

Definitions and Concepts for WJEC (Wales) Biology GCSE

Topic 1.2: Respiration and the Respiratory System in Humans

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

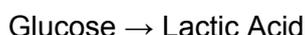
Definitions marked by '*' are for separate sciences only

Aerobic respiration - A process that occurs in all cells when oxygen is available. It is a series of enzyme-controlled reactions within the cell that use glucose and oxygen to release energy **in the form of ATP** and produce carbon dioxide and water.



Alveoli - Tiny air sacs in the lung which are the site of gaseous exchange.

Anaerobic respiration - A form of respiration that releases energy from glucose when there is an oxygen debt. **As glucose is incompletely broken down in anaerobic respiration, it is less efficient and produces less ATP than aerobic respiration.** Anaerobic respiration in animals is shown by the following equation:



Carbon monoxide - A chemical that binds irreversibly with red blood cells, reducing their capacity to carry oxygen.

Carcinogen - A chemical that increases the risk of developing cancer.

Cilia - Small hair-like structures which beat and waft mucus away, keeping the airways clear.

Cytoplasm - Contains dissolved nutrients and salts and the organelles. It is also the site of many chemical reactions.

Diaphragm - The sheet of muscle between the thoracic and abdominal cavity. The diaphragm (along with the ribcage) is important for changing the volume of the thorax during ventilation.

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

Emphysema - A non-communicable disease which causes the breakdown of the alveoli walls.

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

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

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

Mucus - A sticky substance released into the respiratory tract to trap microorganisms.

Nicotine - A chemical which makes smoking addictive and causes direct damage to the lungs.

Respiratory system - A specialised system which allows efficient gaseous exchange.

Tar - A sticky substance which blocks airways and stimulates mucus production leading to clogged airways.

Ventilation - The process by which fresh air moves into the lungs and stale air moves out the lungs.

✦ Definition taken from: [WJEC \(Wales\) GCSE in BIOLOGY Specification V.2 January 2019](https://www.wjec.co.uk/media/10000000/WJEC_Wales_GCSE_in_BIOLOGY_Specification_V.2_January_2019.pdf)

