

WHAT IS ADAPTATION?

Adaptation is the adjustment of organisms to their environment in order to improve their chances at survival in that environment. This is a slow process where **natural selection** over many generations results in the most useful traits being passed down and becoming more common. This occurs because individuals with these **traits** are better **adapted** to the environment and therefore more likely to survive and breed. This process leads to the **evolution** of a species. An **adaptation** is a feature of an organism that enables it to live in a particular habitat.



TYPES OF ADAPTATION

Over many generations, the marine life that we know has adapted to an enormous range of different habitats and environmental conditions in the ocean. There are many types of adaptations. These are generally grouped into 3 main categories: **structural, physiological & behavioural...**

Structural Adaptation

Physical features such as shape, body covering and internal organisation.

Although dolphins are mammals, they look quite different to mammals that live on land. This is because they are adapted to living in the ocean.

Some dolphin adaptations:

- Their body shape is streamlined
- They have fins rather than legs
- They have blowholes on the tops of their heads which they use to breathe above water

Physiological Adaptation

These relate to how the metabolism (process by which your body converts what you eat and drink into energy) works. They permit an organism to regulate functions of the body. These include breathing, temperature control and excreting chemicals as a defence mechanism.

Whales may migrate over huge distances and pass through varied water temperatures in arctic and tropical oceans. Being warm blooded (or endothermic) helps them to cope with these changes in temperature and maintain a constant body temperature, independent of the surrounding water temperature.

Behavioural Adaptation

These are learned or inherited behaviours. They are the way an organism acts in order to survive in its environment.



THE THEORY OF EVOLUTION

Charles Darwin and **Alfred Russel Wallace** developed the **theory of evolution** in the 1800s. They observed that over time, the characteristics that help survival become more common and a species gradually changes or **adapts** to its' environment. Given enough time, these small changes can add up to the extent that a **new species** altogether can evolve.

