

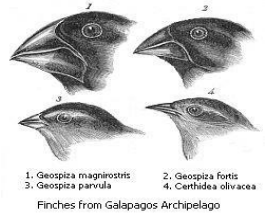
Evolution Notes



Define Evolution:

Charles Darwin:

- _____ – 1831 – Famous for his study with _____.
- He wrote the book, _____.
- Darwin's 3 main theories**
 - _____
 - Populations _____ changes _____ time
 - All life is a _____ and shares common ancestors.



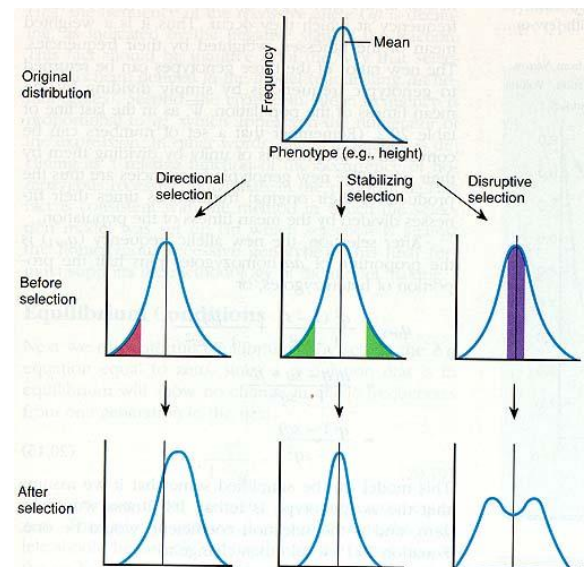
Define Natural Selection:

Four Components of Natural Selection

- _____ – _____
- _____.
- _____.
- _____.

3 ways natural selection can shape a population

- _____
 - Favors _____ individuals
 - Reduces the variations in the population
- _____
 - Favors _____ extreme (high or low)
 - Rapid change
- _____
 - Favors _____ extremes in the population
 - The average is weeded out
 - Leads to evolution of _____ species



6 Evidences for Evolution

1. _____

a. _____

This is a very gradual process occurring over generations.

b. **Mimicry** –

Example – A harmless Syrphid Fly adapts to look like a harmful Yellow Jacket Wasp to avoid predators. Snakes



c. **Camouflage** –

Example - Octopus, cuttlefish, many marine organisms



2. _____

a. These are adaptations that _____ than structural adaptations

b. They are changes to an organism's _____.

Example – _____ in bacteria. Those bacteria that are not killed by the antibiotic survive to reproduce. They pass their resistance to their offspring and after several generations there is a large population of resistant bacteria.

3. _____

a. A fossil is _____.

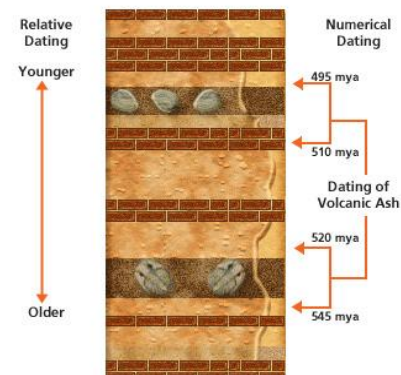
b. Fossils can give an overall picture of how species _____.

c. By comparing fossils from different time periods, paleontologists can start to discover which organisms are related and how evolution has occurred.

Two ways fossils to figure out how old a fossil is

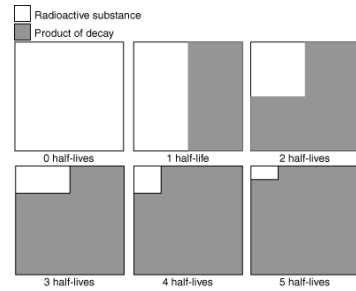
Relative Dating –

- Looks at _____ - _____
- Youngest fossils will be found at the _____ and _____ at the _____.
- Used for determining _____ and _____ of the species.



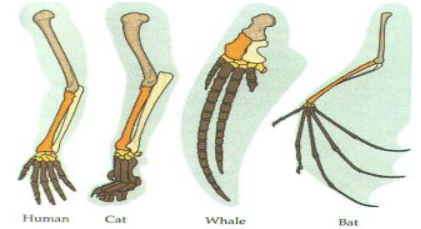
Radiometric/Absolute Dating –

- Each fossil contains a radioactive isotope that _____ over time.
- Over time, that decay forms a _____.
- Scientists measure how much of the fossil is decayed and how much is normal to find the _____.



4. _____
 a. _____

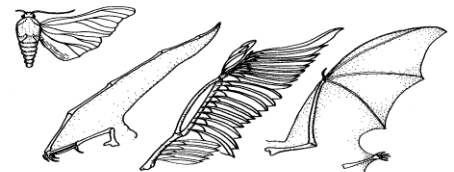
Show evidence that organisms have a _____.
 It would be unlikely for so many animals to have similarities if each species arose separately.
 Example: _____



b. _____

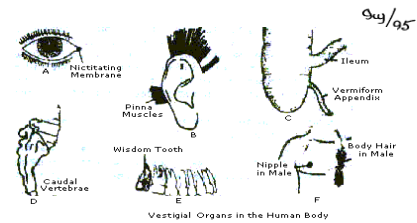
These organisms **do not have common ancestors**, but have

Examples – Bird wings and insects



c. _____ - _____

Example: Ostriches and penguins have wings but don't fly, humans have a tail bone but no tail, humans have an appendix but it isn't needed.



5. _____

- An embryo is the earliest stage of development and young embryos are relatively indistinguishable. The similarities suggest a _____.

6. _____

- Similarities between _____ and _____ sequences show how species are related. The _____ the DNA sequence, the more _____ the species.

Evolution of a new Species

- What is a species? _____
- Evolution of a new species is called _____. It occurs when member of a similar population no longer interbreeds to produce fertile _____ in nature.

Ways for a species to Evolve

- A. _____ – when part of a population of the same species becomes _____ from the remainder by change in ocean level, mountains, canyons, volcanoes.
- B. _____ – when the _____ becomes so different that they can _____ mate and produce _____ offspring.
- Behavior differences can keep them from interbreeding – _____ at different _____ of the year
- C. _____ – mistakes during cell division can cause too many genes and a mutation occurs, making a _____.

Patterns of Evolution

1. _____ – occurs when a species that was _____ to ancestral species become _____.
- This occurs with population adapting to different environmental condition change and eventually become _____
 - This can occur when an ancestral species _____ into _____ different species to fit _____ habitats.
2. _____ – occurs when _____ species evolves similar _____ because they live in similar environments in different parts of the world. Ex. Cacti, fish

Populations

1. A population is defined as members of a species that _____.
2. Populations evolve, not _____.
3. Populations are always either _____ or are in a state of _____.

How Equilibrium Changes

1. _____ – the movement of individuals _____ of the population. This can introduce or remove alleles in the gene pool.
2. _____ – The alteration of allele frequencies by _____ events. This occurs when populations become _____. Ex. Amish populations – _____ alleles are more common.
3. _____ – mutations cause by chance or _____ can introduce new _____ to the gene pool. These mutations can be good or bad.