What is Evolution?

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An introduction to Evolution

Evolution is the process of change in all forms of life over generations. It helps us to understand the history of life.

Definition:

Evolution is the change over time in one or moreinheritedtraits found inpopulations oforganisms.

Other names of Evolution:
Biological evolution or organic evolution

Biological Evolution

The central idea of biological evolution is that all life on Earth shares a common ancestor.

Process

Through genetic variation, selective forces can occur in order for evolution to occur. That means, as genetic variation happens, some variations will surive and reproduce, potentially passing on that variation, while others will not reproduce and not pass on the variation. Variations that increase survival drive evolution.

Common causes of evolution

- Genetic Drift - Random changes to the proportions of two or more inherited traits within a population
- Natural selection - differential survival and/or reproduction of organisms that differ in one or more inherited traits.

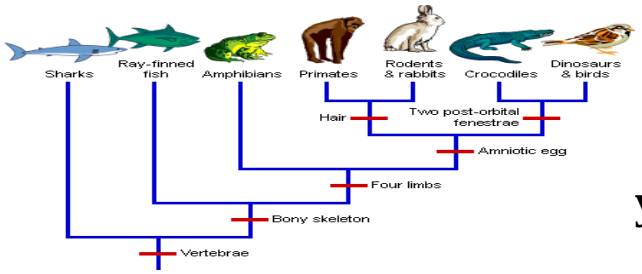
3 Conditions of Natural Selection

1. Every individual receives genes from their parents then passed on to their offspring.
2. Organisms tend to produce more offspring than the environment can support.
3. Variations among offspring occurs.

Reasons of Variations

- Mutations – introduction of new genes via random changes
- Reshuffling of existinggenes during sexual reproduction

The Histor



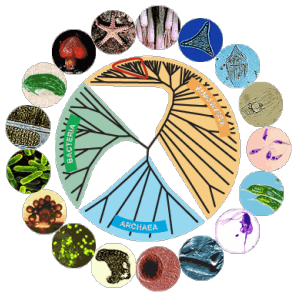
y of Life

Life history has changed over time and different species sharecommon ancestors.

Evolutionary change and evolutionary relationships are represented in family trees. These family trees are constructed and this knowledge affects biological classification.

The Family Tree

- Process of evolution produces a pattern of relationships between species.
- Lineages evolve and modifications get inherited.
- A branching pattern of evolutionary relationships produced.
- The Tree of Life then represents thephylogeny of organisms



The Three Domains:

This tree of life referred to as the three domains:

1. Archaea
2. Bacteria
3. Eukaryota

Modern evolutionary synthesis

Themodern evolutionary synthesis defines evolution as the change over time in this genetic variation.

Population Genetics

From a genetic viewpoint:
Evolution is a generation-to-generation change in the frequencies ofalleles within a population that shares a common gene pool.

Hardy-Weinberg principle:

Hardy Weinberg principle states that the frequencies of alleles in a sufficiently large population will remain constant if the only forces acting on that population are the random reshuffling of alleles during the formation of the sperm or egg, and the random combination of the alleles in these sex cells duringfertilisation.

Evolution is currently applied various areas within biology such asconservation biology,developmental biology,ecology,physiology ,paleontology andmedicine. The impact is on other areas likeagriculture,anthropology,philosophy andpsychology.

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Reference Links:

- http://en.wikipedia.org/wiki/Evolution
- http://en.wikipedia.org/wiki/Introduction_to_evolution
- http://www.actionbioscience.org/evolution/lenski.html
- http://evolution.berkeley.edu/evosite/evo101/IIIMechanisms.shtml
- http://en.wikipedia.org/wiki/Mutation
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