

## Definitions and Concepts for OCR (B) Biology GCSE

### Topic 1: You and Your Genes

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*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.

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

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

**Cytoplasm** - A jelly-like material which contains nutrients. In prokaryotic cells it also stores genetic information.

**\*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. (Adenine (A), Thymine (T), Cytosine (C) and Guanine (G)). ✚

**\*Deletion** - A mutation where one or more nucleotides are deleted or lost from the DNA strand

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

**Dominant** - An allele which 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.

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

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

**Genetic variation** - The variation in the genes of a species.

**Genetic diagram** - Can be used to model and predict outcomes of the inheritance of characteristics that are determined by a single gene, e.g. punnett squares or family trees. ✚

**Genetic engineering** - The genome is modified to change an organism's characteristics. ✚

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**Genetic material** - The material that stores the genetic information.

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

**Genotype** - An organism's genetic composition. Describes all alleles.

**Heredity** - The process by which genetic information is transmitted from one generation to the next.

**Heterozygous** - When someone has two non-identical alleles of a gene e.g. Bb.

**Homozygous** - When someone has two identical alleles of a gene e.g. bb.

**\*Insertion** - A mutation where 1 or more extra nucleotides are inserted onto a DNA strand.

**Light microscope** - A microscope that uses light to produce an image of the specimen. The images produced are of lower resolution compared to those produced by electron microscopes.

**\*Messenger RNA (mRNA)** - A RNA subtype which carries a complementary DNA strand from which proteins are synthesised at the ribosomes.

**\*Mutation** - A random change in DNA which increases variation. They may have a neutral, beneficial or damaging effect on the phenotype.

**\*Non-coding DNA** - Components of DNA that do not code for proteins.

**Nucleotide** - The monomers of DNA consisting of a common sugar, a phosphate group and one of four chemical bases (A, T, C, G) attached to the sugar.

**Nucleus** - An organelle found in most eukaryotic cells that contains the cell's genetic material and controls the cell's activities.

**Phenotype** - An organism's observable characteristics due to interactions of the genotype and the environment.

**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.

**Polymer** - Many small molecules (monomers) chemically joined together to make one large molecule.

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

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

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



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

**Ribosomes** - Organelles which are the site of protein synthesis.

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

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

**\*Substitution** - A mutation where one or more nucleotides are substitutes for another in a DNA strand.

**Variant** - A different version of a gene. †

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

† Definition taken from: [OCR Gateway Science Biology \(B\) Specification \(J257\) V3.1 \(January 2020\)](#)

