

## 4.1.2 Theories of Evolution: Lamarck Vs Darwin

Evolution is the gradual change of organisms over many generations. Scientists developed different theories to explain how living things change and adapt to the environment. Two important scientists are Jean Baptiste Lamarck and Charles Darwin.

### 1. Lamarck's Theory of Evolution

Jean Baptiste Lamarck proposed one of the earliest theories of evolution. His theory is called the inheritance of acquired characteristics.

**Main Ideas of Lamarck** Organisms change because of environmental needs. Frequently used organs become stronger. Unused organs become weak and disappear. Acquired characteristics are passed to offspring. **Example:** Lamarck explained that giraffes stretched their necks to reach leaves on tall trees. Over time, their necks became longer and were inherited by their offspring.

### 2. Darwin's Theory of Natural Selection

Charles Darwin developed the theory of natural selection after observing organisms during his voyage on the HMS Beagle.

**Main Ideas of Darwin** Organisms produce many offspring. Individuals show variations. Some variations help survival. Organisms with favorable traits survive and reproduce. Useful inherited traits become common in populations. **Example:** Darwin explained that some giraffes were naturally born with longer necks. These giraffes survived better because they reached food easily and reproduced more successfully.

### 3. Differences Between Lamarck and Darwin

Lamarck	Darwin
Acquired traits are inherited	Inherited variations are selected
Use and disuse are important	Natural selection is important
Changes occur because organisms need them	Changes occur through survival advantage

### 4. Evidence Supporting Darwin's Theory

**Industrial melanism:** Dark moths survived better in polluted areas. **Antibiotic resistance:** Resistant bacteria survive antibiotic treatment. **Galápagos finches:** Different beak shapes developed according to food sources.

## Summary Questions and Answers

### What is evolution?

Evolution is the gradual change of organisms over time. **Who proposed the inheritance of acquired characteristics?**

Jean Baptiste Lamarck proposed the inheritance of acquired characteristics. **What is natural selection?**

Natural selection is the process where organisms with favorable traits survive and reproduce more successfully. **How did Lamarck explain giraffes' long necks?**

He explained that giraffes stretched their necks to reach leaves and passed the longer necks to offspring. **How did Darwin explain giraffes' long necks?**

Darwin explained that naturally long-necked giraffes survived better and reproduced more. **Give one example supporting Darwin's theory.**

Antibiotic resistance in bacteria supports Darwin's theory. **What is the main difference between Lamarck and Darwin?**

Lamarck believed acquired traits are inherited, while Darwin believed inherited variations are selected naturally.