

IB Biology B: Curriculum Guide: Evolution

Essential Ideas:

- There is overwhelming evidence for the evolution of life on Earth.
- The diversity of life has evolved and continues to evolve by natural selection.

Understandings:

- Evolution occurs when heritable characteristics of a species change.
- The fossil record provides evidence for evolution.
- Selective breeding of domesticated animals shows that artificial selection can cause evolution.
- Evolution of homologous structures by adaptive radiation explains similarities in structure when there are differences in function.
- Populations of a species can gradually diverge into separate species by evolution.
- Natural selection can only occur if there is variation among members of the same species.
- Mutation, meiosis and sexual reproduction cause variation between individuals in a species.
- Adaptations are characteristics that make an individual suited to its environment and way of life.
- Species tend to produce more offspring than the environment can support.
- Individuals that are better adapted tend to survive and produce more offspring while the less well adapted tend to die or produce fewer offspring.
- Individuals that reproduce pass on characteristics to their offspring.
- Natural selection increases the frequency of characteristics that make individuals better adapted and decreases the frequency of other characteristics leading to change within the species.

Guidance:

- Students should be clear that characteristics acquired during the lifetime of an individual are not heritable.