

Evolution

Chapter 6

I. Mechanisms of Evolution

A. Early Evolutionist

1. Jean Baptiste de Lamarck

a. Theory of Use and Disuse

B. Evolution by Natural Selection

1. Charles Darwin viewed and collected animals from the different Islands and areas while he sailed on the HMS

2. Natural Selection was developed by Charles Darwin in the mid 1800s

3. Natural Selection - organisms with traits best suited to their environments are more likely to survive

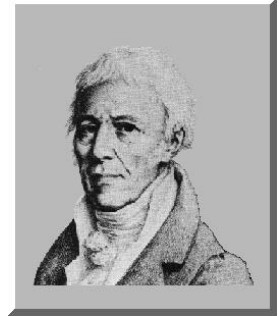
a. Darwin identified four factors that govern natural selection

1) Organisms produce more offspring than can survive

2) There are variations among individuals of a species

3) Some of the offspring are better able to survive than others

4) Over time, the population begins to look more like those who are better able to survive



4. Darwin wrote a book describing his theory of evolution by natural selection. His book, *On the Origin of Species by Means of Natural Selection*, was published in 1859

C. Adaptation and Variation

1. Variation is a inherited trait that makes it different from other organisms in a population of the same species
 - a. The source of variation is believed to come from mutations
 - b. Most mutations are harmful, but a few can be beneficial
2. Adaptation is any change over time that allows an organism to better survive

D. How Fast Does Evolution Occur

1. Gradualism
 - a. Darwin hypothesized that the rate of evolution was steady slow and continuous
 - b. The apparent lack of intermediates in most evolutionary schemes is one problem with this theory
2. Punctuated Evolution
 - a. Shows that rapid evolutionary changes may have occurred resulting from catastrophic events taking place

II. Evidence for Evolution

A. Fossils

1. Kinds of Fossils

- a. Imprint
- b. Cast made in an organisms track, shell or indentation
- c. Wood or bone replace by minerals
- d. Frozen in Ice
- e. Trapped in resin

B. Fossil Record

1. Relative dating

- a. This idea is based on the oldest layer on the bottom and younger layers on the top.

2. Radioactive Dating

C. Other Evidence for Evolution

1. Vestigial Structures

- a. A structure or organ of an organism that seems to have no apparent use
- b. Embryology
- c. Comparing similarities of embryo organisms

2. DNA comparisons

III. Primate Evolution

A. Primates

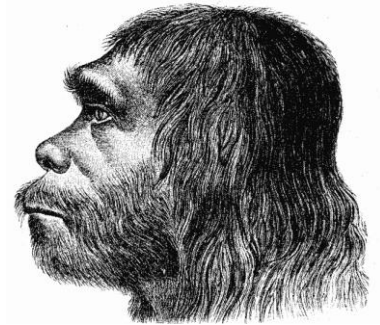
1. All have opposing thumbs
2. Binocular vision
3. Flexible shoulders and rotating fore limbs

B. Two main groups of Primates

1. Lemurs, tarsiers, & the prosimain
2. Higher primates - monkeys, apes and humans

C. Hominids

1. Means humanlike primate
2. Modern humans
Homo sapiens
3. Neanderthal
4. Cro-Magnon



Evolution	Design/Creationism
All living things came from the same ancestor that arose from a pre-biotic soup. Everything came about by totally natural processes.	All life was designed by an intelligent designer. Life was not just a chance of the right material in the right environment
Comparative anatomy with comparative structures points to a common ancestor	Anatomy and physiology with common characteristics point to one designer or an original design plan
Evolution observed and selective breeding support the theory of evolution explaining all organisms on one family tree	Evolution observed is the designed ability in the DNA to conserve life in an ever changing environment
The lack of geological intermediates point to punctuated evolution caused by catastrophic events and mass extinction	The lack of geological intermediates point to a designer and changes that can be documented demonstrates the designed ability to adapt