



SWGS KS4 VOCABULARY LIST: BIOLOGY

This list consolidates key vocabulary in the subject, making it easier for you to know, understand and use it accurately. This may be provided as a pre-filled glossary or a word list to complete. Your teachers will use this vocabulary frequently, and you will encounter it in reading. You will be expected to learn meanings and spellings.

B1.1 Cell structures

Keyword	Definition
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 surfaces for cell-to-cell signalling.
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.
Cover slip	A small piece of glass placed on top of the specimen to protect it from the lens.
Eukaryotic cell	A type of cell found in plants and animals that has a nucleus and other membrane-bound organelles.
Eyepiece lens	The lens that further magnifies the image produced by the objective lens.
Genetic material	The material that stores the genetic information.
Light microscope	A microscope that used light to produce an image of a specimen.
Magnification	How many times larger the image appears relative to the original object. $\text{Magnification} = \frac{\text{image size}}{\text{actual size}}$
Mitochondria	The organelle which is the site of aerobic respiration. It contains enzymes required for cellular respiration.
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.
Permanent vacuole	An organelle found in plant cells which stores cells 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.
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.
Prokaryotic cell	A unicellular organism that lacks a nucleus and other membrane-bound organelles e.g. bacteria.
Resolution	The ability to see two cells as two separate entities.
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.
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.

B1.2 What happens in cells

Keyword	Definition
Active site	The part of the enzyme which is specific to the substrate and has a complementary shape to it.
Amino acids	Small molecules that make up a protein.
Amylase	An enzyme that breaks down carbohydrates not simple sugars. It is produced in the pancreas and salivary glands.
Denaturation	The permanent change in the shape of an enzyme's active site that stops the enzyme from 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), 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.
Limiting factor	An 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.
Lock and key hypothesis	A theory that describes how substrates must be the correct shape to fit the active site of an enzyme.
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, G, or T.
Polymer	Many small molecules (monomers) chemically joined together to make 1 large molecule.
Protein	A large molecule synthesised from amino acid monomers.
Protein synthesis	The formation of proteins from amino acids which takes place in the ribosomes.
Ribosomes	Organelles which are the site of protein synthesis.
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.

B1.3 Respiration

Keyword	Definition
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: $\text{Glucose} + \text{Oxygen} \rightarrow \text{Carbon dioxide} + \text{Water}$
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: $\text{Glucose} \rightarrow \text{Lactic acid}$

Benedict's reagent	A reagent used to test for reducing sugars that produces a different colour (from a blue solution to a brick red precipitate) based on the amount of reducing sugar present.
Biuret reagent	A reagent used to test for the presence of peptide bonds. A colour change from blue to violet indicates the presence of peptide bonds.
Biuret test	A test used to check for the presence of peptide bonds.
Carbohydrate	A large molecule that is synthesised from simple sugars.
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.
Exothermic reaction	A reaction that releases energy, usually in the form of light or heat.
Fatty acid	A carboxylic acid that has a long carbon chain. Fatty acids react with glycerol to make lipids.
Iodine solution	A solution used to test for the presence of starch. A colour change from brown to blue-black indicates a positive result.
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 molecule of glycerol.
Non-reducing sugar	A sugar which doesn't have a reducing species (an aldehyde functional group)
Protein	A large molecule synthesised from amino acid monomers.
Reducing sugar	A sugar that has a reducing end (aldehyde functional group) present. It acts as a reducing agent and is oxidised itself.

B1.4 Photosynthesis

Keyword	Definition
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.
Diffusion	The net spreading out of particles from a high concentration to a lower concentration (down their concentration gradient). Energy is not required.
Guard cells	Cells that control the opening and closing of the stomata.
Limiting factor	A factor that when in short or inadequate supply limits the rate of a reaction.
Palisade mesophyll	A specialized plant tissue that carries out photosynthesis.
Phloem	A plant tissue that transport sugars from the source to the sink.
Photosynthesis	An endothermic reaction that take place in the chloroplasts, converting carbon dioxide and water into glucose and oxygen using light energy. It is a two-stage process. $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
Photosynthetic organisms	Organisms that are the main producers of food and therefore biomass for life on earth.

Stomata	Small pores in the epidermis of the leaves that facilitate gaseous exchange.
Xylem	A specialised tissue that transports water and dissolved minerals from the roots to the leaves of the plant.

B2.1 Supplying the cell

Keyword	Definition
Active transport	The movement of particles from an area of low concentration to an area of high concentration, against the concentration gradient. This required energy.
Adult stem cell	A stem cell found in the bone marrow that can form many types of cells.
Bone marrow	A human tissue that contains stem cells which can develop into red blood cells.
Cell cycle	A series of events that take place in a cell in preparation for cell division.
Cell differentiation	The production of specialised cells allowing organisms to become more efficient.
Concentration gradient	The difference in concentration between two areas.
Cytokinesis	The third stage of the cell cycle in which two identical diploid daughter cells are formed.
Diffusion	The net spreading out of particles from a high concentration to a lower concentration (down their concentration gradient)/ Energy is not required.
Embryonic stem cell	A type of stem cell found in very early embryos that can differentiate into any cell type.
Hypertonic	The net movement of water out of the cell via osmosis
Hypotonic	The net movement of water into the cell via osmosis
Interphase	The first stage of the cell cycle in which cells grow, new proteins are synthesised, and chromosomes are replicated.
Meristematic cell	A type of cell that can differentiate into any plant cell type.
Meristem tissue	A plant tissue that contains many undifferentiated cells.
Mitosis	A type of cell division that produces two identical diploid daughter cells (i.e. contain a full set of chromosomes) from one parent cell. It is the second stage of the cell cycle and is important for growth, development and the replacement of damaged cells.
Multicellular organism	An organism that has more than one cell.
Muscle cell	A specialised animal cell that contracts or relaxes causing muscle movement.
Nerve cell	A specialised animal cell that transmits electrical impulses.
Osmosis	The net movement of water molecules from a region of high concentration to a region of low concentration through a partially permeable membrane.
Plasmolysis	The net movement of water out of a plant cell, causing the cell membrane to move away from the cell wall. This results in cell death.
Root hair cells	Specialised cells that provide a large surface area for the uptake of water and minerals from the soil.
Sperm cell	A specialised animal cell that carries the male DNA to the egg for reproduction.

Stem cell	Cells that are unspecialised and capable of differentiating into a range of different cell types.
Turgid	When the vacuole of a plant cell becomes swollen and enlarged with water.
Undifferentiated cell	A cell that is not specialised for its function.
Water potential	A measure for the tendency of water to move from one area to another area. It is represented by the sign Ψ (Psi).

B2.2 The challenges of size (ANIMAL)

Keyword	Definition
Alveoli	Small air sacs in the lungs that serve as the gaseous exchange surface. They provide a large surface area for efficient exchange.
Aorta	The main artery that takes oxygenated blood away from the heart to the body.
Artery	A blood vessel that carries blood away from the heart under high pressure.
Atrium	The upper chamber of the heart that receives the blood from the veins.
Biconcave	Describes the shape of red blood cells which increases the surface area for gaseous exchange.
Blood	A tissue that contains red blood cells, white blood cells, plasma and platelets.
Double Circulatory System	A circulatory system found in mammals in which the blood passes through the heart twice in a full body circuit.
Heart	The organ that pumps blood around the body.
Multicellular Organism	An organism that has more than one cell.
Plasma	A pale yellow liquid found in the blood that carries water, enzymes, salts, nutrients, proteins, urea and hormones.
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.
Red Blood Cells	Cells in the blood that carry oxygen and remove carbon dioxide.
Single Circulatory System	A circulatory system in which the blood passes through the heart only once in a full body circuit.
Valves	Structures found at each end of both ventricles that prevent backflow of blood (ensuring blood flows in one direction). Valves can also be found in the veins.
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 heart from the body.
Ventricles	The lower chambers of the heart that receive blood from the atria and pump it to the arteries. The human heart has two ventricles.
Villi	Small projections from the small intestine that increase the surface area for food absorption.

B2.2 The challenges of size (PLANT)

Keyword	Definition
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,
Companion Cells	The active cells of the phloem. They provide energy for the phloem to transport substances.
Guard Cells	Cells that control the opening and closing of the stomata.
Lignin	A material that lines the xylem vessels and provides strength and support.
Osmosis	The net movement of water molecules from a region of high concentration to a region of low concentration through a partially permeable membrane.
Phloem	A plant tissue that transports sugars from the source to the sink.
Potometer	A piece of capillary tube that is used to investigate the rate of transpiration. Water loss from the surface of the lead is measured by the distance that the air bubble travels over a certain period of time.
Root Hair Cells	Specialised cells that provide a large surface area for the uptake of water and minerals from the soil.
Sieve Tubes	Plant cells that have no nuclei and are connected via the cytoplasm.
Stomata	Small pores in the epidermis of the leaves that facilitate gaseous exchange.
Translocation	The process of transporting sucrose around the plant.
Transpiration	The loss of water from the surface of the leaves by evaporation from the open stomata.
Turgid	When the vacuole of a plant cell becomes swollen and enlarged with water.
Water Potential	Measure for the tendency of water to move from one area to another area. It is represented by the sign Ψ (Psi).
Xylem	A specialised plant tissue that transports water and dissolved minerals from the roots to the leaves of the plant.

B3.1 The nervous system

Keyword	Definition
Accommodation	Changing the lens shape to fine focus the image of an object regardless of its distance from the eye.
Central Nervous System	CNS. The brain and the spinal cord.
Cerebellum	The region of the brain that controls unconscious functions such as posture, balance and muscular movement.
Cerebral Cortex	The outer layer of the cerebrum.
Cerebrum	The highly folded region of the brain that is responsible for controlling voluntary actions such as learning, 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 allowing the eye to focus.

Colour Blindness	A condition where a person has a defect in the receptors or a lack of receptors in the retina.
Coordination	The ability to use different parts of the body together smoothly and efficiently.
Cornea	The part of the eye that refracts light as it enters, focusing it onto the retina.
Effector	A gland or muscle that produces a response to the stimulus to restore optimum conditions.
Iris	The part of the eye that contracts or relaxes to control the amount of light entering the eye.
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 in front of the retina.
Medulla	The part of the brain responsible for non-voluntary movement such as breathing rate and heart rate.
Motor Neurone	The neurone that transmits impulses from the relay neurone to the effector to produce a response.
Optic Nerve	The nerve that carries impulses between the brain and the eye.
Pituitary Gland	The gland that stores and releases hormones which regulate many bodily functions.
Pupil	A hole in the centre of the iris. It is controlled by the muscles of the iris and changes size depending on the brightness of the light.
Receptor	A cell or organ that recognises the stimulus.
Reflex Arc	The pathway of neurones involved in a reflex action.
Relay Neurone	The neurone that transmits electrical impulses from the sensory neurone to the motor neurone.
Retina	The layer at the back of the eye that contains light receptors and is sensitive to light.
Sensory Neurone	The neurone that detects the stimulus and transmits the electrical impulse to the relay neurone located in the spinal cord.
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	Attach the lens to the ciliary muscle
Synapse	The junction between two neurones (nerve cells)

B3.2 The endocrine system

Keyword	Definition
Adrenaline	A hormone released by the adrenal gland which increases heart rate and breathing rate (involved in fight/flight). It also raises blood sugar levels by increasing the conversion of glycogen into glucose.
Auxin	A plant hormone responsible for cell elongation.
Contraception	Methods that are used to prevent pregnancy.
Dormancy	A period of time in which seeds 'hibernate'. This stops then they germinate.
Endocrine Glands	A group of cells that are specialised in secreting chemicals (hormones) directly into the bloodstream.

Endocrine System	A chemical messenger system that releases hormones directly into the bloodstream to control metabolism, development, growth and reproduction.
Ethene	A plant hormone that promotes fruit ripening.
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.
Gravitropism	The growth response of a plant to gravity.
Germination	The process by which seeds develop into plants.
Gibberellins	Plant hormones that initiate germination and flowering.
Herbicide	A type of pesticide used to kill unwanted plants (weeds)
Hormone	A chemical messenger secreted by the endocrine glands into the bloodstream and transported to receptors on target organs.
Infertility	The inability to reproduce after 12 months or more of unprotected sex.
In Vitro Fertilisation	IVF. The fertilisation of an egg using sperm outside of the body.
Luteinising Hormone	LH. A female reproductive hormone released by the pituitary gland that stimulates the release of an egg.
Menstrual Cycle	The monthly cycle in biological women that involves the development of the uterus lining, ovulation, maintenance of the uterus lining and its shedding.
Negative Feedback	A system that works to reverse the initial stimulus.
Oestrogen	A female sex hormone produced in the ovaries that regulates the menstrual cycle and controls the development of secondary sexual characteristics.
Parthenocarpic Fruit	Seedless fruit.
Phototropism	The growth response of a plant to unilateral light.
Pituitary Gland	The gland that stores and releases hormones which regulate many bodily functions.
Progesterone	The hormone that maintains the uterus lining during the later stages of the menstrual cycle and pregnancy.
Root Cuttings	A method of cloning plants in which a root is cut from a parent plant and replanted in compost.
Rooting Powder	A powder that contains auxins. The cut root is dipped into this before being replanted (during root cuttings).
Testosterone	The male reproductive hormone that controls sperm production and the development of secondary sexual characteristics.
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.

B3.3 Maintaining internal environments

Keyword	Definition
ADH	A hormone secreted by the pituitary gland which increases water reabsorption in the kidney (making the kidney tubules more permeable to water).
Glucagon	A hormone produced by the pancreas which works with insulin to control blood sugar levels. It increases blood glucose concentration by converting glycogen into glucose.
Homeostasis	The maintenance of a stable internal environment in the body despite fluctuations in internal and external conditions.

Hypothalamus	The part of the brain that is the regulation centre for temperature and water balance of the body.
Insulin	A hormone produced by the pancreas which controls the body's blood sugar levels. It works to decrease glucose levels.
Kidney	The organ in the body that maintains water balance and produces urine.
Negative Feedback	A system which works to reverse the initial stimulus.
Nephron	A kidney filtering unit.
Osmosis	The net movement of water molecules from a region of high water potential to a region of low water potential, across a partially permeable membrane.
Renal Artery	The blood vessel that provides the kidney with blood.
Renal Vein	The blood vessel that takes blood away from the kidney.
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 the person develops insulin resistance or doesn't produce enough insulin.
Urine	A liquid produced by the kidneys to help maintain water balance. It contains mineral ions, water and urea.
Vasoconstriction	The constriction of blood vessels.
Vasodilation	The dilation of blood vessels

B4 Ecosystems

Keyword	Definition
Abiotic Factors	The non-living factors of an ecosystem, e.g. temperature or light intensity.
Aerobic Decomposition	Organisms break down dead or decaying matter (decompose) in the presence of sufficient oxygen.
Anaerobic Decomposition	Organisms carry out decomposition in the absence of oxygen producing carbon dioxide and methane gas. This usually happens in waterlogged soils.
Biomass	The mass of all the living material present in a particular area or particular organism.
Biotic Factors	The living factors of an ecosystem, e.g. food availability or pathogens.
Carbon Cycle	The cycle through which carbon (in the form of carbon dioxide) moves between the environment and living organisms. It involves respiration, photosynthesis, combustion and decomposition.
Combustion	The process by which organic matter is burnt to release energy as well as carbon dioxide and water. It is part of the carbon cycle.
Community	All the populations of different species that are living in a habitat together.
Competition	When different organisms compete for the same resources (e.g. food, shelter and mates) in an ecosystem. It limits population size.
Compost	Dead or decaying matter that is often used as fertiliser for crops.
Decomposer	An organism that feeds on dead and decaying matter.
Decomposition	The process of breaking down dead material into simple organic matter. The decomposition rate is influenced by water availability, oxygen availability and temperature.
Ecosystem	The community of organisms and non-living components of an area and their interactions.

Egestion	The removal or undigested food from the body as faeces.
Excretion	The removal of metabolic waste from the body.
Food chain	Shows the feeding relationships between organisms and the resultant biomass transfer.
Habitat	The place where plants, animals and all other living organisms live.
Host	The organisms on/in which the parasite lives.
Interdependence	The dependence of organisms on each other in order to survive.
Microorganisms	Very small organisms that are involved in the recycling of materials in an ecosystem. They can convert carbon into carbon dioxide which is then released into the atmosphere. They also return mineral ions to the soil.
Mutualism	The interaction between two organisms where both benefit as a result of their relationship.
Parasite	An organisms which feeds on or in a host organisms as the expense of the host.
Parasitism	The interaction between two organisms where only one organism, the parasite, benefits whilst the host cell does not.
Precipitation	A part of the water cycle where water returns to land in the from of rain, snow or hail.
Predation	A biological relationship in which a member of one species consumes the member of another species.
Predator	A consumer that preys on and eats other animals.
Prey	A consumer that is eaten by a predator.
Primary Consumer	An organism that cannot produce its own food, so must obtain energy by feeding on the producer. They are herbivores which consume at tropic level two of a food chain.
Producer	An organism that makes its own food, usually via photosynthesis.
Pyramid of Biomass	A table showing the dry mass of living material at each trophic level in a food chain. This table forms the shape of a pyramid.
Secondary Consumer	An organism that cannot produce its own food to must obtain its energy by feeding on the primary consumer. They are carnivores which consume at tropic level three of the food chain.
Species	A group of organisms that can interbreed and produce fertile offspring.
Water Cycle	The cycle of water moving between the environment and living organisms. It involves precipitation, condensation, transpiration, biomass transfer and evaporation.

B5.1 Inheritance

Key word	Definition
Allele	A version of a gene (also known as variant)
Asexual reproduction	A form of reproduction that only involves a single parent and creates genetically identical offspring
Chromosome	A long, coiled molecule of DNA that carries genetic information in the form of genes
Continuous variation	Variation that can take any value between two extremes e.g. height or weight
DNA (deoxyribonucleic acid)	A polymer that is made of two strands twisted around each other forming a double helix. It contains all the genetic information
Diploid	When a cell has a full set of chromosomes

Discontinuous variation	Variation that can only take discrete values e.g. eye colour
Dominant	An allele that is always expressed when present. It is represented by a capital letter.
Enzyme	Biological catalysts that increase the rate of chemical reactions
Gamete	Sex cell
Genome	The entire genetic material of an organism
Genotype	The genetic make up of an organism
Haploid	When a cell has half the number of chromosomes
Heterozygous	When an individual has two non-identical alleles of a gene e.g. Bb
Homozygous	When an individual has two identical alleles of a gene e.g. bb
Meiosis	A form of cell division that produces gametes. They are not genetically identical and contain half the number of chromosomes.
Messenger RNA (mRNA)	An RNA subtype that carries genetic information from the nucleus to the ribosomes during protein synthesis.
Mutation	A random change in DNA which increases variation. They may have a neutral, beneficial or damaging effect on the phenotype.
Nucleus	An organelle found in most eukaryotic cells that contain the cell's genetic material and controls the activities of the cell.
Phenotype	The physical characteristics of an organism. It is due to interactions between the genotype and the environment.
Punnett square	A grid used to determine potential outcomes of a genetic cross.
Recessive	An allele that is only expressed if two
Seedbank	A place where seeds are preserved in order to preserve genetic diversity.
Sexual reproduction	Reproduction that involves the fusion of male and female gametes. This method of reproduction produces genetic variation.
Single gene inheritance	Inheritance of characteristics that are controlled by a single gene
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

B5.2 Natural selection and evolution

Key word	Definition
Allele	A version of a gene (also known as a variant)
Active site	The part of the enzyme which is specific to the substrate and has a complimentary shape to it.
Antibiotic	A type of medication that helps cure bacterial disease by killing infective bacteria inside the body
Antibiotic resistance	The ability of bacteria to become resistant to the treatment that is being used to kill it, i.e. antibiotics. This provides evidence for evolution.
Artificial classification	The classification of organisms based on observable characteristics
Biodiversity	The variety of different organisms living in an ecosystem
Evolution	A change in the inherited characteristics of a population over time, through the process of natural selection, which may result in the formation of new species.
Extinction	When all the members of a species have died.

Fossil record	The remains or impressions of dead organisms found in rocks that are millions of years old. They provide evidence for evolution.
Molecular phylogenetics	Finding evolutionary relationships between organisms on the basis of their DNA. This method can only be used in fossils that have DNA present.
Natural classification	The classification of organisms based on their evolutionary relationships.
Natural selection	The process by which advantageous alleles are passed down to offspring over many generations, increasing allele frequency. These alleles give rise to phenotypes best suited to the environment.
Seedbank	A place where seeds are preserved in order to preserve genetic biodiversity.

B6.1 Monitoring and maintaining the environment

Key word	Definition
Conservation	The preservation and careful management of the environment or natural resources
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.
Habitat	The place where plants, animals and all other living organisms live. A habitat includes all biotic and abiotic factors.
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 re-distribute and another sample is collected. The number of marked and unmarked species in the second sample is compared.
Pooter	A piece of equipment used for sampling a known area to determine the abundance and distribution of organisms.
Pollution	Contamination or destruction of the natural environment due to human intervention.
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
Species	A group of organisms that can interbreed and produce fertile offspring
Sustainability	The ability to maintain something for future generations.
Transect	A line (usually created by a tape measure) along which samples are taken. It is used to measure the abundance and distributions of organisms in an ecosystem.

B6.2 Feeding the human race

Key word	Definition
Fertiliser	Natural or artificial materials that are added to soils to provide essential nutrients and improve plant growth.
Genetic engineering	The modification of the genome of an organism (by inserting a desired gene from another organism) to introduce desirable characteristics.
Genome	An organism's complete genetic material.

Hydroponics	A method of growing plants in something other than soil, whilst adding nutrients.
Ligase	An enzyme used to join pieces of DNA together. It binds complementary sticky ends together.
Pesticide	A chemical used to control pests around crops.
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.
PCR (polymerase chain reaction)	A technique used to rapidly amplify fragments of DNA into millions of copies
Restriction enzyme	An enzyme that cuts DNA in specific places producing sticky ends.
Selective breeding	A process in which desired organisms are bred to produce offspring with desirable characteristics.
Sticky ends	Single stranded DNA ends of double-stranded DNA that stick out. They are able to bind to another DNA fragment.
Vector	A carrier used to transfer a gene from one organism to another.

B6.3 Monitoring and maintaining health

Key word	Definition
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.
Antibiotic	A type of medication that helps cure the bacterial disease by killing infective bacteria inside the body
Antibiotic resistance	The ability of bacteria to become resistant to the treatment that is being used to kill it i.e. antibiotics. This provides evidence for evolution.
Antibiotic resistant 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 diseases 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.
Athletes foot	A disease caused by a 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	A disease caused by fungus in plants which causes white fluffy growth on leaves, eventually leading to plant death.
Benign tumour	A tumour that is non-cancerous so cannot spread around the body.
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.

Cancer	The result of changes in cells that lead to uncontrolled growth and division
Carcinogens	Chemical or agents that are cancer causing.
Cardiovascular diseases	A non-communicable disease that affect the heart or blood vessels.
Cervical cancer	A non-communicable disease as a result of prolonged infection by HPV
Cilia	Hair like structures that waft substances away
Cirrhosis	A non-communicable disease, du 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.
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 a bacterium (<i>Agrobacterium tumefaciens</i>) in plants which infects the stem and roots causing tumours.
Disease	An illness that affects animal or plant health.
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
Habitat	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 spread via unprotected sex and the sharing of needles.
Human papillomavirus (HPV)	A communicable viral disease which is transmitted through unprotected sex.
Immune system	The body's defence mechanism against foreign bodies.
Immunosuppressant drugs	Medication that supresses the immune system and must be taken after transplant to prevent rejection.
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 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 diseases	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.
Placebo	An inactive version of a drug. It is indistinguishable from the real drug but has no effect on the recipient.
Platelets	Cell fragments involved in the clotting of blood.
Protist	A type of pathogen which is eukaryotic and single celled. It is from the kingdom Protista.

Statins	A type of drug used to lower cholesterol levels. It is used in the treatment of some cardiovascular diseases.
Stent	A wire mesh used in the treatment of coronary heart disease. It widens the artery in order to maintain the hearts oxygen supply.
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.
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.
Transplant rejection	The rejection of the transplant tissue by the immune system of the recipients' body.
Tuberculosis (TB)	A communicable bacterial disease which damages and destroys lung tissue, supressing the immune system.
Tumour	A mass of cells formed due to uncontrolled cell division.
Vaccination	A method of introducing small quantities of inactive or dead forms of pathogen to stimulate antibody production by white blood cells.
Virus	A type of pathogen that can infect any living organism. They are only able to reproduce inside a living host.