

GLOSSARY

ANTHERS

The male reproductive organs of plants where pollen is made and stored.

ANTISENSE DNA

In double stranded DNA the two strands are known as sense and antisense DNA. The antisense strand is the one that is transcribed to form mRNA (so it is complementary to mRNA and sense DNA).

AGROBACTERIUM-MEDIATED TRANSFORMATION

Genetic transformation using bacteria to carry new genetic information into an organism.

AMINO ACID

Amino acids are the subunits or 'building blocks' of protein. A protein molecule consists of one or more long chains of amino acids.

CELL MEMBRANE

Phospholipid bilayer surrounding the cell.

CEREAL

A grassy plant from temperate climates that is used to produce grain, e.g. oats, wheat, barley, rye.

CEREAL CYST NEMATODE (CCN)

A parasitic nematode that infects the roots of cereal crops.

CODON

A sequence of three bases of DNA or RNA. The 'code' of RNA is read in groups of three bases (codons), with each codon giving a specific instruction.

CROSSING

The breeding of plants.

DIGESTION

Enzymatic breakdown of large molecules into smaller ones.

DOWN-REGULATED

A reduction in the expression of a gene, resulting in reduced protein production.

GEL ELECTROPHORESIS

A technique used to separate DNA fragments according to their size.

GENE

A segment of DNA that occupies a specific location on a chromosome and controls an inherited characteristic. It usually corresponds to a sequence used in the production of a specific protein or RNA.

GENOTYPE

The coded, heritable information that is part of an individual's genome (its DNA) and contributes to determining a specific trait.

GREEN FLUORESCENT PROTEIN (GFP)

A glowing protein from a jellyfish used in research – in particular in expression studies.

JUNK DNA

A collective name for the large sections of DNA for which no function has yet been identified. While some of this DNA may prove to have no present-day purpose, other sections may have functions that are not yet understood. For this reason, some people prefer the term 'non-coding DNA'.

MALTING QUALITY

Barley that is suitable for malting and is later used to make products such as beer and confectionary.

MOLECULAR MARKER

A specific sequence of DNA that can be identified using molecular biology techniques such as restriction enzymes and gel electrophoresis. When a marker is linked to a trait, it can be used to predict the genotype.

PEPTIDE

A short chain of amino acids.

PHENOTYPE

The physical characteristics of an organism that can be seen or measured.

PLASMID

Circular, extra-chromosomal DNA found in bacteria.

POLYMORPHISMS

Variations in the DNA.

POLYPEPTIDES

A chain of amino acids. Proteins are made up of one or more polypeptide chains.

PROMOTER

A regulatory region of DNA preceding a gene, which influences whether a gene is expressed.

REPORTER GENE

A gene that researchers attach to another gene of interest in cell culture, animals or plants. Genes are chosen as reporters because the characteristics they give to organisms are easily identified and measured, such as the Green Fluorescent Protein. Reporter genes are generally used to determine whether the gene of interest has been taken up by or expressed in the cell or organism.

RESTRICTION ENZYMES

Enzymes used to cut DNA.

RESTRICTION FRAGMENT LENGTH POLYMORPHISMS (RFLPS)

Variations in DNA fragment length following digestion of DNA with restriction enzymes.

RIBOSOME

A small, dense, cellular organelle that assembles proteins. Ribosomes translate messenger RNA (mRNA) to build a polypeptide chain.

STIGMA

The female reproductive organ of plants that receives the pollen.

SOUTHERN BLOTTING

A technique used to identify DNA fragments using complementary fragments of DNA on a membrane as probes.

TRANSGENIC

An organism possessing a gene or genes that have been transferred into it from a different species.

VECTOR

A biological vehicle for carrying genetic information from one organism to another.