

By classifying organisms it is possible to identify those most at risk of extinction. Strategies

can then be put in place to conserve the threatened species.

By classifying organisms it is also possible to understand evolutionary relationships. Vertebrates all have the presence of a vertebral column, along with a skull protecting a brain, and a pair of jaws (usually with teeth). By studying the anatomy of different groups of vertebrates it is possible to gain an insight into their evolution.

Characteristics of Living Organisms: Basics

- **Movement:** an action by an organism causing a change of position or place

Movement

Respiration: the chemical reactions that break down nutrient molecules in living cells to release energy

Glucose (C₆H₁₂O₆) ==CO₂+energy (ATP)

At cellular level?

- **Sensitivity:** the ability to detect and respond to changes in the environment or stimulus.(response to stimuli)
- **Touch me not plant mimosa -**
- **Stimulus** -hot object
- **Reaction**-pulling our hand away

- **Growth:** a permanent increase in size
- **Increase in cell number or cell size**
- **Reproduction:** the processes that make more of the same kind of organism
- **Excretion:** the removal from organisms of toxic materials and substances in excess of requirements
- **Urine (ammonia -urea),sweat gland -sweat**
- **Nutrition: the taking in of materials for energy, growth and development**
- **Protein ,fats,carb ,vitamins,minerals**
- **Viscerel fat surrounds body organs**

Species?-Species organism of particular kind whose members can interbreed among themselves to produce fertile young ones.

Human beings (*Homo sapiens*)

Tiger ,lion

Interbreeding of species will give rise to infertile offspring

Tiger+lion=tigon(infertile)

The Binomial System-naming of organisms in latin

Bi-two nomenclature -naming

Bi- two nomial-naming nomenclature

- Organisms were first classified by a Swedish naturalist called **Linnaeus**
- He named organisms in Latin using the **binomial system** where the scientific name of an organism is made up of two parts starting with:
 - the **genus** (always given a **capital letter**)
 - and followed by the **species** (starting with a **lower case letter**)

When typed, binomial names are always in **italics** (which indicates they are Latin) e.g. *Homo sapiens*

Homo sapiens

We will underline the organism name in book

Homo sapiens



Corvus splendens(house crow)



Corvus macrorhynchos

Genus same -Corvus

But species is different

Cobra-Naga naga

Honey bee-Apis indica

Genus- *Apis*

Species -indica

Cat-Felis domesticus

Genus-*Felis*

Species-domesticus

Mango-Mangifera indica

Potato-Solanum tuberosum

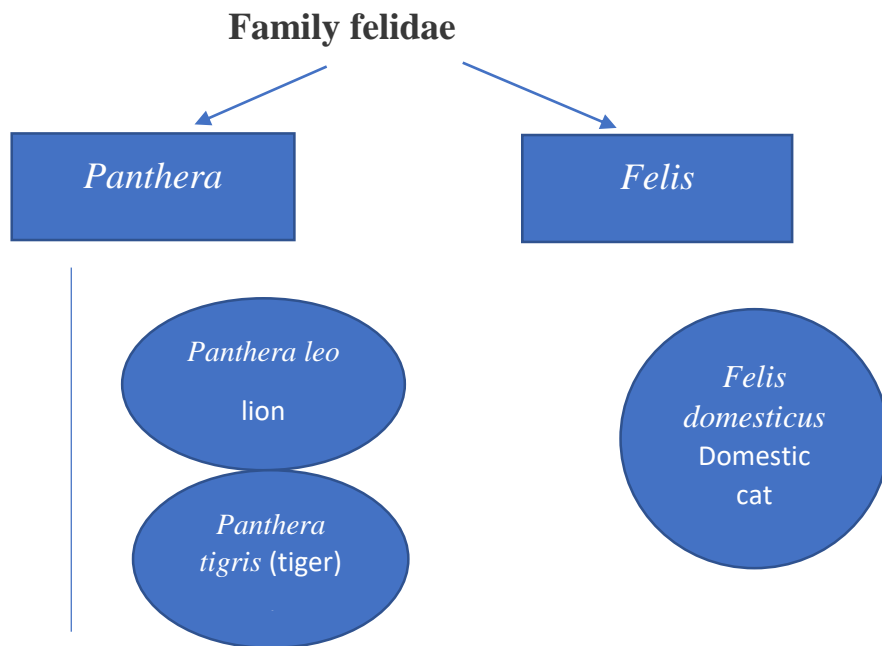
Tomato -Solanum lycoperscium

Capsicum-Capsicum annum

- The sequence of classification is: **Kingdom, Phylum, Class, Order, Family, Genus, Species**

GENUS- similar species constitute the higher category called **GENUS**

Family-group of genera with common characteristics-



Order-group of related family make order

Cat family FELIDAE and dog family Canidae (dog,foxes,jackals)possess some common features

Order group of related families make order-Carnivora

Class-Related orders make class

Eg Mammalia (orders of different kind of dogs,bats,cats,whales,monkey ,humans have features -hairy skin, milk gland.

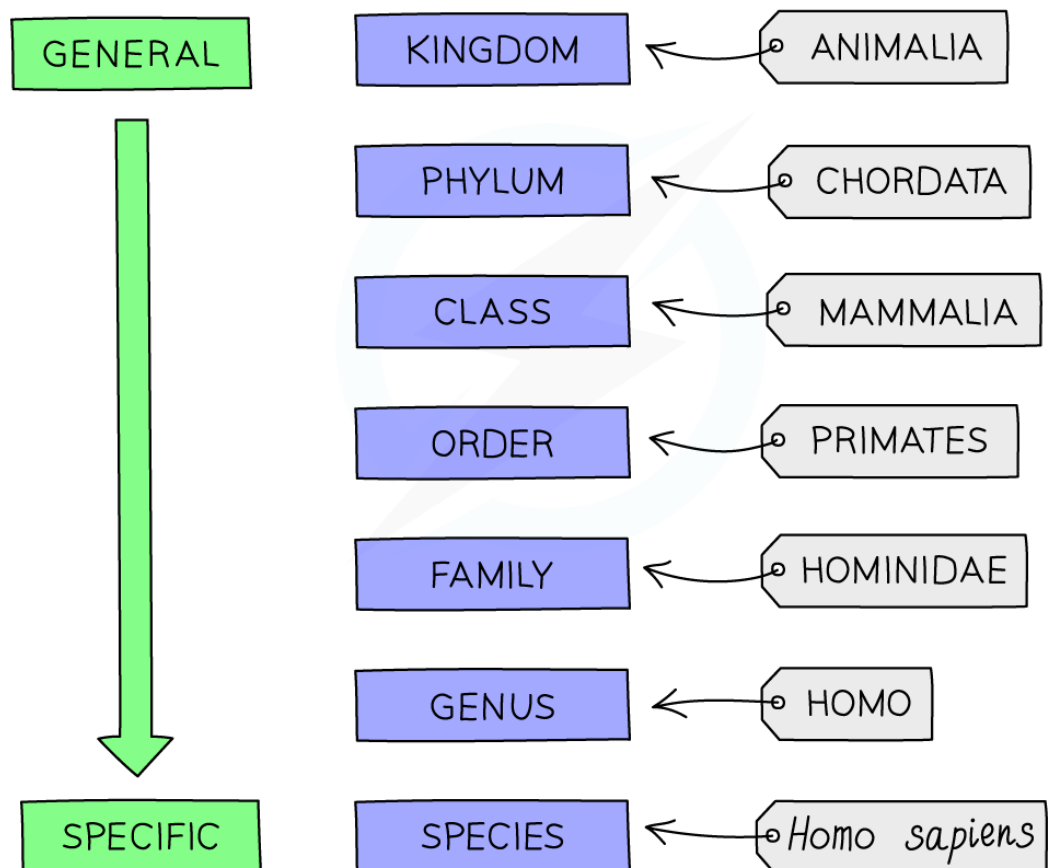
Phylum-largest division in classification of plants and animals

Classes of different animals like mammals,reptiles,birds,frogs,fishes -

--Chordata

Kingdom

LINNAEUS'S SYSTEM OF CLASSIFICATION



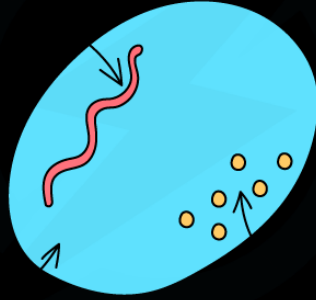
Common Cell Structures

- The cells of all living organisms contain the following:
 - **Cytoplasm**
 - **Cell membrane**
 - **DNA as genetic material** (either found in the nucleus or free in the cytoplasm)

CELL FEATURES

GENETIC MATERIAL
(USUALLY DNA)

CELL MEMBRANE



CYTOPLASM

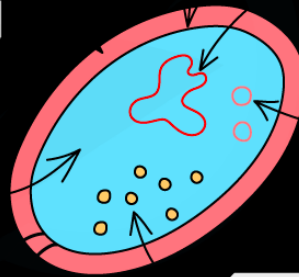
RIBOSOMES

PROKARYOTIC CELL

CELL
MEMBRANE

CELL WALL MADE
FROM PEPTIDOGLYCAN

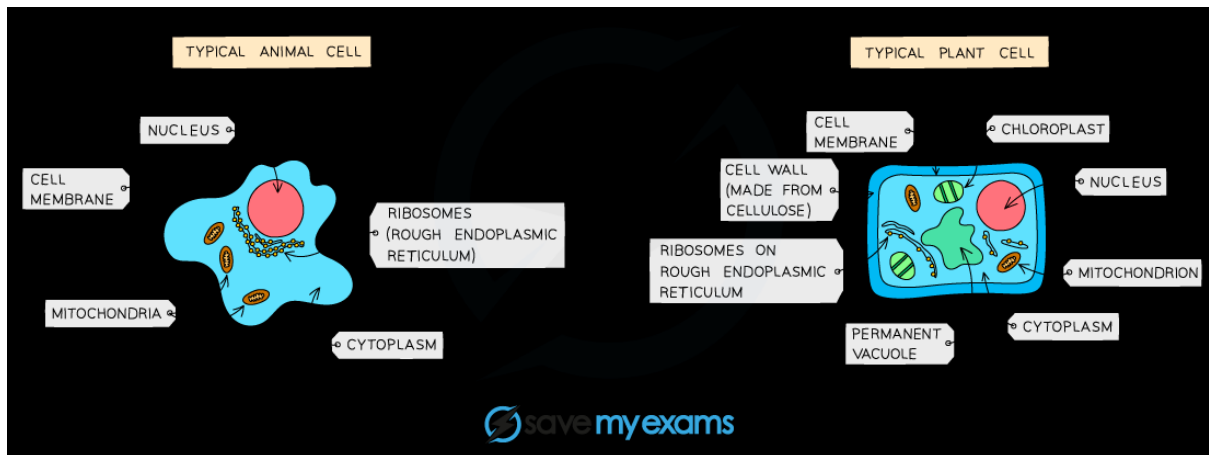
CIRCULAR LOOP
OF DNA



CYTOPLASM

PLASMID

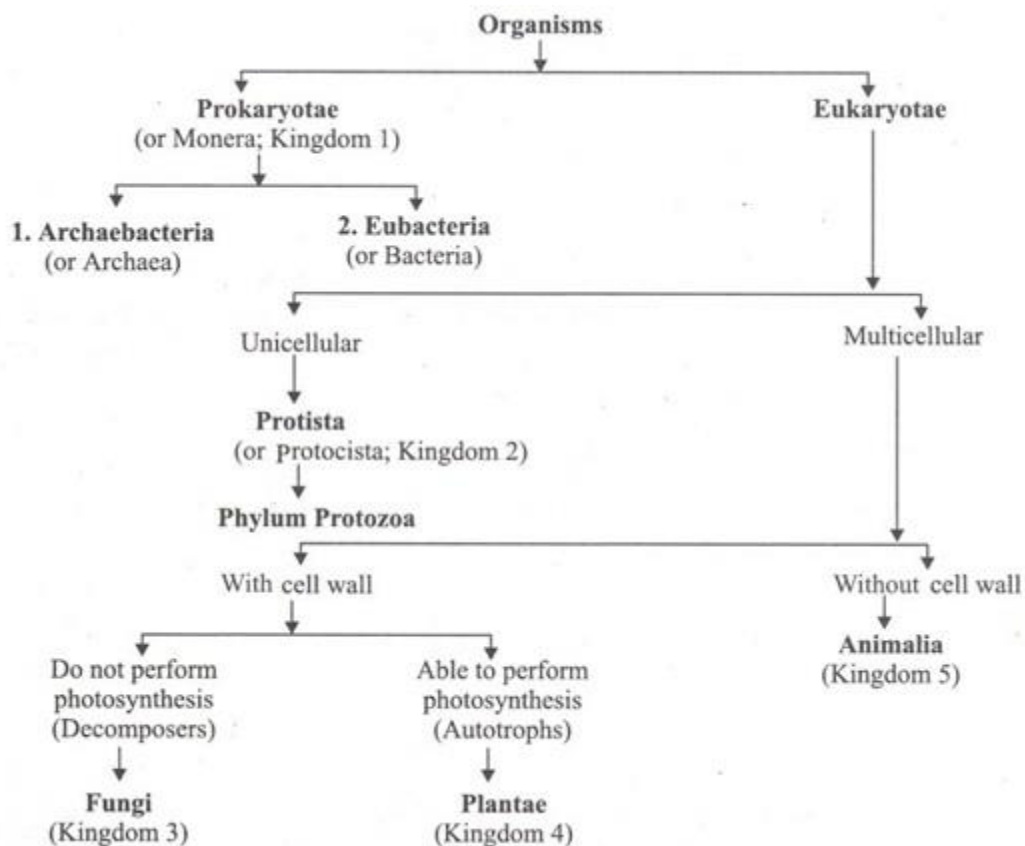
RIBOSOMES



The Five Kingdoms

The first division of living things in the classification system is to put them into one of **five kingdoms**. They are:

- **Animals**
- **Plants**
- **Fungi**
- **Protoctists**
- **Prokaryotes**



Main features of all animals:

- They are **multicellular**
- Their cells contain a **nucleus** but **no cell walls** or **chloroplasts**
- They feed on organic substances **made by other living things**

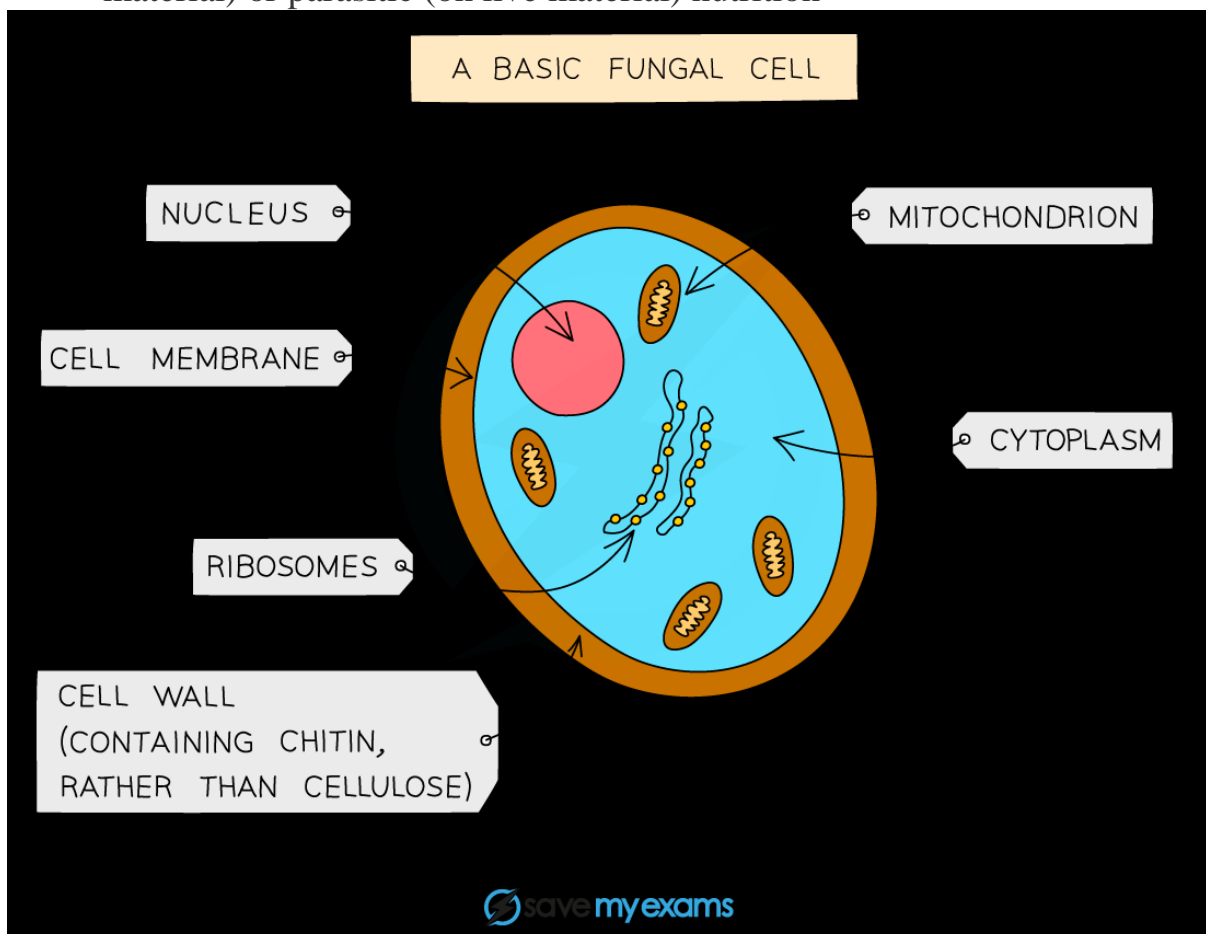
Main features of all plants:

- They are **multicellular**
- Their cells contain a **nucleus, chloroplasts** and **cellulose cell walls**
- They all feed by **photosynthesis**

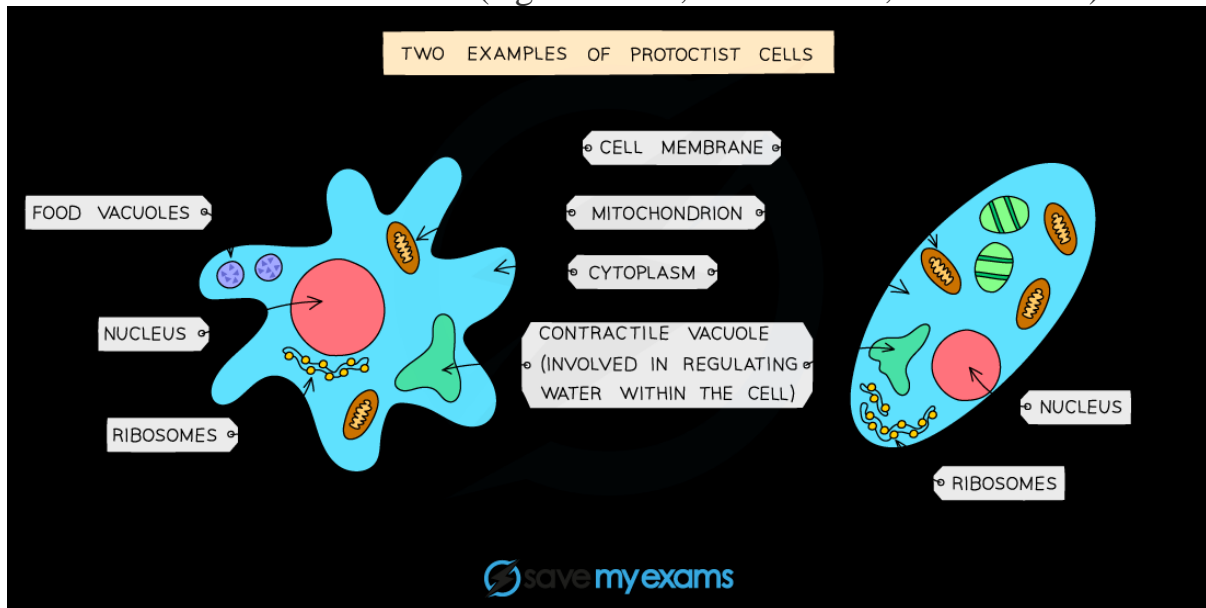
Fungi, Protoctists & Prokaryotes

Main features of all fungi (e.g. moulds, mushrooms, yeast)

- usually multicellular
- cells have nuclei and cell walls not made from cellulose but of chitin
- do not photosynthesize but feed by saprophytic (on dead or decaying material) or parasitic (on live material) nutrition



Main features of all Protoctists (e.g. Amoeba, Paramecium, Plasmodium)



Most are unicellular but some are multicellular

All have a nucleus, some may have cell walls and chloroplasts

This means that some protoctists photosynthesise and some feed on organic substances made by other living things

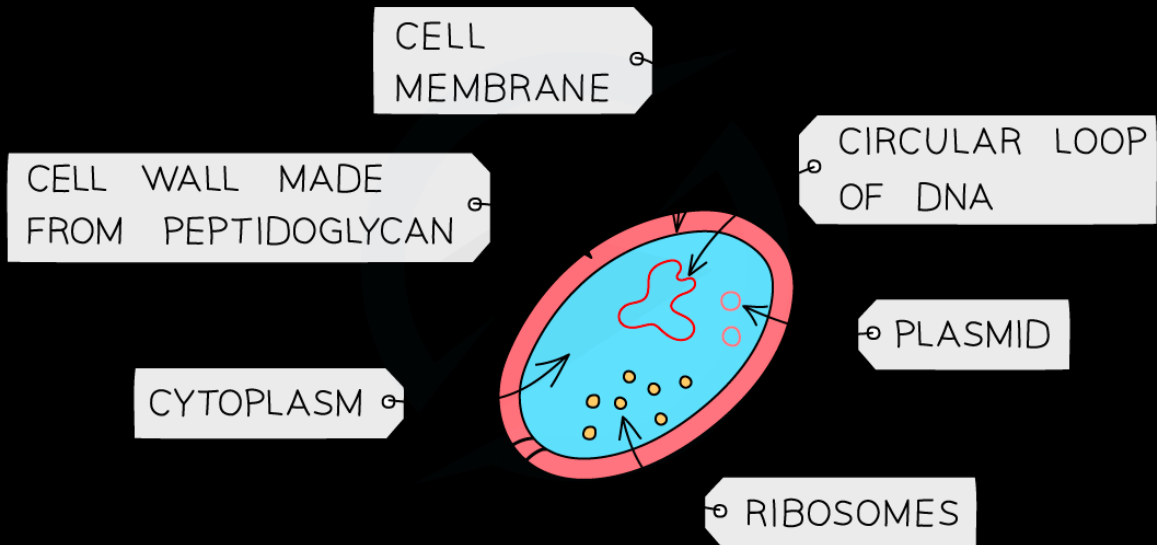
Main features of all Prokaryotes (bacteria, blue-green algae)

Kingdom Monera

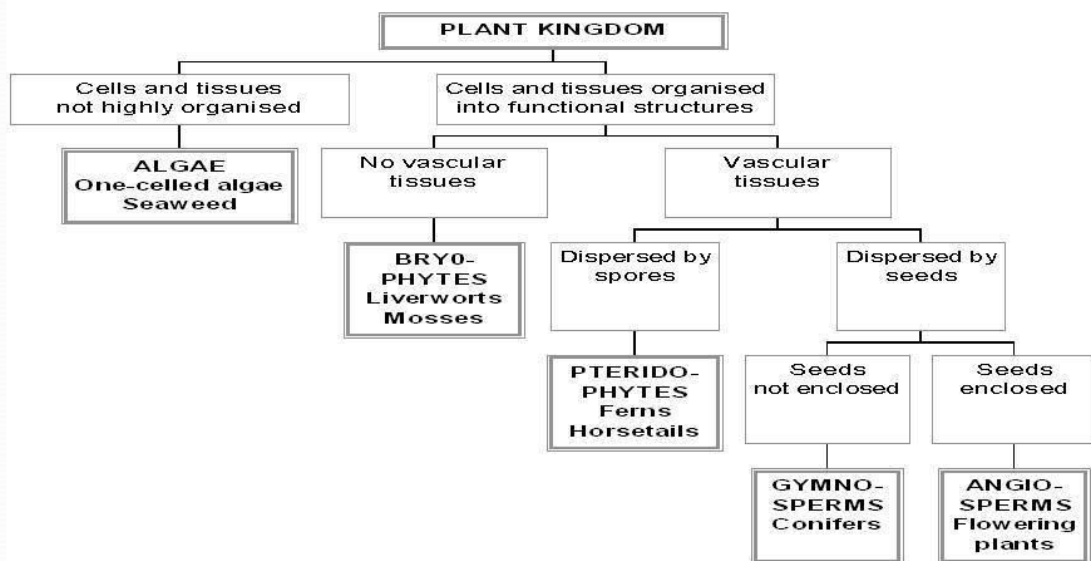
They are often unicellular

Their cells have cell walls (not made of cellulose) PEPTIDOGLYCON and cytoplasm but no nucleus or mitochondria

TYPICAL BACTERIAL CELL



Plant Classification



8 Which kingdoms contain organisms with:

a many cells

b nuclei in their cells

c cell walls

d hyphae

e chloroplasts?