*This is the **Foundation Combined** version — Higher Tier and Separate-only content removed.*

Natural selection is the process by which better-adapted individuals survive and reproduce more, gradually changing the characteristics of a population over generations.

- Darwin's theory (developed independently by Wallace too): variation exists → competition → survival of the fittest → inheritance → change over time.
- Step 1: Random variation exists in a population due to mutations and sexual reproduction.
- Step 2: More offspring are produced than the environment can support — competition for resources (food, water, mates, space).
- Step 3: Individuals with advantageous characteristics are more likely to survive and reproduce.
- Step 4: Survivors pass on the alleles for their advantageous characteristics to offspring.
- Step 5: Over many generations, beneficial alleles become more frequent — the population changes.
- Evidence for evolution: fossil record (shows gradual change over time), DNA evidence (related species have similar DNA), antibiotic resistance (observable natural selection today), comparative anatomy.
- "Fittest" in evolutionary biology means BEST ADAPTED to the current environment — not strongest.

Key Terms

Natural selection	Process where better-adapted individuals survive and reproduce → advantageous alleles increase in frequency
Adaptation	An inherited characteristic that increases an organism's chances of survival and reproduction in its environment
Fitness	In biology: the ability of an organism to survive and reproduce in its environment — not physical strength
Evolution	Change in the inherited characteristics of a population over successive generations

■ **Exam Tip:** For natural selection questions, always include: 1) VARIATION exists, 2) COMPETITION, 3) SURVIVE and REPRODUCE, 4) INHERIT advantageous alleles, 5) FREQUENCY of allele INCREASES over generations. You need all 5 elements for full marks.