

Genetic modification

Define genetic modification.

Genetic modification

Give an example of human genes inserted into bacteria.

Genetic modification

Name three features genes can give to GM crop plants.

Genetic modification

What is golden rice?

Genetic modification **Supplement**

What do restriction enzymes do?

Genetic modification **Supplement**

What does DNA ligase do?

Genetic modification **Supplement**

Put in order: insert plasmid into bacteria, cut gene out, join gene into plasmid, bacteria make protein.

Genetic modification **Supplement**

What is a recombinant plasmid?

The human insulin gene, so bacteria make human insulin.

Changing the genetic material of an organism by removing, changing or inserting individual genes.

Rice genetically modified to improve its nutritional quality (more vitamin A precursor).

Herbicide resistance, insect pest resistance and improved nutritional quality.

Joins the sticky ends of the gene and plasmid to form a recombinant plasmid.

Cut DNA, leaving sticky ends.

A plasmid containing DNA (a gene) from another organism, joined in by DNA ligase.

Cut gene out; join gene into plasmid; insert plasmid into bacteria (which multiply); bacteria express the gene and make protein.

Genetic modification **Supplement**

Give two advantages of GM crops.

Genetic modification **Supplement**

Give two disadvantages of GM crops.

Genes may spread to wild plants; may harm other organisms; seeds can be expensive.

Higher yield; less insecticide needed; improved nutrition.