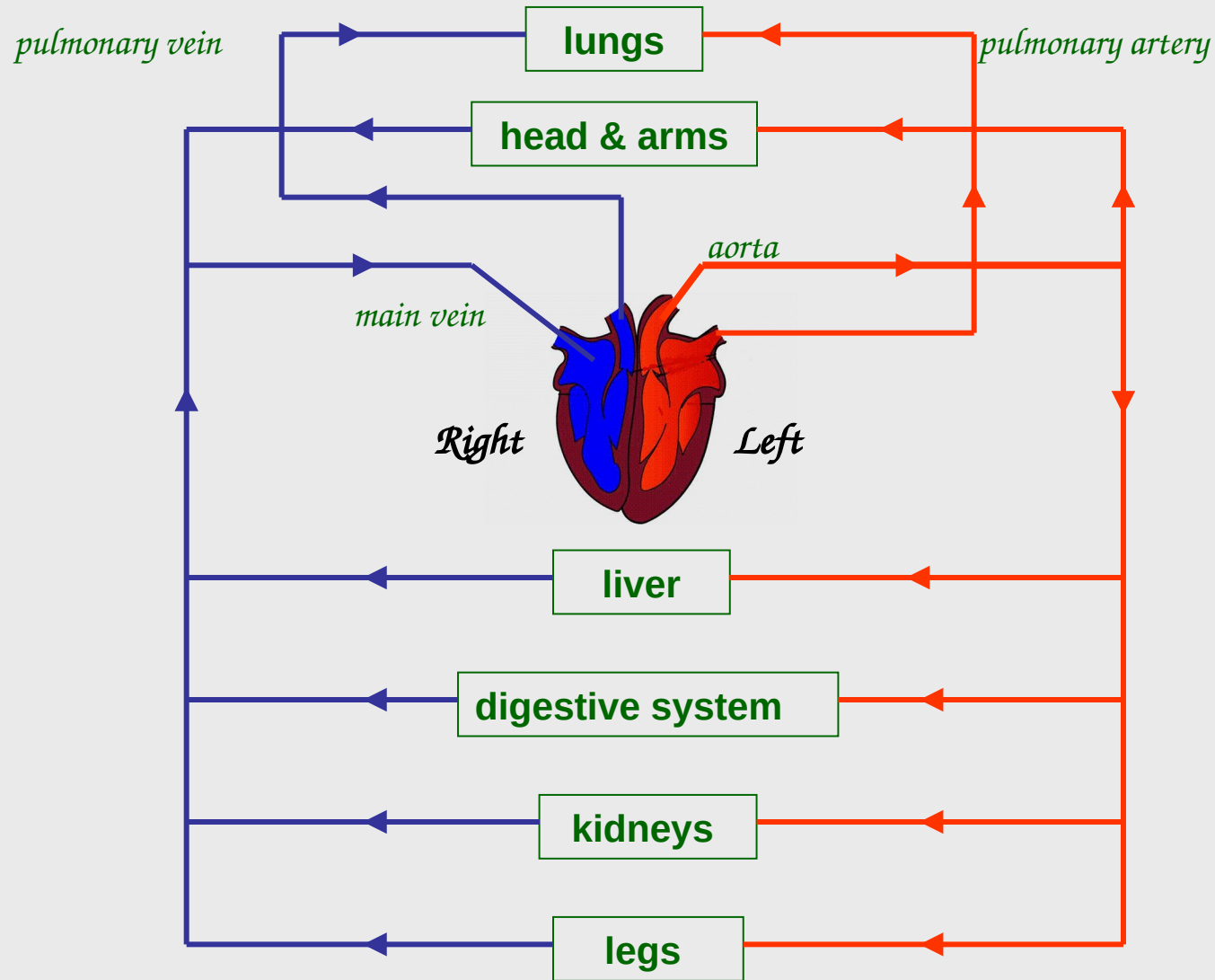


S. MORRIS 2006

What is the circulatory system?

- *The circulatory system carries blood and dissolved substances to and from different places in the body.*
- *The Heart has the job of pumping these things around the body.*
- *The Heart pumps blood and substances around the body in tubes called blood vessels.*
- *The Heart and blood vessels together make up the Circulatory System.*

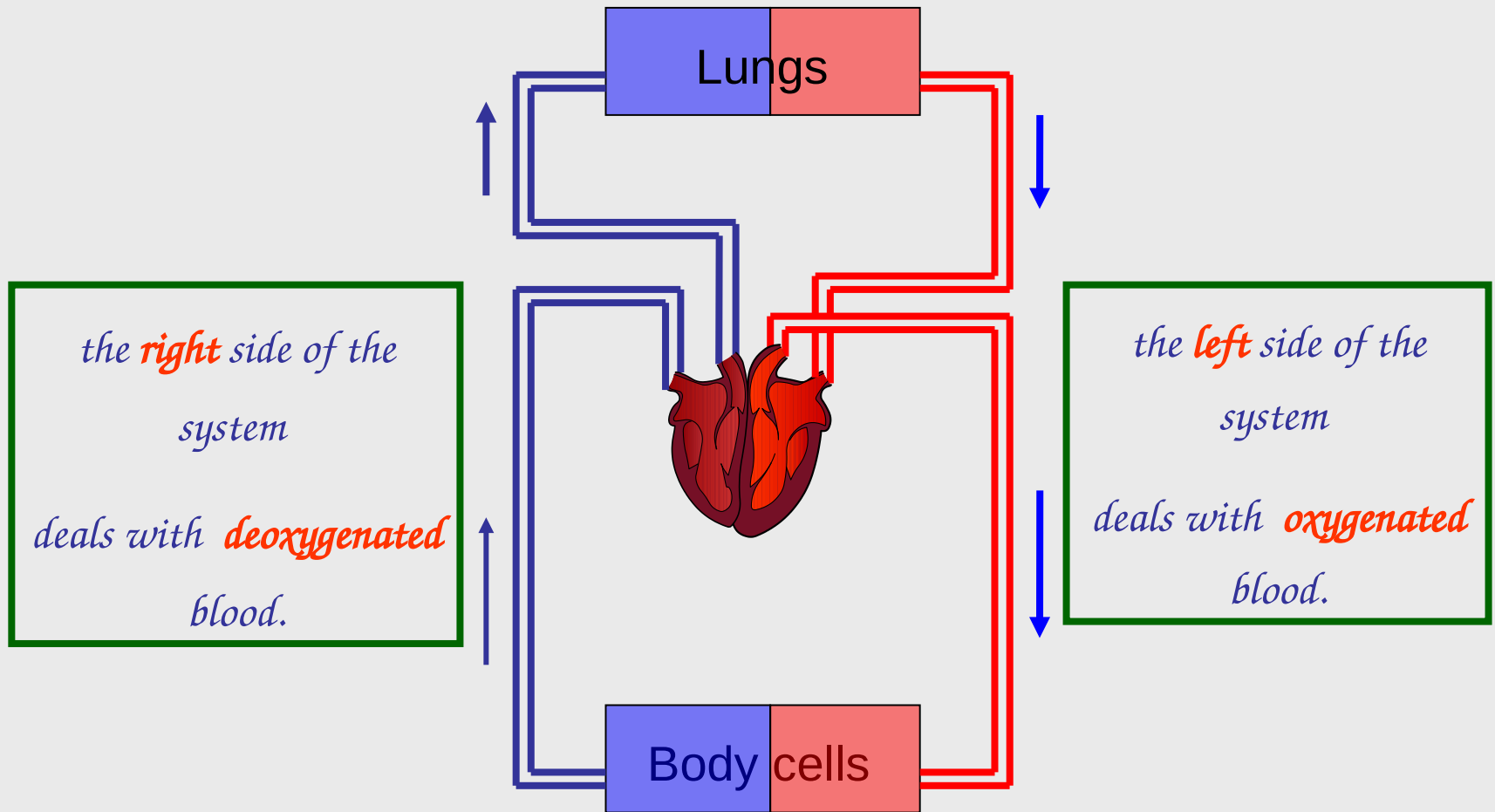
How does this system work?



Circulatory System

Our circulatory system is a double circulatory system.

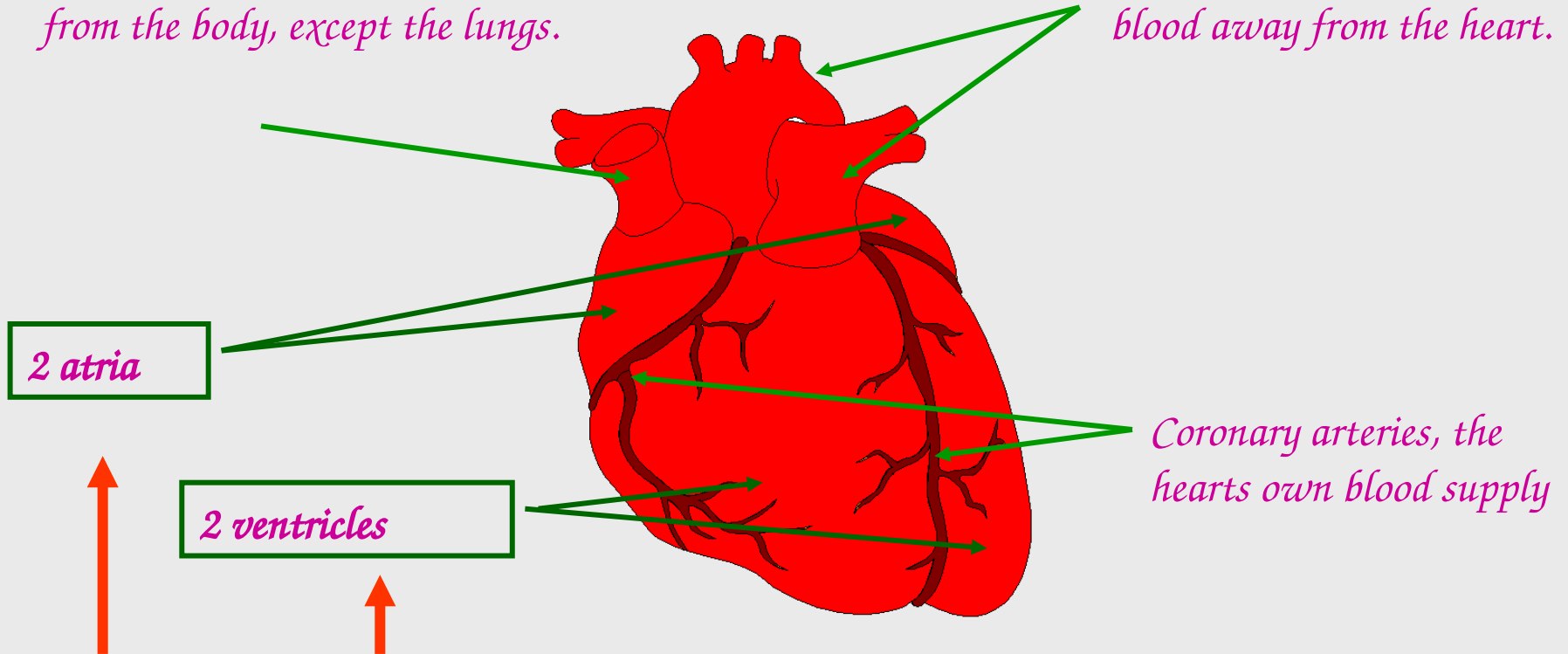
This means it has two parts parts.



The Heart

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

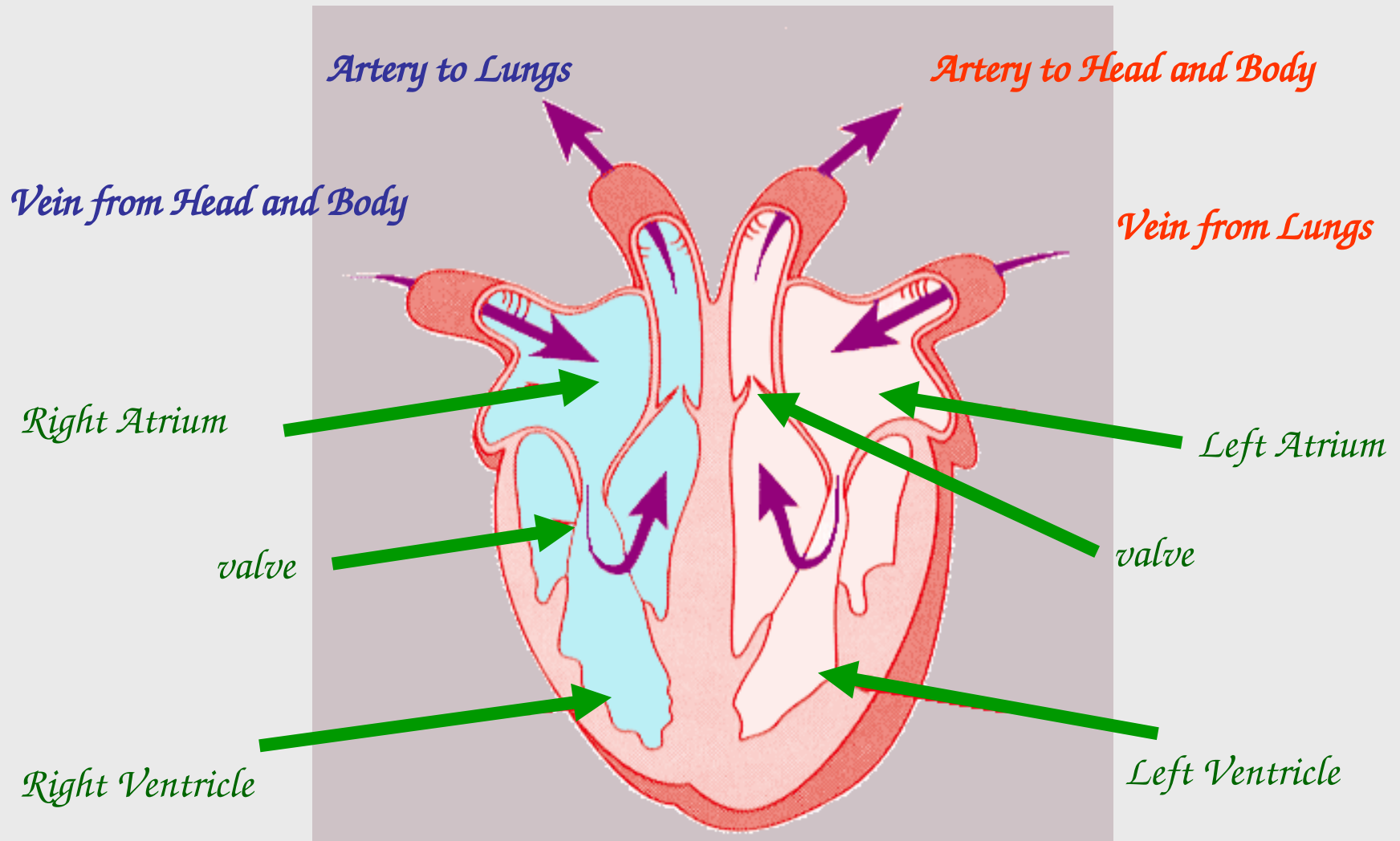
These are **arteries**. They carry blood away from the heart.



The heart has four chambers

now lets look inside the heart

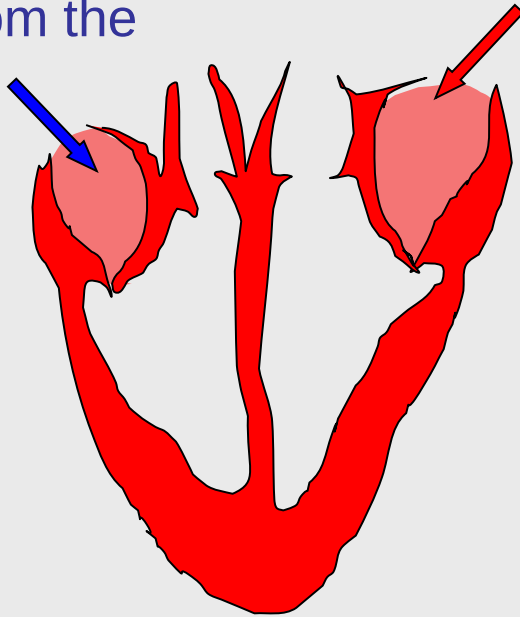
The Heart



How does the Heart work?

STEP ONE

blood from the
body



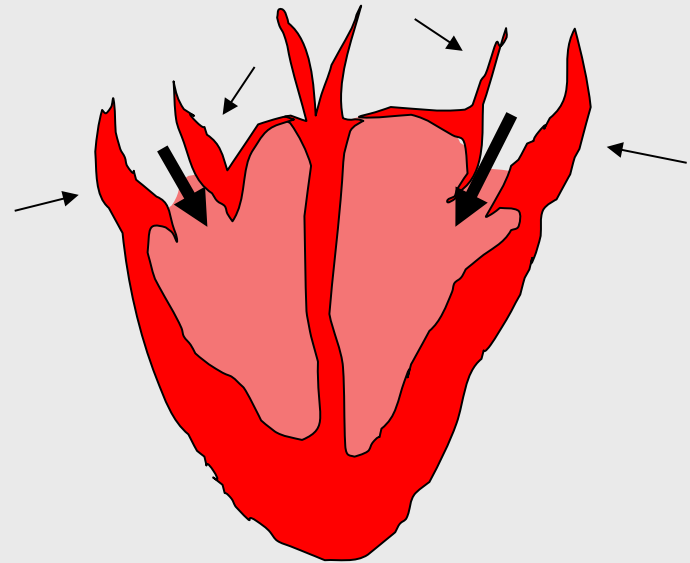
blood from
the lungs

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

How does the Heart work?

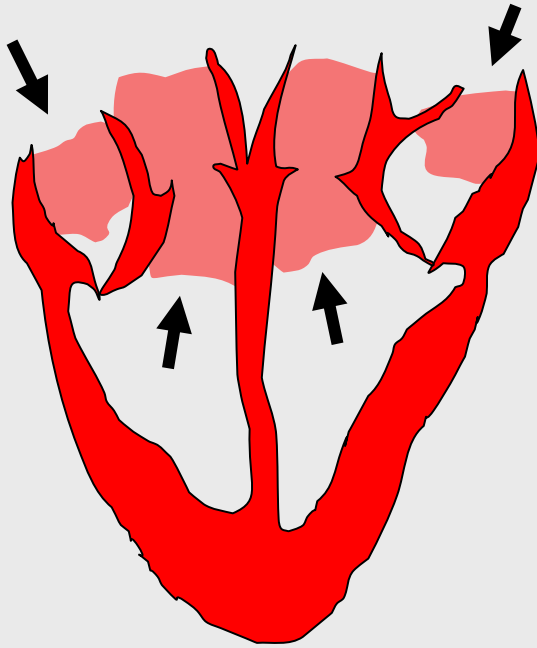
STEP TWO

*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.

*blood from the heart gets around
the body through blood vessels*

There are 3 types of blood vessels

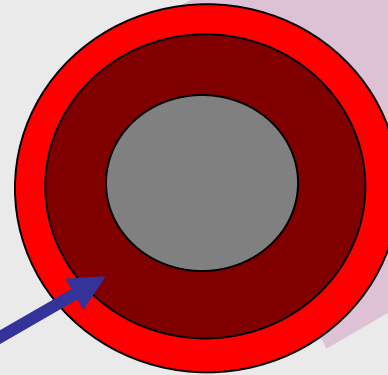
- a. ARTERY*
- b. VEIN*
- c. CAPILLARY*

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.*

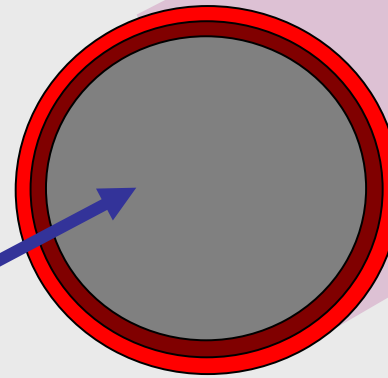
The VEIN

Veins carry blood towards from the heart.

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

thin muscle and elastic fibres

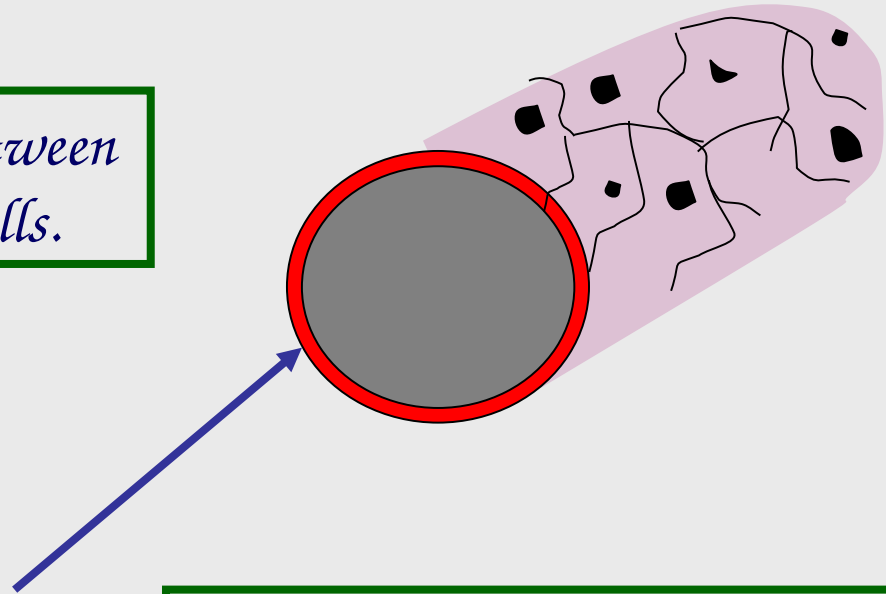
body muscles surround the veins so that when they contract to move the body, they also squeeze the veins and push the blood along the vessel.



The CAPILLARY

Capillaries link Arteries with Veins

*they exchange materials between
the blood and other body cells.*

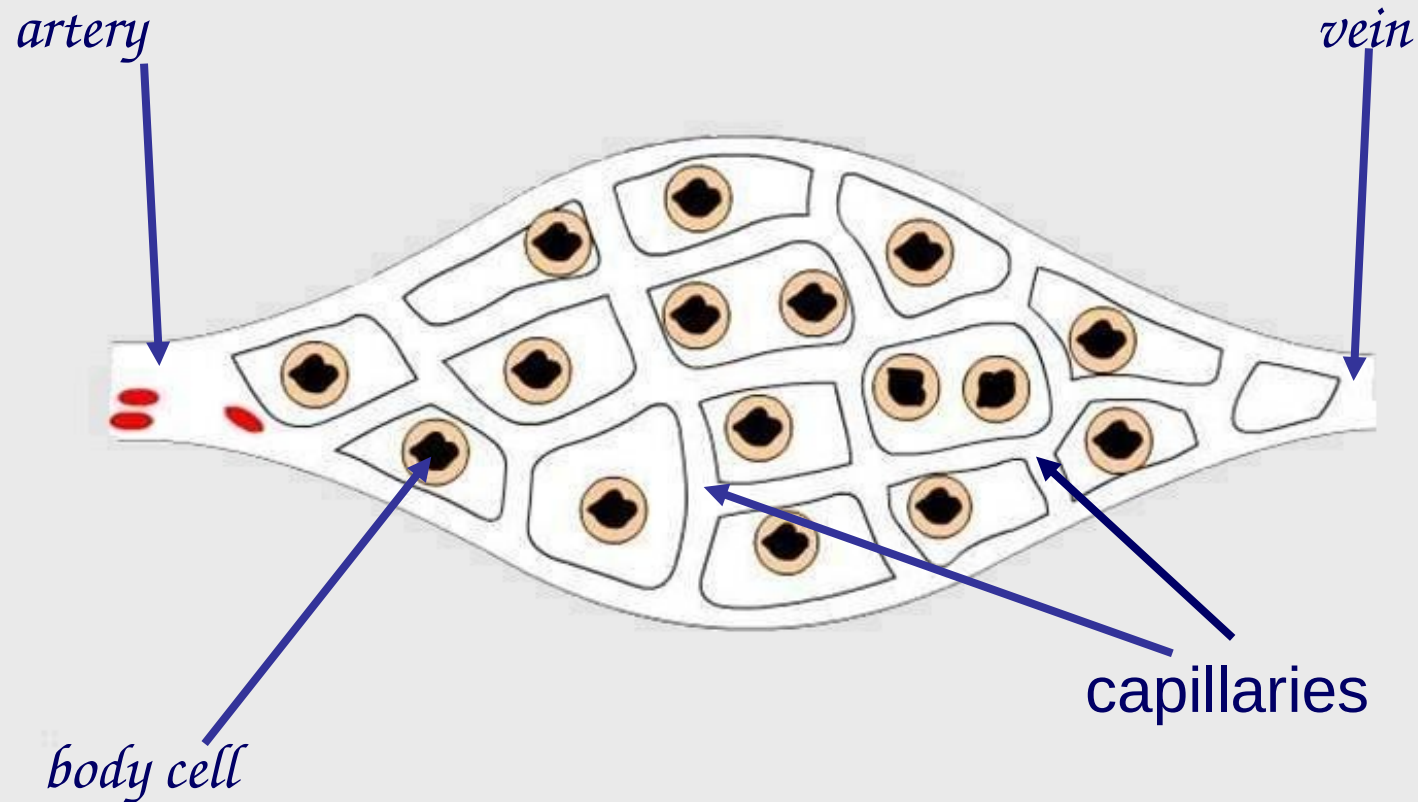


*the wall of a capillary
is only one cell thick*

*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***



what's in

digested food

white blood cells

red blood cells

oxygen

waste (urea)

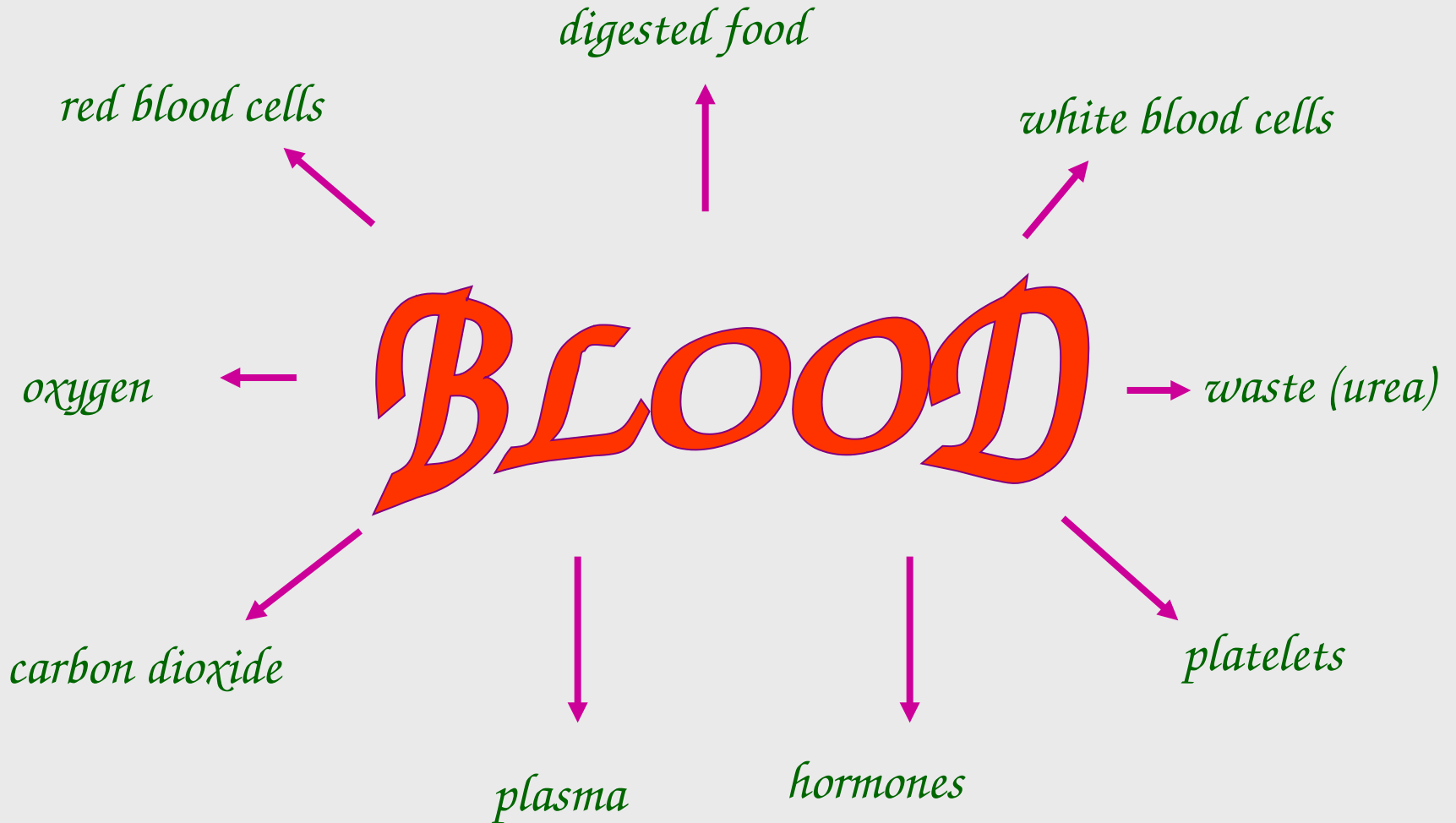
BLOOD

carbon dioxide

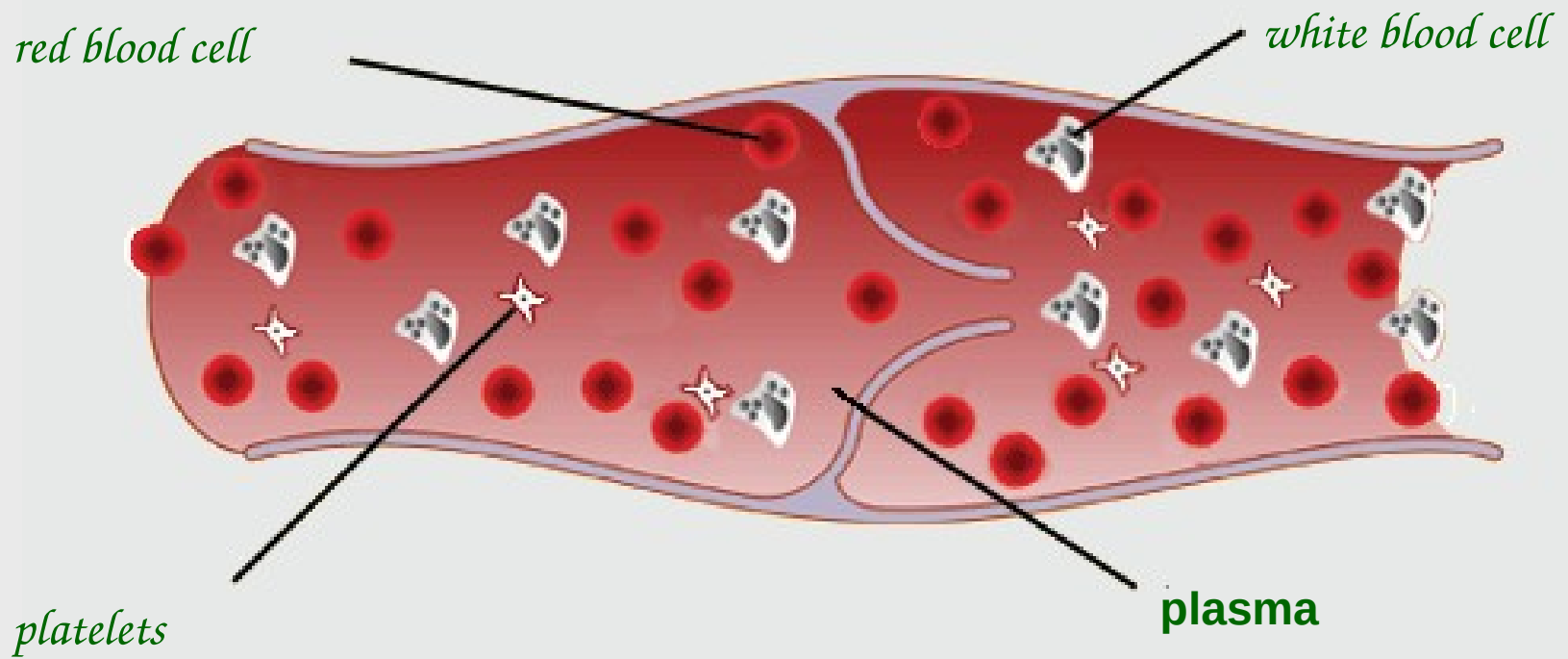
platelets

plasma

hormones



The Blood



Red Blood Cells

a biconcave disc that is round and flat *without a nucleus*

contain *haemoglobin*, a molecule specially designed to hold oxygen and carry it to cells that need it.



can *change shape* to an amazing extent, without breaking, as it squeezes single file through the capillaries.

White Blood Cells



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

the two main ones are the **lymphocytes** and the **macrophages**.

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

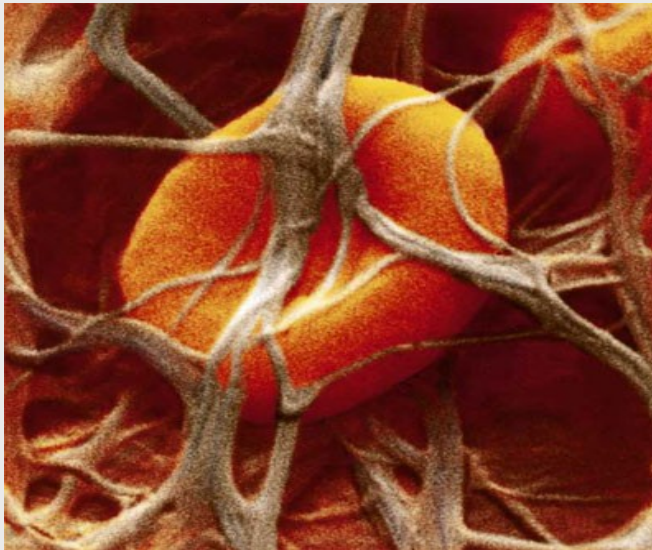
some **lymphocytes** fight disease by making **antibodies** to destroy invaders by dissolving them.

other **lymphocytes** make **antitoxins** to break down poisons.

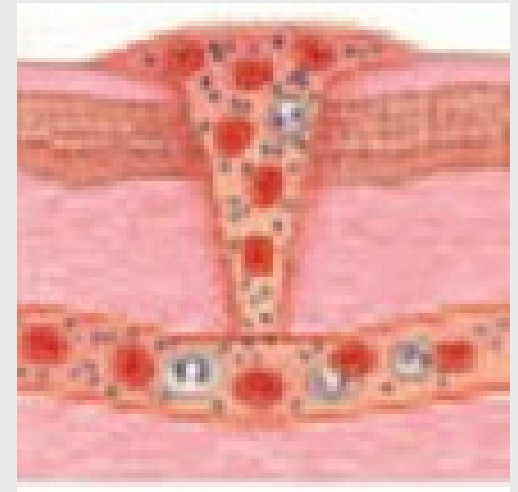
Platelets



Platelets are bits of cell broken off larger cells.

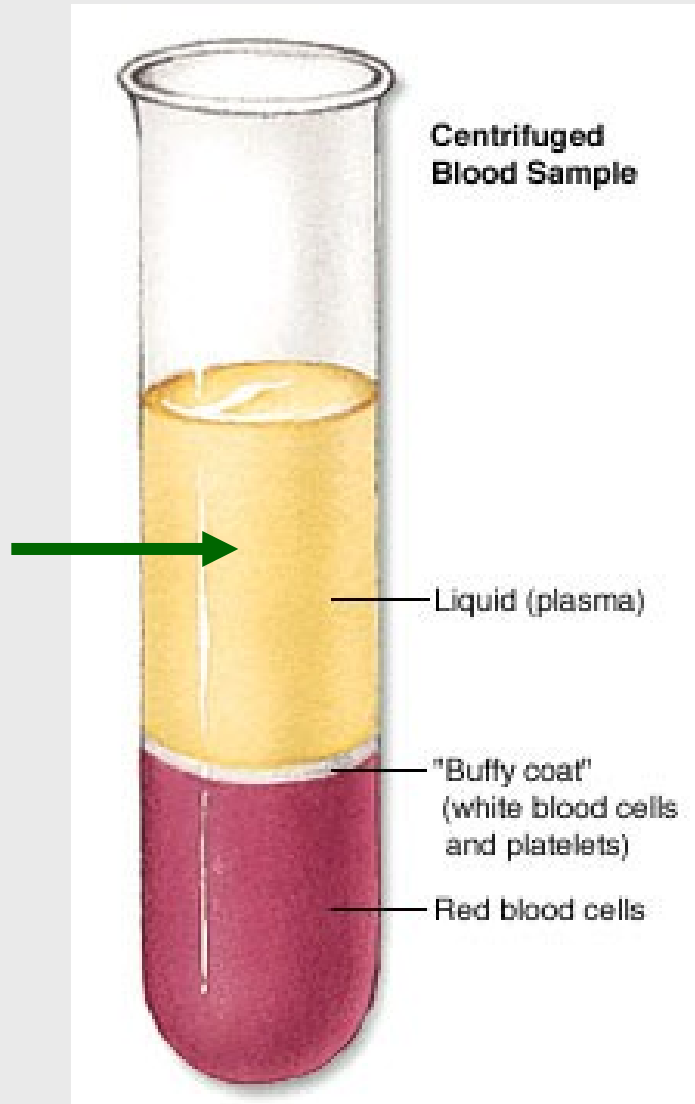


Platelets produce tiny *fibrinogen fibres* to form a net. This net traps other blood cells to form a *blood clot*.



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.*

SUMMARY

copy and complete the following;

Arteries take blood _____ ^{away} 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 _____ ^{towards} link arteries and veins, and have a one cell thick wall. Blood is ^{capillaries} 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 ^{plasma} _____ to help blood clot.

^{oxygen}

^{platelets}

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