

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

### Topic 2.3: DNA and Inheritance

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

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

**Allele** - A version of a gene (also known as variant).

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

**Chromosome** - A long, coiled molecule of DNA that carries genetic information in the form of genes.

**Complementary base pairing** - Describes how the bases of DNA pair up with each other. A pairs with T; C pairs with G.

**Cystic fibrosis** - A genetic disorder caused by homozygous recessive alleles which causes mucus build up in the lungs.

**DNA (Deoxyribonucleic acid)** - 2 chains consisting of alternating sugar and phosphates which are twisted together and connected by bases (A, T, C, and G, **or adenine, thymine, cytosine and guanine**). The order of the bases determines the order of amino acids in a protein synthesised from that gene; the order of the amino acids linked together determines the structure of the synthesised protein. †

**Disease** - An illness that affects animal or plant health.

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

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

**F1 generation** - The first generation of a genetic cross as a result of 2 organisms interbreeding.

**F2 generation** - The second generation of a genetic cross as a result of 2 organisms from the F1 generation interbreeding.

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

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

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



**Gene** - A section of DNA that codes for a specific amino acid sequence which is polymerised to make a specific protein.

**Genetic engineering** - When the genome of an organism is modified to change its characteristics.

**Genetic profiling** - The process of creating a 'profile' for an individual based on their DNA. The DNA is cut into bands and separated into a characteristic band pattern, unique to the individual.

**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.

**Meiosis** - A form of cell division that produces gametes. They are not genetically identical and contain half the number of chromosomes.

**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.

**PKU (Phenylketonuria)** - A genetic disorder caused by homozygous recessive alleles.

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

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

**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.

**Selfing** - Self-fertilisation in plants. Selfing occurs when pollen from a plant lands on the stigma of the same plant.

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

**Single gene inheritance (monohybrid inheritance)** - Inheritance of characteristics that are controlled by a single gene.

**Triplet code** - The triplet code is a code of three bases. Three bases codes for a specific amino acid.

✚ Definition taken from: [WJEC \(Wales\) GCSE in BIOLOGY Specification V.2 January 2019](https://www.wjec.co.uk/media/151227/WJEC_GCSE_in_BIOLOGY_Specification_V.2_January_2019.pdf)

