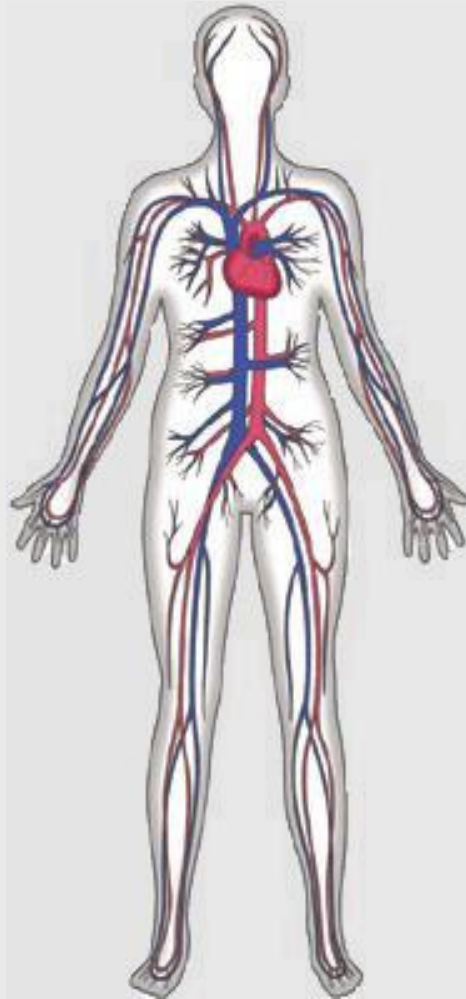


Circulatory System

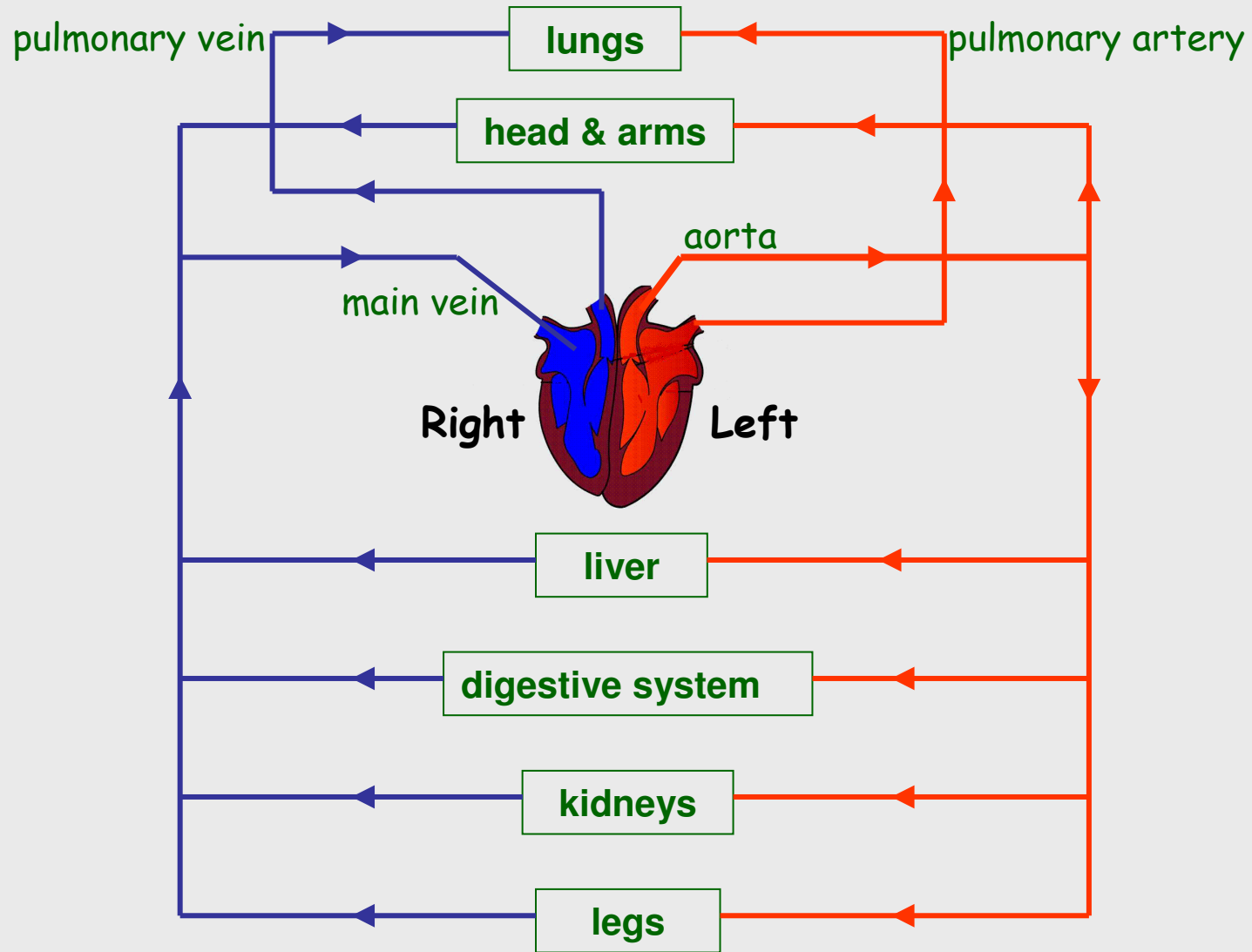


S. MORRIS 2006

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**.

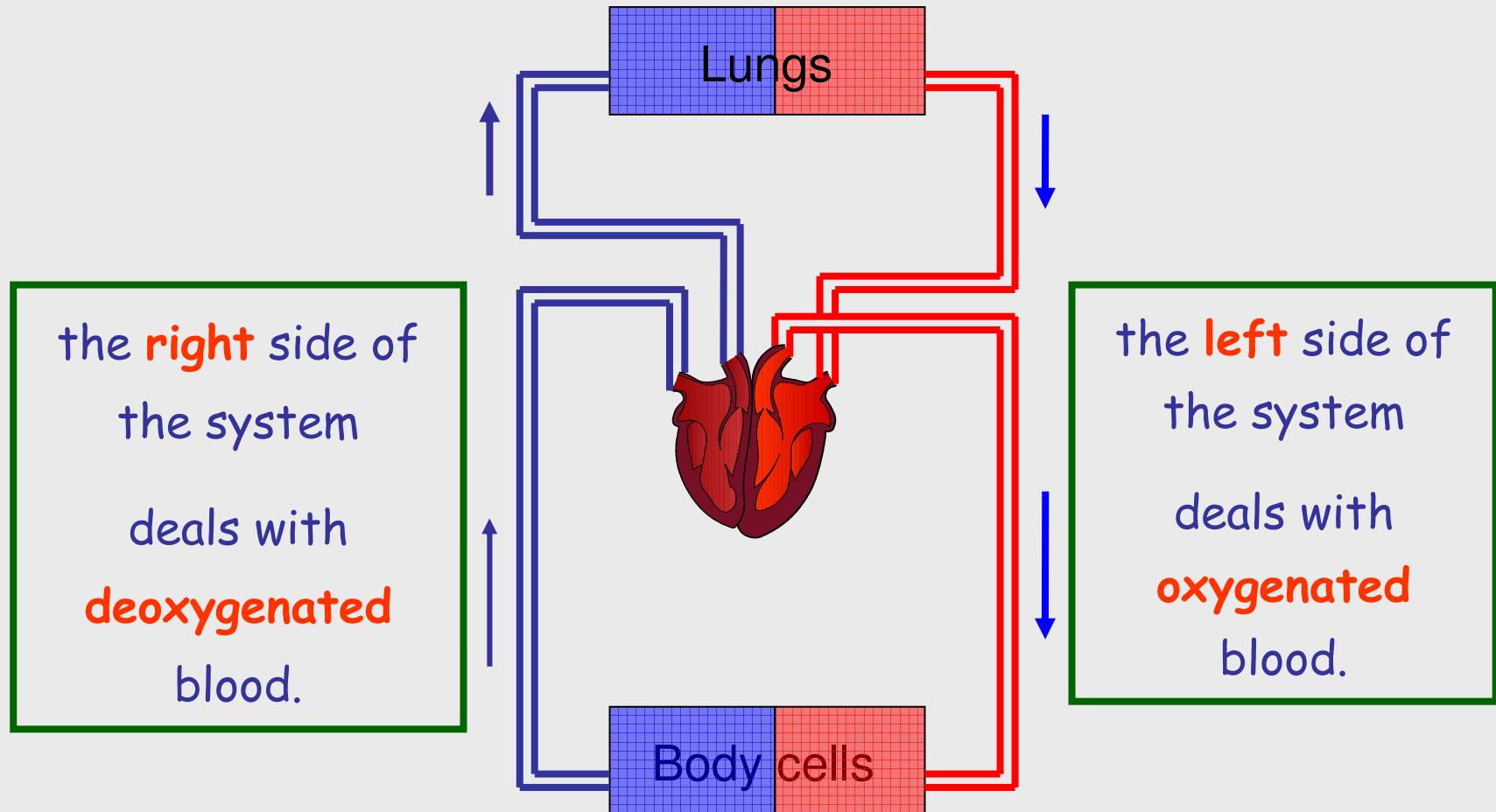
How does this system work?



Circulatory System

Our circulatory system is a double circulatory system.

This means it has two parts parts.



The Heart

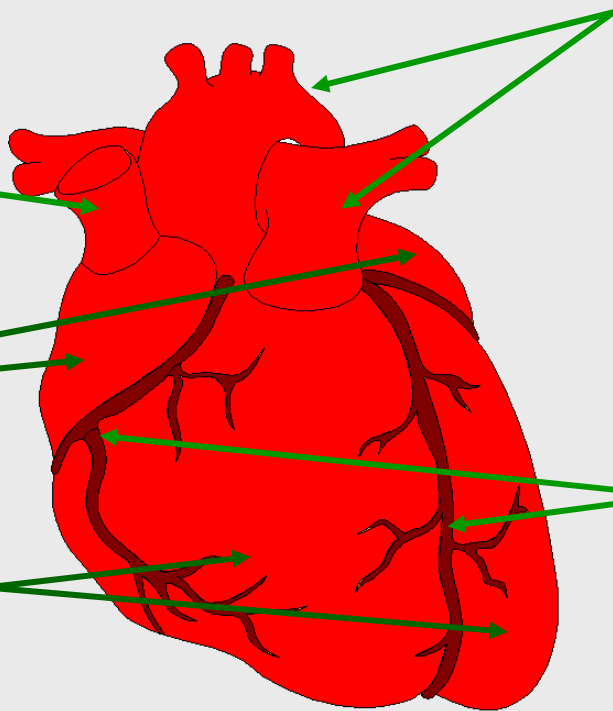
This is a **vein**. It brings blood from the body, except the lungs.

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

2 atria

2 ventricles

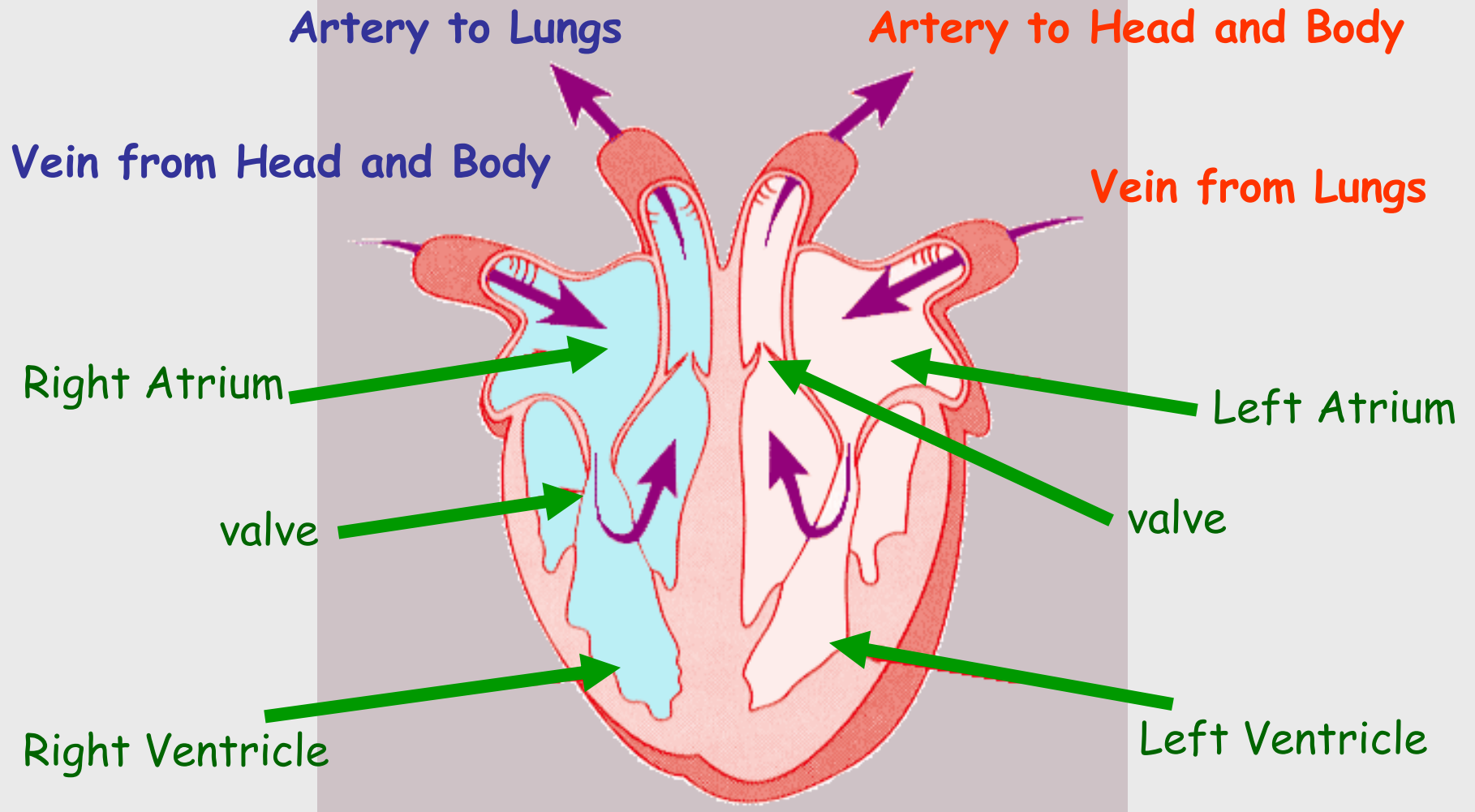
Coronary arteries, the hearts own blood supply



The heart has four chambers

now lets look inside the heart

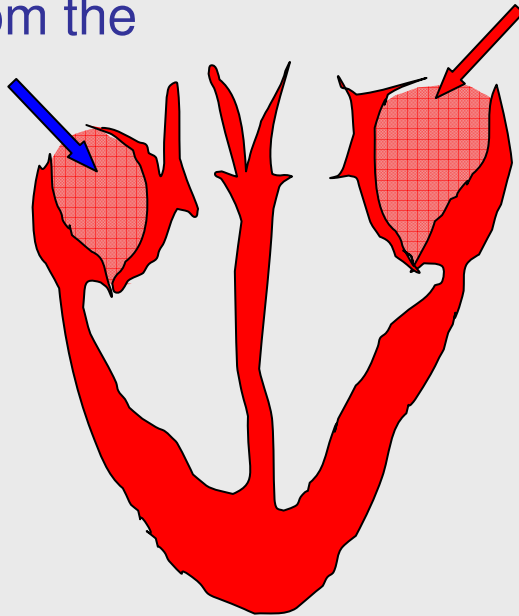
The Heart



How does the Heart work?

STEP ONE

blood from the
body



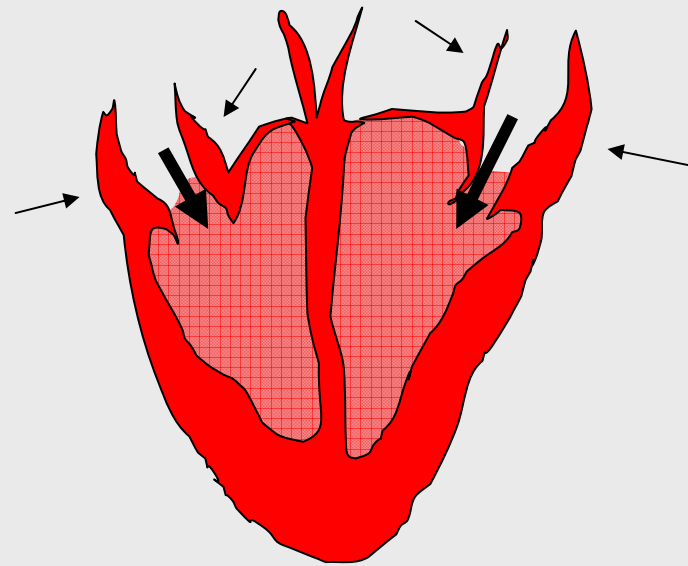
blood from
the lungs

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

How does the Heart work?

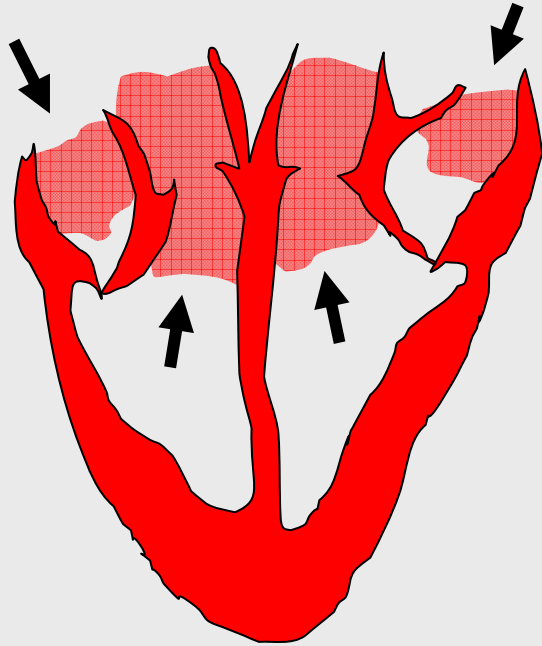
STEP TWO

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

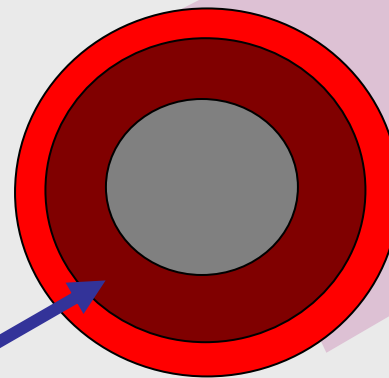
- a. **ARTERY**
- b. **VEIN**
- c. **CAPILLARY**

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.

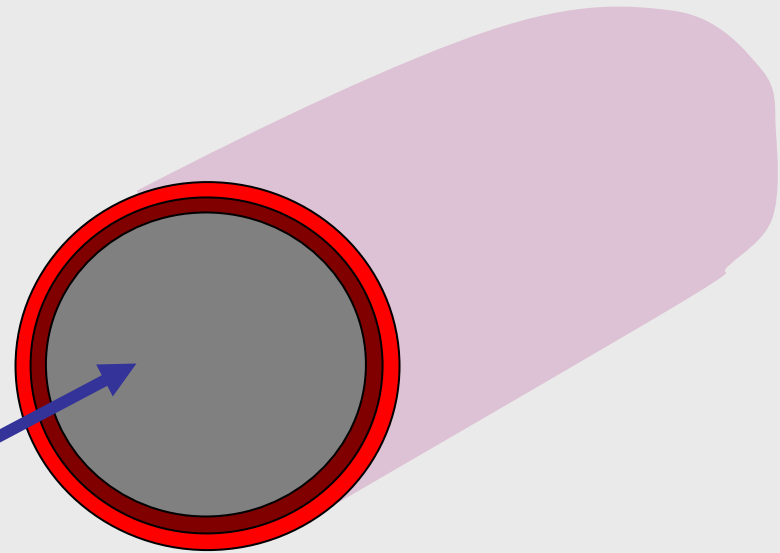
The VEIN

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

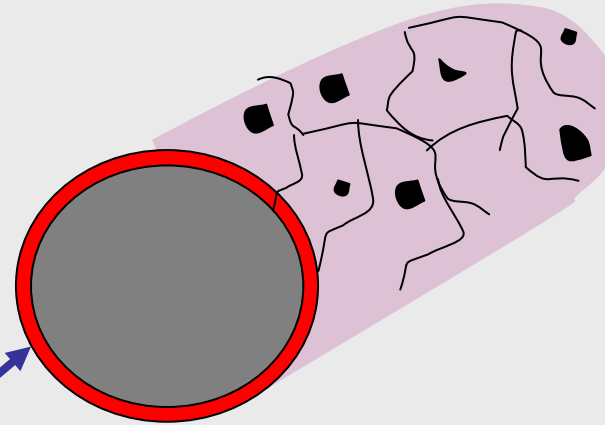
body muscles surround the veins
so that when they contract to
move the body, they also squeeze
the veins and push the blood
along the vessel.



The CAPILLARY

Capillaries link Arteries with Veins

they exchange materials between the blood and other body cells.

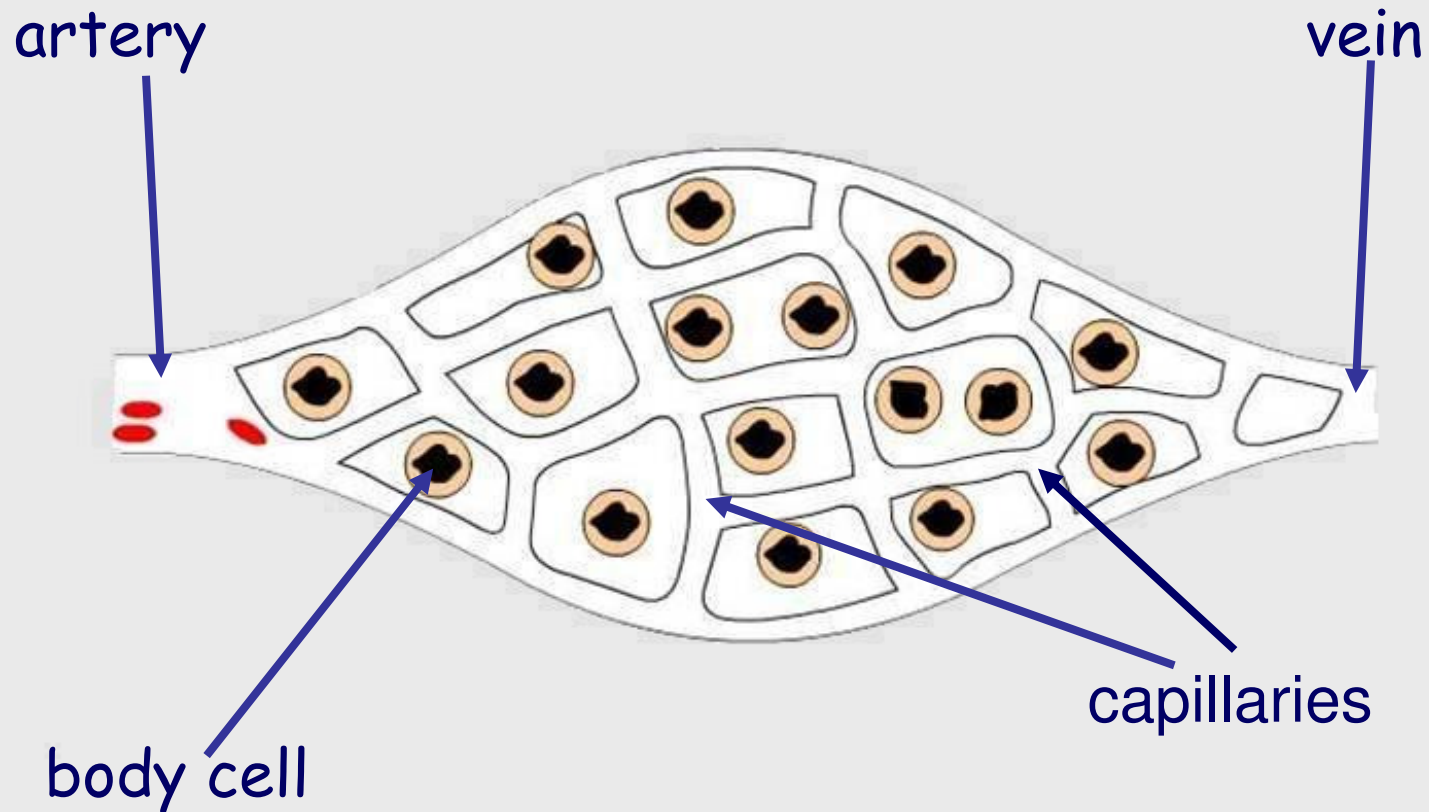


the wall of a capillary is only one cell thick

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

red blood cells

white blood cells

oxygen

waste (urea)

BLOOD

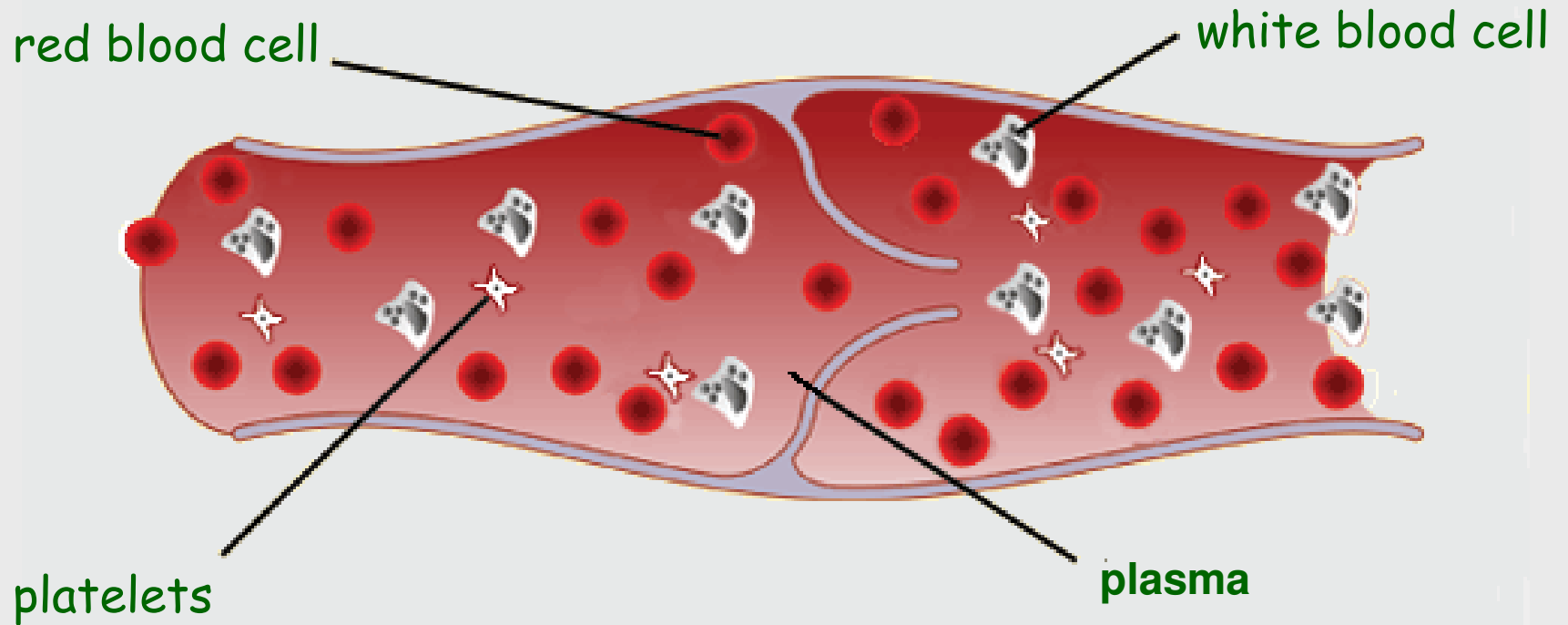
carbon dioxide

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 .

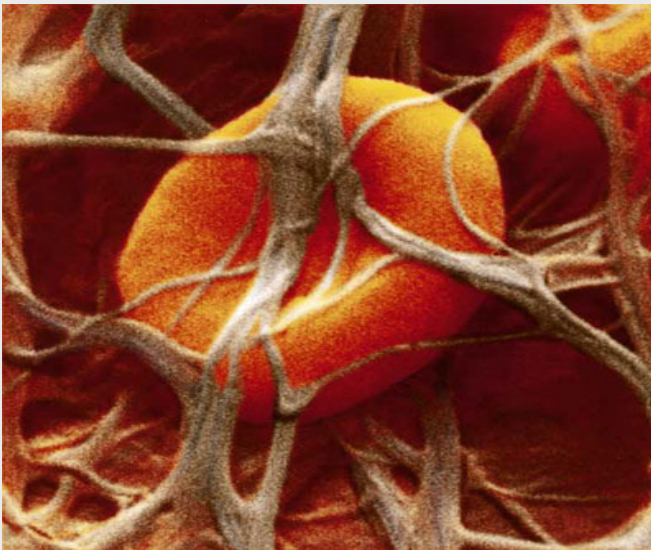
some **lymphocytes** fight disease by making **antibodies** to destroy invaders by dissolving them.

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

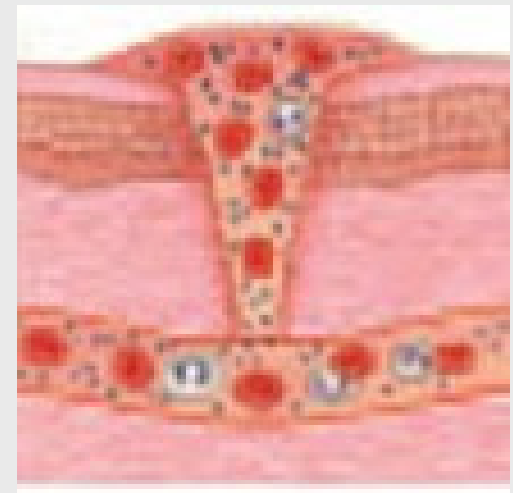
Platelets



Platelets are bits of cell broken off larger cells.

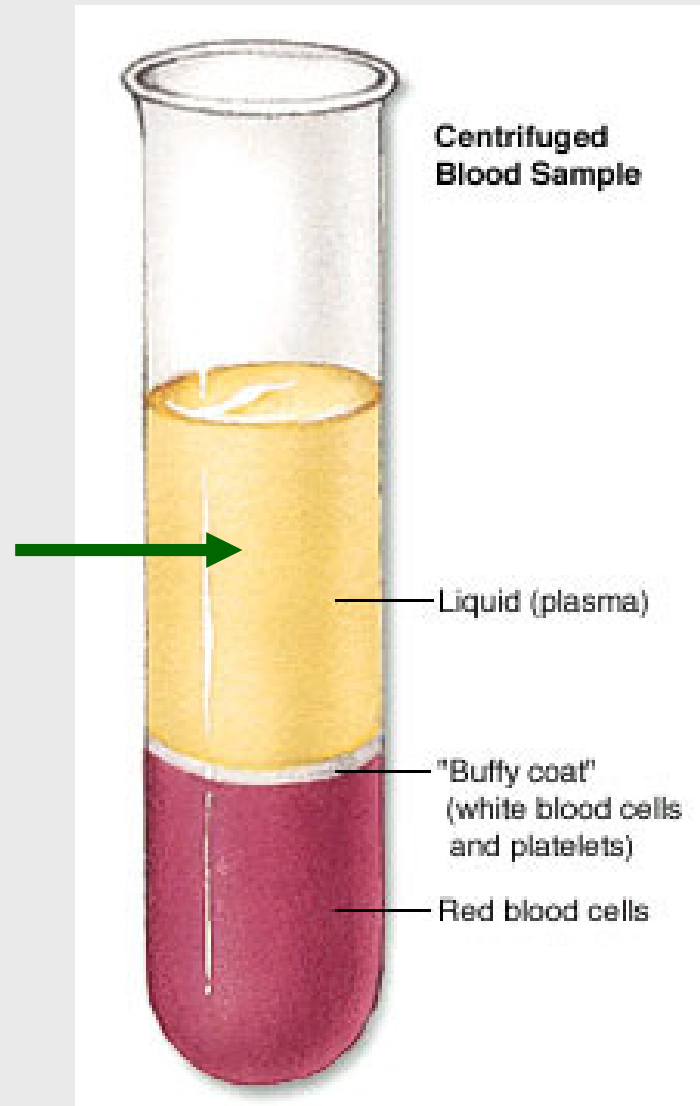


Platelets produce tiny **fibrinogen fibres** to form a net. This net traps other blood cells to form a **blood** clot.



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 muscular walls and elastic fibres. Veins

carry blood towards the heart and also have valves. The

capillaries link arteries and veins, and have a one cell thick wall.

Blood is made up of four main things plasma, the liquid part of the

blood; Red Blood Cells to carry oxygen; White Blood cells to protect

the body from disease and platelets to help blood clot.

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