

Origin of life

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Study of living organisms such as plants, animals and human etc. is the active area of life science.

Now question is how you will define “LIFE”. Life is defined as “the ability of an organism to reproduce, grow, produce energy through chemical reactions to utilize the outside materials”. But scientists and philosophers have tried to understand two important questions related to life

1. How life originated on earth?
2. How different kinds of organisms are formed in the world?

What is life ?

- ❑ Life on earth came into existence only a billion years after the existence of earth
- ❑ Life is an urge of the Universe to understand itself .
- ❑ Life is a pageant that passes very quickly, going hastily from one darkness to another darkness with only ignes fatui to guide; and there is no sense in it. There are two major forms of life in earth i.e. plants and animals

Question

- 1. How life originated on earth?
- 2. How different kinds of organisms are formed in the world?
- So first the question is how earth formed and how its internal structure supports the life?
- Evidences suggest that earth and other planets in solar system came to existence around 4.5-5 billion years ago. Earth originally had two components: solid mass lithosphere and the surrounding gaseous envelope atmosphere. Once the temperature of primitive earth cooled down below 1000C, liquid components known as hydrosphere.

Life is originated as primitive cell with ability to replicate, absorb, nutrition and repair the damage. These single cells are the starting material to form multicellular system and eventually the development of organisms with tissue and organ system. In addition, individual organisms also acquire features over time to adopt better towards changed environment.

What is evolution ?

- . The progressive advancement of organism is by the process known as evolution. Aristotle has considered evolution as “Ladder of chain” or “Scala nature” involving hierarchical linking of series of forms .

Evolution

The term evolution refers to change from one form to another. Change in living organism with time is known as organic or biological evolution. The process of evolution can be understood from the fact that unicellular organism appears first, simple multicellular and later development of complex multicellular organisms such as seed plants and vertebrate animals.

The fishes were the initial early vertebrate and it gradually change to form amphibians. These amphibians have produced reptiles and that has evolved further to give birds and mammals. These hierarchical linking of different species is considered by ladder in the same series, mammals have evolved to human involving ape-like primates by acquiring changes over the course of time.

Now the question is what are the scientific evidences that organisms are evolved from the previously existing organisms?

- Study of physiology, anatomy, development of different organisms gives clues about the several similarities between related organism with selected differences. The correlation of the difference within related organism has allowed to identify properties use to study the evolutionary stages of an organism. These evolutionary evidences are as follows:

Morphological and structural evidences:

Comparative study of the morphology and anatomy of organisms indicate that few of the features are similar. These are as follows:

A. Body organization: The body organization of different organism is evolving over time with different level of organization. The unicellular organism with single cells is the most primitive body organization followed by cells to arrange to give rise tissues, the tissues gather to form organs, and organ co-operate to form organ-system.

B. Homologous organs: The organs of different species of common descent which look different and perform different functions but has similar structure, similar topographic origin and similar embryonic origin are called as homologous organs. Homology is based on divergent evolution.

NOW COMING TO OUR FIRST QUESTION? HOW LIFE ORIGINATED ON EARTH? Six major theories are proposed to explain the origin of life on earth. These theories are as follows:

1. Theory of Special Creations: The theory of special creation is proposed that life on earth is created by a supernatural power, the GOD. According to the Christian belief, god has created the universe, planet, animal, plant and human in six natural days.

2. Theory of spontaneous generations: The theory of spontaneous generation or abiogenesis assumes that non-living material in a spontaneous manner give rise to life.

OBJECTIONS TO THE THEORY OF SPECIAL CREATION:

- It was purely based on religious belief.
- There were no experimental evidences to support the assumptions.
- The age of different fossils proves that living organism appear on earth in different time frame.

What are the first forms of life on earth ?

- The first form of life to appear on earth were prokaryotes .
Prokaryote are unicellular organisms that lack a well defined nucleus, mitochondria, or any other membrane-bound organelle. As for the first animal that lived on the surface of the earth , it is not Dinosaurs , as many scientists believe , but rather the sea sponge which was the animal that lived on planet Earth about 250 years ago .

The End