

Definitions and Concepts for OCR (B) Biology GCSE

Topic 5: The Human Body – Staying Alive

*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.

Adrenaline - A hormone released by the adrenal gland which increases heart rate and breathing rate - it is involved in the fight-or-flight response. It also raises blood sugar levels by increasing the conversion of glycogen into glucose.

Antidiuretic hormone (ADH) - A hormone secreted by the pituitary gland which increases water reabsorption in the kidney by making the kidney tubules more permeable to water.

Aorta - The main artery that takes oxygenated blood away from the left ventricle of 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.

***Brain stem** - A structure of the brain that connects the brain to the rest of the body. The brain stem is important for regulating involuntary processes, such as heart and breathing rates.

Capillaries - The smallest type of blood vessels that provide oxygen and nutrients to the cells, and connect the arteries to the veins.

***Cataract** - The build-up of protein in the lens of the eye, causing it to become cloudy and restricting vision.

Central nervous system (CNS) - The brain and the spinal cord.

***Cerebellum** - The region of the brain that controls conscious movement, balance and coordination.

***Cerebral cortex** - The outer layer of the cerebrum.

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***Cerebrum** - The highly folded region of the brain that is responsible for controlling learning, consciousness, senses, language, personality and memory. It is divided into the right and left hemispheres.

***Ciliary body** - An extension of the iris. It contains the ciliary muscle which can contract or relax to change the shape of the lens - this allows the lens to change the focus from near objects to far objects.

Concentration gradient - The difference in concentration between two areas.

Contraception - Methods that are used to prevent pregnancy.

Cornea - The front part of the eye that refracts light as it enters, focusing it onto the retina.

***Debilitating illness** - An illness in which there are severe impairments in the ability to function. Debilitating illnesses can be caused by permanent neuronal damage that is extremely difficult or impossible to treat e.g. Alzheimer's disease.

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

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

Digestive system - A group of organs that work together to break down food into smaller molecules for absorption into the blood.

Effector - A gland or muscle that produces a response to a stimulus to restore optimum conditions.

Endocrine glands - Tissues or organs that are specialised to produce and secrete hormones directly into the bloodstream.

Endocrine system - A chemical messenger system in which hormones are released into the bloodstream to control metabolism, development, growth and reproduction.

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

Excretory system - A group of organs that work together to remove excess and waste substances from the body.

Follicle stimulating hormone (FSH) - A female reproductive hormone that is released by the pituitary gland. It is responsible for the maturation of an egg in the ovary and the production of oestrogen.

***Functional magnetic resonance imaging (fMRI)** - A non-invasive method of studying brain function.



Gaseous exchange system - A group of organs that work together to ensure efficient gaseous exchange.

Glucagon - A hormone released by the pancreas that works antagonistically to insulin; it causes glycogen to be converted to glucose, increasing blood glucose levels.

Haemoglobin - A protein found in red blood cells which is responsible for carrying oxygen.

Heart - The muscular organ that pumps blood around the body.

Hormone - A chemical messenger secreted by the endocrine glands into the bloodstream and transported to receptors on target organs.

Human circulatory system - A system consisting of the heart, blood and blood vessels which circulates blood around the body.

Hypothalamus - The part of the brain that is the regulation centre for temperature and water balance of the body.

Infertility - The inability to reproduce after 12 months or more of unprotected sex.

Insulin - A hormone produced by the pancreas which controls the body's blood sugar levels. It works to decrease glucose levels.

In vitro fertilisation (IVF) - The fertilisation of an egg using sperm outside of the body. IVF is used when a couple are having difficulty conceiving.

***Iris** - The muscular ring around the iris that contracts or relaxes to control the size of the pupil, and therefore the amount of light entering the eye.

Kidneys - The two organs in the body that maintain water balance and produce urine.

Luteinising hormone (LH) - A female reproductive hormone released by the pituitary gland that stimulates the release of an egg from the ovary (ovulation).

Lens - A part of the eye that further refracts light to focus it onto the retina.

***Long-sightedness (hyperopia)** - A defect of the eye where distant objects appear out of focus due to the convergence of light rays behind the retina.

Menstrual cycle - The monthly cycle in the female reproductive system that involves the development of the uterus lining, ovulation (release of the egg), maintenance of the uterus lining and its shedding.

Menstruation - The shedding of the uterus lining in the menstrual cycle, also known as a 'period'. Menstruation only occurs if the egg has not been fertilised.

Motor neurone - The neurone that transmits impulses from the relay neurone to the effector to produce a response.



Myelin sheath - A fatty layer that surrounds and insulates the axon. The myelin sheath increases the speed of transmission of the impulse.

Negative feedback system - A system which works to reverse the initial stimulus.

Nervous system - A system consisting of the brain, spinal cord, neurones and sensory organs which work together to respond to stimuli inside and outside the body.

Neurotransmitter - Signalling molecules which transmit impulses from one neurone to the next.

Oestrogen - A female sex hormone produced in the ovaries that regulates the menstrual cycle and controls the development of secondary sexual characteristics.

***Osmoreceptors** - Receptors in the hypothalamus that detect a change in osmotic pressure.

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

***Osmotic lysis** - The bursting of an animal cell due to the movement of too much water into it.

***Osmotic shrinking** - The shrinkage of an animal cell due to the movement of water out of it.

Ovulation - The release of a mature egg from the ovary. This usually happens at day 14 of the menstrual cycle.

Pituitary gland - A gland at the base of the brain that stores and releases hormones which regulate many bodily functions.

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

Progesterone - The hormone that maintains the uterus lining during the later stages of the menstrual cycle and in pregnancy.

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.

Ray diagram - A diagram used to model damage or degradation of cells and tissue in the eye.

Receptor - A cell or organ that detects and recognises a stimulus.

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



Reflex action - Rapid, automatic responses that do not involve a processing centre. ✚

Reflex arc - The pathway of neurones involved in a reflex action:

stimulus → sensory → sensory → relay → motor → effector → response
 receptor neurone neurone neurone

Relay neurone - The neurone that transmits electrical impulses from the sensory neurone to the motor neurone. Relay neurones are located in the spinal cord.

***Retina** - The light-sensitive layer at the back of the eye that contains light receptors.

Sensory neurone - The neurone that transmits the electrical impulse from the receptor to the relay neurone.

Septum - The division between the ventricles and the atria in the heart.

***Short-sightedness (myopia)** - A defect of the eye where distant objects appear out of focus due to the convergence of light rays in front of the retina.

Suspensory ligaments - The structures attaching the lens to the ciliary muscle.

Synapse - The junction between two neurones (nerve cells).

Thermoreceptors - Receptors in the hypothalamus that detect a change in temperature of the blood.

Thyroxine - **A hormone released by the thyroid gland that controls the metabolic rate and the rate of glucose uptake during respiration. It also promotes growth.**

Type 1 diabetes - A condition in which the pancreas fails to produce insulin resulting in high blood sugar levels.

Type 2 diabetes - A condition in which a person develops insulin resistance or doesn't produce enough insulin.

Urea - A product of excess amino acid breakdown in the liver. It is the main waste product in urine.

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

Vasoconstriction - The constriction of blood vessels when the body is too cold. This reduces heat loss from the blood.

Vasodilation - The dilation of blood vessels when the body is too hot. This increases heat loss from the blood.

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 right atrium of the heart from the body.

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

✦ Definition taken from: [OCR Gateway Science Biology \(B\) Specification \(J257\) V3.1 \(January 2020\)](#)

