

## AS 90948

### Genetics Glossary

**allele:** different version of a gene / alleles are genes that occupy the same position on homologous (similar) chromosomes

**artificial selection:** the process of breeding plants and animals with desirable characteristics in the hope that their offspring will inherit them

**asexual reproduction:** reproduction involving only one parent producing identical offspring

**bases:** adenine, guanine, cytosine, thymine

**carrier:** has inherited a genetic trait or mutation, but who does not display that trait, but can pass it on to their offspring

**characteristic:** an attribute of an individual eg tall plant, brown hair, blue eyes

**chromosome:** strand of DNA which contains many genes; a normal human cell has 46 (23 pairs)

**complementary base pairing:** used to describe how the bases A always bonds with T, and C with G

**continuous variation:** variation that shows a range eg skin colour / gradual changes, e.g. height and weight

**cystic fibrosis:** disease caused by a recessive gene causes breathing problems due to mucus forming in the breathing system

**diploid:** cell with the full complement of chromosomes (46 in humans)

**discontinuous variation:** variation that is "either/or" eg blood groups, ability to roll tongue or not

**DNA:** this is the chemical which carries genetic information in the nuclei of cells / made up of phosphate units, sugar units and 4 types of bases

**dominant:** this is the allele which will be "expressed" in the phenotype if it is present as either a single gene or as two genes. e.g. B

**double helix:** name given to the twisted ladder shape of the DNA

**fertilisation:** male sex cell (gamete) combines with a female sex cell (gamete) to form a zygote

**gamete:** a sex cell i.e. sperm or egg (ovum) in animals. Ovum and pollen in plants.

**gene:** piece of DNA which codes for a particular protein and therefore a characteristic, eg tongue rolling

**genotype:** this is what genes you carry e.g. BB, Bb or bb

**haploid:** cell with half the full complement of chromosomes (23 in humans)

**heterozygous:** this means having a dominant and a recessive allele e.g. Bb

**homozygous:** a pair of alleles that are the same, e.g. HH or hh

**Huntington's disease:** inherited disease caused by a dominant gene that eventually leads to dementia and death

**hydrogen bonds:** attractive forces that hold the two strands of DNA together

**incomplete dominance:** situation where neither of the two genes (alleles) present masks the other

**karyotype:** A photograph or diagram of the chromosomes of a cell arranged in an orderly fashion

**meiosis:** this is cell division that reduces the number of chromosomes to a half the normal number, producing 4 genetically different cells. This is what happens in the testis and ovary; meiosis produces gametes

**mitosis:** this is a genetically exact division of a cell – produces 2 identical daughter cells

**monohybrid cross:** a straight forward cross involving only one pair of genes or alleles

**mutation:** this is a sudden, permanent change in a gene or whole chromosome

**natural selection:** organisms with characteristics best suited to their environment become more successful, and so expand in numbers

**nucleotide:** a UNIT built up of a base, a sugar and a phosphate group

**pedigree chart:** A family tree drawn with standard genetic symbols, showing inheritance patterns for specific characteristics e.g. straight/curly hair

**phenotype ratio:** ratio of phenotypes e.g. 3 brown hair : 1 blond hair (a prediction of the phenotypes and their occurrence as a result of a cross)

**phenotype:** the expression of the genotype; this is what you look like e.g. brown or blue eyes, if it is a visible trait

**phosphate:** group that alternates with the ribose sugar in the DNA backbone

**Punnett square:** name given to the grid of squares that may be drawn to show the range of combinations of genes that may occur

**pure breeding:** A group of identical individuals that always produce offspring of the same phenotype when interbred / are homozygous individuals eg either BB or bb

**recessive:** this is the allele which is only expressed if there are two such alleles e.g. b

**reduction division:** another name for meiosis

**ribose:** a sugar group that alternates with the phosphate group in the DNA backbone

**semi conservative:** each double-stranded DNA molecule is composed of one parental strand and one newly made strand

**sexual reproduction:** reproduction involving two parents, where the offspring has some features inherited from each

**symbols:** use of capital letter for the dominant gene and the same small letter for the recessive gene, e.g. R for round pea and r for wrinkled pea, where round is dominant

**template:** pattern

**trait:** another word for characteristics, eg brown hair is an example

**triplet code:** genetic code made by a sequences of three bases in the DNA e.g. AAA, GCT, CAT etc

**variation:** the differences among parents and their offspring or among individuals in a population

**zygote:** cell formed when a sperm cell fuses with an egg cell