8th Unit 4

Dates of Instruction: January 8-February 10, 2020

Unit Assessment Date: February 10, 2020

Common Ancestry

Vocabulary	
Term	**Definition**
Anatomical Structure	A body part in an organism. Ex: spinal cord, internal organ, or skull.
Common Ancestor	An organism that two or more species share their descent from.
Complexity	The number of parts or systems an organism has
Diversity	The total number of species or families on Earth
Embryonic Development	The development and growth of an organism before its birth.
Extinction	The death and complete removal of one species
Forelimb	Either of the front limbs of any animal
Fossil	The remains or impression of a prehistoric organism that has been preserved
Fossil Record	The placement of fossils throughout the surface layers of Earth that are used to tell when and for how long organisms were alive.
Gill slits	A set of grooves near the ear that exist in all vertebrates during their embryonic development
Law of Superposition	In any undisturbed sequence of rock layers, or strata, the oldest layer of rock is found at the bottom of the formation, and the youngest is at the top.
Mass Extinction	The complete removal of a large number of species in a short period of time
Organism	Any living thing
Vertebrate	Any animal that has a backbone or spinal column

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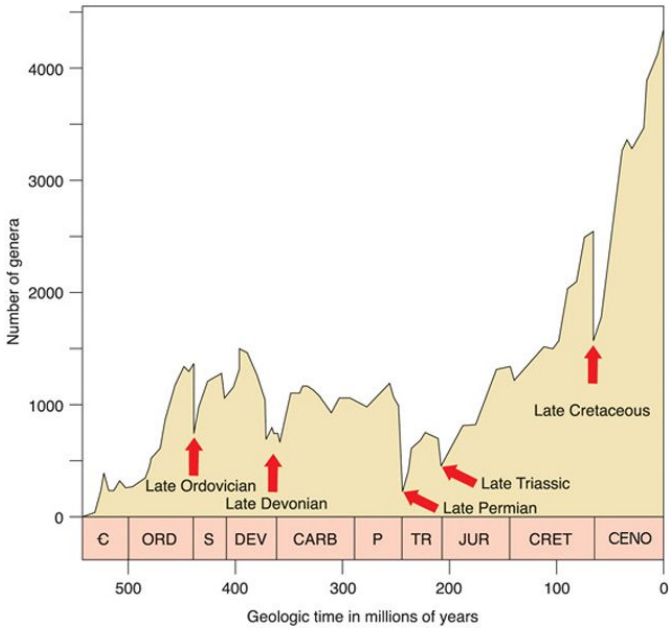
Key Ideas

Fossil Record

- The fossil record shows a history of life on Earth
-Throughout Earth's history, the organisms that inhabited it have changed
- Organisms that more recently existed can be found in more recently deposited rock- these organisms will resemble present day organisms more closely
- All living organisms on Earth show differences in form and function
- Organisms we see today evolved from earlier, distinctly different species
- Over time, the complexity and diversity of organisms has increased
- Extinctions, both smaller scale and mass, have occurred throughout earth's history
- In the time period following extinctions, the overall diversity of organisms increases
-We can look at both the fossil record, and graphs depicting the number of families/species to help us see when extinctions occurred.
-We know the order of life on Earth, based on the position of fossils in sedimentary rock

Red arrows show mass extinctions



This graph shows us that after extinctions we see an increase in the diversity of organisms, and that over time (from the origin of life to present day) diversity has increased.

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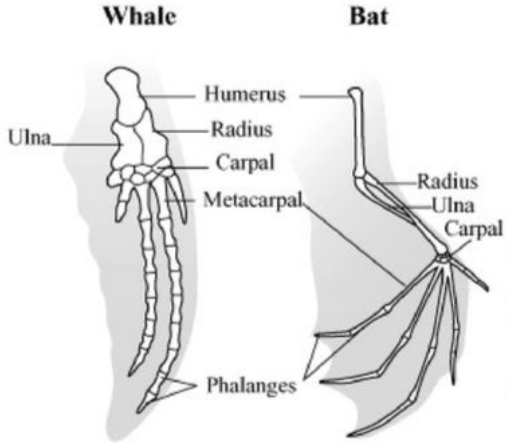
-All life on Earth developed from one common ancestor
-The Earth's present day species evolved from earlier, distinctly different organisms
-Some organisms share a more recent common ancestor than others
-Similarities in DNA sequences, anatomical structure and embryonic development as well as fossil evidence, support the hypothesis of common ancestry
-By comparing modern day organisms to organisms of the past, scientists can infer how closely related they are in an evolutionary sense
-Similarities and differences in anatomical structures between living organisms and extinct organisms can show lines of evolutionary descent and are evidence of evolution
-Anatomical similarities in forelimb structure and skull structure are often used to compare relation
-Genetic information (DNA) varies among species, but there are many overlaps
-Scientists can compare DNA sequences to determine how species are related
-The more similar DNA sequences are between organisms, the more closely related they are
-Similarities in embryonic development can serve as evidence of the relatedness of different species.
-Similarities in the early development stages are evidence that species are related and shared a common ancestor
-We study embryological development of organisms to see similarities that do not exist in the fully formed organism

Similarity in forelimb structure (anatomical similarity) of bats and whales show they shared a common ancestor



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The similar pattern (gill slits that disappear, tails that turn into legs etc…) of embryonic development in pigs and calves shows that they shared a common ancestor.