



Evolution

Evolution is the gradual change in appearance and body chemistry of living things over millions, even billions of years.

Convergent evolution occurs when different animals evolve and become alike. This occurs particularly where the different animals live in similar environments and evolve adaptations that improve their survival in that environment.

All plants and animals in a given species have subtle differences. Sometimes, a plant or animal may be better at escaping predators or catching food or staying warm or cool. This subtle difference may make it better able to survive in a changing environment.

The subtle differences are usually caused by the genes of the particular individual. Genes can change slightly when sex cells such as egg and sperm are being made, or the genes mutate due to ultraviolet light from the Sun, or chemicals in the environment.

Living things that are better adapted to their environment survive long enough to breed and pass on their characteristics to offspring.

Over many millions of years, the plant or animal type can evolve to become a new species. Sometimes, these new species share an environment with very different species and they evolve to resemble each other physically (in their anatomy) or physiologically (in their body chemistry).

For example, sharks (fish) and dolphins (mammals) have very different ancestry, but they look very similar.

Two populations of fish in the Antarctic (southern hemisphere) and the Arctic (northern hemisphere) have very different ancestors, but have independently evolved antifreeze proteins to prevent their blood freezing. The genes that produce the antifreeze proteins in the two fish populations are also quite different.

More Information

PBS Convergent Evolution http://www.pbs.org/wgbh/evolution/library/01/4/l_014_01.html

PBS Evolution Glossary <http://www.pbs.org/wgbh/evolution/library/glossary/protein>