

Definitions and Concepts for OCR (A) Biology GCSE

Topic 6: Global Challenges

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

Definitions marked by '' are for separate sciences only*

Acquired immunodeficiency syndrome (AIDS) - The later stage of HIV infection in which prolonged attack by the HIV virus results in a weakened immune system that is susceptible to other infections.

Afforestation - Growing trees to replace those that have been cut down.

Antibiotic - A type of medication that helps cure bacterial disease by killing infective bacteria inside the body.

Antibiotic resistance - The ability of a bacteria to become resistant to the treatment that is being used to kill it, i.e. antibiotics. This provides evidence for evolution.

Antibiotic resistance markers - **An antibiotic resistant gene that produces a protein which enables a cell to become resistant to antibiotics.**

Antigen - A protein found on the surface of the pathogen that induces an immune response.

Antiseptic - A type of medication that helps kill microorganisms that cause disease.

Antiviral - A type of medication that helps cure viral disease by killing infective viruses inside the body.

***Aseptic techniques** - A range of techniques used to culture microorganisms under sterile conditions in order to minimise contamination.

Athlete's foot - A disease caused by fungus in animals which is transmitted by touching infected skin. It causes a red flaky rash in between the toes and is treated using antifungal creams.

***Autoclaving** - A method used to sterilise glassware and growth media in a strongly heated container/oven.

Bacteria - A type of pathogen which is single-celled and prokaryotic (note: not all bacteria are pathogenic).

Barley powdery mildew (*Erysiphe graminis*) - A disease caused by fungus in plants which causes white fluffy growth on leaves, eventually leading to plant death.

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Benign tumour - A tumour that is non-cancerous so cannot spread around the body.

Biodiversity - The variety of different organisms living in an ecosystem.

Blood - A tissue that contains red blood cells, white blood cells, plasma and platelets.

Bronchitis - A non-communicable disease which causes inflammation of the bronchi and bronchioles.

Capture-recapture - A method of estimating population size. Organisms are captured, marked and then released back into the community. Time is allowed for them to redistribute and another sample is collected. The number of marked and unmarked species in the second sample is compared.

Cancer - The result of changes in cells that lead to uncontrolled growth and division. †

Carcinogens - Chemicals or agents that are cancer causing.

Cardiovascular disease - A non-communicable disease that affects the heart or blood vessels.

***Cell wall** - An outer layer made of cellulose fibres. It provides the plant cell with strength and support. It also acts as a barrier to pathogens.

Cervical cancer - A non-communicable disease as a result of prolonged infection by HPV.

Cilia - Hair-like structures on epithelial cells that beat to waft substances away.

Cirrhosis - A non-communicable disease, due to excess alcohol consumption, that causes scarring of the liver.

Communicable disease - A disease that is caused by a pathogen which can be spread between individuals. It is not inherited or caused by environmental factors.

Conservation - The preservation and careful management of the environment or natural resources.

Coronary heart disease - A non-communicable disease involving the blockage of the coronary arteries and disruption of oxygen supply to the heart.

Crown gall disease - A disease caused by the bacterium *Agrobacterium tumefaciens* in plants which infects the stem and roots causing tumours.

***Cuticle** - A waxy layer on the leaf which is a barrier to pathogens.

Disease - An illness that affects animal or plant health.

Ecosystem - The community of organisms (biotic) and non-living (abiotic) components of an area and their interactions.



Ecotourism - Tourism that is driven towards natural environments to benefit local conservation schemes.

***Fertiliser** - Natural or artificial materials that are added to soils to provide essential nutrients and improve plant growth.

***Flaming** - A method used to sterilise equipment (usually bottlenecks) to prevent contamination.

Fungi - A type of pathogen which is eukaryotic and can be single-celled or multicellular, e.g. yeast and mushrooms.

Genetic engineering - The modification of the genome of an organism (by inserting a desired gene from another organism) to introduce desirable characteristics. †

***Genetic modification** - Altering the genetic information of an organism.

Genome - The organism's complete genetic material.

Habitat - The place where plants, animals and all other living organisms live. A habitat includes all biotic and abiotic factors.

Health - The well-being of an individual with regard to their physical and mental state.

***Human chorionic gonadotropin (hCG)** - A hormone present in the urine of pregnant women.

Human immunodeficiency virus (HIV) - A communicable disease caused by a virus that is transmitted through bodily fluids. HIV may be spread via unprotected sex and the sharing of needles.

Human papillomavirus (HPV) - A communicable viral disease which is transmitted through unprotected sex.

***Hydroponics** - A method of growing plants in something other than soil, whilst adding nutrients.

Immune system - The body's defence mechanism against foreign bodies.

Immunosuppressant drugs - Medication that suppresses the immune system and must be taken after a transplant to prevent rejection.

Ligase - An enzyme used to join pieces of DNA together. It binds complementary sticky ends together.

***Lymphocyte** - A type of white blood cell made by the body to protect against disease and infection.

Malaria - A disease caused by a protist spread by mosquitoes. It causes recurring fever which can be fatal.



Malignant tumour - A cancerous tumour that grows rapidly and can be spread around the body.

***Monoclonal antibodies** - Antibodies produced from a single clone of cells that are specific to one binding site on one protein antigen.

Non-communicable disease - A disease that cannot be transmitted as it is caused by environmental factors or is inherited. It is not pathogenic.

Non-specific defence system - The defence system that protects against a variety of pathogens.

Pathogen - A bacteria, virus or any other microorganism that can cause disease.

***Pesticide** - A chemical used to control pests around crops.

Placebo - An inactive version of a drug. It is indistinguishable from the real drug but has no effect on the recipient.

Plasmid - A circular loop of double-stranded DNA which is found in the cytoplasm of prokaryotic cells. It is used as a vector in genetic engineering.

Platelets - Cell fragments involved in the clotting of blood.

Pollution - Contamination or destruction of the natural environment due to human intervention.

***Polymerase chain reaction (PCR)** - A technique used to rapidly amplify fragments of DNA into millions of copies.

Pooter - A piece of equipment used to collect small insects. Small insects are drawn into a chamber via a tube by sucking on the mouthpiece.

***Prostate cancer** - Cancer of the prostate gland in men.

Protist - A type of pathogen which is eukaryotic and single-celled. It is from the kingdom Protista.

Quadrat - A square grid used for sampling a known area to determine the abundance and distribution of organisms.

Random sampling - A sampling technique used to avoid bias in which the sample area is chosen at random.

Restriction enzyme - An enzyme that cuts DNA in specific places producing sticky ends.

Salmonella - A disease caused by bacteria in animals due to the consumption of undercooked foods such as meat and eggs (food poisoning).



Selective breeding - A process in which desired organisms are bred to produce offspring with desirable characteristics.

Species - A group of organisms that can interbreed and produce fertile offspring.

Statins - A type of drug used to lower cholesterol levels. It is used in the treatment of some cardiovascular diseases.

Stem cell - A cell that is unspecialised and capable of differentiating into a range of different cell types.

Stent - A wire mesh used in the treatment of coronary heart disease. It widens the artery in order to maintain the heart's oxygen supply.

Sticky ends - **Single stranded DNA ends of double-stranded DNA that stick out. They are able to bind to another DNA fragment.**

Stroke - A form of brain damage in which the blood supply to a region of the brain is cut off. This may be due to a blocked artery or bleeding in the blood vessels of the brain.

***Sustainability** - The ability to maintain something for future generations.

Tissue transplant - An operation to replace damaged tissue with healthy tissue, from a healthy donor.

Tobacco mosaic virus (TMV) - A disease caused by a virus in plants which affects chloroplasts and produces a 'mosaic' pattern on the leaves. This prevents efficient photosynthesis, limiting plant growth.

Transect - A line (usually created by a tape measure) along which samples are taken. It is used to measure the abundance and distribution of organisms in an ecosystem.

Transplant rejection - The rejection of the transplant tissue by the immune system of the recipient's body.

Tuberculosis (TB) - A communicable bacterial disease which damages and destroys lung tissue, suppressing the immune system.

Tumour - A mass of cells formed due to uncontrolled cell division.

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

Vaccination - A method of introducing small quantities of inactive or dead forms of pathogen to stimulate antibody production by white blood cells.

Vector - **A carrier used to transfer a gene from one organism to another.**

Virus - A type of pathogen that can infect any living organism. They are only able to reproduce inside a living host.



White blood cells - Cells of the immune system that protect the body from invading pathogens. They produce antibodies and antitoxins.

✦ Definition taken from: [OCR Gateway Science Biology A Specification \(J247\) V3.1 \(July 2020\)](#)

