

Dear Parent,

Your son's or daughter's science class will soon begin exploring a unit on evolution. In this unit, students will learn how inherited characteristics in organisms cause changes over time. By the end of the unit, students should demonstrate a clear understanding of and discuss the following topics:

Evolution is the process by which inherited characteristics in a population allow gradual change over a period of time. In some cases the changes may result in a new species. **Adaptations** are characteristics that help an organism survive and reproduce in their environment. A **species** is a group of individuals that can mate together to and produce offspring.

Evidence of evolution can be found in the fossils of extinct organisms. The **fossil record** provides a timeline based on age and physical similarities. The similarities can be studied to show a link between extinct and present day organisms. Scientists theorize that whales and a hoofed land mammal share a common ancestor. The fossil record provides clues to this relationship.

Charles Darwin studied the finches that lived on the Galapagos Islands. He noticed the beaks of the finches differed from one another. Each finch was suited to the environment they inhabited. He theorized that the finches descended from the South American finches from Ecuador. Each finch evolved adaptations over many generations.

Darwin proposed the theory that evolution happens through natural selection. **Natural selection** is the process where the organisms with the most beneficial adaptations for their environment survive and reproduce successfully. Natural selection has four parts.

1. Overproduction
2. Inherited variation
3. Struggle to survive
4. Successful reproduction

Speciation results in a new species due to evolution. Speciation occurs when populations are separated geographically. The separated groups will adapt according to the different environmental conditions in the new area. Over many generations the populations will become very different. The groups will become different enough that they will no longer be able to breed. They will no longer be considered the same species.

You can help your child learn about these topics by asking questions as the unit progresses or asking your child about key terms from this summary.