

SCIENCE · Y6

Evolution & Inheritance

Knowledge Organiser — Y6

Key vocabulary

1

Evolution

The gradual change in inherited characteristics of populations over many generations.

Example: Giraffes' long necks evolved over millions of years

2

Natural selection

The process by which individuals with characteristics better suited to their environment are more likely to survive and reproduce. Charles Darwin's key insight.

3

Variation

Differences between individuals of the same species. Can be inherited (from parents), environmental (from conditions), or both.

Example: Height in humans — inherited AND environmental (nutrition)

4

Adaptation

A characteristic that increases an organism's survival chances in its environment.

Example: Arctic fox: white fur for camouflage; Cactus: deep roots, thick stem for water storage

5

Fossil

The preserved remains or traces of ancient organisms. Provide evidence that species have changed over time.

Example: Fossils show gradual changes in horse body size and hoof structure over 55 million years



6

Inheritance

The passing of characteristics from parents to offspring via genes.

Example: Eye colour, blood type, some aspects of height

7

Offspring

The young produced by parent organisms. Offspring inherit characteristics from both parents.

Selection — how it works

Four conditions must be met

- 1. **VARIATION:** individuals within a species differ from each other
- 2. **INHERITANCE:** variations can be passed to offspring
- 3. **SELECTION PRESSURE:** some variations make survival or reproduction more likely (food competition, predators, disease, climate)
- 4. **DIFFERENTIAL REPRODUCTION:** individuals with advantageous variations reproduce more successfully, passing those variations to the next generation
- **OVER MANY GENERATIONS:** advantageous variations become more common; disadvantageous ones become rarer
- **CHARLES DARWIN** observed this process on his 1831–1836 voyage on HMS Beagle, particularly the finches of the Galapagos Islands
- **COMMON MISCONCEPTION:** evolution does not happen to an individual — it happens to populations over generations

