

UNIT 8: EVOLUTION

Evidence for Evolution

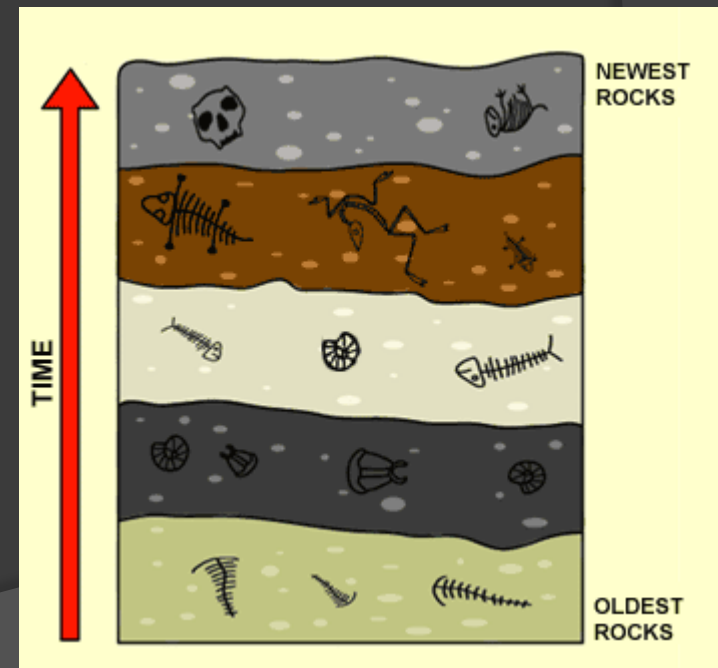
Evidence for Evolution:

Fossil Record

- ◎ Fossils reveal existence of extinct species
 - Changes and formation of new species can be studied

Evidence for Evolution: *Fossil Record*

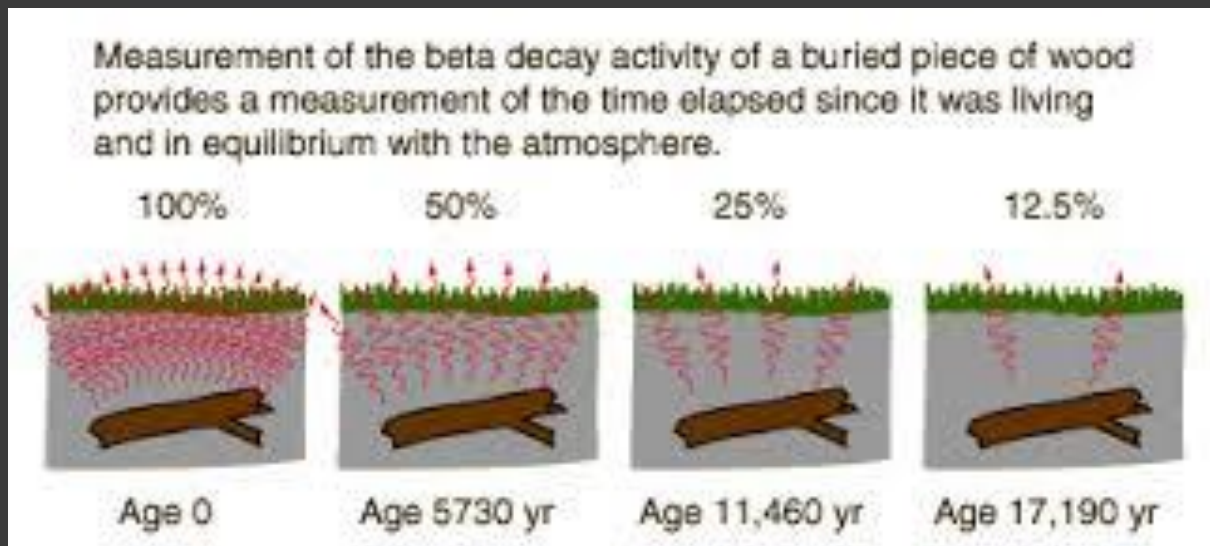
- Fossils are typically found among sediment layers
- Remember – oldest are on the bottom
 - i.e. Principle of Superposition



Evidence for Evolution:

Fossil Record

- Fossil age can be determined using carbon (C-14) dating
 - Uses the natural decay rate of a radioactive isotope of carbon



Evidence for Evolution:

Biogeography

- Uses geography to describe the distribution of species
 - Unrelated species in different regions of the world look alike in similar environments

Evidence for Evolution: *Biogeography*

- E.g. Rabbits and wallaby's resemble each other in structure and habit
 - Rabbits did not exist in Australia until introduced by humans
 - They are NOT closely related
 - Their similarities are the result of natural selection



Giant Armadillo
North America

Giant Pangolin
Africa

Giant Anteater
South America

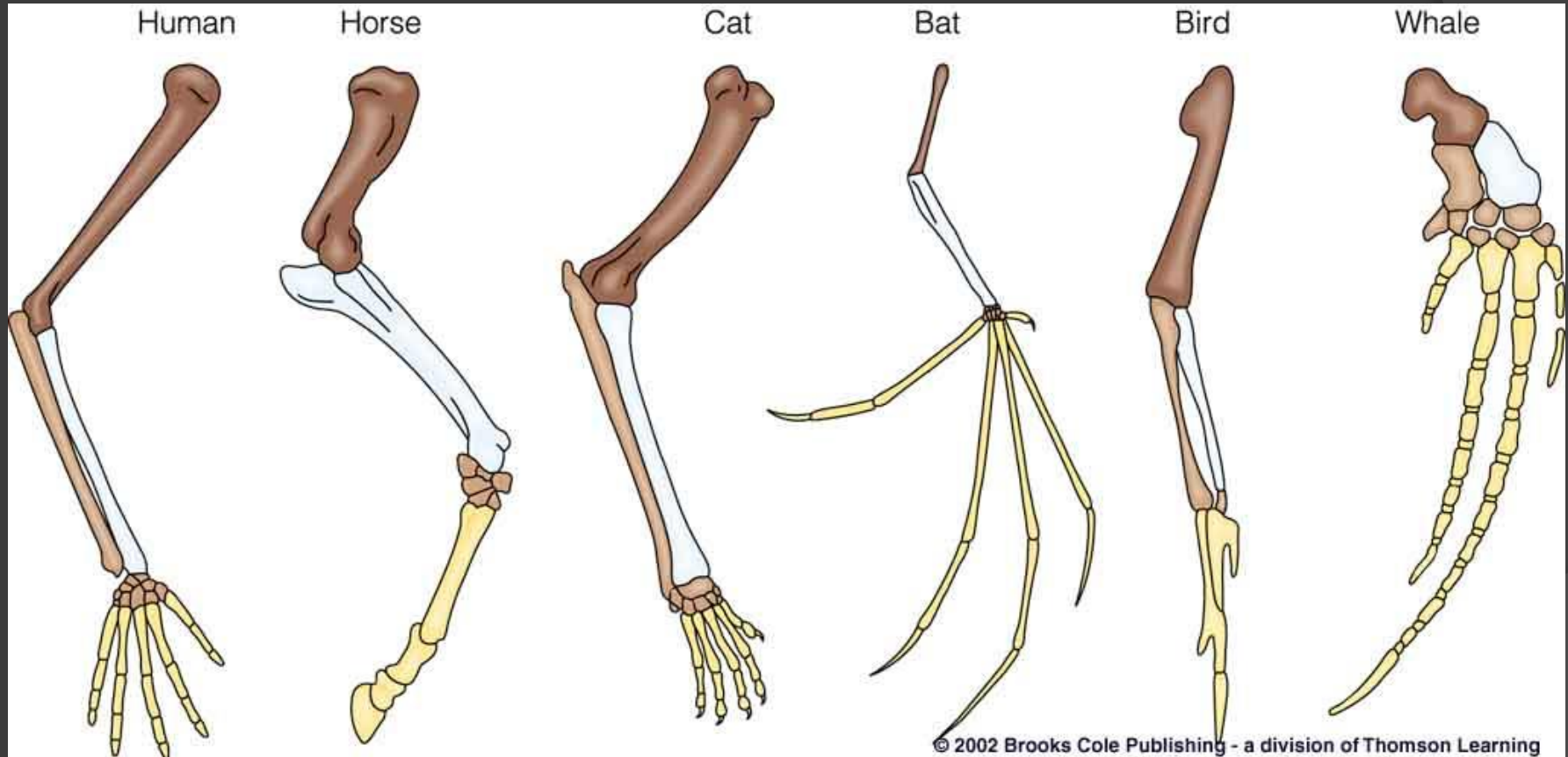
Spiny Anteater
Oceania

Evidence for Evolution:

Comparative anatomy

- Homologous structures – body parts that resemble one another in different species because they evolved from a common ancestor
- Some have become vestigial – meaning they no longer serve any function
 - e.g. limbs in snakes, wings of flightless birds

Evidence for Evolution: *Comparative anatomy*



Evidence for Evolution:

Molecular Biology

- ⦿ Examines the nucleotide and amino acid sequences of DNA and proteins from different species
- ⦿ Closely related species share higher percentages of sequences than species that are distantly related
 - E.g. more than 98% of nucleotide sequences in humans and chimpanzees are identical