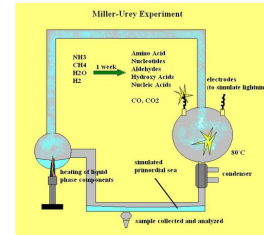
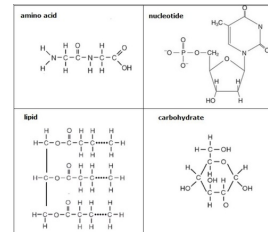


# Miller-Urey Experiment



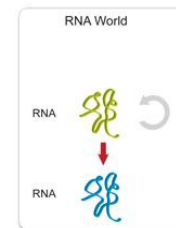
considered to be the classic experiment on how organic molecules, such as amino acids, needed for life were formed from inorganic material

# organic molecules



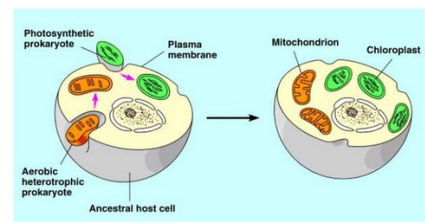
substances containing carbon found in living things; the four main classes are carbohydrates, proteins (chain of amino acids), lipids, and nucleic acids (nucleotides)

# RNA World Hypothesis



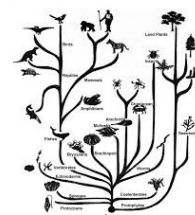
hypothesis that RNA was the first genetic material, not DNA, because catalytic RNA can self-replicate

# Endosymbiotic Theory



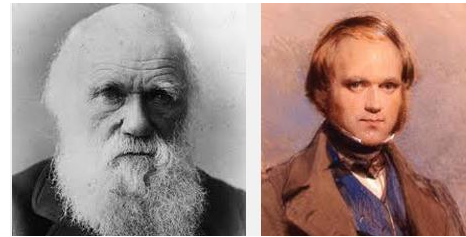
theory that helps explain the complexity of eukaryotic cells; states that chloroplast and mitochondria were once prokaryotes (bacteria)

# Theory of Evolution



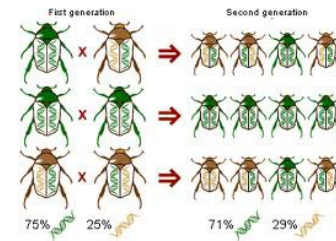
the best scientific explanation for both the unity and diversity of life; proposed by Charles Darwin

Charles Darwin



Father of Evolution

evolution



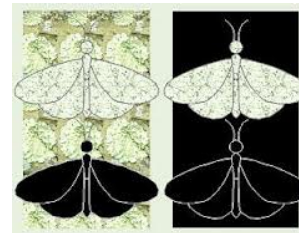
change in allele frequency over time; process by which modern organisms have descended from ancient organisms (decent with modification)

genetic equilibrium



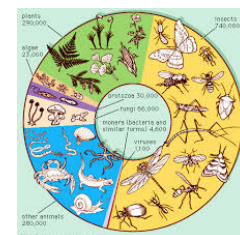
situation in which allele frequencies remain constant; no evolution occurring

natural selection



natures way of selecting the best a particular environment; also called survival of the fittest

diversity



all of the different species on Earth

variation



the differences within a single species

species



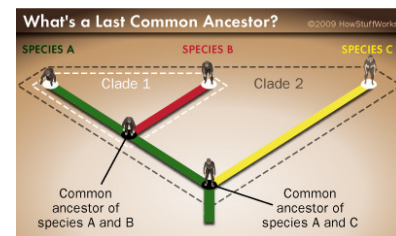
group of similar organisms capable of interbreeding and producing fertile offspring

speciation



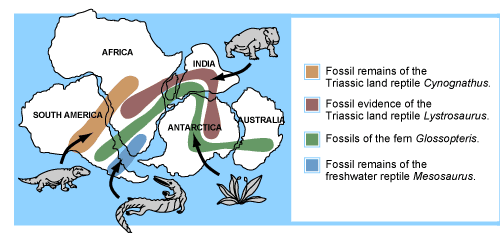
formation of new species

common ancestry



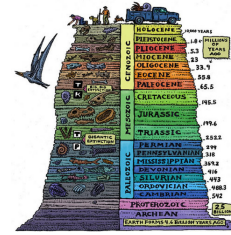
a group of organisms share common descent if they have a common ancestor

biogeography



the study of the distribution of species and ecosystems in geographic space and through geological time; evidence of common ancestry

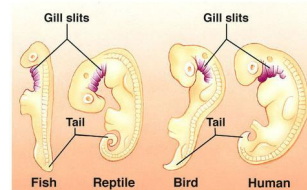
## fossil record



the geological record of organisms on earth that have been preserved in the rock in a chronological order (oldest on bottom); evidence of common ancestry

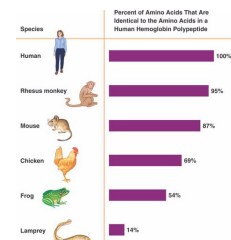
## embryology

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**Embryos and Evolutionary History**



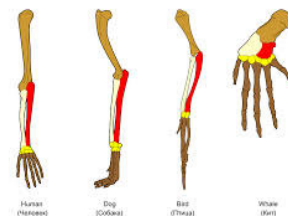
the study of embryos; evidence of common ancestry

## molecular homology



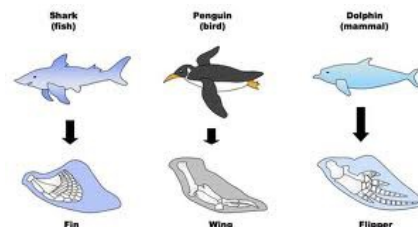
similar amino acid sequences (DNA) among different species from a common ancestor; evidence of common ancestry

## homologous structures



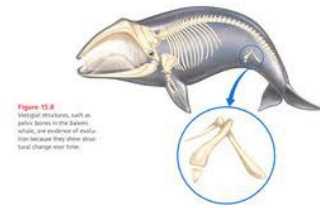
structures that have different mature forms in different organisms but develop from the same embryonic tissues; evidence of common ancestry

## analogous structures



is a trait or an organ that appears similar in two unrelated organisms

vestigial structure



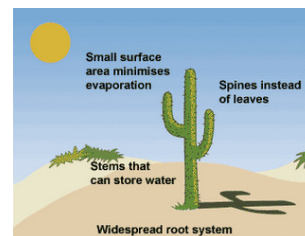
a structure that an organism has that is no longer useful to it, but that they have this structure because a common ancestor to that organism found it useful

fitness



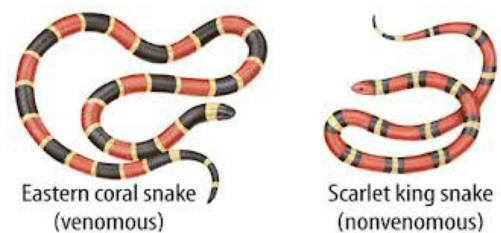
ability of an organism to survive and reproduce in its environment

adaptation



inherited characteristic that increases an organism's chance of survival

mimicry



the similarity of one species to another which protects one or both

camouflage



when an organism blends in with its environment for protection against predators

cladogram

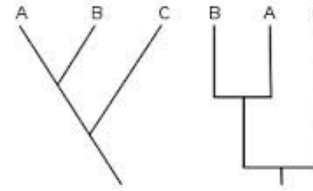
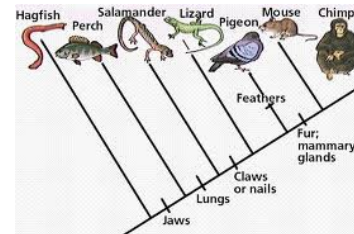


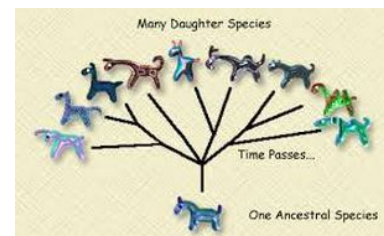
diagram that shows the evolutionary relationships among a group of organisms

derived characteristics



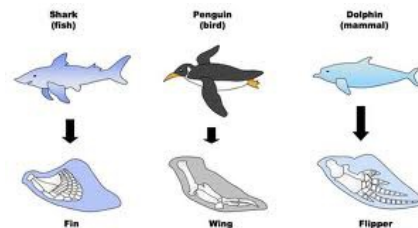
characteristic that appears in recent parts of a lineage, but not in its older members

divergent evolution (adaptive radiation)



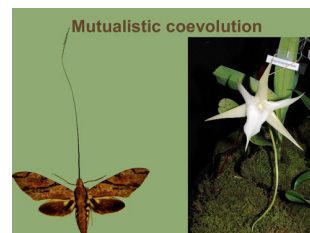
process by which a single species or small group of species evolves into several different forms that live in different ways

convergent evolution



process by which unrelated organisms independently evolve similarities when adapting to similar environments

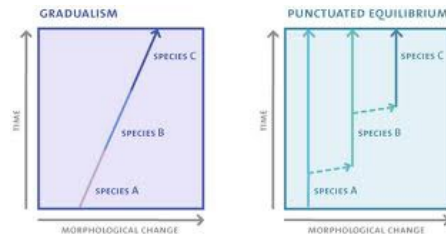
coevolution



the evolution of two or more interdependent species, each adapting to changes in the other

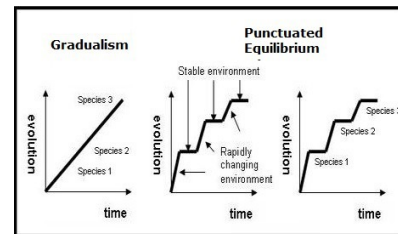


gradualism



when speciation occurs over long periods of time rather than by sudden major changes

punctuated equilibrium



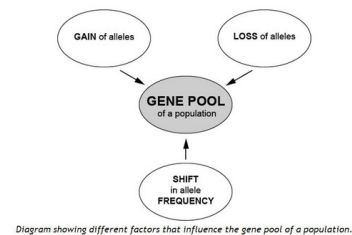
pattern of evolution in which long stable periods (stasis) are interrupted by brief periods of rapid change

extinction



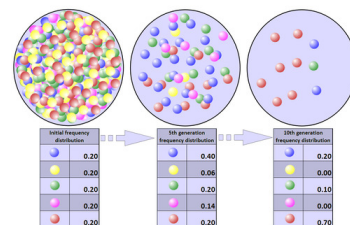
disappearance of a species from all parts of its geographical range

gene pool



the sum of all the genes in an interbreeding population

allele frequency



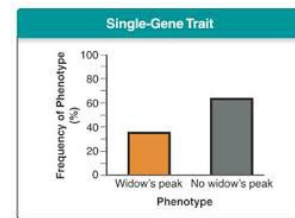
number of times an allele occurs in a gene pool

inherited vs. acquired traits



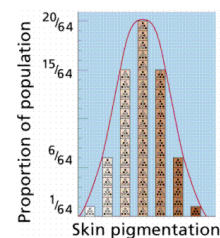
characteristic passed on via genetic material vs.  
physical characteristic that is not inherited but may  
be an effect of the environment

single-gene trait



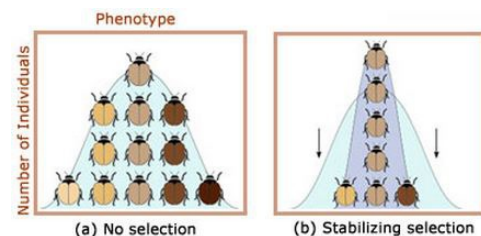
trait controlled by a single gene (ex:  
widow's peak in humans)

polygenic trait



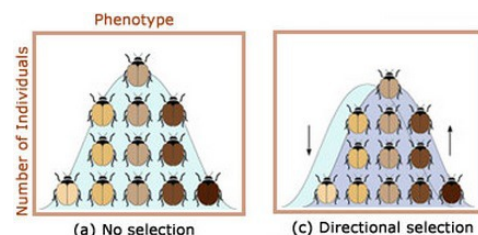
trait controlled by two or more  
genes (ex: skin color of humans)

stabilizing selection



form of natural selection that occurs when  
individuals near the center of a distribution curve  
have higher fitness than individuals at either end

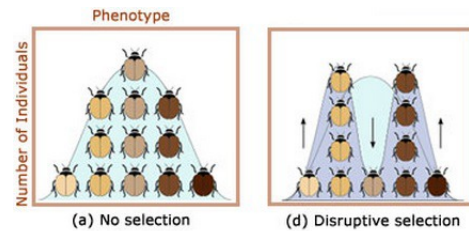
directional selection



form of natural selection that occurs when individuals at  
one end of a distribution curve have higher fitness than  
individuals in the middle or at the other end of the curve



## disruptive selection



form of natural selection that occurs when individuals at both ends of a distribution curve have higher fitness than individuals near the middle

## reproductive isolation



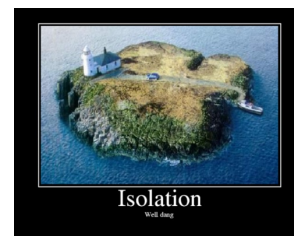
the inability of a species to breed successfully with related species due to geographical, behavioral, physiological, or genetic barriers or differences

## behavioral isolation



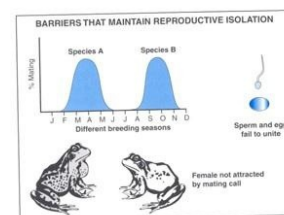
form of reproductive isolation in which two populations have differences in courtship rituals or other types of behavior that prevent them from interbreeding

## geographic isolation



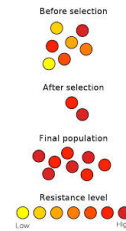
form of reproductive isolation in which two populations are separated physically by geographic barriers such as rivers, mountains, or stretches of water

## temporal isolation



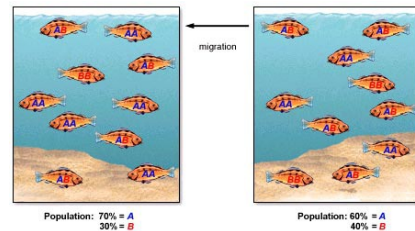
form of reproductive isolation that occurs when members of two species occupy similar habitats, but breed at different times

natural resistance



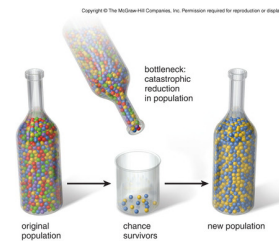
ex: bacterial resistance to antibiotics or  
insects resistant to pesticides/insecticides

gene flow



is the transfer of alleles or genes  
from one population to another

genetic drift



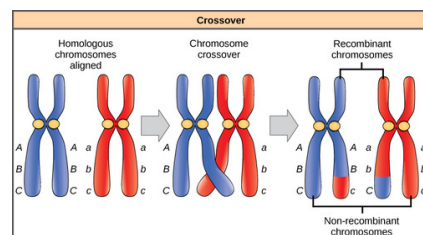
change in allele frequencies of a population due to  
chance or random events rather than by natural  
selection

mutation



a random change in the DNA that can possibly be  
beneficial and can produce genetic variation in a  
species

crossing over



also called gene shuffling or genetic recombination;  
produces genetic variation in a species