MUSEUM COLLECTION

PROTOZOA

Specimens & Permanent slides

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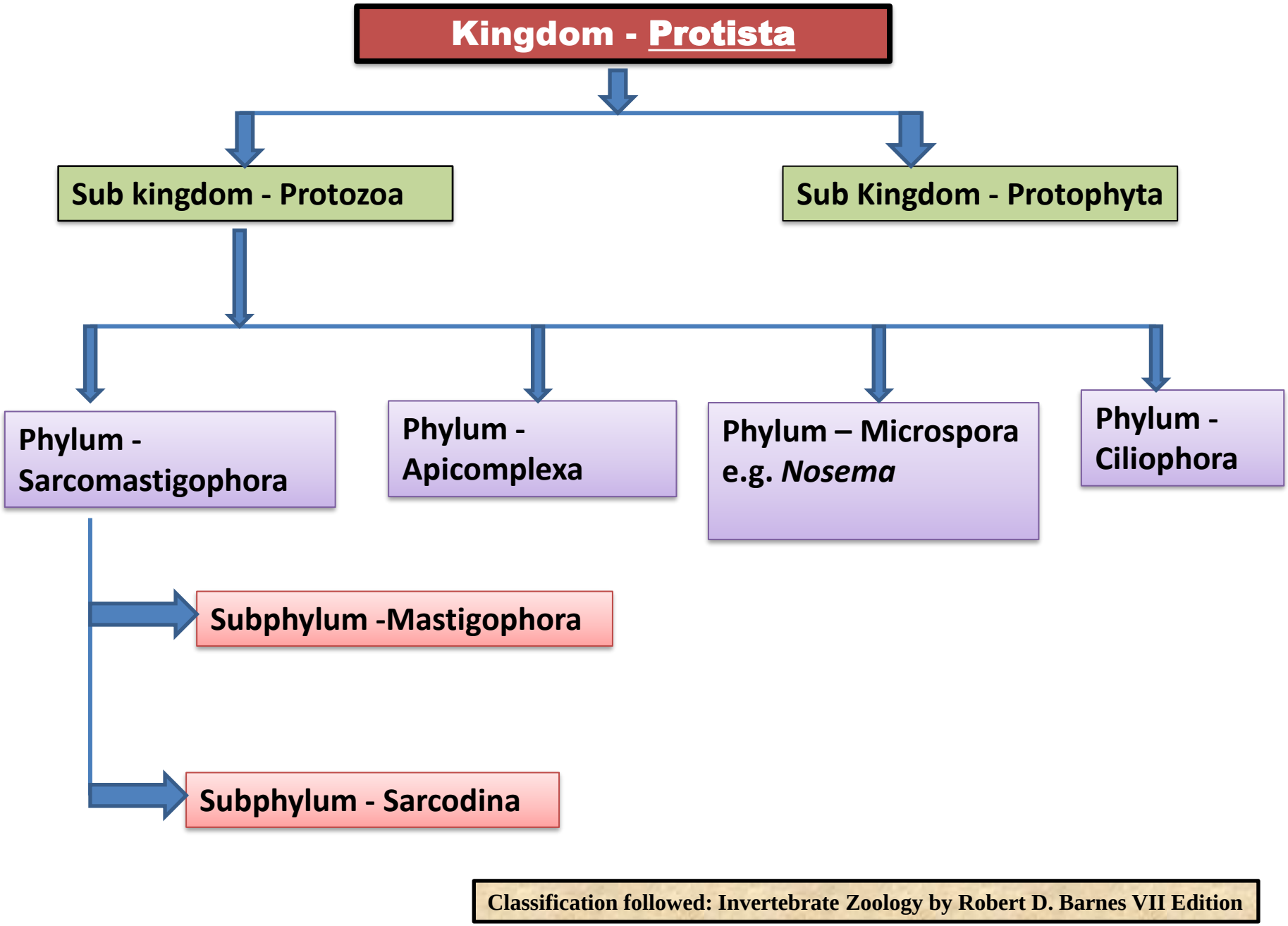
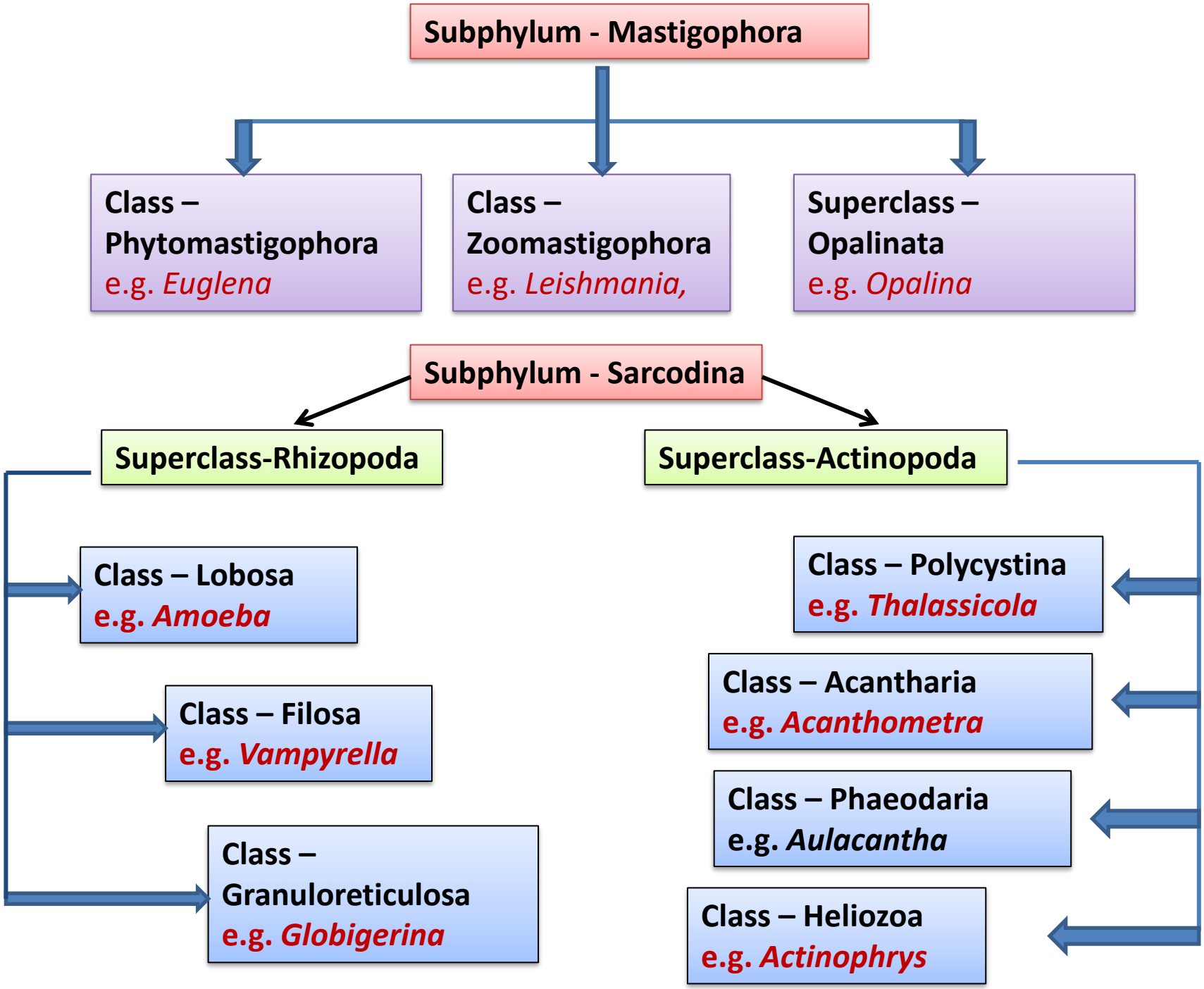
Protozoa

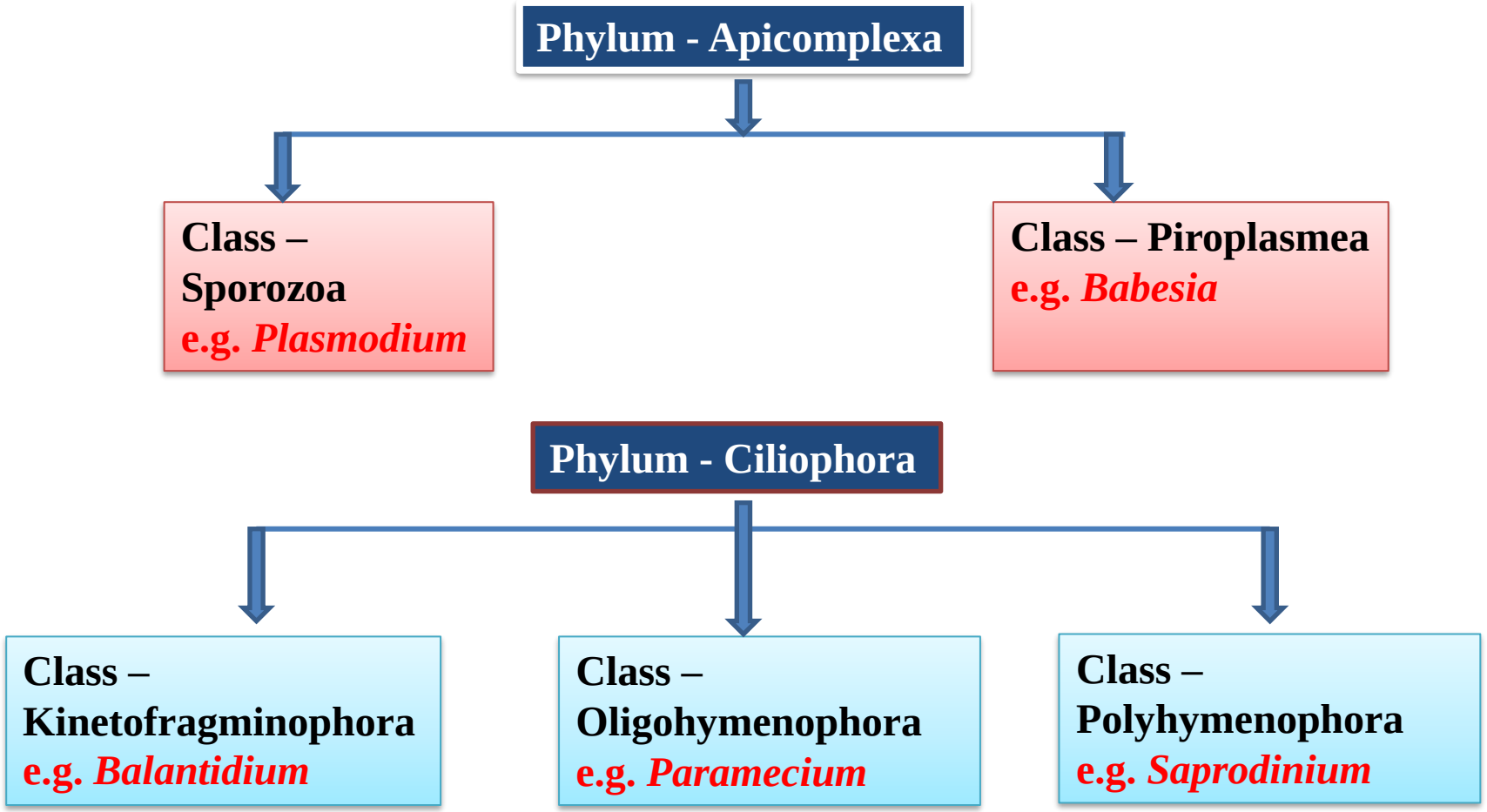
Characteristic features

1. Small, usually microscopic animalcules, ordinarily not visible without a microscope.
2. Simplest and most primitive one, with protoplasmic grade of organisation.
3. Body unicellular, containing one or more nuclei which are monomorphic or dimorphic.
4. Solitary or colonial.
5. Body symmetry none, bilateral, radial or spherical.
6. Body is covered by plasmalemma or pellicle or cyst.
7. Locomotor organelles are finger like pseudopodia or whip like flagella or hair like cilia or absent.
8. Nutrition holozoic (animal like) holophytic (plant like), saprophytic or parasitic.
9. Respiration and excretion is generally through surface or through contractile vacuole which serve mainly for osmoregulation.
10. Reproduction asexual by binary or multiple fission and budding and sexual by conjugation of adults or by fusion of gametes.
11. Encystment commonly occurs to help in dispersal as well as to resist unfavorable condition of food, temperature and moisture.



Classification followed: Invertebrate Zoology by Robert D. Barnes VII Edition


Subphylum - Mastigophora
Class – Phytomastigophora
e.g. Euglena
Class – Zoomastigophora
e.g. Leishmania,
Superclass – Opalinata
e.g. Opalina
Subphylum - Sarcodina
Superclass-Rhizopoda
Superclass-Actinopoda
Class – Lobosa
e.g. Amoeba
Class – Filosa
e.g. Vampyrella
Class – Granuloreticulosa
e.g. Globigerina
Class – Polycystina
e.g. Thalassicola
Class – Acantharia
e.g. Acanthometra
Class – Phaeodaria
e.g. Aulacantha
Class – Heliozoa
e.g. Actinophrys



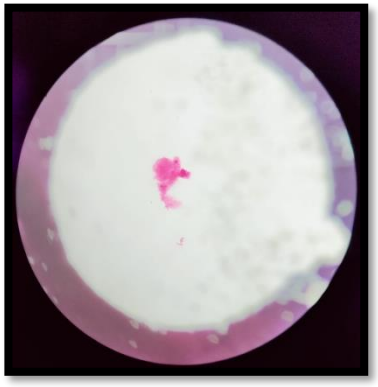
Classification followed: Invertebrate Zoology by Robert D. Barnes VII Edition

AMOEBA

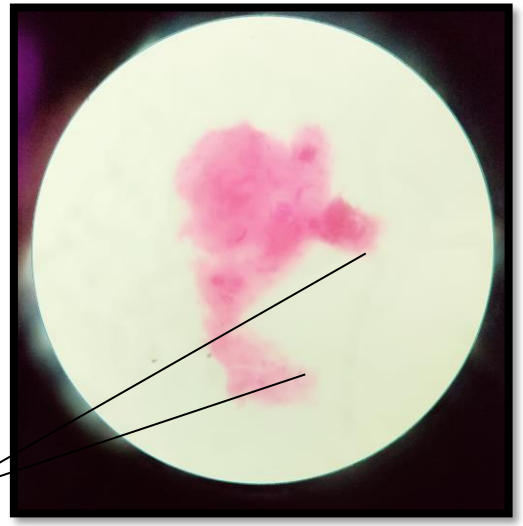
Geographical distribution: Cosmopolitan in distribution, it found on decaying bottom vegetation of freshwater streams and ponds

Scientific Classification

Kingdom: Protista (microscopic and unicellular**)**
Sub-kingdom: Protozoa (non-phototrophic, unicellular, eukaryotic microorganisms with no cell walls**)**
Phylum: Sarcomastigophora (unicellular or colonial, autotrophic, or heterotrophic**)**
Subphylum - Sarcodina (move by cytoplasmic flow or by pseudopods)
Class: Lobosa (irregular pseudopodia)
Genus: Amoeba



(Microscopic view at 4X)

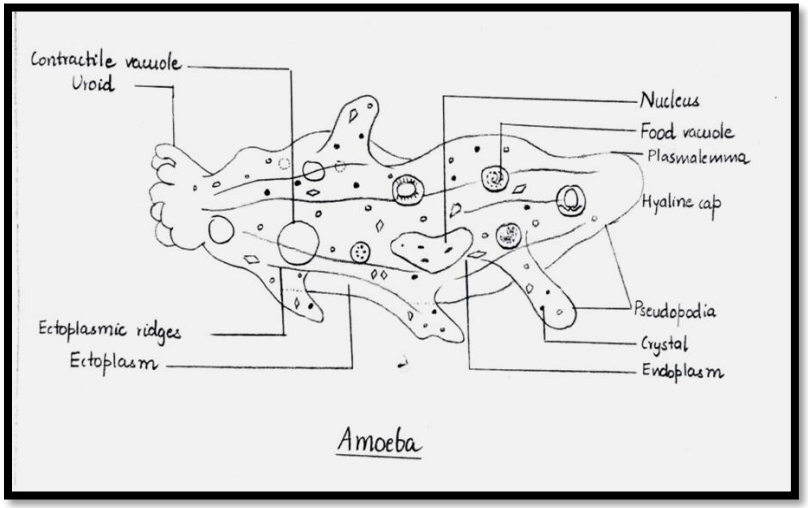


(Microscopic view at 10X)

AMOEBA

Characteristic features

1. Unicellular, irregular shape with pseudopodia
2. Found all over the world
3. Looks like whitish mass of irregular shape with translucent protoplasm
4. Cytoplasm differentiated in ecto and endoplasm
5. Body covered with plasmalemma
6. Endoplasm contains nucleus, food vacule, contractile vacule, water globules and crystral
7. Nutrition: holozoic
8. Reproduction: fission and encystment

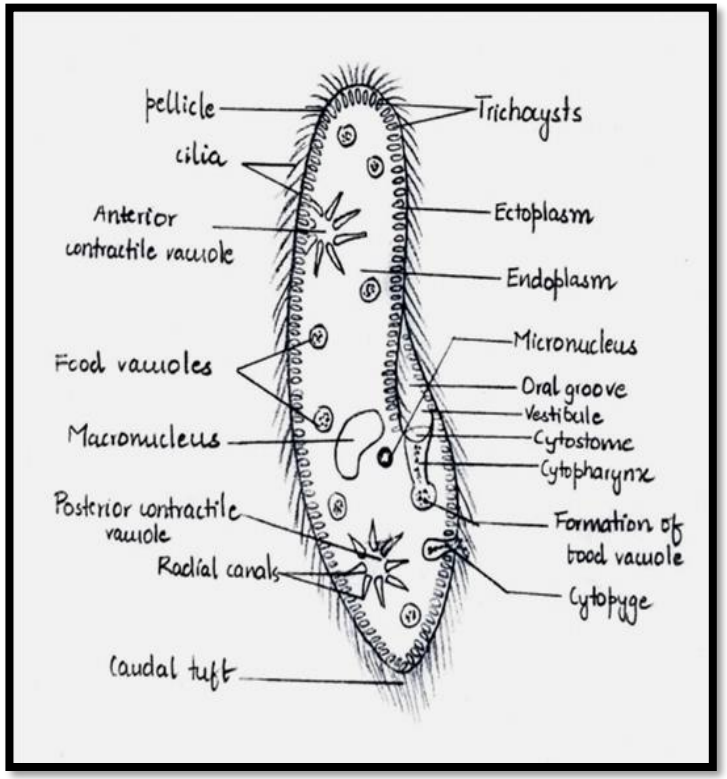


Amoeba

PARAMECIUM

Characteristic features

1. Unicellular and ciliated organism
2. Called as **SLIPPER ANIMALCULE**, being slipper shaped or cigar shaped
3. Anterior end is blunt and posterior end is pointed
4. Body is covered with cilia
5. Ectoplasm has myonemes and rod shaped trichocysts
6. Endoplasm has food vacuole, micronucleus, meganucleus, anterior and posterior contractile vacuole, fat and glycogen.

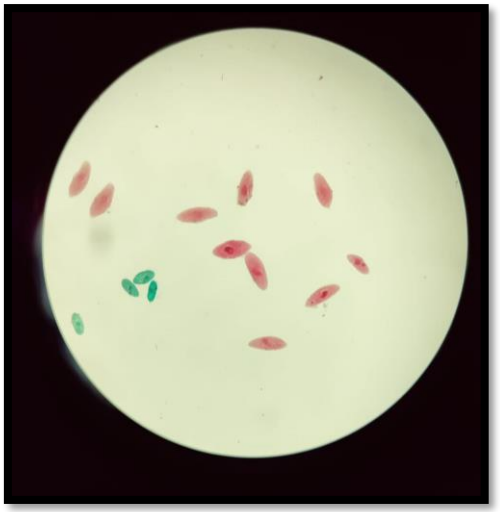


PARAMECIUM

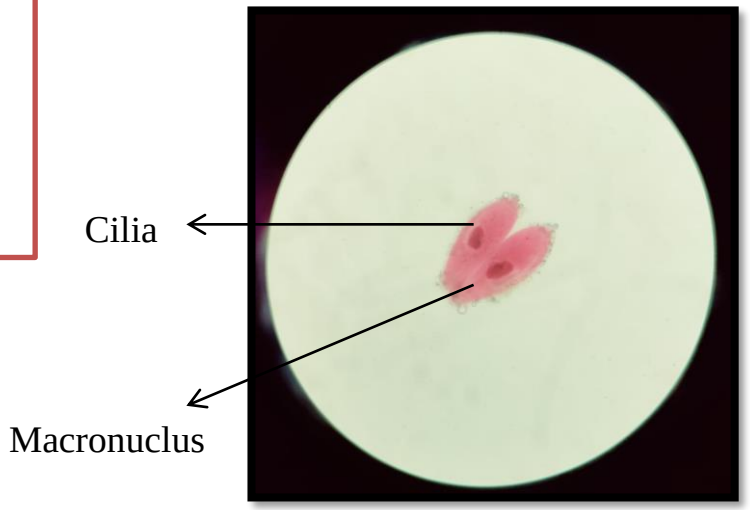
Geographical Distribution: It has a worldwide distribution. It usually lives in the stagnant water of pools, lakes, ditches, ponds, freshwater and slow flowing water that is rich in decaying organic matter

Scientific Classification

Kingdom: Protista (microscopic and unicellular**)**
Sub kingdom: Protozoa (non-phototrophic, unicellular, eukaryotic microorganisms with no cell walls**)**
Phylum: Ciliophora (presence of cilia)
Class: Oligohymenophora (a ventral groove containing the mouth and distinct oral cilia,**)**
Genus: Paramecium



4X microscopic view



10X microscopic view

Conjugation

1. Sexual mode of reproduction
2. Two individual come in contact and unite by their grooves.
3. Pellicle between two forms disintegrates
4. Joined Swimming form called as CONJUGANTS or GAMETOCYTES
5. In each conjugants **macromolecules** disappears and **micromolecule** divide twice forming 4 haploid daughter micronuclei
6. 3 daughter micronuclei disintegrate and 4th one divide into 2 unequal daughter
7. Pronucleus:
8. Active potential male migratory (smaller) & Stationary female pronucleus (larger)
9. Male migratory pronucleus moves through the protoplasmic bridge into other conjugant and fuses with stationary female nucleus
10. Zygote is dipoid and called as SYNKARYON or AMPHINUCLEUS
11. Nuclear division continues
12. 4 adult paramecium form

CONJUGATION IN PARAMOECIUM