

Definitions and Concepts for Edexcel Biology GCSE

Topic 1: Key Concepts in Biology

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

Definitions marked by '' are for separate sciences only*

Acrosome - An organelle in the tip of a sperm that contains enzymes which digest the egg cell membrane.

Active site - A specific region on an enzyme where the substrate binds and the reaction takes place.

Active transport - The movement of substances from a low concentration to a higher concentration (against the concentration gradient) across a membrane, with the use of energy from respiration.

***Benedict's test** - A chemical test used to test for reducing sugars that produces a different colour based on the amount of reducing sugar present.

***Biuret test** - A chemical test that produces a purple colour when it is added to a solution containing protein.

***Calorimetry** - A method of measuring heat transfer during a chemical reaction.

Carbohydrases - Enzymes that break down carbohydrates into simple sugars.

Carbohydrate - A large molecule that is synthesised from simple sugars.

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 that is the site of photosynthesis.

Chromosome - A long, coiled molecule of DNA that carries genetic information in the form of genes.

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

Ciliated epithelial cell - A type of epithelial cell that lines the surface of structures such as the respiratory tract and uterus.

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Concentration gradient - The difference in concentration between two areas.

Denaturation - Upon exposure to high temperatures or extremes of pH, the permanent change in the shape of an enzyme's active site that prevents the binding of a substrate.

Diffusion - The net spreading out of particles from a high concentration to a lower concentration (down their concentration gradient).

Diploid cell - A cell that contains two copies of each chromosome (i.e. a full set of chromosomes).

Egg cell - A specialised female sex cell involved in reproduction.

Electron microscope - A type of microscope that uses a beam of electrons, focused using magnets, to produce an image of a specimen. It has a greater magnification and resolution than a light microscope.

***Emulsion test** - A chemical test that produces a cloudy emulsion when performed on lipids.

Enzyme - A biological catalyst that increases the rate of reactions in living organisms.

Eukaryotic cell - A type of cell found in plants and animals that contains a nucleus.

Flagella - A long hair-like structure found on bacterial cells that is used for cell movement.

Haploid cell - A cell that contains a single copy of each chromosome (i.e. half the number of chromosomes).

***Iodine test** - A chemical test that produces a blue/black colour when iodine solution is added to a sample containing starch.

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

Lipases - Enzymes that break down lipids into fatty acids and glycerol.

Lipid - A large molecule that is synthesised from fatty acids and glycerol.

Lock and key hypothesis - A theory that describes how substrates must be the correct shape to fit the active site of an enzyme.

Magnification - The number of times bigger 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 respiration.

Nanometre (nm) - A quantitative unit of length. One nanometre is equal to $\times 10^{-9}$ metre.

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

Organelle - A specialised structure found inside a cell.

Osmosis - The diffusion of water molecules from a region of high water concentration to a region of lower water concentration across a partially permeable membrane.

Percentage change in mass - The proportion of the mass of a substance that has changed over a set period, calculated using:

$$\text{percentage change in mass} = \frac{\text{final mass} - \text{initial mass}}{\text{initial mass}} \times 100$$

Picometre (pm) - A quantitative unit of length. One picometre is equal to $\times 10^{-12}$ metre.

Plasmid - Loops of DNA found in the cytoplasm of prokaryotic cells.

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

Proteases - Enzymes that break down proteins into amino acids.

Protein - A large molecule that is synthesised from amino acids.

Rate of reaction - The speed at which reactants are converted into products.

Resolution - The smallest distance between two objects that can be distinguished.

Ribosomes - Sub-cellular structures that are the site of protein synthesis.

Specialised cell - A cell that has a structure which makes it adapted to its function.

Specificity - Describes the ability of an enzyme to catalyse only a particular reaction or set of reactions in which a specific substrate fits the active site of the enzyme.

Sperm cell - A specialised male sex cell that is involved in reproduction.

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

