

- Alveolar epithelium** - the single layer of cells around the edge of the alveoli
- Alveoli** - tiny air sacs in the lungs where gas exchange takes place
- Amylase** - enzyme secreted by the salivary glands and pancreas which hydrolyses starch to maltose
- Aneurysm** - ballooning of the inner layers of the artery through the outer layer
- Antagonistic** - when the actions of two things are opposite to each other e.g. the external and internal intercostal muscles during forced expiration
- Aorta** - large artery carrying oxygenated blood from the heart to the body
- Arteries** - blood vessels carrying oxygenated blood to organs and tissues, branch into arterioles
- Arterioles** - smaller blood vessels branching off from arteries carrying oxygenated blood, can direct blood to areas of demand
- Asthma** - condition which can result in the airways becoming restricted due to contraction of smooth muscles lining the bronchioles
- Atheroma** - a fibrous plaque formed in the endothelium of an artery which can block or restrict the lumen
- Atrioventricular valves** - valves between the atria and ventricles in the heart
- Autoradiography** - technique to observe where radioactive tracers are transported in a plant
- Bile salts** - produced by the liver, emulsify large lipid droplets to smaller lipid droplets
- Bohr effect** - when the oxyhaemoglobin dissociation curve shifts right at higher partial pressures of carbon dioxide
- Bronchi** - two tubes branching off from the trachea going to each lung
- Bronchioles** - small tubes branching off from the bronchi and ending at the alveoli
- Capillaries** - the smallest blood vessels which branch off from arterioles and converge into venules
- Capillary beds** - networks of capillaries in tissue creating a large surface area
- Capillary endothelium** - the single layer of cells making up the walls of capillaries
- Cardiac cycle** - sequence of contraction and relaxation of the atria and ventricles
- Cardiac output** - volume of blood pumped by one ventricle in a minute (stroke volume x heart rate)
- Causal relationship** - when one variable has been shown to directly affect another variable in a very well designed and controlled experiment
- Chymotrypsin** - type of endopeptidase secreted by the pancreas
- Cohesion-tension theory** - the theory that explains how water is transported upwards in the xylem vessels
- Companion cells** - cells next to sieve tube elements which carry out living functions for themselves and the sieve tube elements
- Cords** - valve tendons in the heart which prevent the atrioventricular valves being forced into the atria
- Coronary arteries** - arteries supplying heart muscle tissue with blood
- Correlation** - a relationship between two variables which doesn't necessarily mean cause and effect

**Counter-current system** - in fish, water flows over the gill lamellae in the opposite direction to the blood flow to maintain a large concentration gradient of oxygen between the water and blood

**Diaphragm** - muscles under the lungs which contract and relax during ventilation

**Dicotyledonous plants** - a group of flowering plants which exchange gases at the mesophyll cells

**Emphysema** - type of lung disease caused by foreign particles entering the alveoli and causing loss of elasticity and reduced surface area for gas exchange

**Endopeptidases** - enzymes which hydrolyse peptide bonds within polypeptide chains

**Exopeptidases** - enzymes which hydrolyse peptide bonds at the ends of polypeptide chains to release one amino acid

**Exoskeleton** - the hard surface of an insect

**Expiration** - breathing out

**External intercostal muscles** - contract and relax to move the ribcage during inspiration and expiration

**Forced expiratory volume** - volume of air that someone can breathe out forcefully in one second

**Forced vital capacity** - the maximum amount of air that someone can breathe out forcefully after a large breath in

**Gill arch** - part of the gill which contains arteries and supports the gill filaments

**Gill filaments** - each gill has many of these thin plates attached to the gill arch to increase surface area

**Gill lamellae** - very small and thin structures protruding from gill filaments where gas exchange takes place

**Haemoglobin** - protein with a quaternary structure which transports oxygen in red blood cells

**Heart rate** - how many times the heart beats in a minute

**Hydrostatic pressure** - the pressure of a liquid

**Inspiration** - breathing in

**Internal intercostal muscles** - contract during forced expiration

**LDL cholesterol** - a type of cholesterol in the blood which is thought to increase risk of cardiovascular disease

**Lipase** - enzyme secreted by the pancreas which hydrolyses lipids to monoglycerides and fatty acids

**Lung fibrosis** - formation of scar tissue in the lungs which reduces tidal volume and rate of gas exchange

**Lymphatic system** - a system of lymph vessels which acts as a drain for excess tissue fluid

**Mass flow hypothesis** - the best supported theory explaining how translocation works

**Membrane-bound dipeptidases** - a type of exopeptidase found in the cell membrane of epithelial cells lining the ileum which only hydrolyse the peptide bonds in dipeptides

**Membrane-bound disaccharidases** - enzymes in the cell membrane of epithelial cells lining the ileum which hydrolyse disaccharides to monosaccharides (e.g. maltase, sucrase, lactase)

**Mesophyll cells** - cells in a leaf where gas exchange takes place, have a large surface area

**Metabolic rate** - amount of energy used by an organism in a given time

- Micelles** - structures containing monoglycerides, fatty acids and bile salts which release monoglycerides and fatty acids for absorption
- Myocardial infarction** - when blood supply to the heart muscle tissue is cut off due to a blockage in a coronary artery, often called a heart attack
- Operculum** - bony flap which protects the gills in fish
- Oxygen affinity** - how easily haemoglobin will combine with oxygen (high affinity = easily combines)
- Oxygen saturation** - how saturated haemoglobin is with oxygen (100% saturation = all haemoglobin has four oxygen molecules bound)
- Oxyhaemoglobin** - haemoglobin bound to oxygen
- Oxyhaemoglobin dissociation curve** - shows the saturation of haemoglobin with oxygen at different partial pressures of oxygen
- Partial pressure** - can be thought of as the concentration of a specific gas in a cell (but that is not the chemistry definition)
- Pepsin** - type of endopeptidase secreted by cells in the stomach lining which works in acidic conditions
- Phloem** - tissue that transports organic substances (solute) such as sucrose in plants
- Potometer** - equipment used to investigate rate of transpiration
- Pressure filtration** - process which results in the formation of tissue fluid
- Pulmonary artery** - large artery carrying deoxygenated blood from the heart to the lungs
- Pulmonary tuberculosis (TB)** - bacterial lung disease which decreases tidal volume and can cause fibrosis
- Pulmonary vein** - large vein carrying oxygenated blood from the lungs to the heart
- Pulmonary ventilation rate** - volume of air breathed in or out in a minute (tidal volume x ventilation rate)
- Renal artery** - artery carrying oxygenated blood to the kidneys
- Renal vein** - vein carrying deoxygenated blood away from the kidneys
- Semi-lunar valves** - valves at the base of the pulmonary artery and aorta in the heart
- Sieve plate** - end walls between sieve tube elements which allow solutes to pass through
- Sieve tube elements** - living cells forming the phloem vessel tubes
- Sink** - area of a plant where a solute is used up e.g. a tuber that stores sucrose as starch
- Solute** - dissolved substances
- Source** - area of a plant where a solute is made e.g. a leaf that makes sucrose
- Spiracles** - pores on the surface of an insect which allow movement of air in and out of the tracheal system
- Spirometer** - equipment used to measure volume of air breathed in and out
- Stomata** - pores normally on the under sides of leaves which open and close to allow gas exchange, surrounded by guard cells which control opening
- Stroke volume** - volume of blood pumped by one ventricle when it contracts
- Thoracic cavity** - space where the lungs are contained
- Thrombosis** - formation of a blood clot when an atheroma ruptures the endothelium of an artery

- Tidal volume** - volume of air inhaled or exhaled in each breath
- Tissue fluid** - fluid that surrounds cells in tissues
- Toluidine blue O (TBO)** - stains lignin a blue-green colour which allows the xylem vessels to be viewed under a microscope
- Trachea** - large windpipe from the mouth to the lungs
- Tracheae** - tiny pipes which allow air movement through insects
- Tracheoles** - branch off from tracheae in insects, exchange gases with cells
- Translocation** - movement of solutes from source to sink through phloem vessels
- Transpiration** - evaporation of water from the surface of a plant
- Trypsin** - type of endopeptidase secreted by the pancreas
- Unidirectional** - flow of blood travels in one direction only
- Valves** - prevent backflow of blood in the heart and in veins
- Veins** - blood vessels carrying deoxygenated blood away from organs and tissues, contain valves
- Vena cava** - large vein carrying deoxygenated blood from the body to the heart
- Ventilation** - inspiration and expiration to move air in and out of the lungs
- Ventilation rate** - number of breaths per minute (breathing rate)
- Venules** - small blood vessels carrying deoxygenated blood away from capillary beds, converge into veins
- Visking tubing** - can be used in experiments as a partially permeable membrane when investigating absorption
- Waxy cuticle** - layer on the top surface of a leaf which reduces evaporation of water
- Xerophytes** - plants that are adapted to prevent water loss in dry, warm or windy habitats
- Xylem** - tissue that transports water in the stem and leaves of plants