Adaptation Encyclopedia Article

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Adaptation

In evolutionary terms an adaptation is the change of a developmental, behavioral, physiological, or anatomical characteristic, resulting in increasing an organism's chance of breeding and survival. Adaptation is the process whereby organisms undergo modification which enables them to function better in a given environment. Adaptations can be acquired during life, such as the development of more powerful muscles, or they can be inheritable, such as the length of limbs. All organisms have adapted in some way from their ancestors. Natural selection tends to establish adaptations in a population. Less-adapted organisms have a greater tolerance in a particular environment and are better suited to survive change or to colonize new areas, while highly adapted organisms are well-suited to living in their own environment but are less likely to survive change to that environment. A common example of a highly adapted organism is a flower. The flowers of plants are adapted to make the most efficient use of the plant's resources by targeting pollinators. Many plants have flowers that attract only one species of insect. The plant needs only the characteristics to attract its target species of insect, not all species of insects. However, if the plant's target species of insect becomes extinct, the plant will follow the insect into extinction, unless the plant adapts to make use of another pollinator. The more highly adapted the plant is, the less likely it will become extinct.

In physiological terms, an adaptation is a change in an organism to react to conditions. This is a short-term change with a short-term benefit. An example of an adaptation of this type is the production of sweat to increase cooling on a hot day.

Another type of adaptation is sensory adaptation. If a receptor or sense organ is over-stimulated, its excitability is reduced. For example, continually applied pressure to an area of skin eventually causes the area to become numb to feeling and a considerably larger pressure has to be applied to the area subsequently to elicit a similar response.

Whether occuring within a span of minutes, during the organism's lifetime, or over many thousands or millions of years, adaptation serves to increase an organism's efficiency and ultimately its chances of survival.