Gene Transfer

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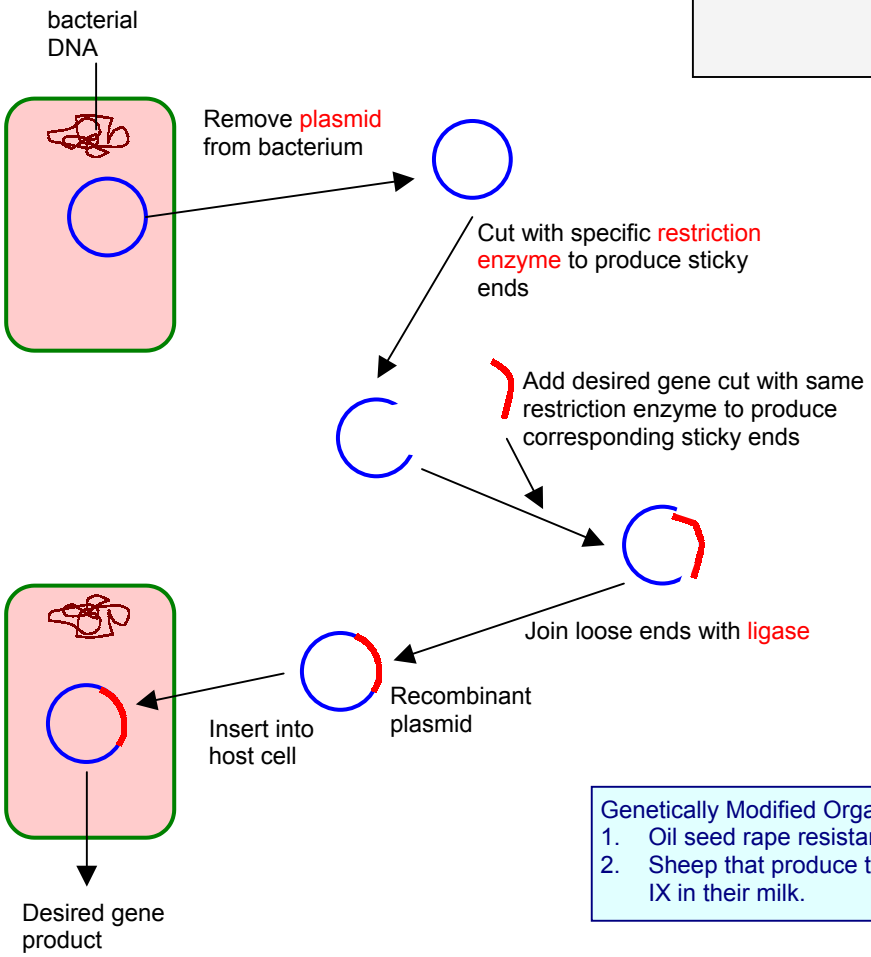
Key requirements

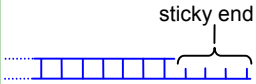
- The gene we want to transfer;
- A plasmid;
- A host cell – usually a bacterium (eg. *E.coli*) or yeast;
- Two enzymes - a restriction enzyme;
  - DNA ligase.

What is a plasmid?



Genetic material can be transferred between species because the genetic code is universal.

A sticky end is a short sequence of unpaired bases at the end of the DNA.



Genetically Modified Organisms – GMOs

1. Oil seed rape resistant to the herbicide glyphosate.
2. Sheep that produce the human blood clotting factor IX in their milk.

Points for discussion

- Faster than traditional selective breeding techniques;
- Uses specific genes from another organism that would not be present in the species own gene pool;
- Specifically targeted;
- Genes may jump from GM organism to wild organisms causing major ecological problems. Example – if a gene producing a toxin designed to kill insects feeding on a crop plant spread from the crop plant to wild plants it would kill any insect whose natural food was the wild plant.
- Genes from different GM organisms can accumulate in a single species causing multiple problems.

What is the Human Genome Project?