

19. ORIGIN AND EVOLUTION OF LIFE

Learning Objectives

At the end of this lesson the students will be able to:

- ☒ Know about Big Bang theory on the origin of universe.
- ☒ Understand theories of origin of life.
- ☒ Discuss the process of evolution on the basis of the available evidences.
- ☒ Relate the principles of Lamarck and Darwin with evolution.
- ☒ Know how variation occurs and its significance.
- ☒ List the importance of fossils and describe the process of fossilization.
- ☒ Identify the plants of ethno botanical importance.
- ☒ Realize about extraterrestrial life.

Important Points and Notes

- ❖ **Mutation and Variation** are two events involved in the process of evolution. Mutation arises due to errors occurring in DNA during replication or exposure to UV rays or chemicals. Mutation leads to variation. It brings about changes in a single individual.
- ❖ **Living Fossils:** These are living organisms that are similar in appearance to their fossilized distant ancestors and usually have no extinct close features. e.g. *Ginko biloba*.
- ❖ The geological time scale is a system of chronological dating that relates geological rock strata to time, and is used by geologists, paleontologists, and other Earth scientists to describe the timing and relationships of events that have occurred during Earth's history.

- ❖ **Thiruvakkarai fossil wood park (Villupuram district, Tamil Nadu):** 2 million years ago tree trunks that got buried along the river, in course of time the organic matter was replaced by silica and was fossilized. They retained their color, shape and texture and was converted into solid rocks. The annular rings, the texture, colors of the layers, nodes and every properties of plants are still visible.
- ❖ NASA is developing the Mars 2020 astrobiology to investigate an astrobiologically relevant ancient environment on Mars, its surface geological processes and the possibility of past life on Mars and preservation of biosignatures within accessible geological materials.