Grade 12 Biology Glossary

A	
abiotic chemistry	Formation of organic compounds in the absence of life processes. Chance combinations of elements to from organic molecules such as amino acids, proteins, sugars, etc.
abiotic factors	The nonliving factors of the environment that influence ecological systems. They include climate and geographical features.
acid deposition	The process of acidic rain falling and resting on abiotic and biotic factors of the earth. Acid rain is partly created by some of the air pollution when combined with rain.
acquired characteristics	Changes in the structure or function of an organ or system during the life of an organism, brought about by the use or disuse of that organ or system, or by environmental influences
adaptation	Tendency of an organism to suit its environment; one of the major points of Charles Darwin's theory of evolution by natural selection; organisms adapt to their environment. Those organisms best adapted will have a greater chance of surviving and passing their genes on to the next generation.
adaptive radiation	The development of a variety of species from a single ancestral form; occurs when a new habitat becomes available to a population.
adenine	A nitrogen base molecule of DNA that pairs with thymine.
aerobic	Requiring free or dissolved oxygen, usually for respiration.
age structure	Categorization of the population of communities by age groups, allowing scientists to make projections of the growth or decline of the particular population.
air pollution	The presence in the atmosphere of one or more contaminants and has characteristics that may be injurious to living organisms.
albino	Condition that results from a lack of pigmentation in cells. Albinos have white hair (fur) and red or pink eyes. White mice are albinos.
algae	A large mixed group of photosynthetic organisms. They often resemble plants and are found mainly in marine or fresh-water habitats. They lack real leaves, stems and roots.

allele	Different versions of the same gene. for example, one gene codes for attached ear lobes and another version of the gene codes for unattached lobes.
amber	A transparent yellow, orange, or reddish-brown fossil resin derived from a coniferous tree.
amino acid	The unit from which proteins or polypeptide molecules are assembled. Each amino acid consists of an amino functional group, and a carboxyl acid group, and differs from other amino acids by the composition of an R group.
amniocentesis	A process whereby a sample of amniotic fluid is obtained from a pregnant woman in order to identify an abnormal fetus.
anaerobic	Living in the absence of free molecular oxygen.
analogous	Describing structures that are apparently similar in structure or function, but have a different evolutionary origin, and thus a different embryological origin and structure.
anatomy	The study of the structure of the body of an organism.
angiosperm	Another word for flowering plants. The ovule is enclosed within an ovary and after fertilization, it develops into a fruit.
anticodon	A sequence of three nucleotides on the transfer RNA molecule that recognizes and pairs with a specific codon on a messenger RNA molecule; helps control the sequence of amino acids in a growing polypeptide chain.
aquatic	Living or growing in, on, or near water.
archaebacteria	Distinct group of bacteria that tend to live n extreme environments. They have structural differenes that separate them from other bacteria. Believed to be most ancient of life forms.
Artificial Selection	Selective breeding of plants and animals to produced characteristics desired by people rather than any natural survival benefit to the organism.
atmospheric change	The change in the atmosphere, or changes in the envelope of gases that surrounds the Earth.
autosomal	Please see autosome, or autosomal dominant, or autosomal recessive.
autosomal dominant	A dominant allele found on chromosomes that play no part in sex determination. The allele prevents the expression of a recessive allele on the same locus.

autosomal recessive	A recessive allele found on chromosomes that play no part in sex determination. The allele is only expressed in the phenotype when it is in the homozygous condition.
autosome	Paired chromosomes that play no part in sex determination. Body cells have 22 pairs of autosomes and one pair of sex chromosomes.
autotrophic	Capable of synthesizing food. Examples are green plants and lower forms capable of photosynthesis or chemosynthesis.
Avery, Oswald	A bacteriologist whose work on transformation in bacteria established in 1944 that DNA is responsible for the transmission of heritable characteristics.

B	
bacterial transformation	A permanent genetic recombination in a bacterial cell, in which a DNA fragment is incorporated into the chromosome of the cell.
bacteriophage	A virus that attacks bacteria. Bacteriophages are characterized by complex shapes with hexagonal head and a tail structure.
base pairs	The link between nitrogen base molecules that joins the two DNA strands; the link between adenine and thymine, or between guanine and cytosine, or uracil and adenine in RNA.
base substitution	A type of mutation in which one nitrogen base is substituted for another; a base can be adenine, thymine, cytosine, guanine, or uracil.
behaviour	A general term applied to any observable activity of a whole animal. Behaviour includes all the processes by which an animal senses its external surroundings and the internal state of its body and responds to any changes it perceives.
behaviourial adaptation	The extent to which a behaviourial characteristic of an organism is suited to a particular environment.
binomial nomenclature	A system of taxonomy developed by Linnaeus in the early eighteenth century. Each species of plant and animal receives a two-term name; the first term is the genus, and the second is the species.
biodiversity	Biological diversity; can be measured in terms of genetic, species, or ecosystem diversity.

biogenesis	A cornerstone of biology that states life can only come from life.
biogeochemical cycle	The complex cyclical transfer of nutrients from the environment to an organism and back to the environment.
biomass	The total weight of living tissue in a community.
biome	A large-scale grouping that includes many communities of a similar nature.
biosphere	All ecosystems on Earth as well as the Earth's crust, waters, and atmosphere on and in which organisms exist; also, the sum of all living matter on Earth.
biotechnology	The application of technology to biological processes for industrial, agricultural, and medical purposes.
biotic factors	The biological factors acting on an organism; as opposed to abiotic factors.
bird	Taxonomic class of terrestrial vertebrates that are characterized by endothermy and feathers.
blended	Inheritance involving expression in the offspring of characters intermediate between those of the parents due especially to incomplete genetic dominance.
boreal forest	A worldwide forest region found in the upper latitudes that is characterized by coniferous trees.

C	
Cairns-Smith theory	An early proponent of an original theory about how life may have originated--on the basis of clay minerals. He starts from the position that consciousness has evolved and that it depends for its existence on an organization of molecules.
capsule	In bacteria, a protective, gelatinous envelope surrounding the cell wall.
Carbon 14 (C14)	A naturally occurring radioisotope of carbon having a mass number of 14 and half-life of 5780 years; used in radiocarbon dating.
carbon water	A form of water that is activated with charcoal and effective in reducing certain pollutants; acts as a type of filter.
Carolus Linnaeus	Man who developed early system of classification of organisms.

carrying capacity	The maximum population that can be sustained by a given supply of resources, like space and food.
case study	An attempt to understand a science principle from collected information.
cast	A fossil reproduction of a natural object formed by infiltration of a mold of the object by water-borne minerals.
Chase, Mary Agnes	A scientist who collected many plants previously unknown to science and her work provided much important information about naturally occurring cereals and food crops.
chemosynthetic	Certain organisms can produce food using chemical pathways that do not involve energy from light e.g., bacteria which live in ocean trenches.
chitin	Chemically a nitrogenous polysaccharide that forms the outer shells of arthropods and hyphal walls of fungi.
Chlorophyll	A green pigment found in chloroplasts of algea and higher plants capable of photosynthesis. Chlophyll captures light energy in photosynthesis.
chloroplast	A chlorophyll containing organelle in organisms capable of photosynthesis.
chorionic villus sampling	Taking a sample of cells from the small projections of the chorionic membrane surrounding the fetus. The sample contains the genetic makeup of the fetus and not the mother. It is used to determine genetic defects.
chromosomal mutation	A change in the number or arrangement of genes in a chromosome.
chromosome	One of a group of thread-like structure of different lengths and shapes in nuclei of cells. They consist of DNA with RNA and protein (mostly histones) and carry the genes.
Cladistics	A method of classification in which the relationships between organisms are based on selected shared characteristics. These are generally assumed to have been derived from a common ancestor.
class	Taxonomic subcategory of phyla and superior to an order.
classify	To group and arrange organisms into a hierarchical order based on similar and dissimilar characteristics.
climax community	The stable community in the final stage of succession.

cloning	the creation of organisms or cells that are genetically identical.
co-dominance	The situation in which two different alleles are equally dominant. If they occur together, the resulting phenotype is intermediate between the two respective homozygotes.
codon	A sequence of three nucleotides in messenger RNA that codes for a single amino acid.
coevolution	Occurs when two different species exert selective pressures on each other.
colour blindness	Imperfect perception of colour thought to be caused by a malfunction or absence of one of the three pigments in the light-sensitive cells (cones) of the retina of the eye. Although it can occasionally be acquired by disease or injury, the defect is usually inherited as a sex-linked recessive character on the X chromosome and is therefore more common in men that in woman.
commensalism	A symbiotic relationship in which one species benefits and the other is not affected.
community	All species or populations living in the same area.
competition	One of the biological interactions that can limit population growth; occurs when two species vie with each other for the same resource.
consumer	Any organism that is unable to synthesize food and must have a food source. Any trophic level above producer.
convergent evolution	The development of similar structures in distantly related organisms as a result of adapting to similar environments and/or strategies of life. Example wings of birds and insects, the body shape of dolphins, sharks, and the extinct marine reptiles known as ichthyosaurs.
crossing over	The exchange of material between homologous chromatids by the formation of chiasmata.
cytosine	A nitrogen based molecule that codes genetic information in the DNA and RNA chain of nucleotides. It pairs up with guanine.

D

Darwin's finches	Classic example of adaptive radiation. Fourteen species of finches are believed to have evolved from a single species that landed on the Galapagos islands.
Darwin, Charles	A scientist who developed the modern theory of evolution and proposed the principle of natural selection.
decomposer	An organism that feeds upon dead organisms breaking them down into simpler substances.
deforestation	The removal or clearing of trees to the extent that a forest disappears or barely exists.
degeneracy	Evolution to an apparent simpler structural form.
deletions	A type of chromosome mutation where a segment of a chromosome is lost.
deme	A group of closely related individuals usually at the species level and able to interbreed more or less freely.
deoxyribose sugar	A sugar in which oxygen has been lost by replacement of a hydroxyl group (OH) with hydrogen (H).
desert	A type of biome characterized by dry conditions and plants and animals that have adapted to those conditions; found in areas where local or global influences block rainfall.
desertification	The deterioration of arid land into desert, caused by a change in climate or by overuse by people or animals.
dichotomous key	A chart used in identifying organisms. The chart is a repeated branching or forking where decisions are made at each fork using simple questions with two choices.
dicot	One of the two main types of flowering plants; characterized by having two cotyledons, floral organs arranged in cycles of four or five, and leaves with reticulate veins; include trees (except conifers) and most ornamental and crop plants.
differences	Characteristics that are not the same, not alike.
dihybrid cross	A hybrid heterozygous at two loci and obtained by crossing homozygous parents with different alleles at two given loci.
diploid	A cell or organism containing twice the haploid number of chromosomes (i.e. 2n).

discontinuous replication	The synthesis of a new strand of a replicating DNA molecule as a series of short fragments that are subsequently joined together.
dispersal mechanisms	The ways in which spores or seeds are spread out from the parent plant.
diversity	The different types of organisms that occur in a community.
DNA fingerprinting	A technique for identifying individuals by means of their DNA. The DNA being tested is extracted from cells (from blood, semen, tissue fragments, etc.) and broken into fragments of 600-700 bases each, using restriction enzymes.
DNA polymerase	In DNA replication, the enzyme that links the complementary nucleotides together to form the newly synthesized strand.
DNA replication	Process by which DNA is duplicated prior to cell division
dominant	Please see dominant allele.
dominant allele	A trait that, in a heterozygote, prevents the expression of another (recessive) trait at the same locus.
double helix	The name given to the structure of DNA when the two strands coil around each other.
Down syndrome	A condition seen in humans, characterized by short stature an a rounded head with obliquely slanted eyes. Affected children may have learning difficulties. It is caused by the presence in all body cells of a extra chromosome 21, due to its non disjunction at meiosis.

E	
earth science	The science that deals with the earth or any part thereof; includes geology, geography, oceanography, and meteorology among others.
ecological pyramid	A pyramid-shaped diagram representing the numbers of organisms, energy relationships, and biomass of an ecosystem. The numbers are high for the lowest trophic level.
ecology	The study of how organisms interact with each other and their physical environment.

ecosystem	The community of interdependent organisms and its physical environment.
ecosystem study	Scientific research done on an ecosystem.
embryological	Having to do with the study of the development of organisms, especially animals, usually restricted to the period from fertilization to hatching or birth.
emigration	The one-way outward movement of individuals out of a population.
endonuclease	An enzyme that catalyzes the hydrolysis of internal bonds of polynucleotides such as DNA and RNA, producing short segments of linked nucleotides .
endoplasmic reticulum	A network of membranes that runs through the cytoplasm and is believed to form a transportation system within cells of eukaryotes.
energy	The ability to bring about changes or to do work.
environment	The complete range of external conditions under which an organism lives, including physical, chemical, and biological factors, such as temperature, light, and the availability of food and water.
epistasis	The action of one gene (the epistatic gene) in preventing the expression of another, nonallelic, gene (the hypostatic gene).
erosion	The loosening and transportation of rock debris at the earth's surface. The wearing away of the land.
ethical	Having to do with moral standards; conforming to professional standards of conduct
ethics	Referring to the morals or beliefs of people when making decisions on genetics.
eubacteria	Bacteria characterized by simple cells with rigid cell walls and lacking photosynthetic pigments. Usually spherical or rod-shaped.
eugenics	the movement devoted to improving the human species by controlling heredity.
eukaryotic	A type of cell found in many organisms including single-celled Protists and multicellular fungi, plants, and animals; characterized by a membrane-bounded nucleus and other membranous organelles; an organism composed of such cells.

eutrophic lake	A lake that is rich in nutrients and consequently is able to support a dense population of plankton and algae. When these die they are decomposed by bacteria, which use up the oxygen, so that the fish are deprived of oxygen and die from suffocation.
evolution	The change in life over time by adaptation, variation, over-reproduction, and differential survival/reproduction, a process referred to by Charles Darwin and Alfred Wallace as natural selection.
exon	A segment of gene that is both transcribed and translated and carries part of the code for the gene product
exponential growth	An extremely rapid increase in the rate of population growth.
extinction	The elimination of all individuals in a group, both by natural and human-induced means.
extrapolate	To estimate data at a point which is beyond all the points on a graph.

F	
F_1	First filial or the first generation that results from a particular cross
F_2	Second filial or the offspring produced by the first generation offspring of a given cross.
family	Taxonomic subcategory of order and superior to genus.
ferns	Any of a large number of seedless vascular plants. They have large spirally arranged leaf-like fronds.
field work	The practical work of a student or scientist conducted in the natural environment rather that in a laboratory.
filial	Pertaining to a son or daughter.
flowers	The reproductive structures in angiosperm sporophytes where gametophytes are generated.
food chain	The simplest representation of energy row in a community. At the base is energy stored in plants, which are eaten by small organisms, which in turn are eaten by progressively larger organisms; the food chain is an oversimplification in that most animals do not eat only one type of organism.

food web	A complex network of feeding interrelations among species in a natural ecosystem; more accurate and more complex depiction of energy than a food chain.
forensic	belonging to, used in, or suitable to courts of law.
fossil	The remains or traces of prehistoric life preserved in rocks of the Earth's crust.
fossil fuels	Fuels obtained from the earth, such as coal, petroleum, and natural gas.
fossilization	The natural process of forming fossils.
founder effect	When a population that has been separated from a parent population contains gene frequencies that are different form the parent population, this difference in the gene pool is called a founder effect. Use when speaking of genetic drift.
frame-shift mutation	A mutation caused by addition or deletion of nucleotides in numbers other than three which shifts the translation reading frame so a new set of codons beyond the point of abnormality in the messenger RNA is read. Also know as phase-shift mutation.
freshwater marsh	A transitional land-water area characterized by aquatic and grass-like vegetation; the marsh has little or no salt content.
fruit fly	A small two-winged fly whose larvae feed on fruit or decaying vegetable matter. The flies are often used in genetic studies because they breed quickly and carry no diseases.
Fungi	Kingdom of organisms characterized by being nonmobile, heterotrophic, and mostly multicellular eukaryotes; includes yeast and mushrooms.

G	
Gaia hypothesis	A hypothetical super-organism composed of the Earth's four spheres: the biosphere, hydrosphere, lithosphere, and atmosphere. An idea that compares earth to a living body.
gametes	Plural. The name given to male or female reproductive or sex cells. Male gametes are sperm and female gametes are called eggs. Male and female gametes combine in sexual reproduction.

gel electrophoresis	The migration of electrically charged particles towards oppositely charged electrodes in a starch gel medium under an electric field.
gene	The segment of DNA that carries the code for a specific protein
gene mutation	Any heritable change in the nucleotide sequence of DNA; can involve substitutions, insertions, or deletions of one or more nucleotides and results in a new form of a gene.
gene pool	The total of all genes possessed by all members of all populations of a species.
genealogy	The study or investigation of ancestry and family histories.
generation	A group of individuals born from a single step in the line of descent from an ancestor and living at the same time.
genetic abnormality	An abnormal characteristic that is caused by a mutation or other genetic alteration or defect.
genetic diversity	The variety of genes in a population.
genetic drift	Random changes in the frequency of alleles from generation to generation; especially in small populations, can lead to the elimination of a particular allele by chance alone.
genetic engineering	The direct introduction of foreign genes into an organism's genetic material by micromanipulation at the cell level.
genetic therapy	Counselling provided to couples that carry known genetic diseases.
genetic vectors	An agent used as a vehicle for introducing foreign DNA, for example a new gene, into host cells. The vectors are self-replicating DNA molecules that can be joined with DNA fragments to form recombinant DNA molecules.
genome	The total genetic material within the cells of an individual.
genotype	The genetic make-up of an organism.
genus	Taxonomic subcategory of family and superior to a species. A collection of similar species.
geologic evolution	The process of change in the earth and its parts.
geologic time scale	The relative age of various geologic periods and the absolute time intervals.

grassland	A type of biome that occurs in temperate and tropical regions with reduced rainfall or prolonged dry seasons; characterized by deep, rich soil, an absence of trees, and large herds of grazing animals.
gross productivity	The total, gross, yield of a given crop per unit of land.
guanine	A nitrogen base of DNA that pairs with cytosine
gymnosperm	Plants characterized by having naked seeds. They do not produce fruit nor flowers.

H	
habitat	The place where a particular organism lives, described in terms of its climate, vegetative, topographic, and other factors.
half-life	The time required for one-half of a given material to undergo chemical reactions or radioactive decay.
haploid	A cell or organism containing only one representative from each of the pairs of homologous chromosomes found in the normal diploid cell.
Hardy-Weinberg Principle	Indicates conditions under which allele and gene frequencies remain constant from generation to generation.
hay infusion	Using dried plants or hay and water to create a microecosystem of organisms. The hay and water is left standing for a long period and droplets of water can be observed for microorganisms.
hemophilia	An inherited sex-linked condition caused by an abnormal gene on the S chromosome resulting in a deficiency of clotting Factor VIII. Hemophiliacs bleed profusely after the slightest wound or injury.
heredity	The transmission of traits or characteristics from parent to offspring
heritable	the transmission of traits from parent to offspring; a trait that can be inherited.
Hershey, Alfred Day	A biochemist whose work using bacteriophages, viruses that infect bacteria, demonstrated that DNA, not protein, is the genetic material. His experiments demonstrated that viral DNA is sufficient to transform bacterial.

heterotroph hypothesis	A suggestion that organisms that make their own food by photosynthesis, known as autotrophs, evolved after the organisms that do not make their own food (Heterotrophs).
heterotrophic	Not capable of synthesizing food. Includes all animals, nongreen plants, all fungi and some monerans and protists.
heterozygous	Describes the situation where each allele of a pair of genes is different. For example, one gene may code for the dominant trait and the other for the recessive condition of the same trait. Written as "Aa" to indicate genotype.
homologous	Describing structures that, though in different species, are believed to have the same origin in a common ancestor.
homologous pair	A pair of chromosomes in which one member of the pair is obtained from the organism's maternal parent and the other from the paternal parent; found in diploid cells. Also commonly referred to as homologous chromosomes.
homozygous	Describes the condition when both alleles of a gene pair are the same. For example, both code for dominant or recessive traits. Written as "AA" or "aa".
human genome project	An international project launched in 1989 with the aim of mapping and sequencing the entire human genome. The results will help in the diagnosis and possible the treatment of a wide range of diseases.
hybrid	An organism that has a mixture of genetic types. Often considered to be heterozygous.
hydroelectric power	Electricity derived from the power of water, as when water runs over a dam to turn large turbines.
hydrospheric change	Changes in the water portion of the earth.
hyphae	Thread-like growths of fungi extending into the substrate the organism in growing in. Hyphae grow at the tips and develop lateral branches.

I	
immigration	The one-way inward movement of individuals into a population.
immunological tests	Medical tests for the degree of acquired resistance to infections.

incomplete dominance	The situation in which one allele may be slightly more dominant than the other in which case the offspring, though still intermediate, will resemble one parent more than the other.
independent assortment	The law, formulated by Mendel, that genes segregate independently at meiosis so that any one combination of alleles is as likely to appear in the offspring as any other combination.
independent traits	Characteristics that are inherited independently of other traits.
inference	An interpretation of an observation; a conclusion by reasoning.
inherited	to receive a characteristic by genetic transmission.
initiation	The first step in translation; occurs when a messenger RNA molecule, a ribosomal subunit, and a transfer RNA molecule carrying the first amino acid bind together to form a complex; begins at the start codon on mRNA.
insertions	A type of mutation in which a new DNA base is inserted into an existing sequence of DNA bases. This shifts the reference frame in protein synthesis, resulting (sometimes) in altered amino acid sequences.
interspecific competition	Competition among similar species for a limited resource, like space or food.
intraspecific competition	Competition within an ecological niche between members of the same species.
intron	In eukaryotes, bases of a gene transcribed but later excised from the mRNA prior to exporting from the nucleus and subsequent translation of the message into a polypeptide.
irrigation	Artificial application of water to land for agricultural use.
isolation	The separation of an individual or population from a natural, mixed population.

K	
karyotype	The physical appearance of the chromosome complement of a given species. A species can be characterized by its karyotype since the number, size, and shape of chromosomes vary greatly between species but are fairly constant within species.

kingdom	A broad taxonomic category, which includes Monera, Protista, Plantae, Fungi, and Animalia, and into which organisms are grouped, based on common characteristics.
Klinefelter syndrome	In humans, a genetically determined condition in which the individual has two X and one Y chromosome. Affected individuals are male and typically tall and infertile.

L	
Lamarck's theory	A 19th century theory postulating that acquired characteristics can be inherited, so resulting in permanent changes in populations.
Latin	The language of ancient Rome. It is used in giving scientific names to organisms.
leaves	The site of photosynthesis; one of the three major organs in plants.
lethal genes	A gene that is capable of causing death or may prevent development of an organism.
life cycle	The sequence of changes making up the span of an organism's life from fertilization to the same stage in the subsequent generation.
life functions	The necessary tasks required to keep organisms alive, like transportation of water and food, breathing or exchange of gases.
linkage	The occurrence of genes together on the same chromosome so that they tend to be inherited together and not independently.
logistic growth	A model of population growth in which the population initially grows at an exponential rate until it is limited by some factor; then, the population enters a slower growth phase and eventually stabilizes.
longitudinal study	Involving information about an individual or group at different times throughout a long period.
Lyell, Charles	A geologist who suggested that the earth was as much as 240 million years old and provided the first detailed description of the Tertiary period.
lysogenic cycle	Part of the life-cycle relationship between a bacteriophage and bacteria, where the genetic material of the bacteriophage replicates with the bacterium.

lytic cycle	Part of the life-cycle relationship between a bacteriophage and bacteria, where the bacterial cell breaks down and releases replicated bacteriophages.

M	
Malthus, Thomas	An economist who argued for population control, since populations increase in geometric ratio and food supply only arithmetic ratio. He also influenced Darwin's thinking on natural selection.
mammal	Taxonomic class of vertebrates that are characterized by the presence of glands and body hair, being warm-blooded and by giving birth to live young.
marginal land	Land that is barely useful for forestry or agricultural purposes.
marine	Pertaining to the sea or salt water as opposed to fresh water.
marine invertebrate	A water dwelling animal that does not possess a vertebral column.
meiosis	The process of cell division leading to the production of daughter nuclei with half the genetic complement of the parent cell.
Mendelian inheritance	The inheritance of traits based on Mendel's laws.
messenger RNA	"Blueprint" for protein synthesis that is transcribed from one strand of the DNA (gene) and which is translated at the ribosome into a polypeptide sequence.
meteorite	Any natural space object that travels through the atmosphere and strikes the earth. Many meteorites contain significant amounts of carbon and/or iron.
microecosystem	The study of an extremely small unit made up of all the living and nonliving components.
microspheres	The molecules created artificially that are protein-like and resembled cell-like units. They resembled some bacteria. These bacterial-type cells were thought to be the first life on earth 3.5 billion years ago. Also called protocells.
mitochondria	Cell organelles that are sites of cellular respiration and thereby are often said to be the energy factories of cells.

mitosis	The division of the cell's nucleus and nuclear material of a cell; consists of four stages: prophase, metaphase, anaphase, and telophase. Cell xeroxing. Mitosis occurs only in eukaryotes. The DNA of the cell is replicated during interphase of the cell cycle and then segregated during the four phases of mitosis.
mold	An impression made in rock or earth material by an inner or outer surface of a fossil shell or other organic structure.
molecular genetics	The study of inheritance using the approach which deals with the physics and chemistry of the processes of inheritance.
Monera	Prokaryotic organisms that includes bacteria.
monocot	One of the two major types of flowering plants; characterized by having a single cotyledon, floral organs arranged in threes or multiples of three, and parallel-veined leaves; include grasses, cattails, lilies, and palm trees.
morality	Rightness or wrongness.
mores	Folkways so common that it eventually becomes the law, or the way of doing things.
Morgan, T.H.	With the study of fruit flies, he established the chromosome theory of heredity, showing that the genetic information was carried by genes arranged along the length of the chromosomes.
mortality	The same as death rate; the number of deaths per thousand organisms in a population.
mosses	A class of bryophytes containing erect leafy plants with multicellular rhizoids. They occur in nearly all damp habitats except the ocean.
motile	Capable of motion.
multiple alleles	The existence of a series of alleles (three or more) for one gene.
muscular dystrophy	a disease characterized by progressive wasting of muscles.
mutagen	Any physical or chemical agent that induces mutation or increases the rate of mutation.
mutualism	A form of symbiosis in which both species benefit. A type of symbiosis where both organisms benefit. The classic example is lichens, which is a symbiosis between an alga and a fungus.

mycelium	The mass of hyphae of a fungus.
Mycology	The study of fungi.

N	
natality	The same as birth rate; the proportion of the number of births per year to the total population.
natural selection	The process of survival and reproduction of better genotypes. Better adapted individuals are more likely to survive to reproductive age and thus leave more offspring and make a larger contribution to the gene pool than do less adapted individuals.
net productivity	The total amount of material produced minus the amount lost through predation, respiration, and decomposition.
niche	The biological role of an organism in a community.
nitrogen	A chemical element, symbol N, that as a diatomic molecule, N2, comprises about 78% of the atmosphere.
nitrogen bases	The four different nitrogen compounds that form pairs to make up the rungs of the ladder in the double helix structure of DNA. Also see base pairs.
nondisjunction	The failure of homologous chromosomes to move to separate poles during one phase of meiosis, resulting in gametes having extra or missing chromosomes.
nonvascular plant	Plants that do not have a system to transport water within the plant's body. These plants rely on osmosis and diffusion to transport materials. Reproduction requires free water.
nuclear energy	The energy released from nuclear reactions or atomic power.
nucleotides	compounds that consist of a ribose or deoxyribose sugar joined to a nitrogen base molecule and to a phosphate; they are the basic structural groups of DNA and RNA.
Nuttall test	A test involving antigen-antibody reactions in blood serum to determine the closeness of phylogenetic relationships between organisms. Sometimes referred to as immunological evidence for evolution.

O	
observation	The act or power of noticing and recording of facts.

oligotrophic lake	A lake that is cold and deep, and has only begun the process of eutrophication.
order	Taxonomic subcategory of class and superior to a family.
Ordovician limestone	Sedimentary rock composed of mostly calcium carbonate from the second period of the Paleozoic era, above the Cambrian and below the Silurian, from approximately 500 million to 440 million years ago.
organic	Compounds containing carbon and often associated with life.
organic evolution	The process of change in organisms by which descendants come to differ from their ancestors, and a history of the sequence of such changes.
overproduction	Referring to the excess amount of organisms that are born.
ozone layer	A layer consisting of ozone, O3, molecules scattered throughout the stratosphere. It absorbs most of the harmful ultraviolet radiation entering the earth's atmosphere and helps to reduce the harmful effects of UV light.

P	
Paleontology	The study of fossils and evolutionary relationships and ecologies of organisms that formed them.
parasitism	A type of symbiosis in which one organism benefits at the expense of the other, for example the influenza virus is a parasite on its human host.
pedigree	A list of ancestors of an animal or person. Sometimes shown as a coded diagram. Also known as a family tree if speaking of humans.
pedigree chart	a chart showing the line of ancestors of an animal or person.
petrification	A fossilization process whereby inorganic matter dissolved in water replaces the original organic materials, converting them to a stony substance.
phenotype	The observable characteristics of an organism, which are determined by the interaction of the genotype with the environment.
photosynthesis	The chemical reactions whereby energy from sunlight is used to combine water and carbon dioxide to produce glucose (food) and oxygen.

phyla	The broadest taxonomic category within kingdoms.
phylogenetic tree	Pertaining to the study of evolutionary relationships within a group, represented as a branching diagram.
phylum	The broadest taxonomic category within kingdoms.
physiological adaptation	The extent to which a physiological characteristic of an organism is suited to a particular environment.
physiology	The way in which organisms or parts of organisms function.
pioneer organism	The first organism to appear during succession.
plant	Organisms belonging to its own kingdom; they are characterized by being nonmobile, autotrophic, and multicellular eukaryotes. They have cellulose in their cell walls and starch as a carbohydrate storage product, with chlorophyll as photosynthetic pigments.
plasmid	An extra chromosomal genetic element found within bacterial cells that replicates independently of the chromosomal DNA.
Pleistocene megafauna	The abundance of animals that lived during an epoch of geologic time of the Quaternary period; also known as the Ice Age.
polygenic inheritance	A group of genes that collectively control or modify the expression of a particular characteristic.
polymerase	Enzymes that bind nucleotides together in the process of DNA replication.
polypeptide	A chain of several amino acids linked together by peptide bonds.
polyploidy	Abnormal variation in the number of chromosome sets. The condition when a cell or organism has more than the customary two sets of chromosomes.
population	A group of individuals of the same species living in the same area at the same time and sharing a common gene pool. A group of potentially interbreeding organisms in a geographic area.
population density	The number of organisms per unit of space.
population dispersion	The process by which groups of living organisms expand the space or range within which they live.
population growth pattern	The factors that determine how changes in population size occur when individuals are added or removed from a population.

population size	The number of organisms of the same species occupying a given area at a certain time.
pre-natal genetic screening	Medical tests performed on a fetus to determine the presence of genetic abnormalities, disorders or diseases.
predation	One of the biological interactions that can limit population growth; occurs when organisms kill and consume other living organisms.
prenatal	Something that is before birth i.e.) during pregnancy.
primary community	The first community of organisms to inhabit an area in which no community existed previously.
primary productivity	The amount of new organic material produced by photosynthesis.
probability	The ratio of the number of times an event occurs to the large number of events that takes place.
producer	Any organism that can produce food by using energy from the environment to combine inorganic molecules to produce food. Usually thought of as green plants.
progeny	Offspring or children.
prokaryotic	Referring to an organism that lacks a true nucleus
Protista	The kingdom of single-celled organisms that are eukaryotes.
PTC testing	A blood test to determine the presence of a soluble protein factor involved in blood coagulation. Without this protein, a person develops a hereditary, sex-linked, haemophilia-like disease. Also known as the Christmas factor and the Christmas disease.
pure bred	The succession of descendants of a homozygous individual that are identical to each other and continue to breed true, i.e. they produce genetically identical offspring.

Q	
quadrat sample	A technique used to count or weigh organisms per square metre of area. Used in ecology to study populations and communities.

R	
radioisotope	An isotope which exhibits radioactivity.
random event	An event that occurs haphazardly and without purpose.
recessive	Please see recessive allele.
recessive allele	A trait that is only expressed in the phenotype when it is in the homozygous condition.
reciprocal cross	A cross that tests whether the inheritance of a particular character is affected by the sex of the parent. The cross is thus made both ways, i.e. the character under consideration is carried by the female in one cross and by the male in the second cross. The procedure can demonstrate which characters are controlled by sex-linked genes.
recombinant DNA	Any DNA fragment or molecule that contains inserted foreign DNA, whether from another organism or artificially constructed.
recombination	The regrouping of genes that regularly occurs during meiosis as a result of the independent assortment of chromosomes into new sets, and the exchange of pieces of chromosomes (crossing over). Recombination results in offspring that differ both phenotypically and genotypically from both parents and is thus an important means of producing variation.
recycling	The reprocessing of waste materials so that it can be used again.
renewability	The ability to make new again.
reptile	Taxonomic class of vertebrates characterized by scales and amniotic eggs.
restriction enzyme	A type of enzyme that can cleave and fragment DNA internally (see endonuclease).
ribosomal RNA; rRNA	one of the three types of RNA which is the main structural component of ribosome
RNA	Ribonucleic acid; a nucleic acid that exist in three forms, each having a function in protein synthesis
RNA polymerase	During transcription, an enzyme that attaches to the promoter region of the DNA template, joins nucleotides to form the synthesized strand of RNA and detaches from the template when it reaches the terminator region.

roots	Organs, usually occurring underground, that absorb nutrients and water and anchor the plant; one of the three major plant organ systems.
runoff	The running off of water during a spring thaw or after a heavy rain.

S	
saprobe	Decomposer organism which gets nourishment from dead organic matter usually by secretion of enzymes and absorption of nutrients. Extremely important in recycling elements in the environment. Same as saprophyte.
saprophyte	See saprobe
scavenger	An organism that feeds on dead organisms.
second filial, F_2	The second filial generation, obtained by crossing within the F1 generation. It is in the F2 that the characteristic monohybrid and dihybrid ratios become apparent.
secondary community	A community that follows the partial or complete destruction of a community. The regrowth of an area after a forest fire is an example.
Sedimentary rock	Rock formed by the products of weathering of other rock. Particles of sand, silt, and clay form horizontal layers of sediments that become compressed and harden into rocks over time. Certain limestones are formed from the remains of aquatic animal shells.
sedimentation	The process of accumulating sediment in layers.
seed	Structure produced by some plants after fertilization in which the next generation is produced. Seeds have cells surrounding it that provides nutrition for the developing embryo.
segregation of chromosomes	The separation of the two alleles of a gene into different gametes, brought about by the separation of homologous chromosomes during meiosis.
selective breeding	The selection of individuals with desirable traits for use in breeding. Over many generations, the practice leads to the development of strains with the desired characteristics.

semi-conservative replication	Process of DNA replication in which the DNA helix is unwound and each strand serves as a template for the synthesis of a new complementary strand, which is linked to the old strand. Thus, one old strand is retained in each new molecule.
sewage	The wastes that passes through the sewers, a series of pipes or channels.
sex chromosome	The X and Y chromosomes in a male and female that determine the sex of an offspring.
sex-linked traits	A trait that is expressed by genes or alleles found on sex chromosomes, usually on the X chromosome. The trait is usually recessive and is not masked by dominant alleles. It occurs far more frequently in males than in females.
sexual reproduction	the formation of new individuals by fusion of two nuclei or sex cells (gametes) to form a zygote
similarities	Characteristics that are nearly the same but not exactly alike.
soil erosion	A gradual wearing away or disappearance of soil due to wind, running water, waves, or glaciers.
solid waste	Referring to the solid water matter that is discharged from the intestines; feces.
speciation	The formation of one or more new species from an existing species.
species	Populations of individuals capable of interbreeding and producing viable, fertile offspring. Reproductive isolated populations. The least inclusive taxonomic category commonly used.
spontaneous generation	The belief that life can arise from nonliving matter. For example, flies from rotting meat, fish from the mud at the lake bottom, mice in a sac of wheat.
sporangia	The structures in which spores are produced.
spores	Impervious structures formed by some cells that encapsulate the cells and protect them from the environment; haploid cells that can survive unfavourable conditions and germinate into new haploid individuals or act as gametes in fertilization.
Stanley Miller	Under laboratory conditions, he tried to recreate the formation of life on earth as it was hypothesized.
stems	The part of a plant that supports the leaves and flowers. It is generally erect but there are variations. Stems also serve to conduct water and food to the leaves.

structural adaptation	The extent to which a structural characteristic of an organism is suited to a particular environment.
structure and function	Referring to the parts and their tasks in organisms.
succession	A progressive series of changes in vegetation and animal life of an area from initial colonization to the final stabilized stage, or climax.
sustainable development	That conserves an ecological balance by avoiding depletion of natural resources; that may be maintained at a particular level.
symbiosis	An interactive association between two or more species living together; may be parasitic, commensal, or mutualistic. The relationship between two organisms.
symmetry	The position of organs and other parts of a body of organisms with respect to an imaginary axis. For example, your left arm is symmetrical to your right arm.
sympatric	Populations of two or more species whose geographic ranges coincide or overlap.
synapsis	The association of homologous chromosomes during the prophase stage of meiosis that leads to the production of a haploid number of bivalents. Homologous chromosomes pair point to point so that corresponding regions lie in contact.

T	
taxonomy	A systematic method of classifying plants and animals. Classification of organisms based on degrees of similarity purportedly representing evolutionary (phylogenetic) relatedness.
template	The strand of DNA that is transcribed to make RNA.
termination	The end of translation; occurs when the ribosome reaches the stop codon on the messenger RNA molecule and the polypeptide, the messenger RNA, and the transfer RNA molecule are released from the ribosome.
test cross	The crossing of a hybrid back to the original parent generation.
thymine	a nitrogen base of DNA that pairs with adenine

topographical characteristics	The parts of the landscape that provides the natural features of a region. The general configuration of a surface, including its relief; may be a land or water-bottom surface.
Trait	A distinguishing quality or characteristic, as in personality or physical makeup
transcription	The synthesis of RNA from a DNA template. The making of RNA from one strand of the DNA molecule.
transect line sample	A line or belt designed to study changes in species composition across a particular area. A long tape marked at set intervals is laid across the area to be studied.
transfer RNA	Small, single-stranded RNA molecules that bind to amino acids and deliver them to the proper codon on messenger RNA.
transgenic organisms	describing organisms, especially eukaryotes, containing foreign genetic material.
translation	The synthesis of protein on a template of messenger RNA; consists of three steps: initiation, elongation, and termination.
trisomy	A condition in which three chromosomes occur together instead of the normal two
trophic level	In complex natural communities, organisms whose food is obtained from plants by the same number of steps. The first trophic level are the producers, followed by herbivores, then by different levels of carnivores.
tundra	A type of biome characterized by an extensive treeless plain across northern Europe, Asia, and North American between the taiga to the south and the permanent ice to the north. Much of the soil remains frozen in permafrost, and grasses and other vegetation support herds of large grazing mammals.
turbidity	The degree to which a substance, especially a liquid, is muddy, thick, or not clear.
Turner's syndrome	A condition in the human female caused by partial or complete lack of the X chromosome.

V	
values	Beliefs or standards
variation	The extent to which the characteristics of a species can vary.

vascular plant	Plants that have systems for transporting water and nutrients within the plant's body. Vascular tissue also provides structural support to allow vascular plants to grow tall.
vascularization	In plants, the process of creating or evolving a conductive system for the transport of water and food.
vertebrate	Any animal having a segmented vertebral column; members of the subphylum Vertebrata; include reptiles, fishes, mammals, and birds.
virus	Infectious chemical agent composed of a nucleic acid (DNA or RNA) inside a protein coat.

W	
water quality	The degree in which water is free from contaminants or other harmful substances.
Watson and Crick	Biologists whose research on the molecular structure of DNA and the genetic code, earned them a Nobel prize in 1962. They showed that DNA formed a double-helix held together by base pairs.
weathering	Physical disintegration and chemical decomposition of earthy and rocky materials on exposure to atmospheric agents.

X	
X-chromosome	The larger of the two types of sex chromosome in mammals and certain other animals. It is similar in appearance to the other chromosomes and carries many sex-linked genes.

Y	
Y-chromosome	The smaller of the two types of sex chromosome in mammals and certain other animals. It is found only in the heterogametic sex.

Z

zygote	The diploid cell that results from the combination of haploid egg and sperm cells. The cell that results from sexual reproduction.

ADD YOUR OWN DEFINITIONS HERE!