

Origin of life

THEORIES FOR THE ORIGIN OF LIFE

The various theories that have been offered to explain the origin of the life are as under:

- 1. *Theory of Spontaneous Generation***
- 2. Theory of Special Creation**
- 3. Theory of Cosmozoa**
- 4. Theory of Panspermia**
- 5. Theory of Chemosynthesis (Phase I-VI)**

Spontaneous Generation

- For much of history, people believed that animals could come from non-living sources. They thought:
 - Frogs developed from falling drops of rain
 - mice arose from sweaty underwear
 - and flies arose from decaying meat.
- This is called **abiogenesis**
- Also known as **spontaneous generation**



Spontaneous Generation

ABIOTENESIS- creation without life.

Spontaneous Generation was the mistaken idea that life can arise from non-living materials. We now believe the cell theory. The cell theory states that all cells come from pre-existing cells.



- Ancient Egyptians believed that eels and frogs came from the mud of the Nile.
- Aristotle "active principle" responsible for life:
 - fleas come from sweat
 - mice come from garbage
 - flies and maggots come from dead and decaying meat



FIGURE 1.4
Pasteur's Experiment



The infusion was boiled for a long time to kill all microorganisms present.



After several days, no microorganisms appeared in the infusion.



The flask was tipped to allow the trapped microorganisms to enter the infusion.



Microorganisms quickly multiplied in the infusion.

- Until the **middle of 19th century**, life was presumed to be created by some **super natural power or creator** **once or at successive** intervals
- This theory holds that **all life forms** have been **specially designed** and created by the "**creator**" or "**God**"
- This view point, **common to most religion**, including **Islam is the oldest hypothesis**
- The **Biblical story** of creation of life and world within **six days** was given by Spanish monk Father Suarez (1548-1617 AD).
- He described that **earth and heaven** were created on the first day and **sky** on the second day. **Plants and animals** originated on the third day, while the **sun, the moon and stars** were created on fourth day; the **birds and fishes** appeared on fifth day and finally **men and beasts** were created on sixth day. The **woman** was constructed on seventh day from the 12th rib of man

2. Cosmozoic theory (panspermia theory) :

- ✓ **Richter in 1865**
- ✓ **Life on earth came from different planet in the form of spores or microorganisms.**
- ✓ **This is called cosmozoa or panspermia which were preserved inside meteorites.**
- ✓ **These meteorites struck into barren earth to release cosmozoa and help in development of various creature.**

- Crick and Orgel: panspermia theory

STAGES OF CHEMOSYNTHESIS

- Formation of simple organic compounds.
- Formation of major organic macromolecules.
- Formation of cell-like aggregates called coacervates.
- Coacervates become more organized with use nucleic acids.
- Beginning of evolutionary development.
- Appearance of autotrophic bacteria.

