Convergent Evolution Versus Divergent Evolution

Intro

Evolution is a process by which species change over time due to selection pressures. Selection pressures allows only organisms that can adapt to their environment to survive and leads to the death of individuals who are not suitable to the environment and cannot survive. Over millions of years many of these species change to become more suited to their environment. Speciation: the separation of a species, can lead to the generation of new species due to the species evolving according to their selection pressures. Convergent evolution occurs when unrelated organisms from different species evolve to have similar characteristics due to their similar environmental pressures. Divergent evolution occurs when animals from the same ancestors are subjected to different selection pressure and evolve differently to form 2 different species

Convergent evolution- dolphins and sharks

Dolphin Shark

Dolphins and sharks are an example of convergent evolution because although they come from drastically different ancestors, they possess very similar qualities because of their shared environment, the ocean. The dolphin comes from an ancestor called the ‘mesonix’, a terrestrial animal. Whilst the shark is from the species of ‘acanthodian’ a fish species. Over millions of years, due to their similar environments and similar selective pressures, they have evolved similarly to each other. Physical characteristics that are found in both these organisms are their side finds, dorsal fins, stream- lined body that allows them to cut through the water, and they are both carnivores. Some differences between the species are due to their different ancestors, for example dolphins have hair around their noses while sharks do not, sharks have gills while dolphins do not and must go to the surface for air. A key difference in their skeletal system is that dolphins' skeletal system is made up of bones and sharks have cartilage instead.

Divergent evolution- lions and tigers

Tiger Lion

The lion and the tiger have divergently evolved from the same ancestors. They come from the ‘Felidae – Cats’ species which is comprised of Cheetahs, Lions, Tigers, Leopards. Although they came from the same species, due to their different selection pressures they are now very different. Tigers have black stripes across their body, have a long body and are heavier and more muscular than lions. Lions are taller, have a stronger jaw, long canine teeth and have fur that is yellow/ dark brown. Lions and tigers live in different locations and this explains why they have evolved differently. Tigers are independent animals and are found in Asia, china and Russia whilst lions are found in packs in Eurasia and Africa. Lions and tigers usually have the same prey and therefore they both have sharp claws, powerful legs to run and capture their prey and a sharp set of teeth which can bite into their kill.

The lion and tiger have very similar bone structures. The tigers bone structure is slightly longer and thicker, the tail bone is shorter and the skull is slightly smaller. As shown in figure two the lions bone structure is slightly smaller in length but a bit taller in height. It has a long tail bone and larger more rounded skull.

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