

Definitions and Concepts for OCR (A) Biology GCSE

Topic 2: Scaling Up

*Definitions in **bold** are for higher tier only*

Definitions marked by '' are for separate sciences only*

Active transport - The movement of particles from an area of low concentration to an area of high concentration, against the concentration gradient. This requires energy.

Adult stem cell - A stem cell found in the bone marrow that can form many types of cells.

Alveoli - Small air sacs in the lungs that serve as the gaseous exchange surface. They provide a large surface area for efficient exchange.

Aorta - The main artery that takes oxygenated blood away from the heart to the body.

Artery - A blood vessel that carries blood away from the heart under high pressure.

Atrium (pl. atria) - The upper chamber of the heart that receives the blood from the veins.

Biconcave - Describes the shape of red blood cells which increases the surface area for gaseous exchange.

Blood - A tissue that contains red blood cells, white blood cells, plasma and platelets.

Bone marrow - A human tissue that contains stem cells which can develop into red blood cells.

Cell cycle - A series of events that take place in a cell in preparation for cell division.

Cell differentiation - The production of specialised cells allowing organisms to become more efficient. †

Companion cells - The active cells of the phloem. They provide energy for the phloem to transport substances.

Concentration gradient - The difference in concentration between two areas.

Cytokinesis - The third stage of the cell cycle in which two identical diploid daughter cells are formed.

Diffusion - The net spreading out of particles from a high concentration to a lower concentration (down their concentration gradient). Energy is not required.

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Double circulatory system - A circulatory system found in mammals in which the blood passes through the heart twice in a full body circuit.

Embryo - An organism in its early stages of development.

Embryonic stem cell - A type of stem cell found in very early embryos that can differentiate into any cell type.

Guard cells - Cells that control the opening and closing of the stomata.

Heart - The organ that pumps blood around the body.

Hypertonic - The net movement of water out of the cell via osmosis.

Hypotonic - The net movement of water into the cell via osmosis.

Interphase - The first stage of the cell cycle in which cells grow, new proteins are synthesised and chromosomes are replicated.

Lignin - A material that lines the xylem vessels and provides strength and support.

Meristematic cell - A type of cell that can differentiate into any plant cell type.

Meristem tissue - A plant tissue that contains many undifferentiated cells.

Mitosis - A type of cell division that produces two identical diploid daughter cells (i.e. contain a full set of chromosomes) from one parent cell. It is the second stage of the cell cycle and is important for growth, development and the replacement of damaged cells.

Multicellular organism - An organism that has more than one cell.

Muscle cell - A specialised animal cell that contracts or relaxes causing muscle movement.

Nerve cell - A specialised animal cell that transmits electrical impulses.

Osmosis - The net movement of water molecules from a region of high concentration to a region of low concentration through a partially permeable membrane.

Phloem - A plant tissue that transports sugars from the source to the sink.

Plasma - A pale yellow liquid found in the blood that carries water, enzymes, salts, nutrients, proteins, urea and hormones.

Plasmolysis - The net movement of water out of a plant cell, causing the cell membrane to move away from the cell wall. This results in cell death.

Potometer - A piece of capillary tube that is used to investigate the rate of transpiration. Water loss from the surface of the leaf is measured by the distance that the air bubble travels over a certain period of time.



Pulmonary artery - The main artery that carries deoxygenated blood away from the heart to the lungs.

Pulmonary vein - The main vein that carries oxygenated blood back to the heart from the lungs.

Red blood cells - Cells in the blood that carry oxygen and remove carbon dioxide.

Root hair cells - Specialised cells that provide a large surface area for the uptake of water and minerals from the soil.

Sieve tubes - Plant cells that have no nuclei and are connected via the cytoplasm.

Sperm cell - A specialised animal cell that carries the male DNA to the egg for reproduction.

Stem cell - Cells that are unspecialised and capable of differentiating into a range of different cell types.

Stomata - Small pores in the epidermis of the leaves that facilitate gaseous exchange.

Translocation - The process of transporting sucrose around the plant.

Transpiration - The loss of water from the surface of the leaves by evaporation from the open stomata.

Turgid - When the vacuole of a plant cell becomes swollen and enlarged with water.

Undifferentiated cell - A cell that is not specialised for its function.

Valves - Structures found at each end of both ventricles that prevent the backflow of blood (ensuring blood flows in only one direction).

Vein - A blood vessel that carries deoxygenated blood to the heart at low pressure.

Vena cava - The main vein that carries deoxygenated blood back to the heart from the body.

Ventricles - The lower chambers of the heart that receive blood from the atria and pump it to the arteries. The heart has two ventricles.

Villi - Small projections from the small intestine that increase the surface area for food absorption.

Water potential - A measure for the tendency of water to move from one area to another area. It is represented by the sign Ψ (Psi).

Xylem - A specialised plant tissue that transports water and dissolved minerals from the roots to the leaves of the plant.

✚ Definition taken from: [OCR Gateway Science Biology A Specification \(J247\) V3.1 \(July 2020\)](#)

