

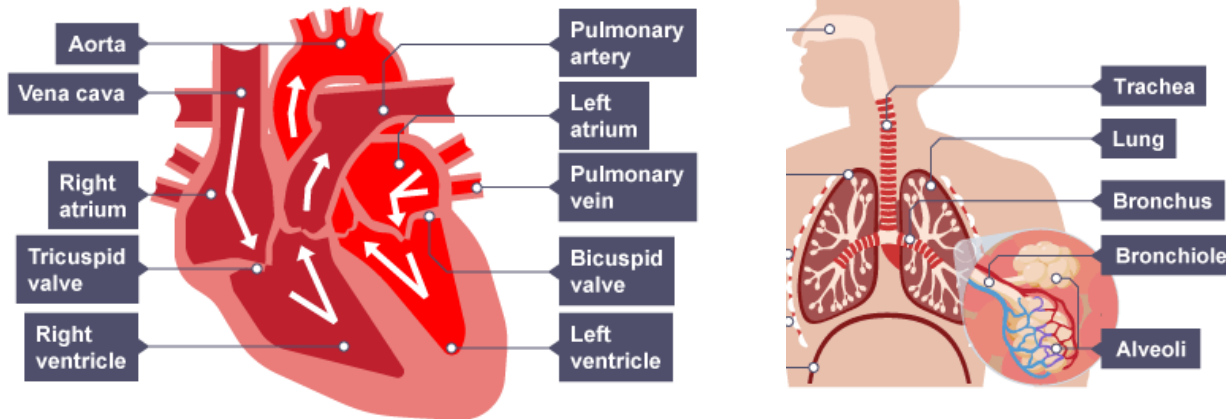
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Biology Topic B4 Organising in Plants and Animals

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Section 6: Heart and Lungs



Section 6a: Structures in the Heart

Pacemaker	Group of cells in the right atrium that controls resting heart rate .
Right ventricle	Pumps deoxygenated blood to the lungs for gas exchange .
Left ventricle	Pumps oxygenated blood to the body . Thick, muscular wall .
Valve	Stops blood flowing the wrong way / leaking.

Section 6b: Structures in the Lungs

Alveoli	Small sacs where gas exchange occurs. Surrounded by capillaries . Oxygen moves from the alveoli into the capillaries , carbon dioxide moves from the capillaries into the alveoli
Trachea and Bronchi	Tubes through which gases move. Lined with cartilage so they don't collapse.

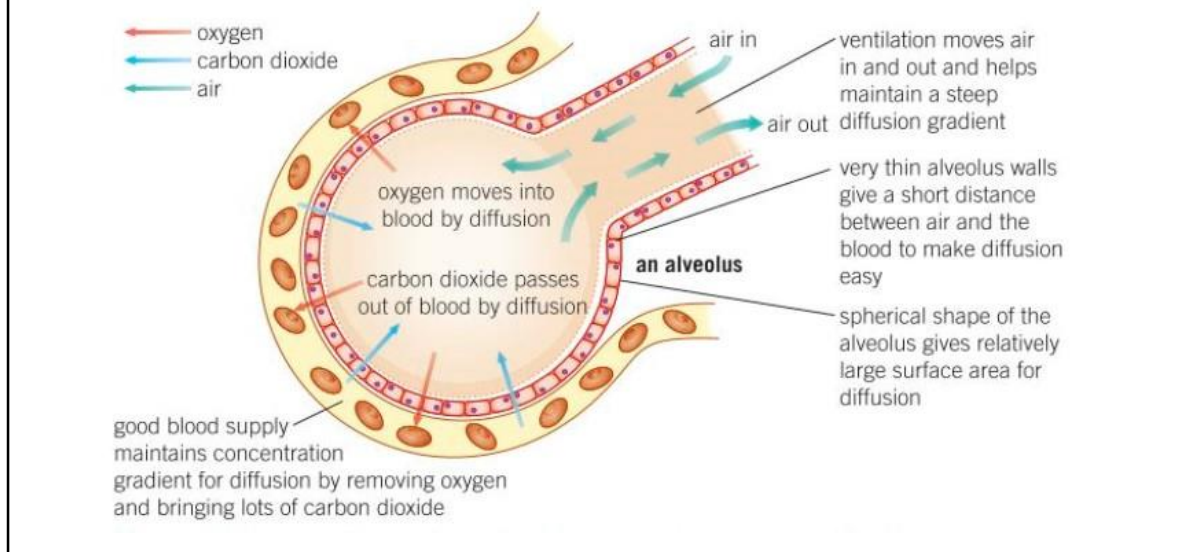
Section 8: Components of the Blood

Plasma	Liquid part of the blood. Transports blood cells as well as carbon dioxide, proteins, glucose, hormones and urea .
Red Blood Cells	Carries oxygen . Packed with haemoglobin , a protein that binds to oxygen. No nucleus to create extra space for haemoglobin. Biconcave shape to give a large surface area .
White Blood Cells	Destroy pathogens . Some can produce antibodies .
Platelets	Cell fragments that help to clot wounds .

Section 7: Blood Vessels

Adaptations	Artery	Vein	Capillary
Purpose	Takes blood away from the heart .	Takes blood back to the heart .	Exchange of substances between blood and cells .
Thick wall to withstand high pressure		Thin wall. Valves to prevent backflow of blood.	Wall is one cell thick to allow quick diffusion of substances.

Section 9: How gases get exchanged in the alveoli.



Section 11: How a stent is positioned in an artery



Section 10: Heart Disease

Coronary Heart Disease	Build up of fatty material in coronary arteries . Can lead to a blood clot and a heart attack .		
Treatment	What it is	Advantage	Disadvantage
Stent	Wire mesh that opens up a blocked artery .	Keeps artery open. Low-risk surgery.	Fatty material can rebuild.
Statin	Drug that reduces cholesterol .	Reduces fat being deposited in arteries.	Side effects e.g. liver damage.
Heart transplant	Replacement heart from a donor.	Long-term.	Major surgery. Could be rejected.
Artificial heart	Man-made heart used while waiting for a transplant .	Not rejected. Keeps patient alive.	Short life-time. Battery has to be transported. Limited activity.
Mechanical heart valve	Mechanical replacement of faulty heart valve.	Can last a life-time.	Can damage red blood cells.
Biological heart valve	Biological replacement of faulty heart valve.	Don't damage red blood cells.	Valve hardens and may need replacing.

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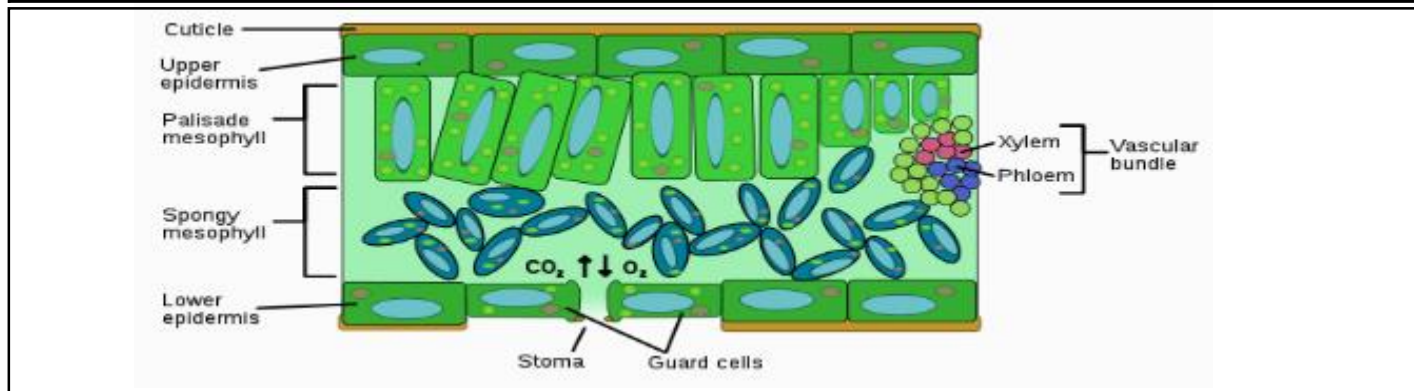
Section 10a: Movement within Plants

Transpiration	The loss of water vapour from the leaves by evaporation from cells and then out through the stomata .
Transpiration Stream	The movement of water from the roots , up the stem to the leaves .
Translocation	The movement of dissolved sugars around the plant.

Section 10b: Factors Affecting Transpiration

Temperature	Increasing temperature increases the transpiration rate as water evaporates quickly.
Humidity	Increasing humidity decreases the rate of transpiration as water evaporates slowly.
Wind speed	Increasing wind speed increases the transpiration rate as water evaporates quickly.
Light	Increasing light increases the rate of transpiration as stomata open .

Section 11: Leaf Structure and Plant Tissues



Epidermis	Cover the surfaces of the leaf; lets light penetrate .59
Xylem	Carries water and minerals from the roots around the plant.
Phloem	Carries dissolved sugars made through photosynthesis around the plant. 6
Palisade mesophyll	Where most photosynthesis takes place. Cells contain many chloroplasts . Absorbs light .
Spongy mesophyll	Some photosynthesis . Has air spaces for diffusion of CO ₂ and O ₂ .
Guard cells	Cells that open and close stomata .
Stoma	Opening that allows CO₂ and O₂ to diffuse in and out of the leaf.

Section 12: Cell Adaptations for Movement Within Plants

Root hair cell Extension gives a large surface area to absorb water and minerals.	
Xylem Vessels are strengthened by lignin to withstand pressure. Cell walls are waterproof.	
Phloem End of cells contain pores to allow dissolved sugars to move between cells.	
Guard Cells and Stoma Guard cells can open the stoma to allow gas exchange or close to prevent water loss.	