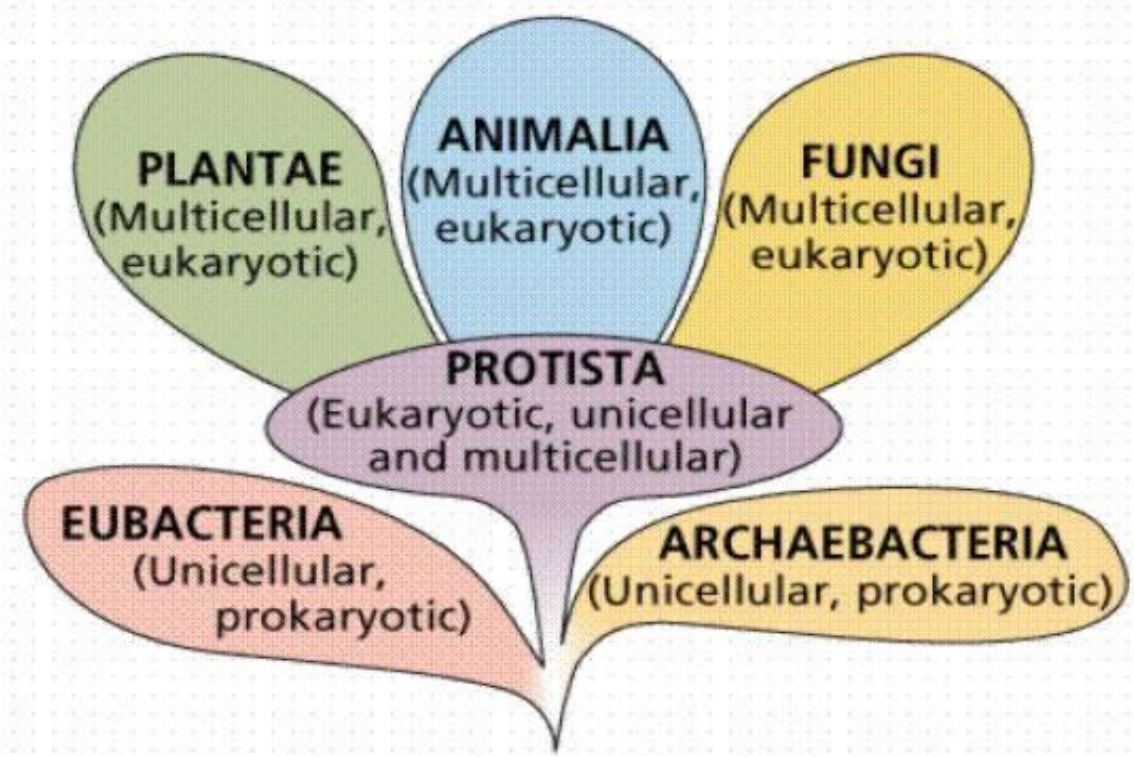
CHAPTER 2

CLASSIFICATION OF PLANTS AND ANIMALS

All living organisms on our planet are broadly classified into categories called kingdoms.

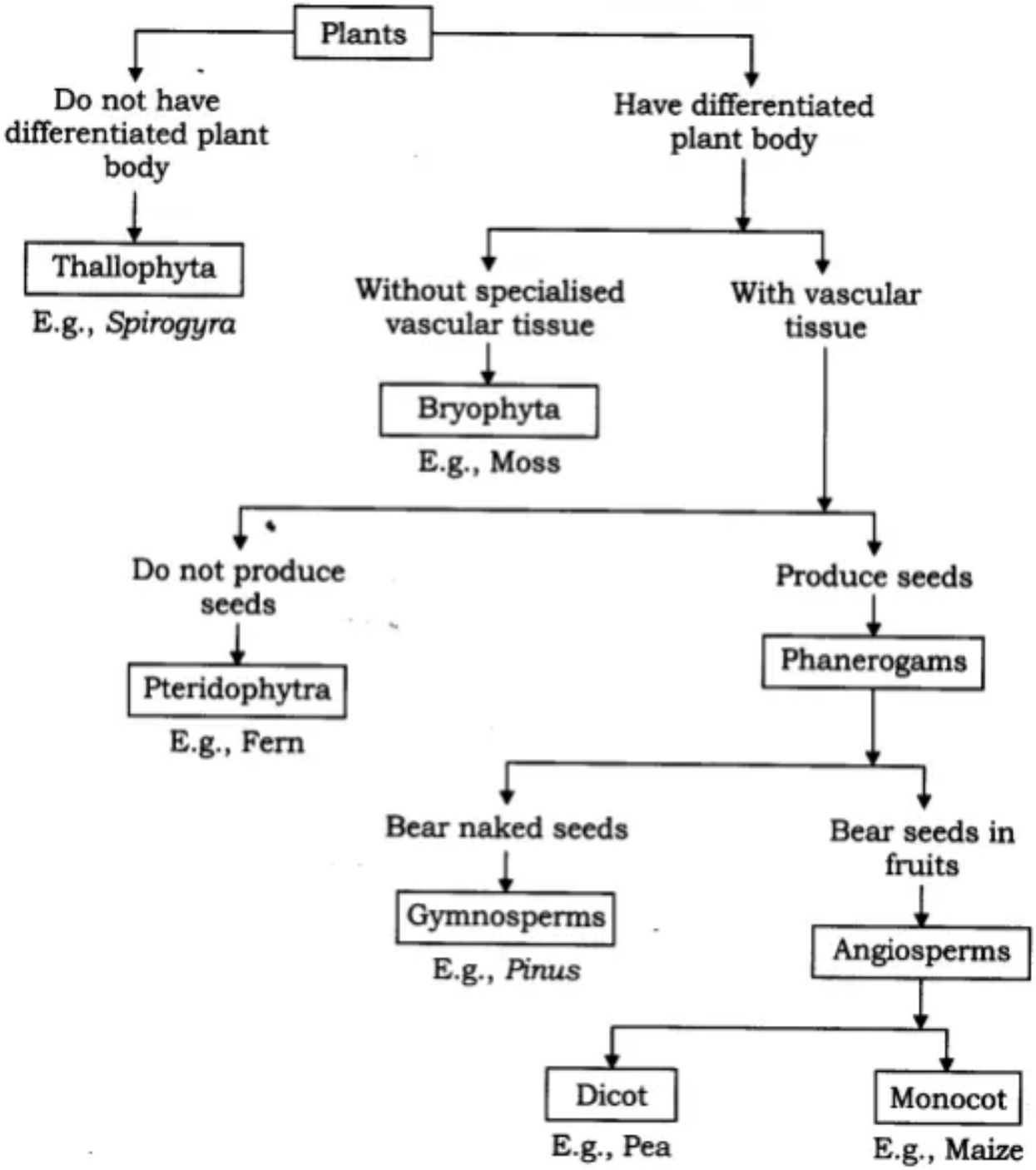
This classification of living organisms proposed by **Robert Whittaker** has five Kingdoms viz**, Monera, Protista, Fungi, Animalia, and Plantae. These kingdoms are formed on the basis of their cell structure, mode, and source of nutrition and body organization.**



The Kingdom Plantae contains about 300,000 different species of plants. Among the five kingdoms, Kingdom Plantae is vital, as it is the source of food for all other living creatures present on planet earth,

This kingdom includes all types plants like herbs, shrubs, trees, creepers, climbers, aquatic plants, desert plants, mountain plants. flowering and non-flowering plants etc.

Cryptogams: The thallophytes, the bryophytes, and the pteridophytes have inconspicuous reproductive organs and are together referred to as Cryptogams.
Phanerogams: Plants like Angiosperms and Gymnosperms with well- developed reproductive tissue that ultimately make seeds are called Phanerogams.
Monocots: Plants with seeds containing a single cotyledon are called monocotyledons or monocots e.g. maize
Dicots: Plants with seeds containing two cotyledons are called dicotyledons or dicots. Example: bean
Cotyledon: Cotyledons represent a bit of pre-designed plant in the seed. These help in providing nourishment to the developing embryo.
The Plant Kingdom can be further classified into five divisions. Their key characteristics are given below:



Thallophyta: – The plant body is simple thallus type i,e.undifferentiated. The plant body is not differentiated into root, stem, and leaves. They are commonly known as algae. Examples: Spirogyra, Chara, volvox, Ulothrix, etc.

Bryophyta: Plant body is differentiated into stem and leaf-like structure. Vascular system is absent, which means there is no specialized tissue for transportation of water, minerals, and food. Bryophytes are also known as the amphibians of the plant kingdom because they need water to complete a part of their life cycle. Examples: Moss, Marchantia.

Pteridophyta: Plant body is differentiated into root, stem, and leaf. Vascular system is present. They do not bear seeds and hence are called cryptogams. Plants of rest of the divisions bear seeds and hence are called phanerogams. Examples: Marsilea, ferns, horse tails, etc.

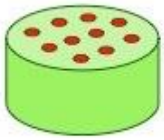
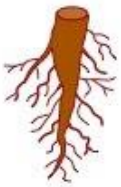
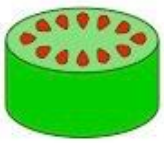
Gymnosperms: They bear seeds. Seeds are naked, i.e., are not covered. The word 'gymnos' means naked and 'sperma' means seed. They are perennial plants. Examples: Pine, Cycas, Deodar

Angiosperms: The seeds are covered. The word '***angios***' means **covered.** There is great diversity in species of angiosperm. Angiosperms are also known as flowering plants because a flower is a specialized organ meant for reproduction. Angiosperms are further divided into two groups, viz. monocotyledonous and dicotyledonous.

Monocotyledonous: There is single seed leaf in a seed. A seed leaf is a baby plant. Examples: wheat, rice, maize, etc.

Dicotyledonous: There are two cotyledons in a seed. Examples: Mustard, gram, mango, etc.

Difference between Monocots and Dicots:

	Seed	Root	Vascular	Leaf	Flower
Monocot					
	One cotyledon	Fibrous roots	Scattered	Parallel veins	Multiples of 3
Dicot					
	Two cotyledon	Tap roots	Ringed	Net-like veins	4 or 5

MONERA

- **Types of Bacteria**

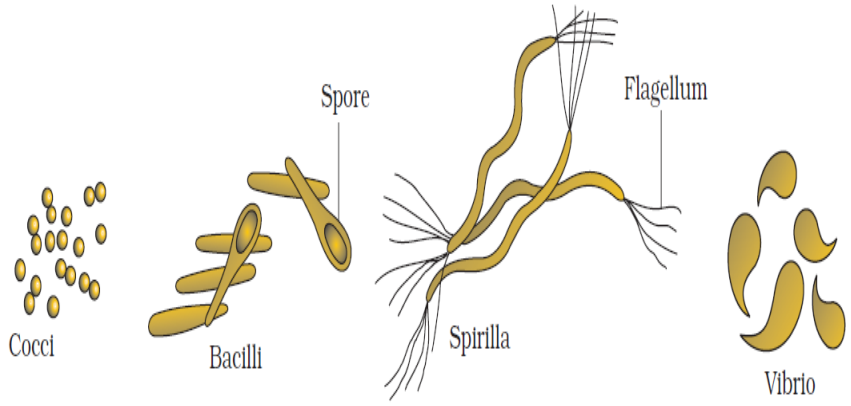
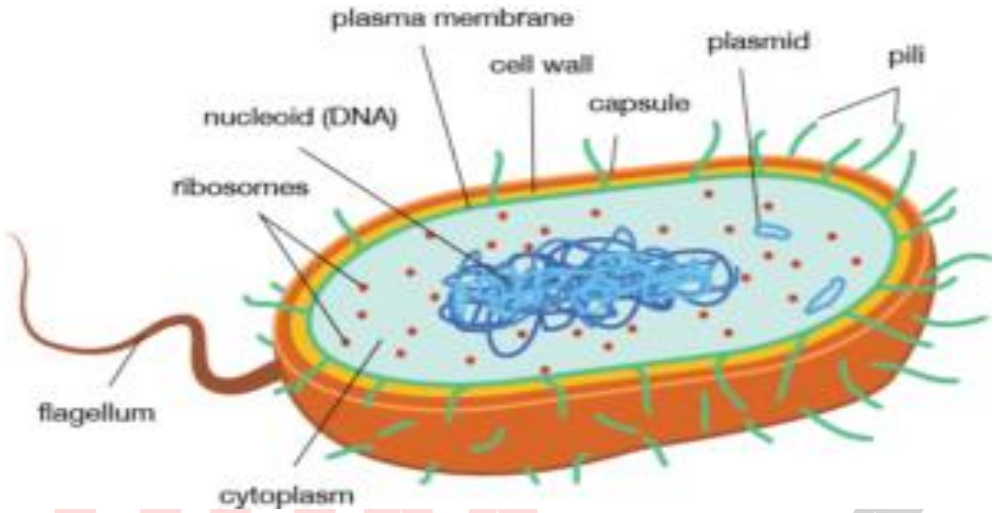


Figure 2.1 Bacteria of different shapes

Bacteria are classified into major 4 groups according to their basic shapes:

- spherical (**cocci**)
- rod (**bacilli**)
- **spiral** (**spirilla**)
- comma (**vibrio**)

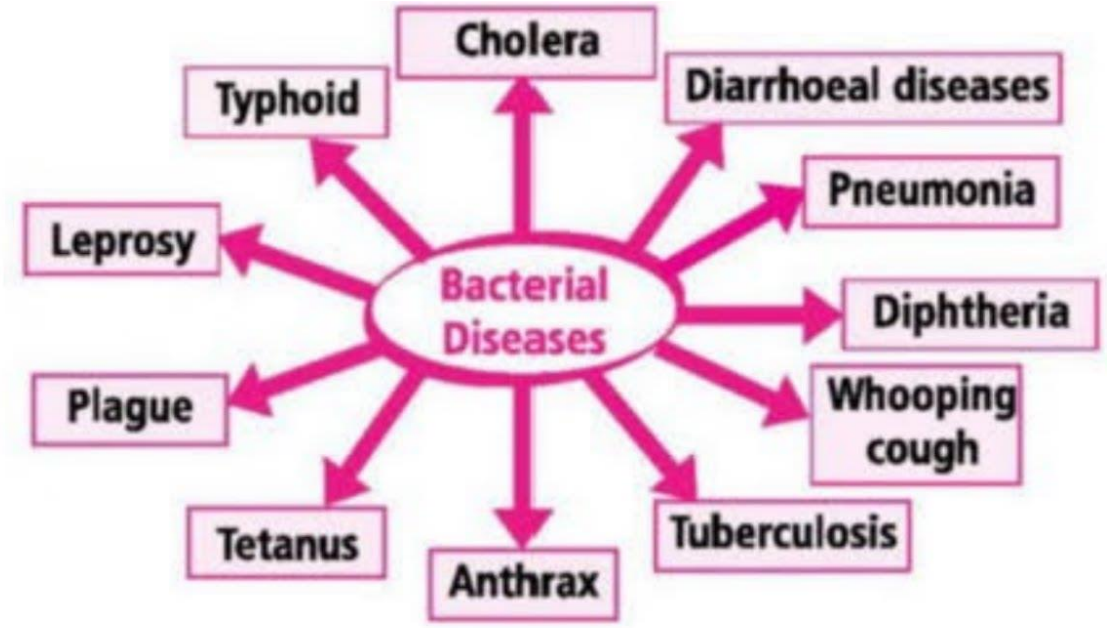
- **Structure of Bacteria**



➢ **Usefulness of bacteria:**

- Medicines and vaccines.
- Curdling of milk (***Lactobacillus***)
- Retting of fibres.
- Tanning of leathers.
- Composting
- Production of Biogas (anaerobic bacteria)
- ***E.coli*** in human large intestine help in production of vitamin B and K.
- ***Rhizobium*** help in atmospheric nitrogen fixation**.**
- ***Pseudomonas and Nitrosomonas*** help in returning back the nitrogen to atmosphere by breakdown of nitrites and nitrates**.**
- **Bacteria** in ruminants help in digestion of cellulose.
- **Saprophytic bacteria** help in decomposition of organic material and cleans environment.

- **Harmfulness of bacteria:**



Bacterial Diseases

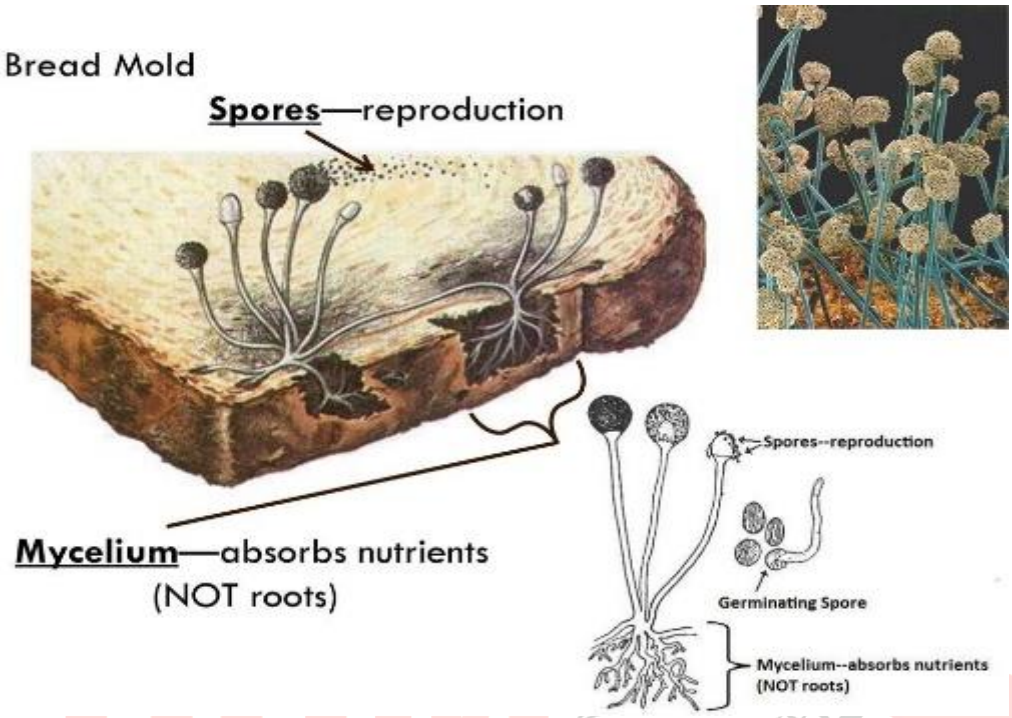
PROTISTA:

Amoeba

- **Amoeba** reproduces asexually through **binary fission**. In this process, an individual divides itself into two daughter cells. Under unfavorable condition divide by **multiple fission** forming an outer protective covering **cyst.**
- Amoeba excretes through contractile vacuole.
- Amoeba respires by cell membrane by diffusion.
- It moves by pseudopodia and capture its food also by it. Nutrition type holozoic.

FUNGI:

Rhizopus



- Reproduce by spore formation.
- Nutrition is saprophytic.
- Respiration aerobic.