

Definitions and Concepts for CAIE Biology IGCSE

Topic 2: Organisation of the Organism

*Definitions in **bold** are for supplement only*

Acrosome - An organelle in the tip of a sperm that contains enzymes which digest the cells around an egg and the egg membrane.

Cell - The basic building block of all living organisms.

Cell membrane - A partially permeable barrier that surrounds the cell.

Cell wall - An outer layer made of cellulose that strengthens plant cells.

Chloroplast - An organelle in which photosynthesis occurs.

Cilia - Hair-like structures found on ciliated cells that waft substances across the surface of tissue in one direction.

Ciliated cell - A type of epithelial cell that lines the surface of structures such as the respiratory tract and uterus. Ciliated cells are covered in tiny hair-like structures known as cilia.

Cytoplasm - A thick solution of salts, water and proteins within the cell. It contains the cell's organelles.

Egg cell - A specialised female sex cell involved in reproduction. It has a haploid nucleus which holds the genetic material of the cell and a large amount of cytoplasm containing nutrients for the growth of the early embryo.

Gamete - A reproductive cell with half the chromosomes of normal cells.

Light microscope - A type of microscope that uses a series of lenses to magnify the visible light reflecting off a specimen. It has a low magnification and resolution.

Magnification - The number of times larger an image appears compared to the original object, calculated using the formula:

$$\text{image size} = \text{magnification} \times \text{real size}$$

Micrometre (μm) - A quantitative unit of length. One micrometre is equal to $\times 10^{-6}$ metre.

Millimetre (mm) - A quantitative unit of length. One millimetre is equal to $\times 10^{-3}$ metre.



Mitochondria - An organelle that is the site of aerobic respiration. Cells with high rates of metabolism require a large number of mitochondria.

Nerve cells - Specialised cells responsible for the transmission of nerve impulses to and from the brain and spinal cord.

Nucleus - An organelle found in most plant and animal cells that contains the genetic material of the cell and controls the activities of the cell.

Organ - A group of specialised tissues working together to carry out a specific function.

Organelle - A specialised structure found inside a cell.

Organ system - A group of specialised organs working together to carry out a specific function.

Palisade mesophyll cells - Plant cells located below the upper epidermis. They receive a large amount of light so contain a high concentration of chloroplasts for photosynthesis.

Prokaryotic cell - A type of cell found in bacteria that does not contain a nucleus or membrane-bound organelles.

Red blood cell - A type of blood cell that is anucleate and biconcave. It contains haemoglobin which enables the transport of oxygen and carbon dioxide to and from the tissues.

Ribosomes - Organelles that are the site for protein synthesis.

Root hair cells - Specialised cells responsible for the uptake of water and minerals from the soil.

Sperm cell - A specialised male sex cell involved in reproduction. It consists of a head containing the acrosome and haploid nucleus, a midpiece containing many mitochondria and a tail.

Tissue - A group of specialised cells working together to carry out a specific function.

Vacuole - An organelle found in plant cells which stores cell sap and supports the cell.

Xylem vessel - A transport tissue in plants that is specialised to transport water and dissolved minerals from the roots of the plant to the leaves.

