ATOMIC ENERGY CENTRAL SCHOOL, INDORE

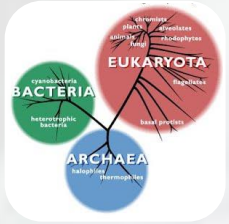
CLASS XI

BIOLOGY

UNIT 1

CHAPTER 2

MODULE 1/4



BIOLOGICAL CLASSIFICATION

NEERAJ KUMAR BAMANIA

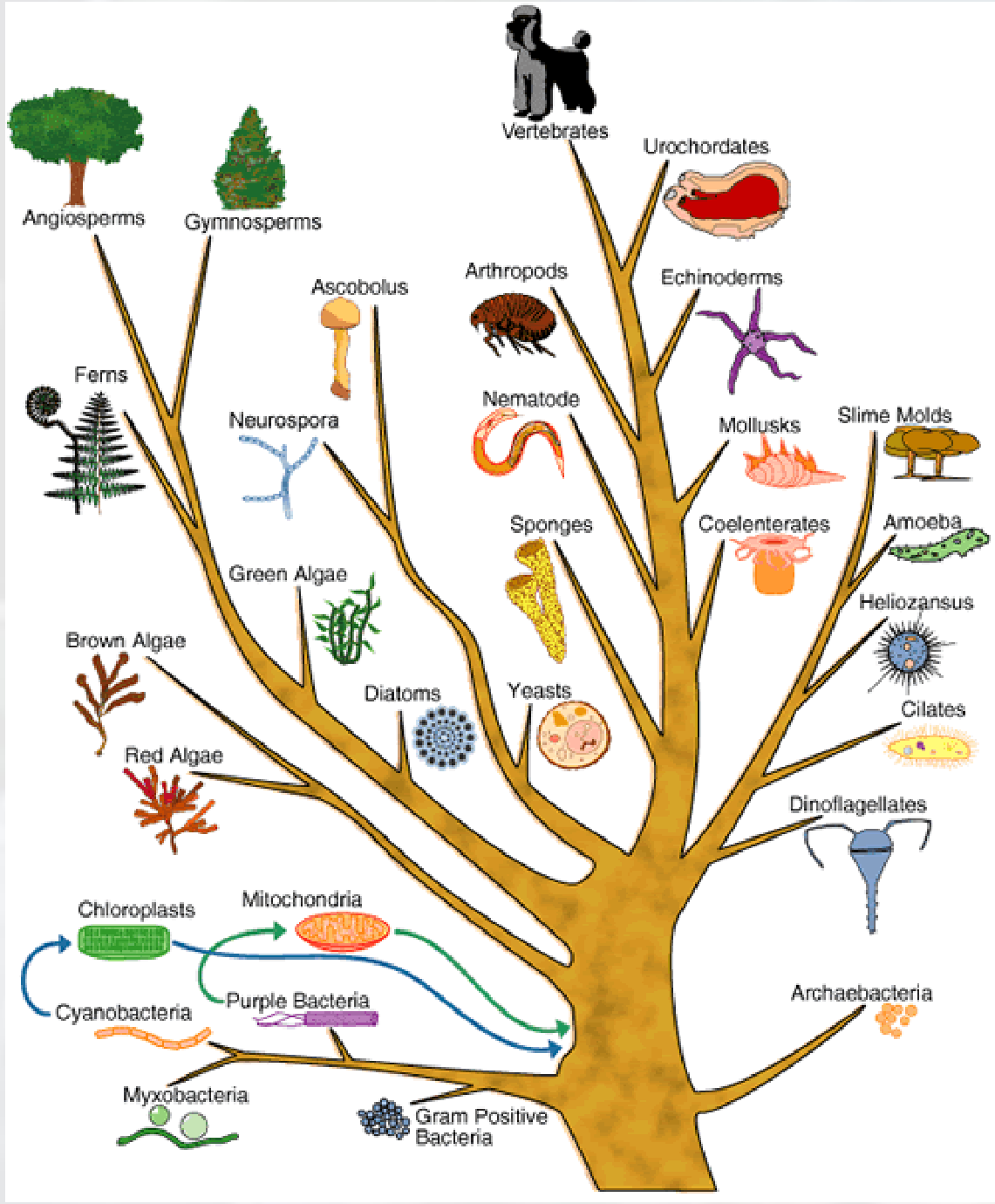
- PGT(SS) - BIOLOGY

UNIT- 1

DIVERSITY IN THE LIVING WORLD

CHAPTER – 2

BIOLOGICAL CLASSIFICATION



Classification

Essential Question

Why is it important to place living things into categories?

KEY CONCEPT QUESTIONS:

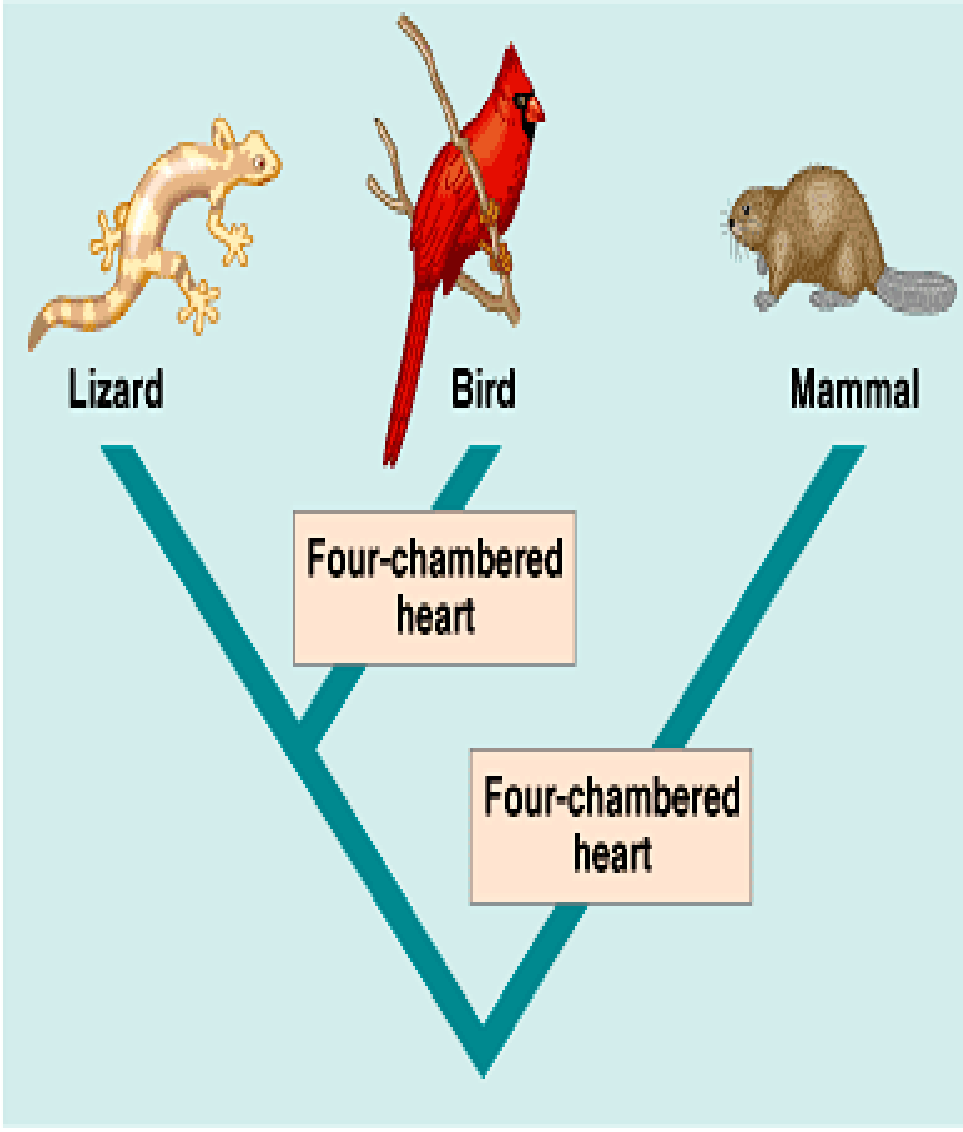
- **How are living things organized for study?**
- **What is binomial nomenclature?**
- **What is Linnaeus's system of classification?**

- **How are living things organized for study?**
  - To study the diversity of life, biologists use a classification system to name organisms and group them in a logical manner

- **TAXONOMY**
  - discipline of classifying organisms and assigning each organism a universally accepted name

Classification

- **System to organize all living creatures**
  - plants
  - animals
  - microbes
  - etc.



- **Why do you classify anything?**
- to be certain everyone is talking about the same thing
- Using common names can be confusing
- In India, the word *Kaag* refers to a Crow, whereas *Kauwa and Kaakbhushundi* also named.
- Woodchuck and ground hog are the same animal

Why not use common names?

- Misleading
  - Starfish
  - Dogfish
  - Dragonfly
  - Silk worm

- Confusing
  - blue jay, blue coat, corn thief
  - dog, perro, chien

Why not use common names?

- **But they all have only one scientific name!**

Pisaster ochraceus

Corvus splendens

Pyrrhosoma nymphula

Cyanocitta cristata

- A more universal way of scientifically classifying came about.

- BINOMIAL NOMENCLATURE
  - classification system in which each species is assigned a two-part scientific name

Carolus Linnaeus

- The Linnean system
  - proposed in 1700s
  - each species has a 2 part name
    - genus
    - species

Homo sapiens

GENUS

a group of closely related species.

TAXON

a group or level of organization; aka: taxonomic category

Latin binomial

- 2 part scientific name
  - Genus — larger group to which organism belongs
    - always capitalized
  - species — specific name for that organism
    - always lowercase
  - example: Linnaeus named humans *Homo sapiens*
    - means "**wise man**"
      — perhaps in a show of hope & optimism

I. Two Kingdoms Classification:

- In his Systema Naturae, first published in 1735, **Carolus Linnaeus** distinguished two kingdoms of living things:
- Animalia for animals and Plantae (Vegetabilia) for plants.
- He classified all living organisms into two kingdoms – on the basis of nutrition and locomotion (mobility).

I. Two Kingdoms Classification:

Linnaeus placed unicellular protozoans and multicellular animals (metazoans) under animal kingdom because of their compact body, holozoic nutrition (ingestion of food) and locomotion. All other organisms were grouped under plant kingdom because of their immobility, spread out appearance and autotrophic mode of nutrition. Thus, the traditional plant kingdom comprised bacteria, algae, plants and fungi

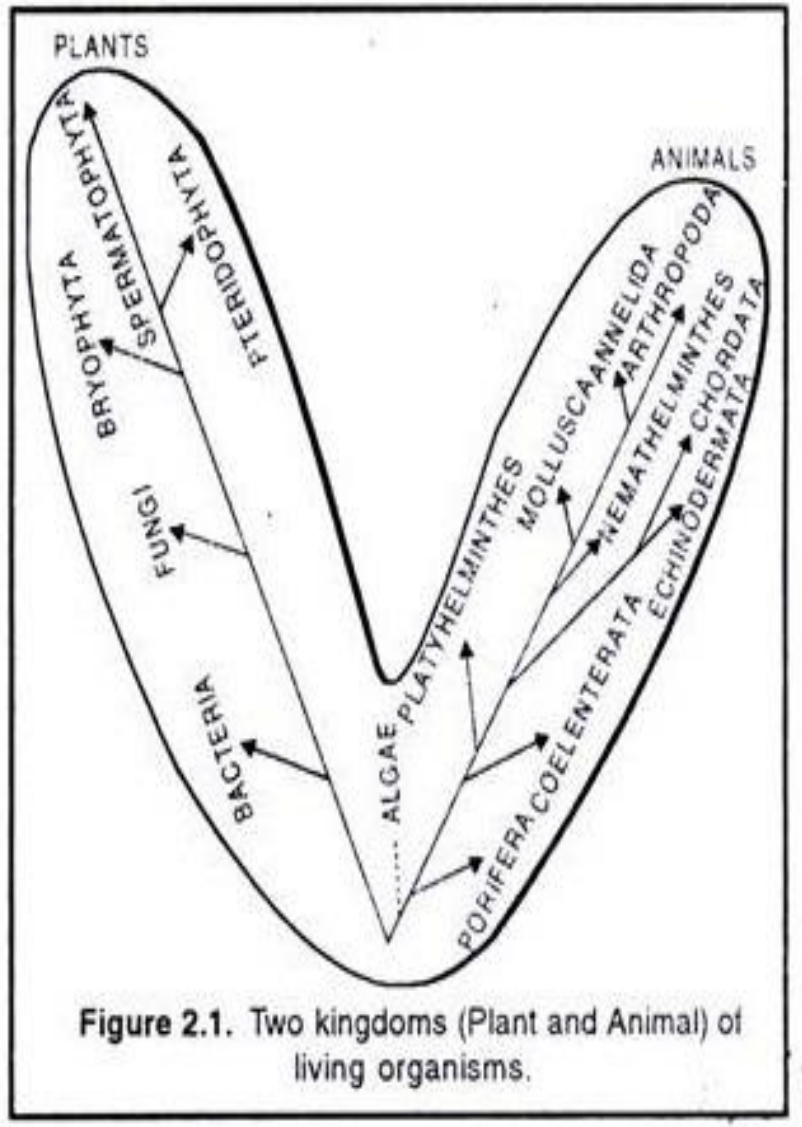


Figure 2.1. Two kingdoms (Plant and Animal) of living organisms.

Demerits or Limitations:

- (a) The two kingdom system of classification did not indicate any evolutionary relationship between plants and animals.
- (b) It grouped together the prokaryotes (bacteria, BGA) with other eukaryotes.
- (c) It also grouped unicellular and multi-cellular organisms together.
- (d) This system did not distinguish the heterotrophic fungi and the autotrophic green plants.
- (e) Dual organisms like Euglena and lichens did not fall into either kingdom.
- (f) Slime mould, a type of fungi, can neither be grouped in fungi nor plants. This is because they are wall less and holozoic in vegetative stage, but develop cell wall in the reproductive stage.
- (g) It did not mention some acellular organisms like viruses and viroids.

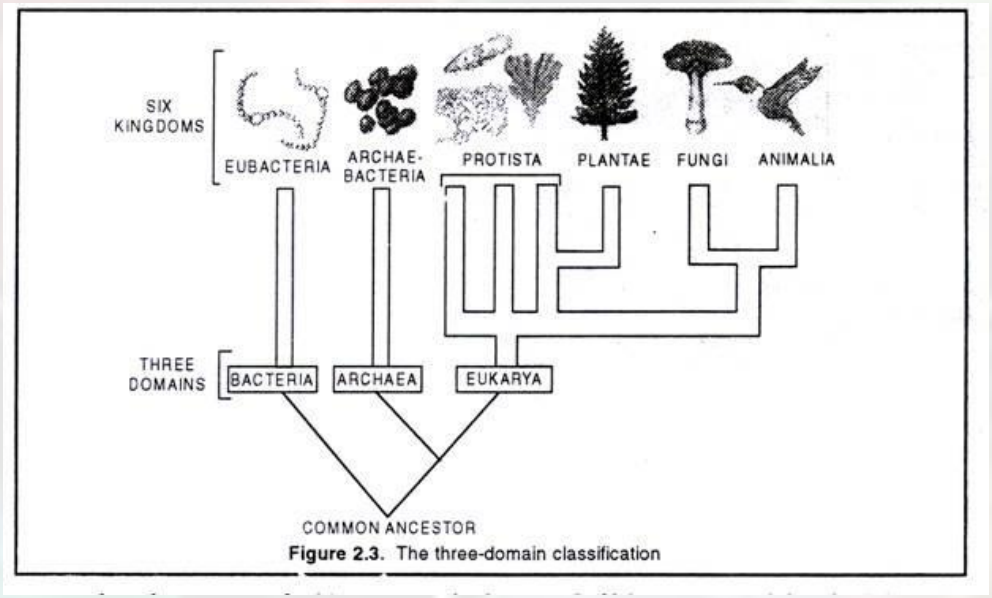


Figure 2.3. The three-domain classification

To be contd...