

Human Evolution

- **Origin of life**

- **Evolutionary biology** is the field of science that deals with the study of evolutionary development of life forms on earth
- **Big-bang theory** explains the origin of the universe.
- Scientists believed that life originated through chemical evolution.
- Formation of biomolecules → First life form

- **According to Oparin and Haldane**, the primitive atmosphere was reducing as it lacked oxygen. The atmosphere was rich in methane, water vapour, ammonia and carbon dioxide.
- The temperature was high and volcanic eruptions were frequent.
- **Urey and Miller** experimentally confirmed that formation of life was preceded by chemical evolution.
- **Branching descent** and **natural selection** are the key concepts of **Darwin's theory**.

- **Evidences of evolution -**

- Fossils
- Homologous organs
- Analogous organs
- Vestigial organs
- Comparative anatomy and morphology
- Embryological evidences
- Molecular evidences

- The slow and gradual process of change of one organism into another is known as **Organic Evolution**.
- The occurrence of evolution has been supported by various theories put forth by biologists.
- In 1809, Jean Baptiste Lamarck a French zoologist put forth the theory of inheritance of acquired characters; also known as **Lamarckism**.
- He stated that according to their need, organisms put some organs in their bodies to maximum use while some of the organs were not used. The part of the body put to maximum use will have the tendency to grow larger and stronger while the part less used will become less prominent and ultimately disappear

altogether. Thus, the organisms acquired new characters. For example, giraffe have developed long necks as a result of attempts to eat leaves high up on trees.

Darwinism

- According to Darwin, evolution took place by natural selection.
- Another aspect of natural selection is the survival of the fittest, where nature selects the individuals, which are most fit, to adapt to their environment.

Evolution of man

Homo sapiens

Modern man



Neanderthal man (Cranial capacity around 1400cc)



Homo erectus (Cranial capacity around 900cc)



Homo habilis (Cranial capacity around 650 – 800cc)

1st human-like being



Australopithecus (2 mya)



Dryopithecus and Ramapithecus (15 mya)

(More ape-like) (More human-like)