

Chapter 13 – How Populations Evolve: Explaining the Diversity of Life

Charles Darwin - *On the Origin of Species by Means of Natural Selection*, 1859.

What was before Darwin?

Aristotle -

Jean-Baptiste de Lamarck, 1800s

Refinement of traits, organisms successful in environment

Change over time, but

Charles Darwin and *The Origin of Species*

Charles Darwin

proposed a hypothesis, evidence

Five-year voyage on the HMS Beagle -

Naturalist - collected thousands of specimens and observed various adaptations in organisms

New Insights

Darwin was strongly influenced by the writings of geologist Charles Lyell.

Lyell suggested that Earth is

Thus, extended time scale allowing gradual changes to occur in species and in geologic features

Darwin returns to England

Gathers data and comes up with:

"descent with modification"

Proposes a mechanism - natural selection.

In natural selection, individuals with certain inherited traits are

Evolution: Darwin's Theory

Alfred Russell Wallace

Worked in Indonesia

mid 1850's, developed similar ideas to Darwin

Presented to the scientific community

Soon after Darwin publishes *On the Origin of Species by Means of Natural Selection*

Controversial

More than just a hypothesis, theory

Verified by more than 150 years of research.

Darwin publishes *On the Origin of Species by Means of Natural Selection*, making two proposals:

1. Existing species descended from
2. Natural selection is

Evolution - Genetic change in a population or species over generations

Population -

Living species are descendants of ancestral species that were different from present-day ones.

Evidence of Evolution

Biological evolution has left evidence:

Evidence from Fossils

Fossils - imprints or remains of organisms that lived in the past

Sedimentary rock

Paleontologists -

Not all fossils are the actual remnants of organisms.

Sometimes, an entire organism is preserved

Amber, Frozen in ice, Preserved in bogs

How Populations Evolve Chapter 1 exercise Answers

Alan R. Templeton



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