

# 19. Classification of Living Organisms

The earth came into existence 4-5 billion years ago and life originated around 3.4 billion years ago. In these many years, approximately 15 million different kinds of organisms have evolved. The wide variety of organisms is termed “**biodiversity**.” Various kinds of organisms differ from each other structurally. R. Whittaker classified all the organisms into five major groups, called *five kingdom classification*. All living organisms are further classified on the basis of their similarities and differences into different categories such as:

kingdom → phylum → class → order → family  
genus → species

Classification shows evolutionary relationships between organisms and is also termed *Systematics*. The science of classification or systematics is termed **Taxonomy**.

Common names are confusing and variable, so each kind of organism has been given a scientific name. A scientific name includes the names of the genus and species

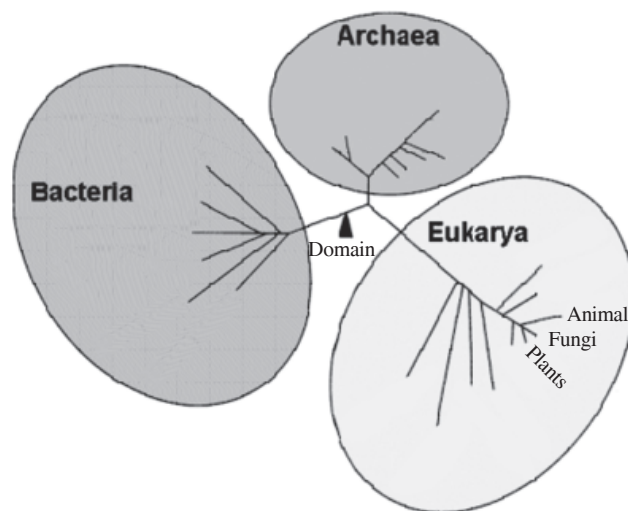
## Build Your Understanding

- All living organisms are classified into three major domains:
  1. Archaeobacteria: Primitive bacteria (prokaryotes) living in hot water bodies
  2. Eubacteria: All other bacteria found on earth, and devoid of a well-developed nucleus.
  3. Eukarya: All organisms other than bacteria and possessing a well formed nucleus.

In 1969, “Whittaker” arranged all kinds of organisms into five kingdoms:

### Five Kingdoms of life

1. MONERA: All bacteria, are the only prokaryotes, i.e. their hereditary material is not enclosed in a nucleus.
2. PROTOCTISTA (PROTISTA): Single celled nucleated plant-like algae and animal like protozoans
3. FUNGI: Multicellular nucleated organisms which are saprotrophs.
4. PLANTAE: Includes plants which are autotrophs and manufacture food by photosynthesis. Their cells possess a cell wall.
5. ANIMALIA: Includes animals which are heterotrophs and are made of cells without a cell wall.



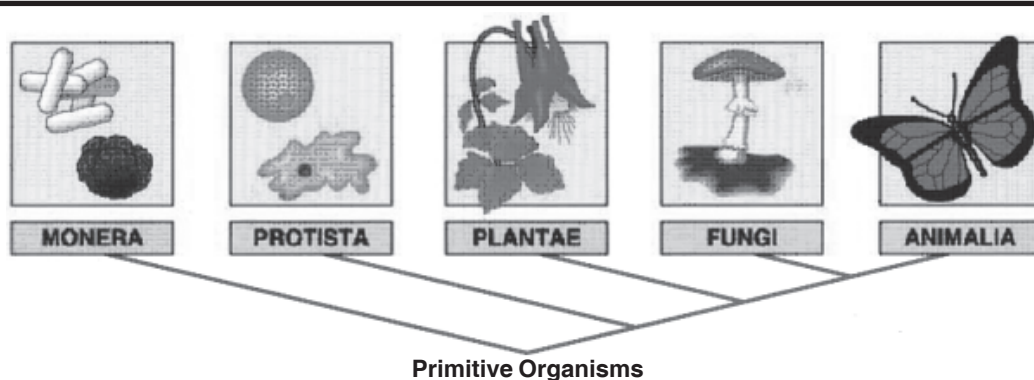


Fig. 1. Five kingdoms of life

**Binomial Classification:** Every kind of organism has a scientific name made of two parts: (i) name of the genus and (ii) name of the species. The initial letter of the genus is written with a capital letter and species with a small letter. The scientific name is written in italics or underlined.

Biodiversity has three levels namely:

- (i) Genetic diversity
- (ii) Species diversity
- (iii) Ecosystem diversity

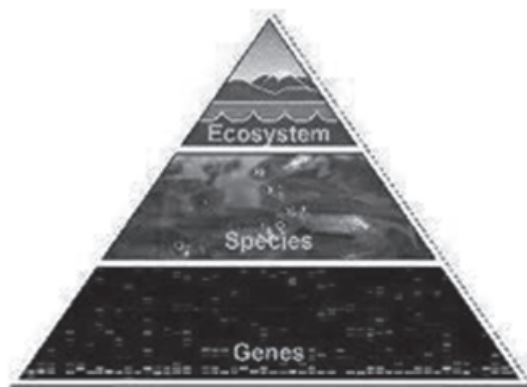


Fig. 2. Three levels of biodiversity

★ **Stretch Yourself**

1. The common name of rice is simpler than its scientific name *Oryza sativa*. Why is the scientific name then given?
2. Which out of the following categories are used for naming an organism?  
Phylum, Family, Genus, Species, Order, Class

? **Test Yourself**

1. Given below are scientific names of some organisms, encircle the ones which are wrongly written and write them correctly:
  - i. *Mangifera indica*
  - ii. *Cajanus Cajan*
  - iii. *Felis Domesticus*
  - iv. *Ficus religiosa*

2. *Corvus splendens* (house crow) and *Corvus macrorhynchos* (jungle crow) are names of two crows. Do they belong to the same species? Give reasons in support of your answer.
3. Match the items in column I with as many as possible of the items given in column II.

| Column I      | Column II   |
|---------------|-------------|
| Pine          | Fungi       |
| Earthworm     | Monera      |
| Bread mould   | Prokaryote  |
| <i>Amoeba</i> | Gymnosperm  |
| Moss          | Plantae     |
| Bacteria      | Animalia    |
|               | Protoctista |
|               | Bryophyta   |

4. Why are *Octopus* and *Oyster* placed in the same phylum? Name the phylum to which they belong.
5. Make a taxonomic key of the following:  
cow, parrot, starfish, cobra, rohu