

T.D.C part IV (Zoology H)

27-01-2019 Dr. V. Kumar

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### ⊗ Origin of Life:

#### 1. Theory of special creation:

Acc to this theory :-

- a) All living plants and animal existing now were created by some supernatural power or God or Creator.
- b) These forms were designed all of a sudden according to surrounding.
- c) These have existed unchanged from the time they come into existence.

## 2. Theory of Catastrophism:

- earth has undergone several catastrophes or destruction.
- After every catastrophe God created a new living world. This theory is similar to theory of special creation.

## 3. According to Panspermia or Inter-planetary or Cosmozoic theory:

- Life is distributed throughout cosmos in the form of resistant spores, the cosmzoa. They reached earth accidentally from some other planet. On getting favourable condition for life, they develop into organisms and evolved into existing forms.
- This theory was put forward by Richter 1865 and was supported by Arrhenium (1859-1927) and others.

⇒ **Objection** - Living matter can't survive the extreme cold and dryness



and intense radiation of interplanetary space.

⇒ **Support:**

- Evidences of existence of life on other planets of cosmos came from the discovery of fossils of micro-organisms in meteorites in 1961.

- Space research has shown that bacteria and spores can withstand the rigors of space travel and can survive in airless and waterless environment.

**4. Theory of directed Panspermia:**

- The Nobel Laureate Francis Crick and Leslie Orgel have recently revived the theory of Panspermia. They assumed that there are civilisations on other planets in our galaxy. The inhabitants of one such planet, decided some thousands of million years ago, to experiment whether life can develop on their neighbouring planets. They infected some planets in our galaxy, including earth with some micro-organisms. This is called directed Panspermia.

\* Support to direct panspermia:  
- In support of this theory, Crick and Orgel cited two biological anomalies.  
i.e.

### (a) Genetic code:

- There is only one code for all forms of life on earth because life has originated and diversified from a single seed or germ.

### (b) Molybdenum (Mo):

- The metal molybdenum plays an important role in biological system. It forms a base for many enzyme system.

Although so, important it constitutes just 0.02% of total metal composition of earth. So crick and Orgel concluded that life has been exported to this planet from some other planet, where molybdenum is present in large proportions.

## 5. Theory of Spontaneous generation:- (or, Abiogenesis or Autogenesis)

- Living organism originated from non-living environment.

## 6. Theory of Biogenesis: (Life from cycle)



- (a) Redi's experiment:  
Francisco Redi (1621-1697)  
(Abiogenesis can't exist)
- (b) Spallanzani's experiment  
(Abbe-Spallanzani 1729-1799)  
- Abiogenesis does not exist.

- (c) Pasteur's experiment:  
(Louis Pasteur 1822-1895)  
- He concluded that only minute organisms such as Protists and bacteria arise from pre-existing organisms.

### # Modern Hypothesis of Life: or, Biochemical origin of Life

- The modern Hypothesis of origin of life was formulated by Haeckel. He considered that most primitive organisms appeared spontaneously at some time from some inorganic matter as a result of formative action of special external physical forces as electric discharge ultra violet light and corpuscular radiation.

- The work of Haldane, A.I

Opabin, Stanley Miller, H. Urey & others provided evidences in favours of this hypothesis.

\* Origin of Universe:

# Big-Bang theory:

- According to Gamow and others, the universe came into existence about 14 million years ago through the explosion in a small sphere of condensed mass of cosmic matter.

- After Big-Bang (theory) explosion the elementary particles formed hydrogen which ultimately give rise to other elements. The collapse of a cloud of dust formed our galaxy about 10 millions years ago.

- There are strong evidences for the Big-Bang theory.

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