Year 12 – A level Biology

Keywords

- Alveoli: Tiny air sacs that serve as the primary gaseous exchange surface. They consist of a thin epithelial cell layer, collagen and elastic fibres.
- Bronchioles: Many small divisions of the bronchi. They contain smooth muscle to restrict airflow to the lungs but do not have cartilage. They are lined with a thin layer of ciliated epithelial cells.
- Ciliated epithelial cells: Specialised cells with tiny hair-like cilia found lining the trachea that waft bacteria-containing mucus up to the back of the throat, where it is swallowed. Counter current flow: An adaptation for gaseous exchange in bony fish. Blood in the gill filaments and water moving over the gills flow in opposite directions, maintaining a steep oxygen concentration gradient.
- Elastic fibres: Fibres of elastin that allow the alveoli to stretch as air is drawn in and recoil back to normal size, expelling air. They are also found in the trachea, bronchi and bronchioles.
- Expiration: During expiration (exhalation) the diaphragm relaxes and reverts to a dome. The external intercostal muscles relax, moving the ribs down and in. The volume of the thorax decreases, and thoracic pressure exceeds air pressure. Air moves out of the trachea.
- Gill filaments: The main site of gaseous exchange in fish, over which water flows. They are found in large stacks, known as gill plates, and have gill lamellae which provide a large surface area for exchange.
- Gill lamellae: The fine branches of the gill filaments. They are adapted for gaseous exchange by having a large surface area and good blood supply.
- Goblet cells: Specialised cells that secrete mucus onto the trachea lining. The mucus traps harmful substances and microorganisms, preventing their entry into the lungs.
- Active loading: The process by which hydrogen ions are actively pumped out of companion cells using ATP, before diffusing down a concentration gradient, back into the cells via co-transporter proteins, whilst carrying sucrose.
- Adhesion (water movement): The formation of hydrogen bonds between carbohydrates in the xylem vessel walls and water molecules. This contributes to the capillarity of water and transpiration pull.
- Apoplast route: One of two pathways by which water and minerals move across the root. Water moves through intercellular spaces between cellulose molecules in the cell wall.
- Casparian strip: A waterproof strip surrounding the endodermal cells of the root that blocks the apoplast pathway, forcing water through the symplast route.
- Cohesion (water movement): The formation of hydrogen bonds between water molecules. This contributes to the capillarity of water and transpiration pull.
- Cohesion-tension theory: The model that explains the movement of water from the soil to the leaves, in a continuous stream.
- Companion cells: The active cells of the phloem located adjacent to the sieve tube elements. They retain their nucleus and organelles, producing ATP for metabolic processes in both themselves and the sieve tube elements.
- Dicotyledonous plants: Plants that produce seeds that contain two cotyledons. They have two primary leaves.
- Hydrophytes: Plant that are adapted to live and reproduce in very wet habitats, e.g. water lilies.
- Bile canaliculi: Vessels which collect the bile produced by hepatocytes.
- Blinking reflex: The involuntary blinking of the eyelid when an object is held close to the eye. It is the last reflex to be lost. .
- Central nervous system (CNS): The brain and spinal cord. Cerebellum: The region of the brain that controls muscle coordination and non-voluntary movement (e.g. balance, posture).
- Cerebrum: The largest region of the brain, consisting of two hemispheres, that receives sensory information from receptors and sends information via the motor neurones to effectors. It is responsible for all voluntary and some involuntary responses.
- Cholinergic synapse: A synapse which uses the neurotransmitter acetylcholine. Creatine phosphate: A compound stored in muscles that serves as a phosphate reserve, enabling ATP regeneration.
- Cutting: A small section of the root or stem of an adult plant. Cyclic AMP (cAMP): A 'second messenger' involved in the action of adrenaline that activates protein kinase.
- Dendron: An extension from a nerve cell that carries impulses towards the cell body. Depolarisation: The rapid influx of sodium ions into the cell which cause it to lose its negative charge and the membrane potential to increase.
- Ectotherm: A type of organism which is dependent on its environment to maintain its body temperature

<u>Year 13 – A level Biology</u>

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