

## Definitions and Concepts for WJEC (Eduqas) Biology GCSE

### Topic 7: Inheritance, Variation and Evolution

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

*Definitions marked by '\*' are for separate sciences only*

**Amino acids** - Small molecules that make up a protein.

**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.

**Classification** - The organisation of organisms into groups based on their characteristics and structure.

**Complementary** - Describes how the chemical bases in DNA pair with each up. Adenine (A) pairs with thymine (T); cytosine (C) binds with guanine (G).

**DNA (Deoxyribonucleic acid)** - A polymer made up of two strands forming a double helix. †

**DNA (Deoxyribonucleic acid)** - A polymer made from four different nucleotides; each nucleotide consisting of a common sugar and phosphate group with one of four different bases attached to the sugar. †

**Dominant** - An allele that is always expressed when present. It is represented by a capital letter.

**Eukaryotic cell** - A type of cell found in plants and animals that has a nucleus and other membrane-bound organelles.

**Evolution** - A gradual change in the population's inherited characteristics over time, by the process of natural selection. This may result in the formation of a new species.

**Extinction** - The death of all members of a species. Extinction may occur if natural selection occurs too slowly, so the organisms cannot adapt to new environmental conditions.

**Fertilisation** - When the male and female gametes fuse restoring the full chromosome number.

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**Fossil record** - The remains or impressions of dead organisms found in rocks that are millions of years old. They provide evidence for evolution.

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

**Gamete** - Sex cells (sperm and egg cells) with half the usual number of chromosomes. They are involved in reproduction.

**Genes** - Sections of DNA molecules that determine inherited characteristics and that are in pairs. +

**Genetic engineering** - A process which involves modifying the genome of an organism to introduce desirable characteristics. +

**Genetic profiling** - The process of analysing an organism's DNA. The DNA is cut into pieces and separated into bands. The pattern of bands can be compared to show the similarity between two DNA samples. +

**Genome** - The entire genetic material of an organism.

**Genotype** - The genetic makeup of an organism.

**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.

**Mutation** - A random change in DNA which increases variation. They may have a neutral, beneficial or damaging effect on the phenotype. The rate of mutations occurring is increased by ionising radiation.

**Natural selection** - The process by which advantageous alleles are passed down to offspring over many generations, increasing the allele frequency. These alleles give rise to phenotypes best suited to the environment.

**Non-coding DNA** - DNA which does not code for a protein but instead controls gene expression.

**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, T or G.

**Phenotype** - The physical characteristics of an organism. It is due to interactions between the genotype and the environment.

**Prokaryotic cell** - A unicellular organism that lacks a nucleus and other membrane-bound organelles, e.g. bacteria.

**Protein synthesis** - The formation of proteins from amino acids which takes place in the ribosomes.



**Protein** - A large molecule synthesised from amino acid monomers.

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

**Punnett square** - A grid used to determine potential outcomes of a genetic cross.

**Recessive** - An allele that is only expressed if two copies are present. It is represented by a small letter.

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

**Sex chromosomes** - A pair of chromosomes responsible for the determination of gender. XY in males, XX in females.

**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.

**Three-domain system** - A biological classification which divides organisms into Archaea, Bacteria or Eukarya. It is based on differences in RNA.

**Triplet code** - The bases are read in groups of three. In protein synthesis, three bases codes for one particular amino acid; a long sequence of bases codes for a sequence of amino acids, which makes up a protein.

**Variant** - A version of a gene (also known as allele). As the DNA sequences of variants are different, they code for slightly different amino acid sequences, which may affect the protein.

✦ Definition taken from: [WJEC \(Eduqas\) GCSE in Biology Specification V.3 January 2019](#)

