

## Definitions and Concepts for OCR (A) Biology GCSE

### Topic 1: Cell Level Systems

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

*Definitions marked by '\*' are for separate sciences only*

**Active site** - The part of the enzyme which is specific to the substrate and has a complementary shape to it.

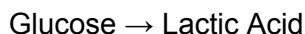
**Aerobic respiration** - A form of respiration that uses a plentiful supply of oxygen to release energy from glucose. It is shown by the following equation:



**Amino acids** - Small molecules that make up a protein.

**Amylase** - An enzyme that breaks down carbohydrates into simple sugars. It is produced in the pancreas and salivary glands.

**Anaerobic respiration** - A form of respiration that releases energy from glucose when there is an oxygen debt. Anaerobic respiration in animals is shown by the following equation:



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

**Cell membrane** - A selectively permeable barrier which controls the movement of substances into and out of the cell. It also has receptor molecules on the surface for cell-to-cell signalling.

**Cellular respiration** - A continuously occurring chemical process which is universal and occurs in all living cells. It is exothermic and releases energy (in the form of ATP) from the breakdown of organic compounds such as glucose.

**Cell wall** - An outer layer made of cellulose fibres. It provides the plant cell with strength and support.

**Chloroplasts** - The organelles that are the site of photosynthesis. They contain chlorophyll (a green pigment) which absorbs light energy and important enzymes which are needed for photosynthesis.

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

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**Cover slip** - A small piece of glass placed on top of the specimen to protect it from the lens.

**Denaturation** - The permanent change in the shape of an enzyme's active site that stops the enzyme functioning normally.

**\*DNA (Deoxyribonucleic acid)** - A polymer made up of four nucleotides, each consisting of a phosphate group and a common sugar which has one of four different bases attached: Adenine (A), Thymine (T), Cytosine (C) and Guanine (G).

**Enzymes** - Biological catalysts that increase the rate of chemical reactions.

**Enzyme specificity** - Enzymes will only act on specific substrates that have a complementary shape to the active site of the enzyme.

**Eukaryotic cell** - A type of cell found in plants and animals that has a nucleus and other membrane-bound organelles.

**Exothermic reaction** - A reaction that releases energy, usually in the form of light or heat.

**Eyepiece lens** - The lens that further magnifies the image produced by the objective lens.

**Fatty acid** - A carboxylic acid that has a long carbon chain. Fatty acids react with glycerol to make lipids.

**Genetic material** - The material that stores the genetic information.

**Light microscope** - A microscope that used light to produce an image of a specimen.

**Limiting factor** - **A factor that when in short or inadequate supply limits the rate of a reaction.**

**Lipase** - An enzyme that breaks down lipids into fatty acids and glycerol.

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

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

**Magnification** - How many times larger the image appears relative to the original object.

$$\text{Magnification} = \text{image size} / \text{actual size}$$

**Mitochondria** - The organelle which is the site of aerobic respiration. It contains enzymes required for cellular respiration.

**Monomer** - A small molecule which can be bonded to other identical monomers to form a large polymer. Monomers usually contain a carbon-carbon double bond, C=C.

**Nucleotide** - The monomers of DNA that consist of a common sugar, a phosphate group and a base attached to the sugar. The chemical base can be one of A, C, T or G.



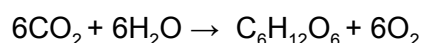
**Nucleus** - An organelle found in most eukaryotic cells that contains the cell's genetic material and controls the activities of the cell.

**Objective lens** - The lens found closest to the specimen that magnifies the image.

**Palisade mesophyll** - A specialised plant tissue that carries out photosynthesis.

**Permanent vacuole** - An organelle found in plant cells which stores cell sap and helps maintain the cell's turgidity. A small, temporary vacuole can be found in animal cells that is used for the storage and transportation of substances.

**Photosynthesis** - An endothermic reaction that takes place in the chloroplasts, converting carbon dioxide and water into glucose and oxygen using light energy. It is a two-stage process.



Sunlight energy

**Photosynthetic organisms** - Organisms that are the main producers of food and therefore biomass for life on earth. †

**Plasmid** - A circular loop of double-stranded DNA that is found in the cytoplasm of prokaryotic cells. It is free to move unlike chromosomal DNA.

**Polymer** - Many small molecules (monomers) chemically joined together to make 1 large molecule.

**Prokaryotic cell** - A unicellular organism that lacks a nucleus and other membrane-bound organelles e.g. bacteria.

**Protein** - A large molecule synthesised from amino acid monomers.

**\*Protein synthesis** - The formation of proteins from amino acids which takes place in the ribosomes.

**Resolution** - The ability to see two cells as two separate entities (measured in dpi).

**Ribosomes** - Organelles which are the site of protein synthesis.

**Scanning electron microscope (SEM)** - A microscope that uses reflected electrons to produce an image of a specimen. It creates a 3D image with a lower resolution.

**Slide** - A thin piece of glass on which the specimen is placed.

**\*Transcription** - The unzipping of the DNA molecule around the gene, copying it to mRNA in the nucleus. †

**\*Translation** - Translating the mRNA sequence to an amino acid sequence during protein synthesis.



**Transmission electron microscope (TEM)** - A microscope that uses transmitted electrons to produce an image of a specimen. It creates a 2D image with a higher resolution so details of organelles can be seen.

**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 \(July 2020\)](#)

