CAIE Biology IGCSE

9 - Transport in Animals

Flashcards

What is the circulatory system?

What is the circulatory system?

A series of blood vessels with a pump and valves to prevent backflow

What type of circulatory system do fish have?

(Higher/Supplement)

What type of circulatory system do fish have? (Higher/Supplement)

Single circulatory system

Describe a single circulatory system (Higher/Supplement)

Describe a single circulatory system (Higher/Supplement)

The blood only passes through the heart once for each full circuit of the body

Heart → Gills → Body

What type of circulatory system do mammals have? (Higher/Supplement)

What type of circulatory system do mammals have? (Higher/Supplement)

Double circulatory systems

Describe a double circulatory system (Higher/Supplement)

Describe a double circulatory system (Higher/Supplement)

The blood passes through the heart twice per circuit

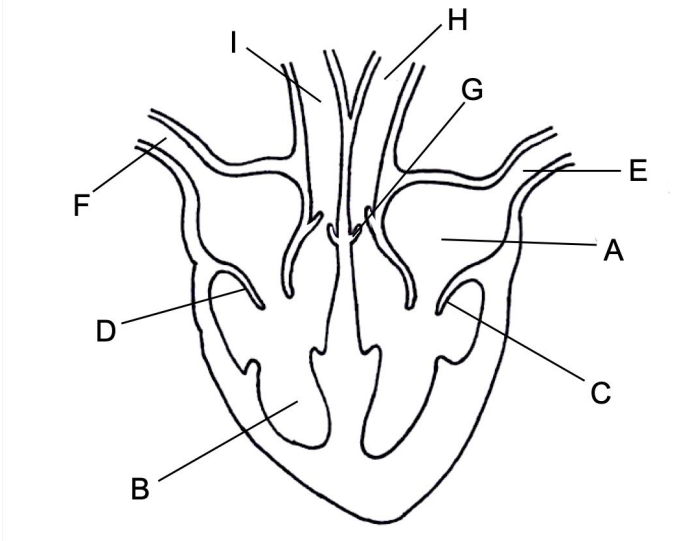
Heart → Body → Heart → Lungs

What is the advantage of a double circulatory system? (Higher/Supplement)

What is the advantage of a double circulatory system? (Higher/Supplement)

Double circulatory systems can maintain a higher blood pressure which increases the speed at which the blood flows so nutrients can be delivered and waste can be removed more quickly

Identify the structures of the heart labelled in the diagram below



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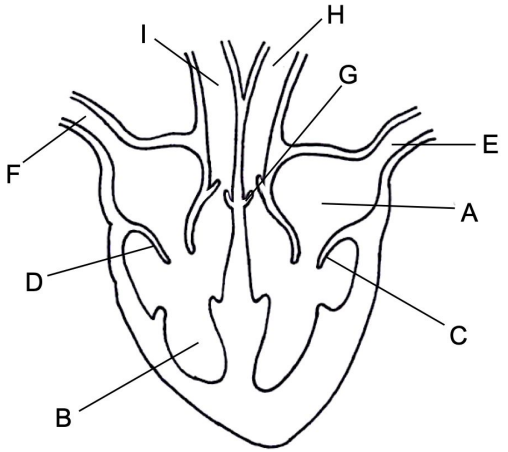
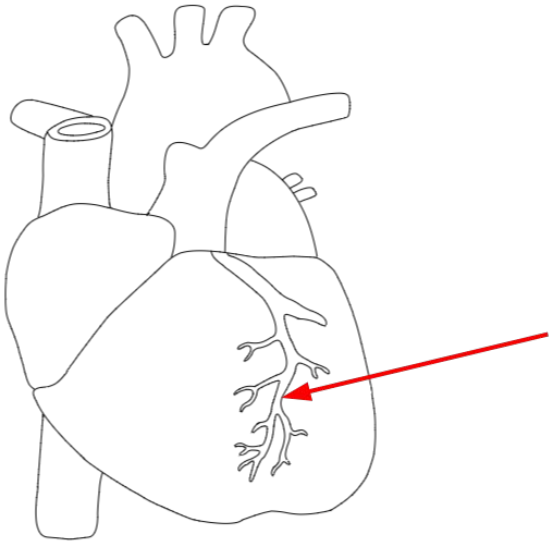


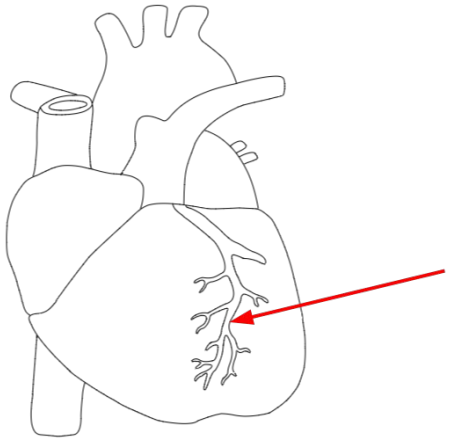
A	left atrium	**F**	vena cava
B	right ventricle	**G**	semi-lunar valve
C	bicuspid valve	**H**	aorta
D	tricuspid valve	**I**	pulmonary artery
E	pulmonary vein		

Name this artery and state its purpose



Name this artery and state its purpose

It is the coronary artery and it supplies the heart muscle with blood



What is the name of the wall that separates the right and left sides of the heart?

What is the name of the wall that separates the right and left sides of the heart?

The septum

What type of muscle is the heart made of?

What type of muscle is the heart made of?

Cardiac muscle

Why is the wall of the left ventricle thicker than the wall of the right ventricle?

(Higher/Supplement)

Why is the wall of the left ventricle thicker than the wall of the right ventricle? (Higher/Supplement)

The left ventricle has to pump blood a further distance around the whole body so the blood needs to be under a higher pressure

Why do the ventricles have thicker walls than the atria? (Higher/Supplement)

Why do the ventricles have thicker walls than the atria? (Higher/Supplement)

The ventricles need to pump blood at a higher pressure to pump it out and round the body and to the lungs whereas the atria only need to pump the blood into the ventricles (a shorter distance) so do not need to generate as high of a pressure

What is the difference in function between veins, arteries and capillaries?

What is the difference in function between veins, arteries and capillaries?

Arteries carry blood **a**way from the heart

Ve**in**s carry blood towards (**in**to) the heart

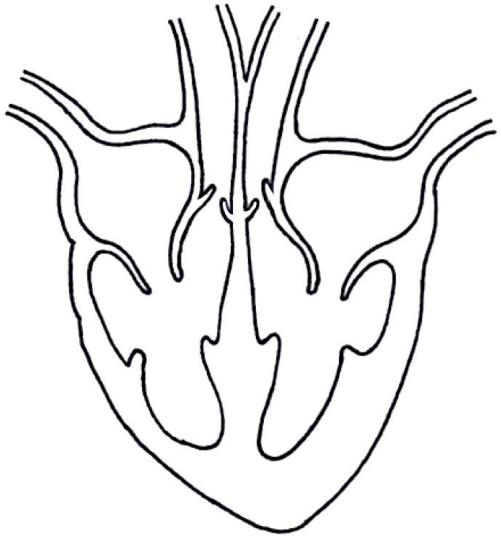
Capillaries flow close to tissues for exchange

Why is the septum important? (Higher/Supplement)

Why is the septum important? (Higher/Supplement)

It separates the oxygenated blood from the deoxygenated blood

Show the direction of blood flow through the heart on the diagram below



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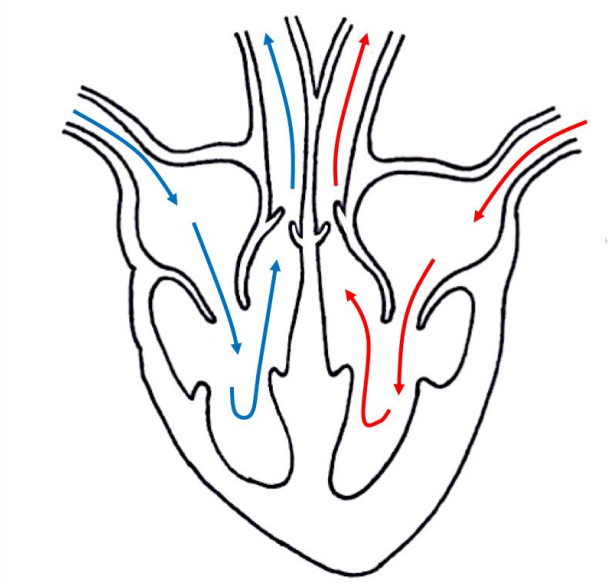


Describe the blood flow through the right side of the heart (Higher/Supplement)

Describe the blood flow through the right side of the heart (Higher/Supplement)

- Deoxygenated blood flows into the right atrium from the vena cava
- This blood passes through the right AV valve into the right ventricle
- The blood is then pumped out of the heart to the lungs through the right SL valve and into the pulmonary artery

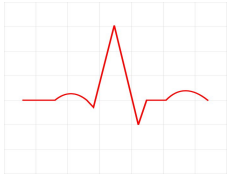
Describe the blood flow through the left side of the heart (Higher/Supplement)

Describe the blood flow through the left side of the heart (Higher/Supplement)

- Blood enters into the left atrium from the pulmonary vein
- The blood is then pumped through the left AV valve into the left ventricle
- The blood is then pumped out through the left SL valve and into the aorta

Give 3 ways of measuring the activity of the heart

Give 3 ways of measuring the activity of the heart

ECG 

Pulse rate

Listening to the sounds of the valves

State the effect of physical exercise on heart rate

State the effect of physical exercise on heart rate

Physical exercise increases heart rate

Explain the effect of physical exercise on heart rate (Higher/Supplement)

Explain the effect of physical exercise on heart rate (Higher/Supplement)

- Muscular contraction requires energy from respiration
- More respiration requires more oxygen and more carbon dioxide
- Heart pumps faster to provide more oxygen to the muscles for respiration and to remove the carbon dioxide quickly

What is coronary heart disease (CHD)?

What is coronary heart disease (CHD)?

When the artery providing the heart tissue with blood (the coronary artery) becomes blocked

Give 6 common risk factors for coronary heart disease

Give 6 common risk factors for coronary heart disease

- Smoking
- Poor diet
- Lack of exercise
- Stress
- Genetic predisposition
- Gender

How can coronary heart disease be prevented by altering lifestyle choices?

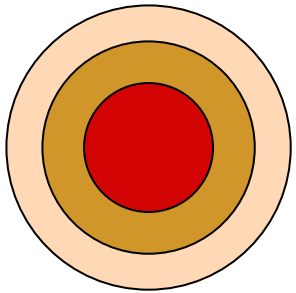
How can coronary heart disease be prevented by altering lifestyle choices?

- Exercise regularly
- Control diet:
  - Eat less saturated fats
  - Eat more fruit and vegetables
  - Eat less salty foods
  - Stop smoking/drinking

Describe the structure of arteries

Describe the structure of arteries

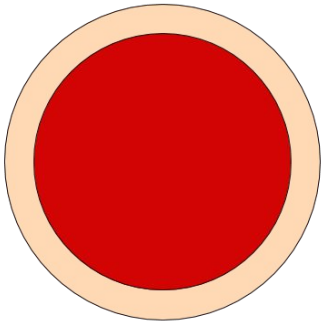
They have thick walls made of muscle and elastic tissue and a small lumen to transport blood under high pressure



Describe the structure of capillaries (Higher/Supplement)

Describe the structure of capillaries (Higher/Supplement)

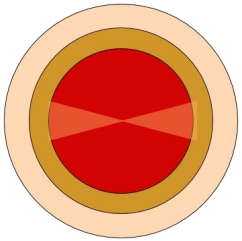
They have thin walls about one cell thick to allow for the easy exchange of substances at the tissues.



Describe the structure of veins

Describe the structure of veins

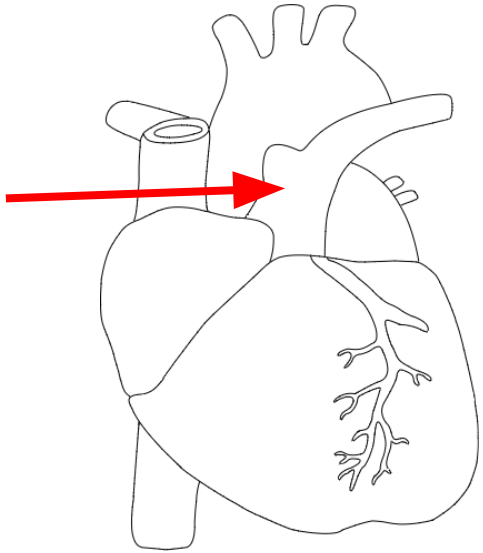
Veins have less muscle and elastic tissue than arteries and they have a larger lumen as the blood is at lower pressure, they also have valves to prevent backflow



Name the artery that supplies the lungs with blood

Name the artery that supplies the lungs with blood

The pulmonary artery



Name the vein that takes blood away from the lungs

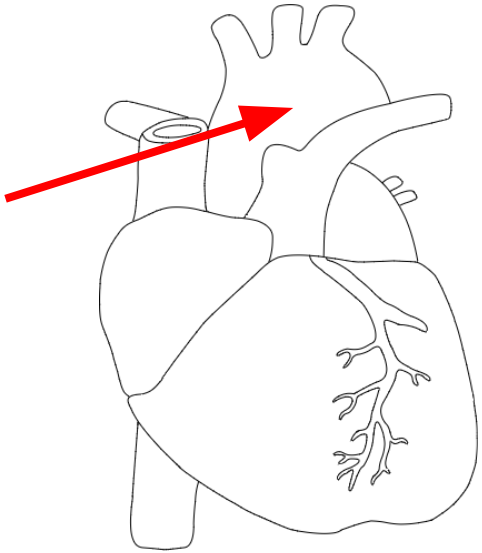
Name the vein that takes blood away from the lungs

The pulmonary vein

Name the main artery that takes blood away from the heart

Name the main artery that takes blood away from the heart

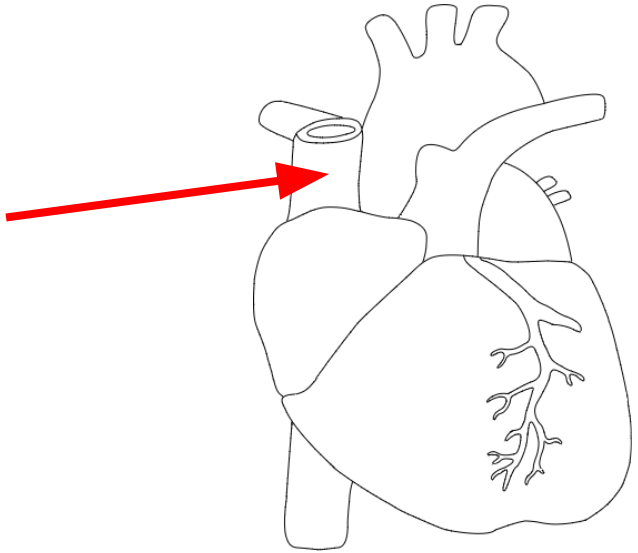
The aorta



Name the main vein that takes blood to the heart

Name the main vein that takes blood away from the heart

The vena cava



Name the main artery that takes blood to the kidneys

Name the main artery that takes blood to the kidneys

The renal artery

Name the main vein that takes blood away from the kidneys

Name the main vein that takes blood away from the kidneys

The renal vein

Name 4 components of the blood

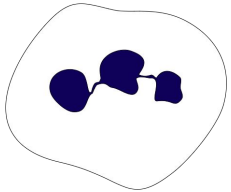
Name 4 components of the blood

- Red blood cells
- White blood cells
- Platelets
- Plasma

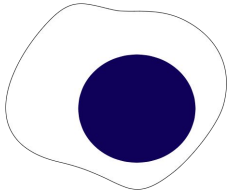
Name 2 types of white blood cell (Higher/Supplement)

Name 2 types of white blood cell (Higher/Supplement)

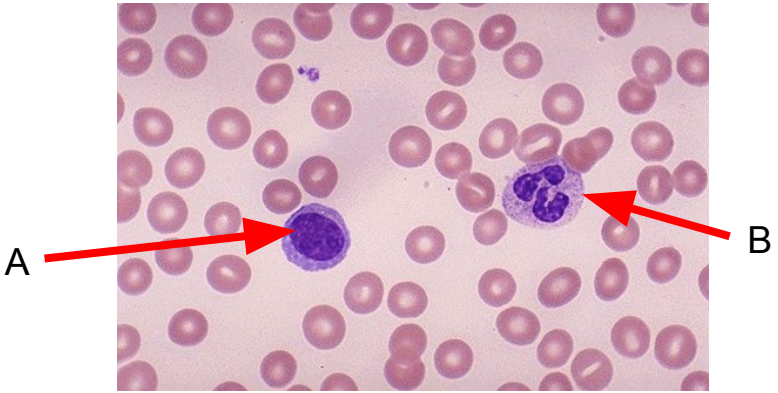
Phagocyte



Lymphocyte



Identify cell A and cell B (Higher/Supplement)



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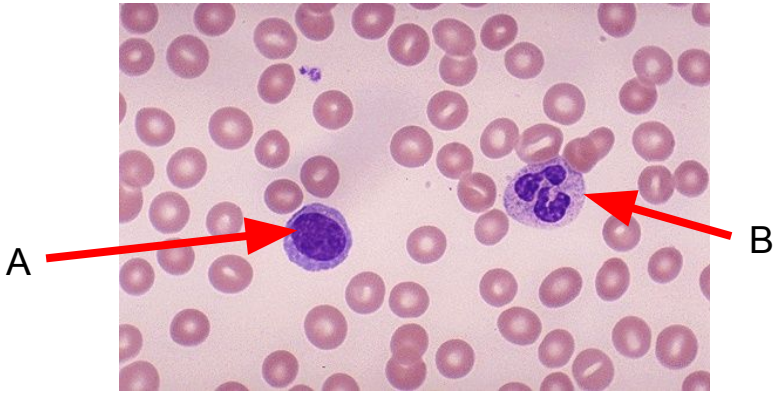
Identify cell A and cell B (Higher/Supplement)

A - Lymphocyte

B - Phagocyte



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What is the function of platelets?

What is the function of platelets?

They are used in forming blood clots

What is the purpose of blood clotting?

What is the purpose of blood clotting?

- Preventing excess blood loss
- Preventing the entry of pathogens through wounds

Describe the process of blood clotting (Higher/Supplement)

Describe the process of blood clotting (Higher/Supplement)

Blood clotting is a process used to stop bleeding from damaged blood vessels by creating a mesh by converting fibrinogen to fibrin

What is the function of red blood cells?

What is the function of red blood cells?

Transporting oxygen to tissues using haemoglobin

State 2 functions of white blood cells

State 2 functions of white blood cells

- Producing specific antibodies
- Phagocytosis (engulfing pathogens)

What is the function of plasma?

What is the function of plasma?

Transporting substances like ions, soluble nutrients, hormones and carbon dioxide in the blood