Genetic Engineering



What is genetic engineering?

The transfer of genes (segment of DNA) from one species to another.

This is impossible in naturally breeding.

How to get the gene from species A to species B?

A **vector** is used to carry the gene into the host nucleus.





What is a plasmid?

Bacterium





DNA fragment is incorporated into chromosome.

Natural role of a plasmid in bacteria?

- Plasmids usually contain one or two gene that confer a selective advantage on the bacterium e.g. antibiotic resistance gene.
- Every plasmid possess a replicator gene can duplicated independently from the thromosomal DNA.









\gg restriction enzyme

In bacteria, restriction enzymes are found naturally.

They cut DNA at specific sites.



DNA double helixes are cut at the axis of symmetry:











Inserting a DNA Sample



















