

2. Dianoflagellates: These are photosynthetic marine organisms of different colors depending upon the pigment present in their cell wall. The cell wall has cellulose on its outer surface. Most of the dianoflagellates have two flagella attached to their cell body. Red dianoflagellates multiplication in ocean and gives red color.

3. Euglenoids: Euglena is the representative organism belonging to this group. These are photosynthetic organism and they perform photosynthesis in the presence of sun light. In the absence of sunlight, it catches tiny preys and behave like heterotrophs. The cell body has a protein rich layer pellicle and it gives flexibility to the organism.

4. Slime Moulds: Slime molds are saprophytic protists. They feed on organic matter from decaying twigs and leaves. During unfavorable condition, they forms spores which are resistant and survive in extreme conditions. Spores of these organisms can survive for several years and be dispersed by air.

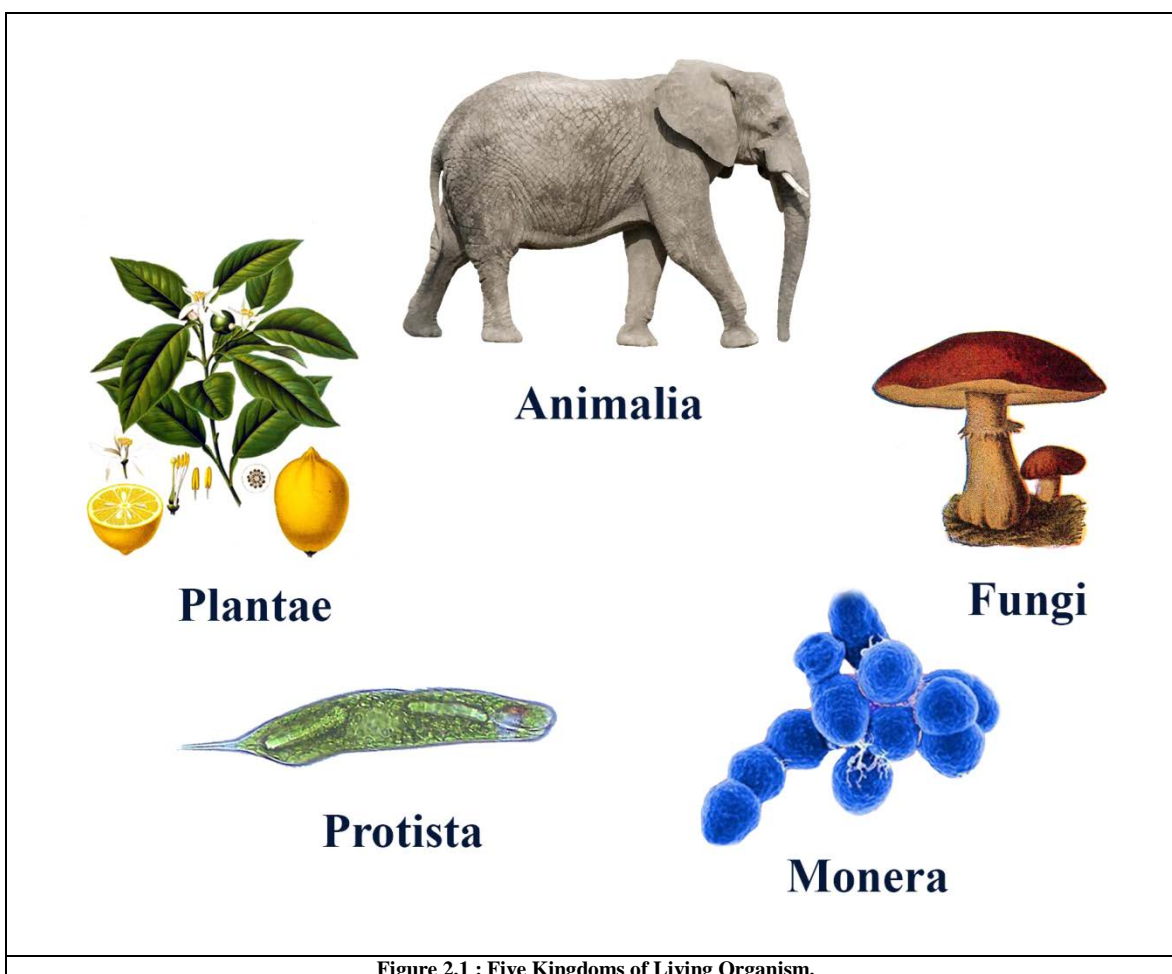


Figure 2.1 : Five Kingdoms of Living Organism.

But big question at this moment is “What Defines living object”? To answer this question, we can perform comparative analysis of living system with non-living system (diesel engine) as given in the Table 1.1.

TABLE 1.1 COMPARASION OF LIVING WITH NON-LIVING SYSTEM (DIESEL ENGINE).		
Feature	Living System	Non-living System (Diesel engine)
Energy Source	Food	Diesel
Machinery	Metabolic Reactions	Combustion
Mechanism to utilize energy	Anabolic Reactions	Torque
Dispose waste material	Present	Exhaust in the form of smoke.

Based on this comparative analysis, number of charterstics observed in a living organism can be define. These properties are as follows:

- Self Growth or Self Renewal
- Endogenous ability to produce energy
- Movement with an exception in the case of Plants as they don’t Move
- Ability to self replicate.

But human has developed “robots” which can perform several of these tasks but still it does not considered as “living organism”. In addition, with the advancement in technology, the criteria for living organism is redefined. These re-defined criterias are as follows:

- **Complex organization-Composed of different types of cells**
- **Metabolism- To produce energy and utilize preformed food material.**
- **Responsiveness- To respond to the extreme environmental conditions. Such as Temp, wind, starvation.**
- **Growth- Endogenous Growth**
- **Reproduction- ability to give off springs**
- **Evolution- To better suits to the changed environment or metabolism.**

Lecture 1: Basic Biology: A Brief Introduction

Introduction: Science (or literally mean “knowledge”) is the systematic organized knowledge on a particular subject. These topics are ranging from spirituality to cutting edge open heart surgery and human’s have realized the importance to study and document them for future generations. Study of these aspects and applying the guided rules has influenced the human life and as result several branches of science have been evolved to focus on specific aspects. There are two main branches:

(A) Social Sciences: Human behavior and its relationship with other humans (in society) is complex and studied within the big umbrella of social sciences. Within the social sciences, it has several sub-branches to study specific aspects. These are as follows:

1. Anthropology: it is the field of science which study the past and present of human considering the combined knowledge feedback from social sciences, biology, human behavior etc.

2. Economics: The field of science which understand the production, distribution and consumption of wealth.

3. Education: The field of science which understand the learning ability of an individual through systematic experimentation and develop novel teaching and learning rules as per age or ethnic background.

4. Geography: The field of science which study the several aspects of earth including soil types, spatial location of rivers, mountains, environment etc.

5. History: The field of science which study the past of the human culture and experiences in different time frames. It study the cultural differences between different human races etc.

6. Linguistics: The field of science which study the human language.

7. Political Sciences: The field of science the theory and practice of politics and political behavior.