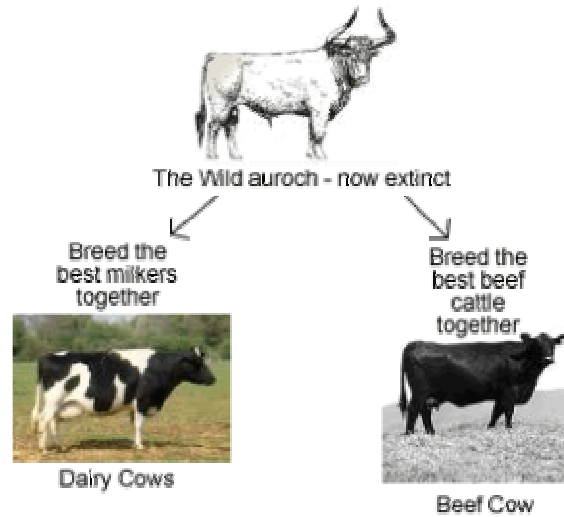


Int 2 Biology - Unit 2 Environmental Biology & Genetics

Revision Notes for Chapter 10 - Applied Genetics

Selective Breeding

Farmers and breeders have been breeding from selected individuals for many generations. By breeding together the best organisms for a particular desired characteristics over many generations this characteristic becomes part of the breed.



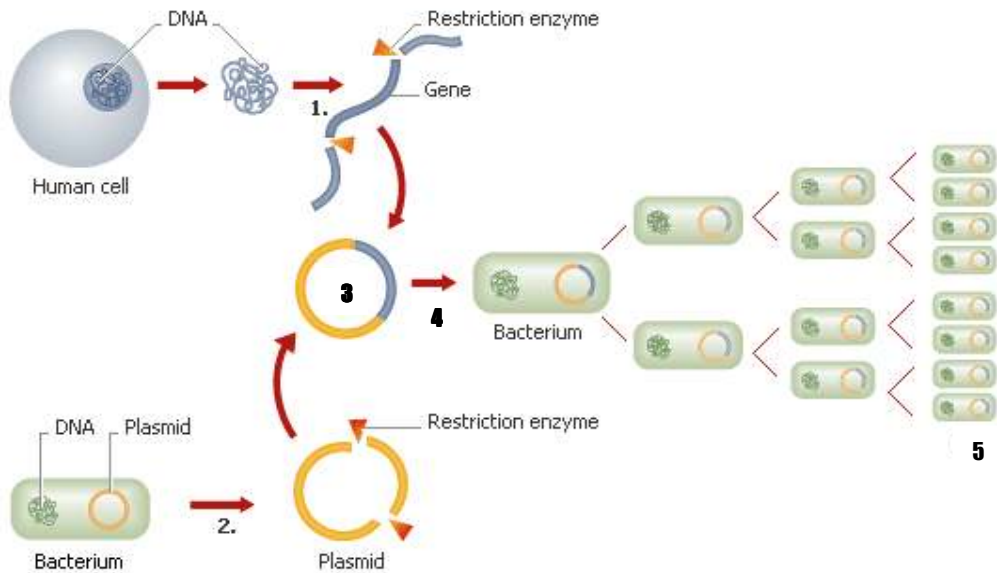
Disadvantages of selective breeding are:

1. takes many generations
2. may not produce the desired product

Genetic Engineering

In genetic engineering genes from one species are inserted into the chromosome of another (usually bacteria).

This involves several steps. You must know these steps:



STEP 1 - Human gene is cut out of chromosome using an enzyme

STEP 2 - Bacterial plasmid is cut open using an enzyme

STEP 3 - Human gene is inserted into open bacterial plasmid

STEP 4 - Altered plasmid is inserted into a new bacterial cell

STEP 5 - Bacteria containing altered plasmid produce desired product as they grow and multiply

Examples of products made by genetic engineering are:

INSULIN for treating diabetes
FACTOR VIII for treating haemophilia
HUMAN GROWTH HORMONE for treating growth disorders

Advantages of genetic engineering are:

1. chemicals can be produced on a large scale
2. low costs
3. much shorter time scale than selective breeding
4. relatively sure that you are going to get the desired product

Disadvantages of genetic engineering are:

1. danger that genes may be released into wild populations