

# OCR (B) Biology A-level

## 2.2.2 - Transport systems in mammals

### Flashcards

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What are the benefits of a double circulatory system?



## What are the benefits of a double circulatory system?

- Maintains blood pressure around the whole body
- Uptake of oxygen is more efficient
- Delivery of oxygen and nutrients more efficient
- BP can differ in pulmonary and systemic system



Relate the structure of arteries to their function.



Relate the structure of arteries to their function.

Thick, muscular walls to withstand high pressure. Elastic tissue allows recoil to prevent pressure surges. Narrow lumen to maintain pressure. Smooth inner endothelial lining.



Relate the structure of veins to their function.



Relate the structure of veins to their function.

- Large lumen eases blood flow
- Thin walls due to lower pressure.
- Require valves to ensure blood doesn't flow backwards.
- Have less muscular and elastic tissue as they don't have to control blood flow.



Relate the structure of capillaries to their function.





## Relate the structure of capillaries to their function.

- Walls only one cell thick; short diffusion pathway.
- Narrow lumen, red blood cells squeeze through, decreasing the diffusion distance.
- Numerous and highly branched, providing a large surface area.



Relate the structure of arterioles and venules to their function.



# Relate the structure of arterioles and venules to their function.

- Branch off arteries and veins in order to feed blood into and take blood away from the capillaries.
- Smaller than arteries and veins so that the change in pressure is more gradual as blood passes through increasingly small vessels.



# What is tissue fluid?



## What is tissue fluid?

A fluid surround cells and tissues that contains glucose, amino acids, oxygen, and other nutrients. It supplies these to the cells, while also removing any waste materials.



What types of pressure influence the formation of tissue fluid?



What types of pressure influence the formation of tissue fluid?

- **Hydrostatic** pressure = higher at arterial end of capillary than venous end.
- **Oncotic** pressure = changing water potential of the capillaries as water moves out, induced by proteins in the plasma.



# How is tissue fluid formed?





## How is tissue fluid formed?

As blood is pumped through increasingly smaller vessels, hydrostatic pressure is greater than oncotic pressure, so fluid moves out of the capillaries. It then exchanges substances with the cells.



# How can blood pressure be measured?



## How can blood pressure be measured?

Using a sphygmomanometer. Cuff is fastened around the upper arm, then inflated and deflated. Stethoscope is used to note the pressure at which Korotkoff sounds are heard (systolic) and when these sounds stop (diastolic).



What risks are associated with high or low blood pressure?



What risks are associated with high or low blood pressure?

- Hypertension= high blood pressure
  - Can cause stroke, chest pain, heart attack
- Hypotension= low blood pressure
  - Can cause fainting, blurred vision, difficulty concentrating

