

1. Selective Breeding

Process of selecting individuals of the same species with the desired characteristic and breeding them to produce offspring with the desired characteristics

Benefits of selective breeding	Produce disease resistant crops, increase the yield of milk and meat from cattle, increased growth rate of chickens so meat can be sold earlier, domestication of pets (more attractive and docile) and many more
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Concerns of selective breeding	It does not always work and takes a long time. Interbreeding of organisms can cause disease or defects
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Method for selective breeding

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| 1. | Select a male and female with the desired characteristics |
| 2. | Breed together |
| 3. | Check the offspring for the desired characteristics |
| 4. | If desired characteristics are present continue to interbreed until the characteristic is always present. If the desired characteristic is not present, go back to step 1. |

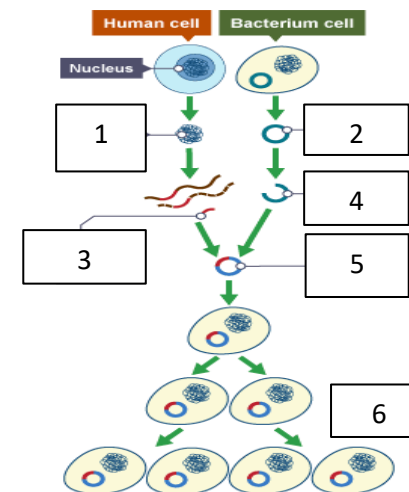
2. Genetic engineering

Genetic Engineering (Genetic Modification – GM)	Process of inserting the gene of one organism to the DNA of another to change or enhance specific characteristics.
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Plasmid	Ring of secondary DNA in a bacteria cell
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Genetically engineering insulin using bacteria (HT only)

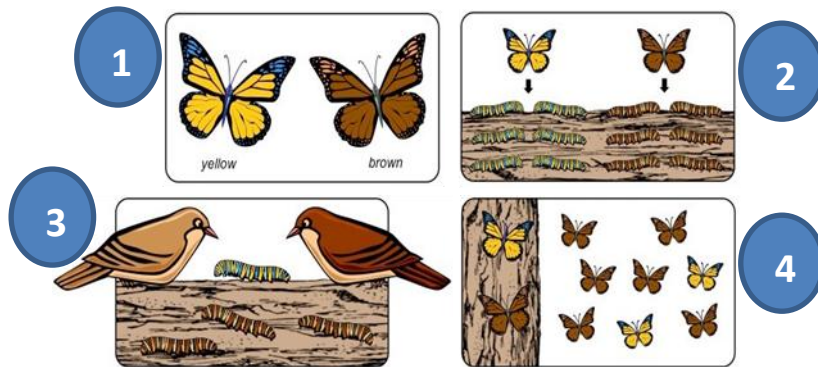
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|---|---|
| 1 | Chromosome containing desired gene is removed |
| 2 | Plasmid from a bacterium is removed |
| 3 | Enzymes are used to cut the gene from the DNA |
| 4 | Enzymes are used to cut out a section of the plasmid DNA |
| 5 | The desired gene is inserted into the plasmid using enzymes |
| 6 | The plasmid is placed back into the bacteria, which multiplies rapidly, copying the gene and making insulin |



3. Evolution

The theory of EVOLUTION by NATURAL SELECTION was put forward by Charles Darwin

	Stage	Explanation
1	Variation	There is genetic variation within a population caused by inherited genes
2	Competition	Over production of offspring leads to increased competition
3	Selection	Individuals with beneficial adaptations are more likely to survive to pass on their genes
4	Inheritance	Over many generations there is a change in the allele frequency



Species	A group of organisms that have similar features that can breed to produce fertile offspring
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4. Extinction

What is extinction?	When the all the organisms of a species have die and there are none left alive
Causes of extinction	<ol style="list-style-type: none"> 1. NEW disease 2. NEW predator 3. Lack of food 4. Climate change 5. Natural disasters

5. Fossils

What are fossils?	Remains or imprint of an organism that dies millions of years ago, found in rocks, ice and peat
How do fossils form? (rocks)	<ol style="list-style-type: none"> 1. Organism dies and falls to the ground 2. Layers of sediment over the dead organism 3. Over millions of years, the layers turn to rock and minerals in the rock replace the minerals in the bones of an animal <p>This happens because decay cannot occur.</p>
What information can fossils tell us?	<p>Early life was simple.</p> <p>The evolution of a species can be predicted by looking at differences between the fossils of a species.</p>
Why do we not have fossils for the early life on Earth?	<p>Fossilisation is rare as most organisms decay</p> <p>Fossils can be easily become damaged as the rocks move due to tectonic plates</p> <p>Most early life has soft body forms which do not fossilise</p>

6. Classification

Carl Linnaeus	Developed the system of classification used today
Binomial name	Official name of a species including the genus and species name
3 domain system developed by Carl Woese	<p>All organisms can be classified in to 3 domains</p> <ul style="list-style-type: none"> • Archaea – ancient simple bacteria, often extremophiles • Prokaryote – bacteria • Eukaryote – complex organisms including animals and plants.

Group	Mnemonic
Kingdom	King
Phylum	Philip
Class	Came
Order	Over
Family	For
Genus	Good
Species	Soup