

Evidence for Evolution

EQ: What is some of the evidence for evolution?



Embryonic
Development

Microevolution

Body Structures

Biological
Molecules

The Fossil Record

Microevolution

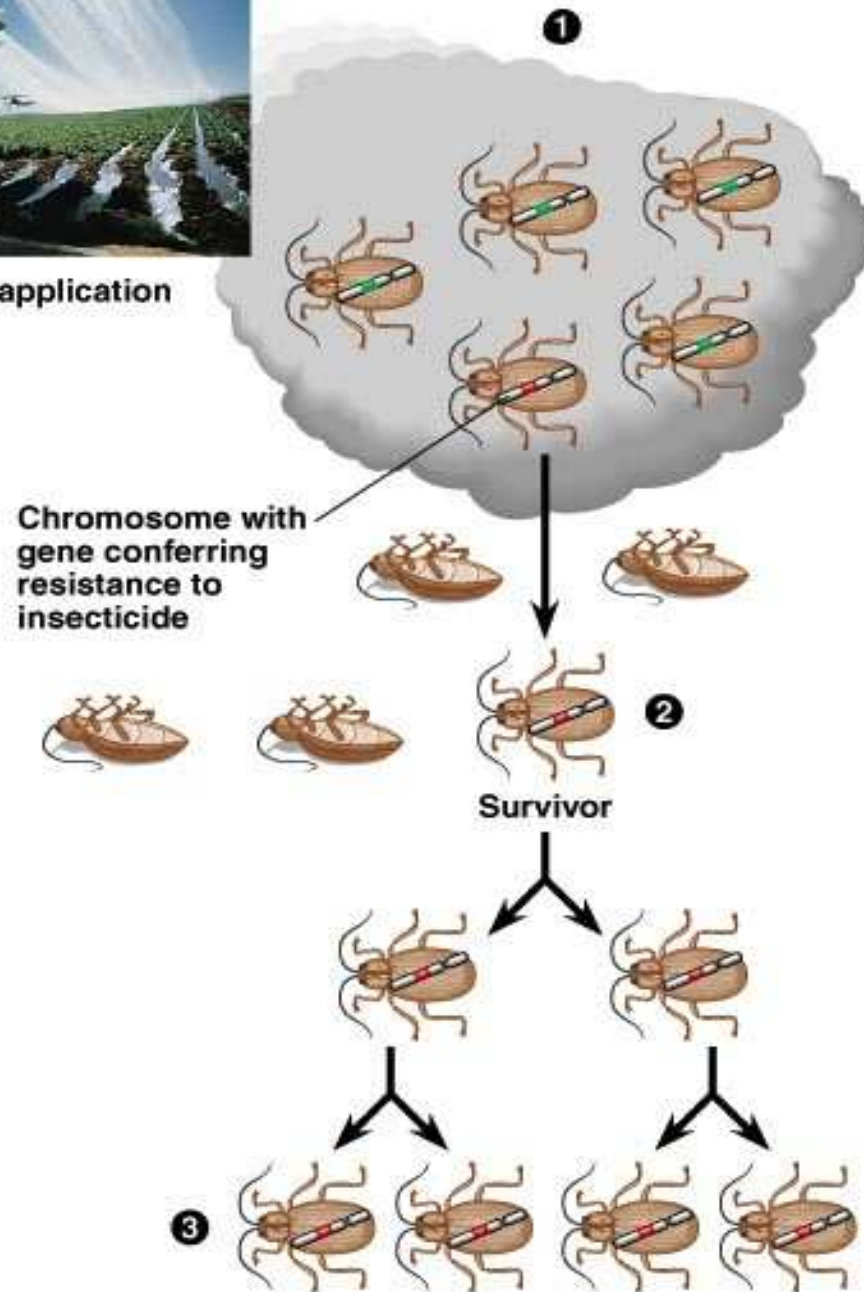
- Evolution that we can see in action during a small amount of time (remember evolution is change {in genes} over time).
 - Examples include Peppered moths, antibiotic resistance, pesticide resistance in insects.



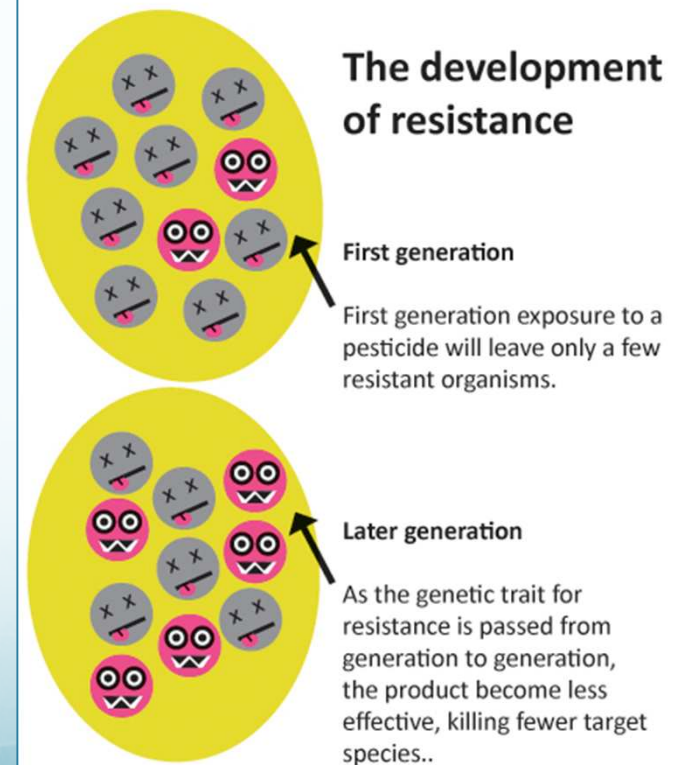
The Peppered Moth

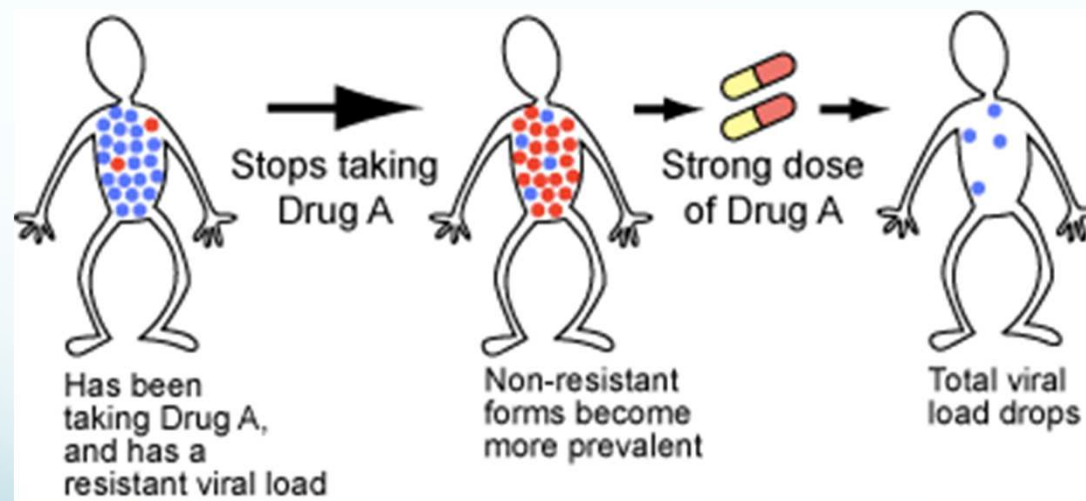
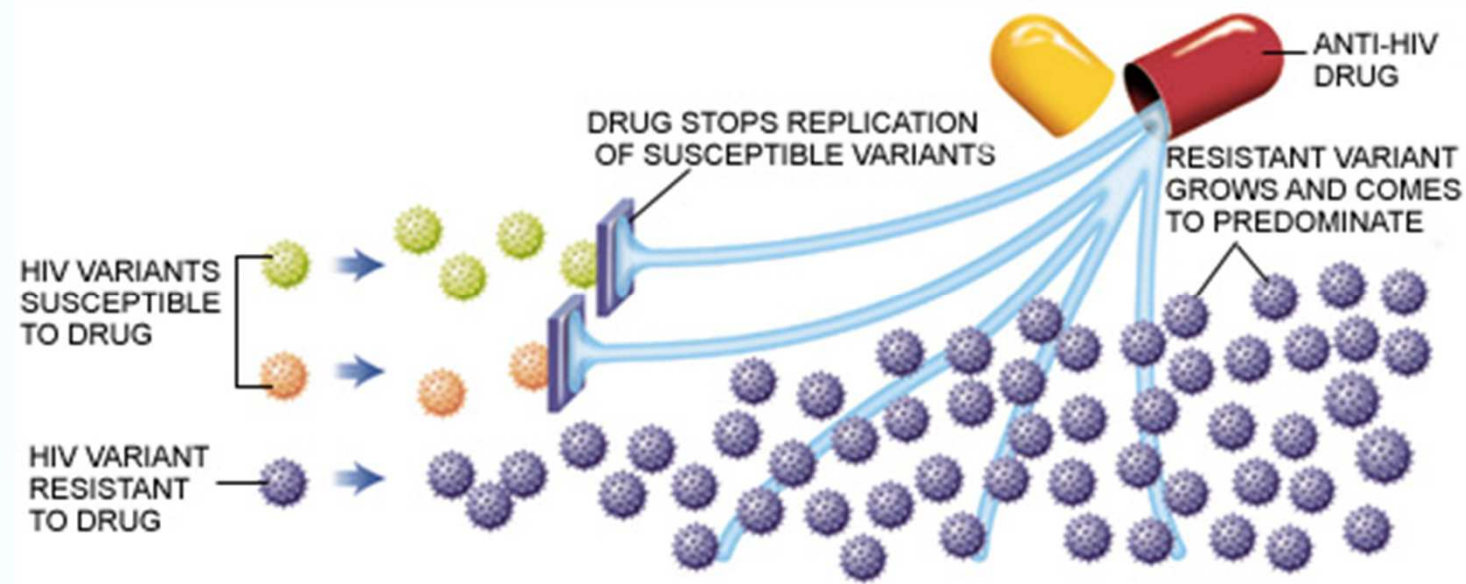


Insecticide application



Evolution of pesticide resistance in response to selection





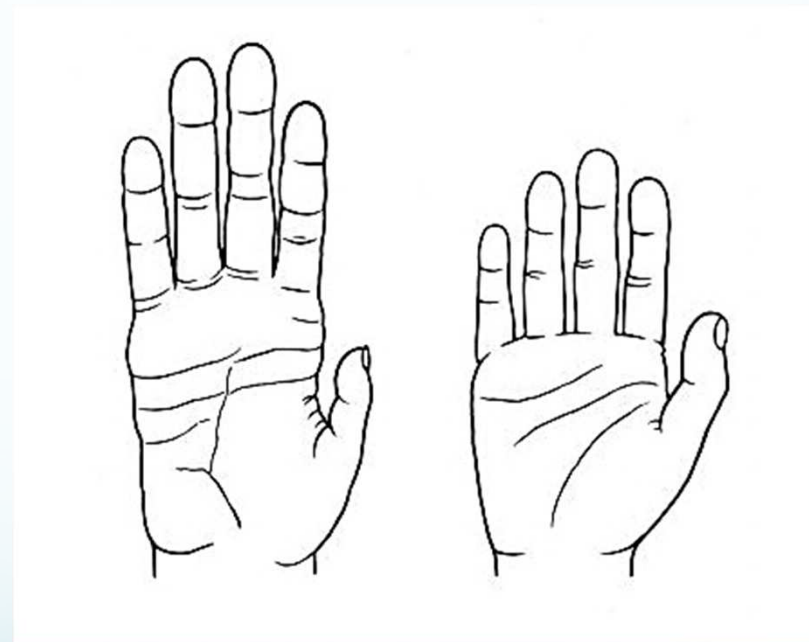
Evolution of drug-resistance in HIV

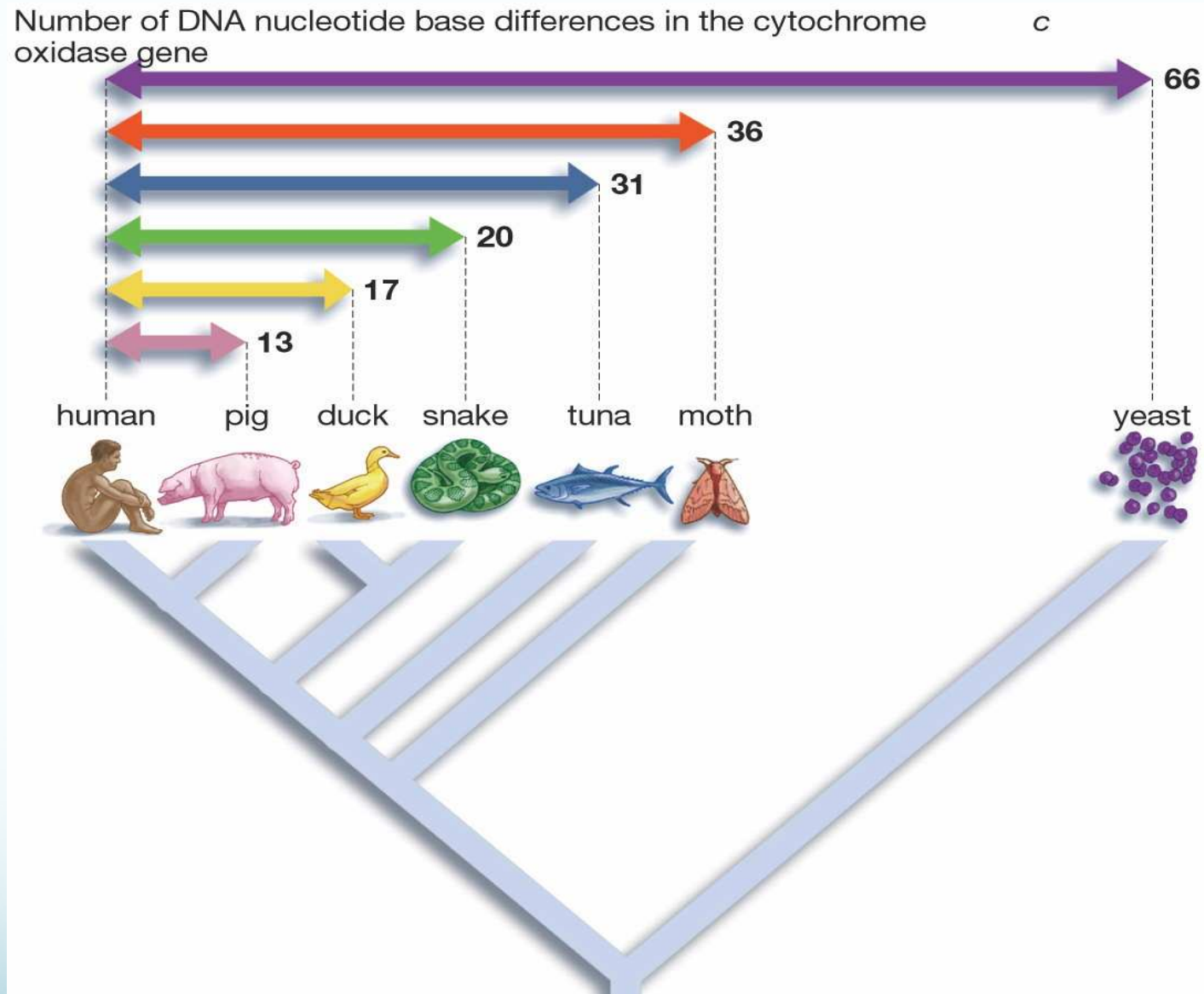
Biological Molecules

Similarities in DNA sequences-

The more alike two organisms are, the more amino acids they have in common (genetic sequence).

Example- Chimpanzees and humans share a nearly identical amino acid sequence.

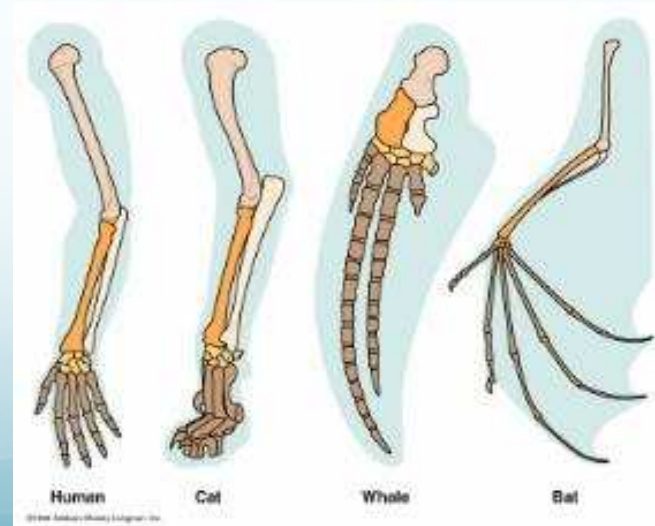




Similarities in DNA Sequence

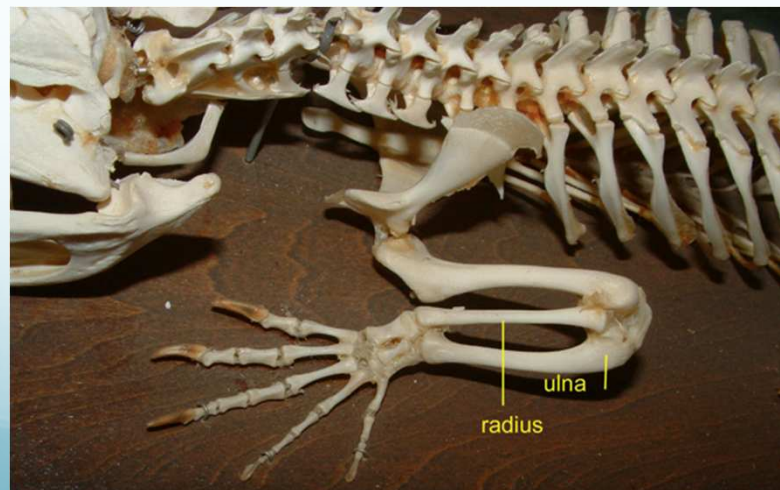
Homologous Body Structures

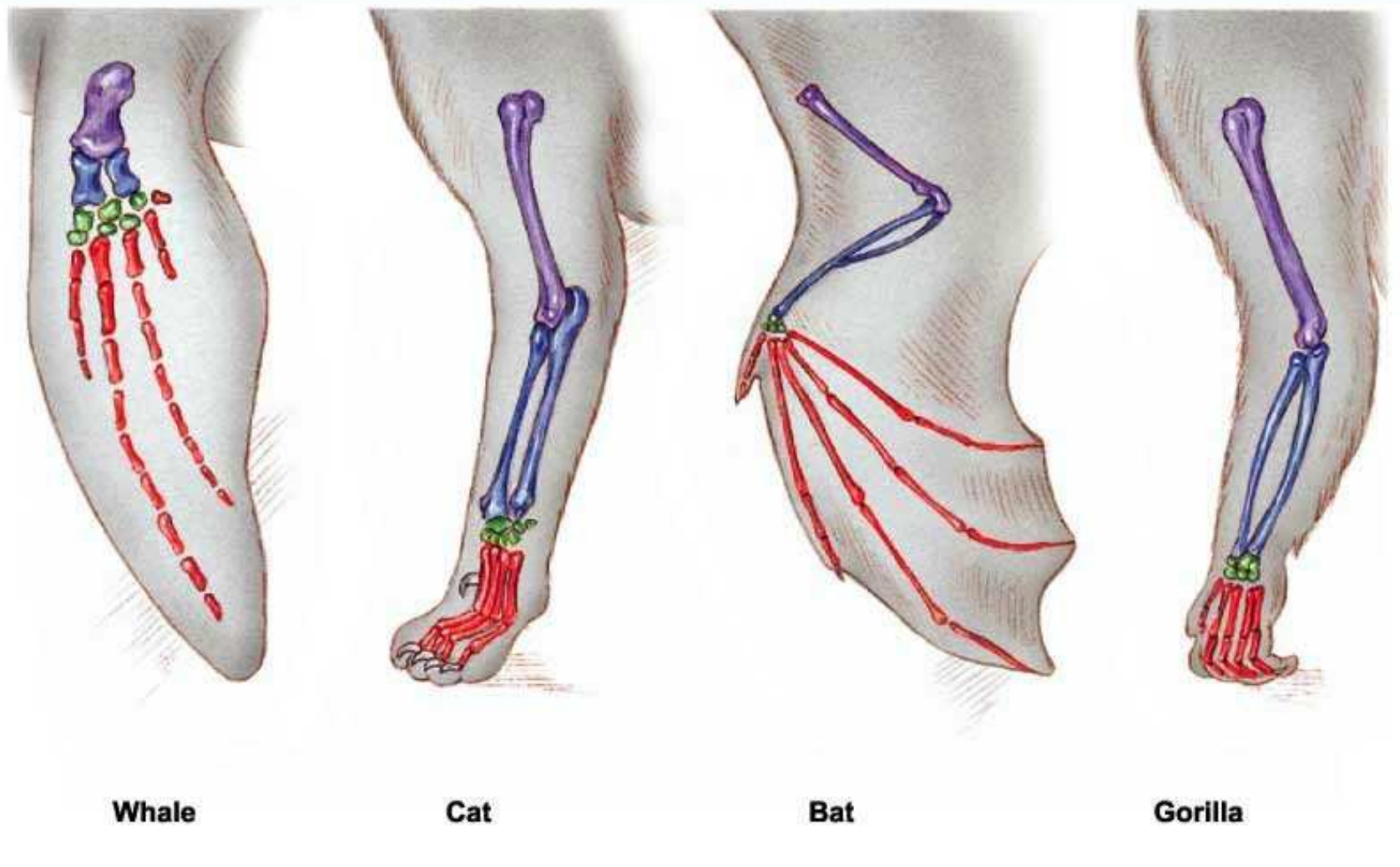
- Structures that are inherited from a common ancestor.
 - Structures have different mature forms but develop from the same embryonic tissues
- Provide strong evidence that all four-limbed animals with backbones descended, with modification, from a common ancestor.



Homologous Body Structures

- **Scientists noticed animals with backbones (vertebrates) had similar bone structure**
- **May differ in form or function**
- **Limb bones develop in similar patterns**
 - **Arms, wings, legs, flippers**

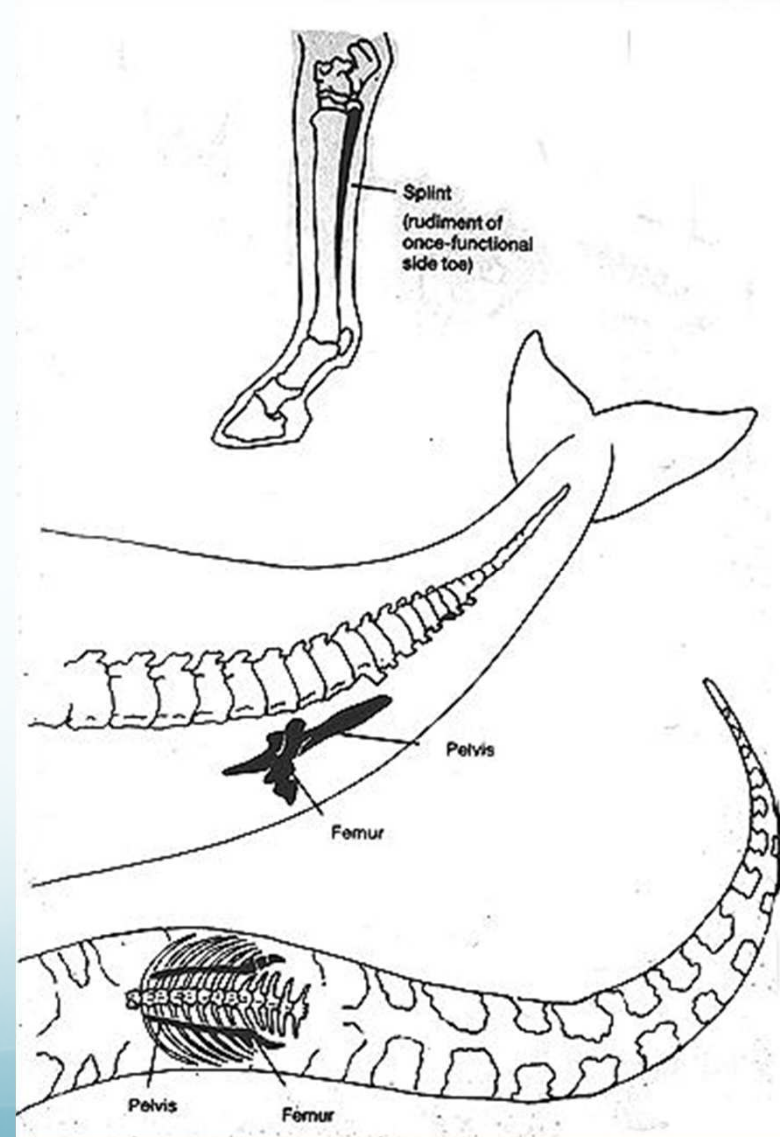




Homologous Structures

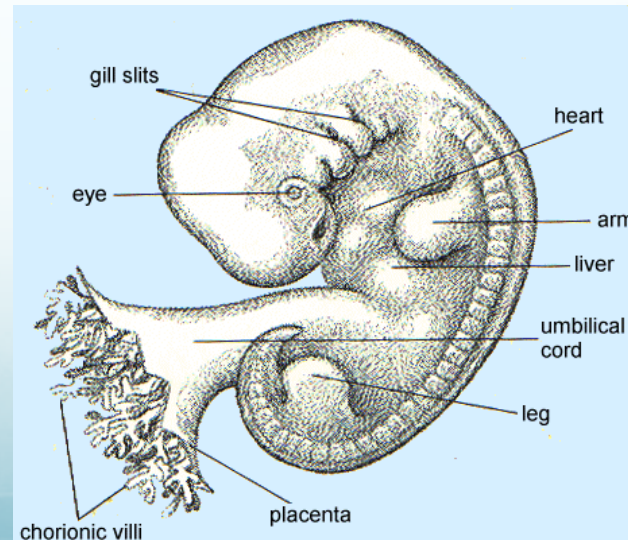
Vestigial Structures

- Structures that are present in an organism, but serve no apparent purpose.
 - Examples: appendix in man, legs on skinks, pelvic bone of whales

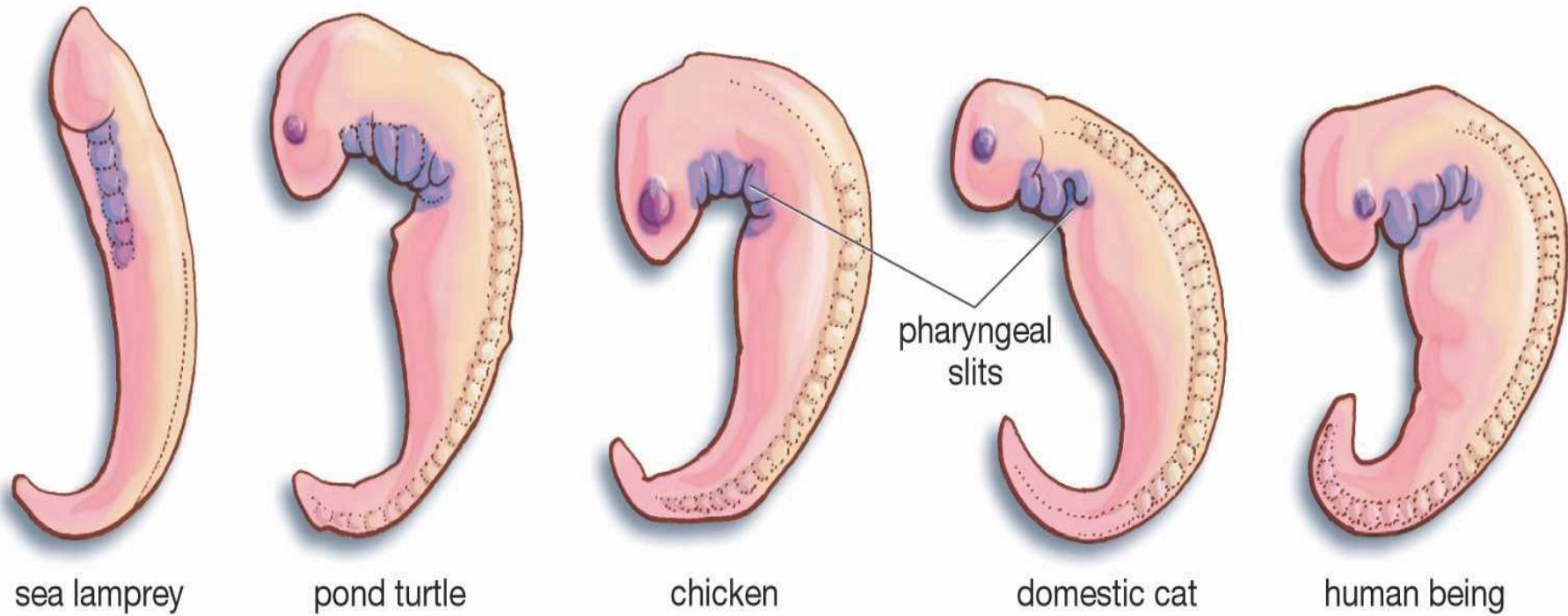


Similarities In Early Development

- Embryonic Structures Of Different Species Show Significant Similarities
- Embryo – early stages of vertebrate development



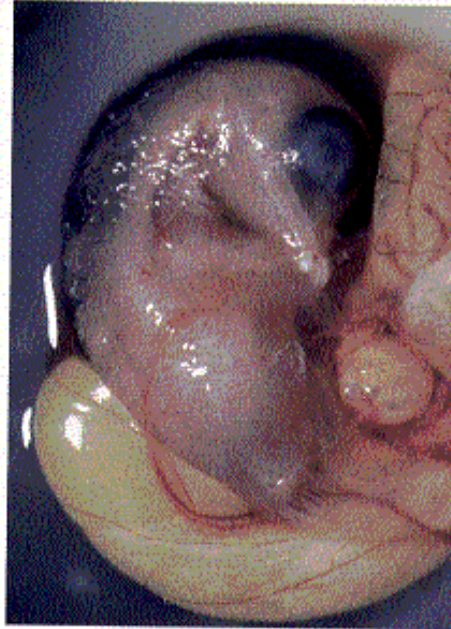
Pharyngeal slits exist in these five vertebrate animals ...



... evidence that all five evolved from a common ancestor.

Similarities In Embryonic Development

Chicken



Turtle



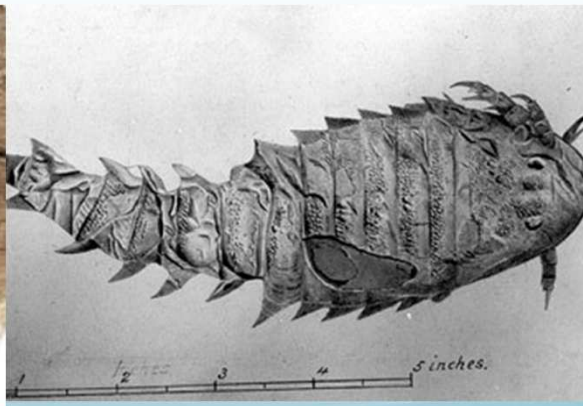
Pharyngeal
pouches are
present during
embryonic
development.



Human

The Fossil Record

- **FOSSIL RECORD:** all information about past life that can provide evidence about the history of life on Earth.
 - The fossil record is incomplete, because not all organisms become fossilized after death.
 - Over 99% of all species that have ever lived on Earth have become extinct.



Evidence for Evolution – The Fossil Record

(a) Strata of sedimentary rock with fossils embedded



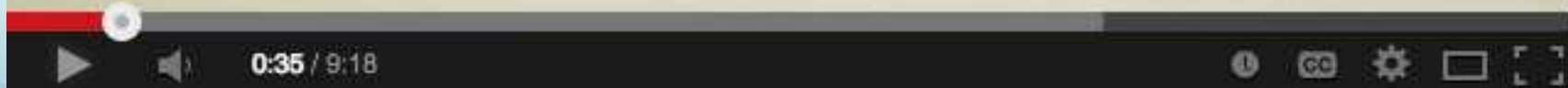
(b) Fossilized sea urchin, at least 65 million years old



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EVOLUTION





Left Side Activity
Write a half page
summary of the two
videos. (One page total)