Classification of Living Organism

Taxonomy

Biological classification is putting organisms into groups. This is part of Scientific Taxonomy. Classification is the arrangement of different related organism groups put into different groups. The classification system starts with a group with a wide variety of organisms and becoming more selective as the groups get more specific. Carl Linnaeus classified organism by shared characteristics.

UNIT OF CLASSIFICATION

- Species
- Genera
- Families
- Order
- Class
- Phylum

2) Basis of classification of living organisms :-

The main characteristics which are considered for classification of living organisms into different groups are :-

- Whether they are made of prokaryotic or eukaryotic cells.
- Whether the cells occur singly or they are grouped together and live as an indivisible group.
- Whether they produce their own food by photosynthesis or get their food from outside.
- Of the organisms which produce their own food (plants) what is the level of organisation of their body ?
- Of the animals what is the level of organisation of their body and what are their special organs and their functions ?

The characteristics used for classification of plants will be different from the characteristics used for classification of animals because plants make their own food and animals get their food from outside.

Basis for Classification:

- 1. Comparative Anatomy (Structure)
  - Compares Physical ex: Homologous Structures, Traits
- 2. Biochemistry –
  - ex: DNA and RNA
- 3. Embryology –
  - Comparing Developing Embryos
- 4. Molecular Basis –
  - ex: Cellular Structure
- 5. Phylogeny
  - Related Organisms with common ancestors
  - ex: Derived Characteristics

HISTORY

- Aristotle gave the first but crude classification.
- Carolus Linnaeus in the 18th century gave the first basis of modern classification. He divided organisms into 2 kingdoms : PLANTAE [Plant Kingdom] and ANIMALIA [animal kingdom] because he could see only these .
- Ernst Haeckel , a german zoologist , further added one more kingdom PROTISTA which included all unicellular organisms.

Whittaker based his classification on 4 factors namely :

1. Cellular structure- whether the organism is Prokaryotic or Eukaryotic.
2. Cellular organization- whether the organism is Unicellular or Multicellular. In multicellular organisms what is the level of organization.
3. Mode of source of nutrition- whether the organism is Autotrophic or Heterotrophic.
4. Phylogenetic relationships- phylogeny means evolutionary history of a species.

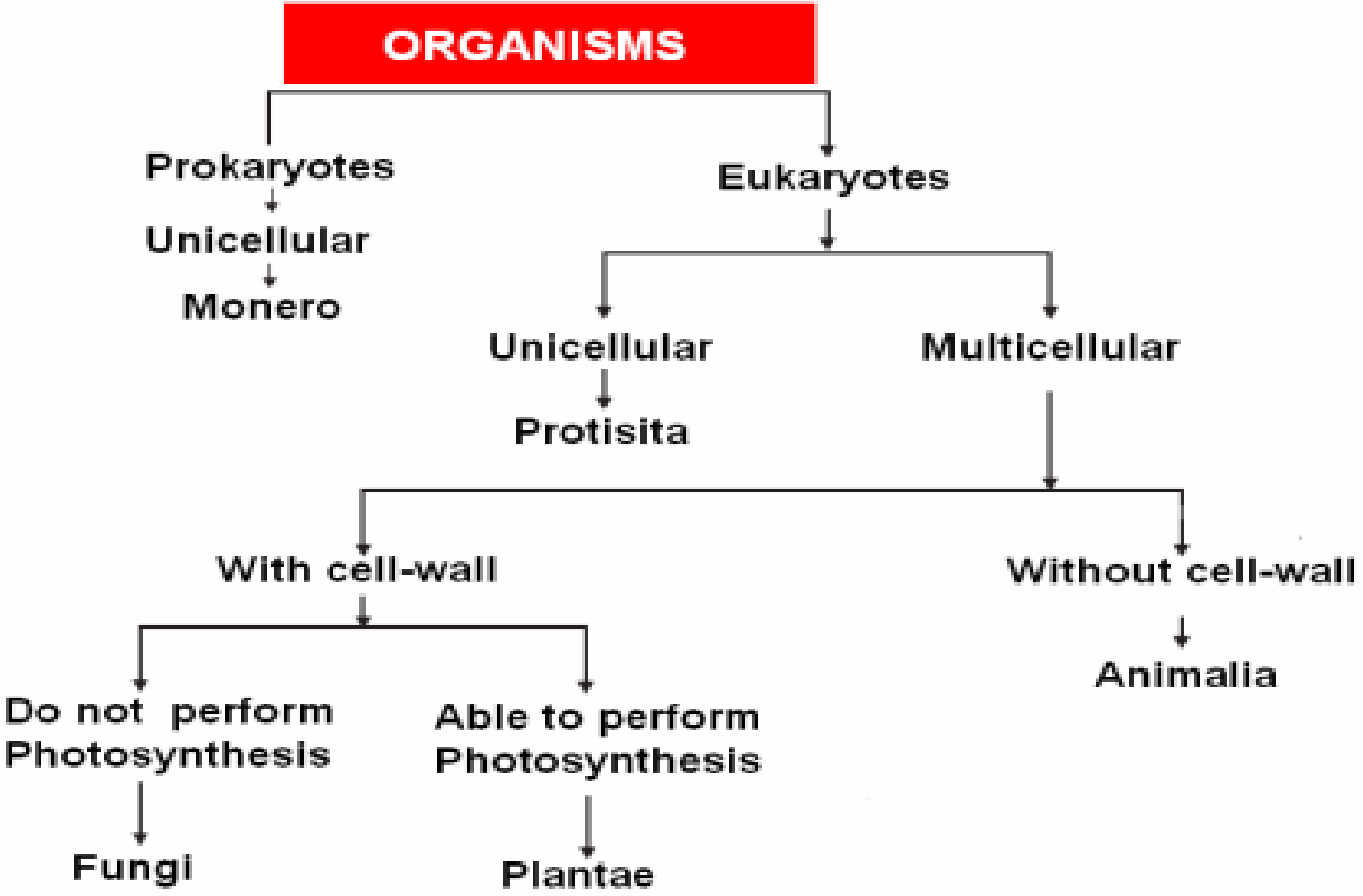
BINOMIAL NOMENCLATURE

- It is based on two name.

1. Generic name(start with capital letter)
2. Species name(small letter)

- Scientific name written in italic form
- e.g.Scientific name of mustard is *Brassica campestris or Brassica campestris*

Major Groups Of Living Organisms



Classification of Organisms into five Kingdoms

KINGDOM MONERA

1. 1 cell
   No true nucleus - prokaryote (genetic material scattered and not enclosed by a membrane).
2. some move (flagellum)and others don't move.
3. Some make their own food (autotrophic); others can't make their own food (heterotrophic).

examples - bacteria, blue-green bacteria (cyanobacteria)

KINGDOM PROTIST

1 Single cell and multicellular.
2.have a true nucleus - eukaryote

3.some move (cilia, flagella, pseudopodia); others don't move.

4.some are autotrophic and others are heterotrophic.

There are three different type of things that are called Protists: protozoans, algae, and molds.

- PROTOZOANS are animal-like and are classified by how they move. They are also heterotrophs and a single-celled organism.
- ALGAE are plant-like and are classified by their color. They are also autotrophs and both single-celled and multi-cell organism.
- MOLD is fingus-like and decompose organic material. They get their nutrition from dead organisms. It is both single-celled and multi-celled organism. They are heterotrophic.

examples - amoeba, diatom, euglena, paramecium, some algae (unicellular), etc

KINGDOM FUNGI

- Multicellular
- Eukaryotes
- Heterotrophic by absorbtion

KINGDOM PLANTAE

- Multicellular
- Eukaryotes
- autotrophic

KINGDOM ANIMALIA

- Multicellular
- Eukaryotes
- Hetrotrophic