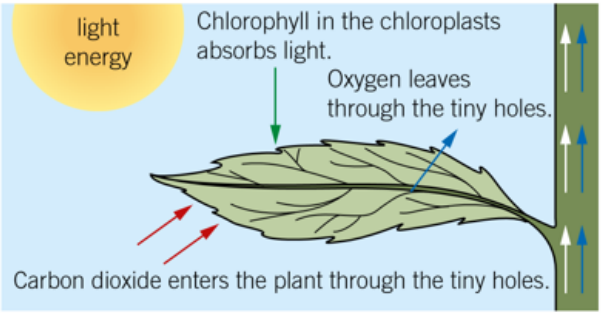
Your teacher will tell you which topic you should revise. Read and learn all the information in the topic, ready for a Quiz in lesson.

Topic 1: The environment

PHOTOSYNTHESIS

Photosynthesis is a chemical reaction that takes place in the **chloroplasts** to produce **glucose**.

carbon dioxide + water → oxygen + glucose

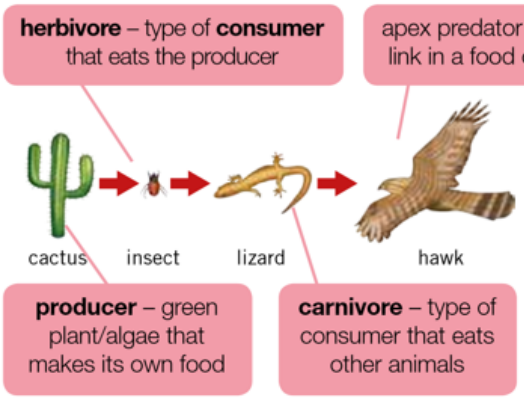


FOOD CHAINS AND WEBS

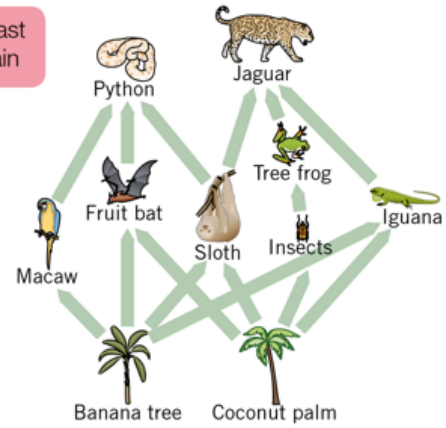
Food chains show the transfer of energy between organisms – the arrows represent the direction of energy transfer.

Food webs show how lots of food chains are connected in an ecosystem.

Food chain



Food web



Prey: an organism eaten by another organism.

Predator: an organism that eats another organism.

POPULATIONS AND ECOSYSTEMS

The number of organisms that live in the same area is called a **population**. Populations of organisms are constantly changing – this affects other populations in a food web

Interdependence is when living organisms depend on each other to survive, grow and reproduce.

Ecosystem – all he organisms found in a particular location and the area they live in
Community – the organisms in an ecosystem
Habitat – the area where a community lives

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Topic 2: Evolution and Inheritance

Inheritance

Characteristics

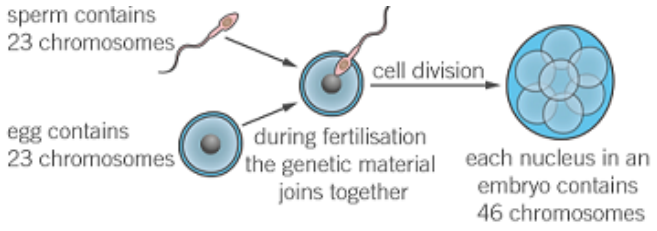
Characteristics are inherited from your parents through genetic material stored in the nucleus of cells.

We inherit half of our DNA (deoxyribonucleic acid) from our mother and half from our father.

DNA

- contains all the information needed to make an organism
- is arranged into long strands called **chromosomes**.
- each chromosome is divided into sections of DNA
- sections of DNA that contain the information to produce a characteristic are called **genes**

Inheritance of genetic material:



Natural selection

Organisms in a species show variation caused by differences in their genes.

Organisms with the most useful characteristics survive and reproduce.

This is called 'survival of the fittest'.

Successful genes are passed on to the offspring.

This is repeated many times and over a long time can lead to a new species.

Process of natural selection

- All living organisms have **evolved** from a common ancestor, through the process of natural selection.
- Organisms change slowly over time.
- Those better adapted to their environment are more likely to survive.

Your teacher will tell you which topic you should revise. Read and learn all the information in the topic, ready for a Quiz in lesson.

Topic 3: Selective breeding and genetic engineering

Selective Breeding

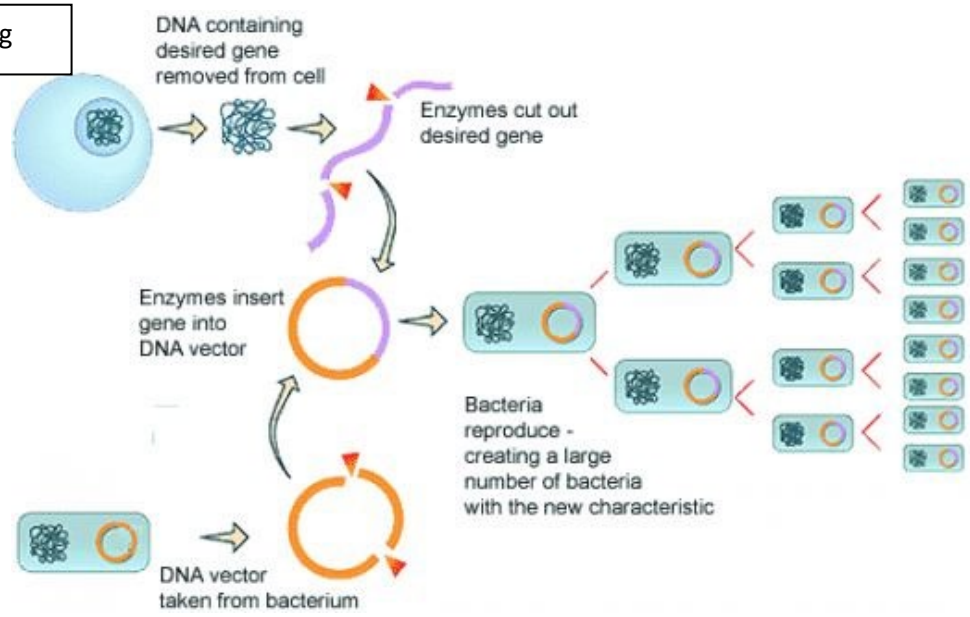
Humans can try to artificially speed up the process of evolution by using **selective breeding**.

- 2 organisms with the desired features / characteristics are bred together.
- The "best" offspring (ones with the desired features) are then bred again.
- This process of breeding the offspring with the desired features happens over a large number of generations until all the offspring have the characteristic being selected for.

Examples of features that might be selected for include **disease resistance, high meat/milk/fruit yields, calm and gentle natured animals, bright colours / unusual looking features.**

Because there is often inbreeding involved in selective breeding, the offspring can often have genetic problems due to a reduced gene pool. This can result in harmful features being passed on.

Genetic Engineering



Benefits of Genetic Engineering

Can produce crops that can grow in harsh conditions, can produce insulin that won't be rejected by the body, improved growth rate of crops.

Risks of Genetic Engineering

Do not know the long term effects, GM plants and animals may affect wildlife.

Science – Alternative curriculum
Environment, evolution and inheritance

Year - 9
Term 2

Vocabulary	Wider Research	Apply
1. **Photosynthesis** 2. **Food chain** 3. **Food web** 4. **Producer** 5. **Consumer** 6. **Predator** 7. **Prey** 8. **Ecosystem** 9. **Community** 10. **Habitat** 11. **Population** 12. **Evolution** 13. **Natural selection** 14. **Inheritance** 15. **Chromosomes** 16. **Sex cell** 17. **XX and XY** 18. **DNA** 19. **Selective breeding** 20. **Genetic engineering**	• Food chains and webs https://www.bbc.co.uk/bitesize/guides/zq4wjxs/revision/1 • Inheritance and evolution https://www.bbc.co.uk/bitesize/topics/zpffr82 • Selective breeding https://www.bbc.co.uk/bitesize/guides/zw4wjxs/revision/2 • Genetic engineering https://www.bbc.co.uk/bitesize/guides/zsg6v9q/revision/4	• Food chains and webs For a habitat of your choose create a food chain and a food web for the population that live their What do you think might happen if one of the populations in the food web is removed? • Inheritance and evolution Research how the giraffe has evolved a long neck. Use your ideas of the process of natural selection in your answer • Genetic engineering What is ‘golden rice’ and why is it such an important genetically engineer food.