

5.2 NATURAL SELECTION AND EVOLUTION

Theory of evolution

Charles Darwin: proposed theory of evolution by natural selection

Wallace proposed theory of speciation

Organisms with beneficial characteristics are more likely to survive and pass them on to offspring

Now widely accepted as more evidence

Not initially accepted due to religious beliefs

Survival of the fittest

A population of a species gets isolated so large genetic variation between the 2 populations

2 populations unable to interbreed and produce fertile offspring = new species formed

Gradual change in inherited characteristics of a population over time

Evolution

Natural selection

If mutation is survival advantage, organisms survive and pass on mutation to offspring

Speciation

New species formed = can no longer interbreed to produce fertile offspring

Continuous process

Classification systems

Artificial classification

Based on observations

The Linnaean system

Natural classification

Based on molecular techniques

Phylogenetics – based on DNA sequencing

Evidence for evolution

Antibiotic resistance

Proof that bacteria are evolving, e.g. MRSA

Prevent by completing antibiotic course

Fossils

Compare ancient organisms to current organisms

KEY
'Biology only' written in clouds.

OCR (A)