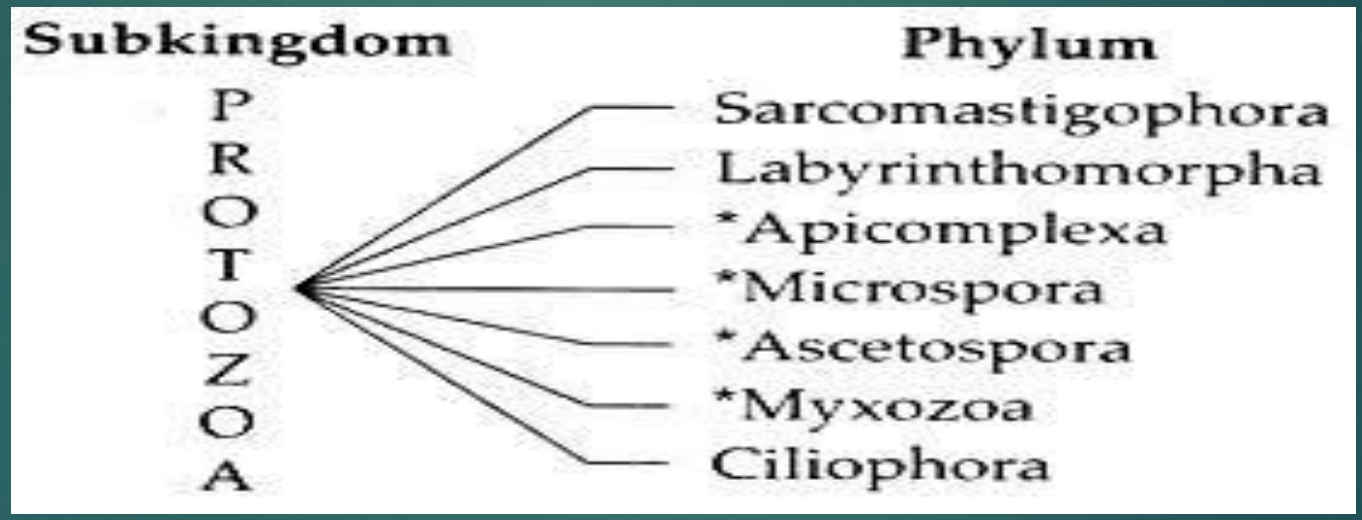

بسم الله الرحمن الرحيم

ANIMAL-LIKE PROTISTS

THE PROTOZOA

Classification Of Protozoa

- There are 7 phylums in Sub-Kingdom Protozoa:



Phylum Sarcomastigophora

INSHA ISLAM

PHYLUM SARCOMASTIGOPHORA

General Characteristics:

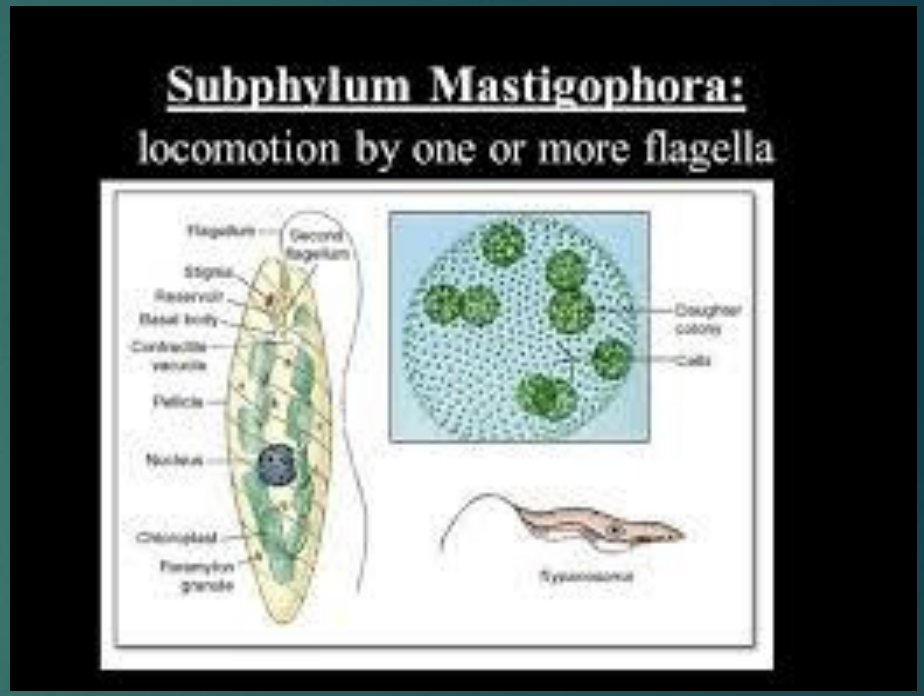
- Possesses flagella, pseudopodia or both for locomotion.
- Largest protozoan phylum.
- 18000 described species.
- Unicellular or colonial.
- Autotrophic, saprozoic or heterotrophic mode of nutrition.
- Single type of nucleus.
- Asexual and sexual reproduction but sexual reproduction is common

Classification Of Phylum Sarcomastigophora

Sub-Phylum Mastigophora	Sub-Phylum Sarcodina	Sub-Phylum Opalinata
➢ Class Phytomastigophora ➢ Class Zoomastigophora	➢ Superclass Rhizopoda ➢ Superclass Actinopoda	

Sub-Phylum Mastigophora

- Flagellar locomotion.
- Two-dimensional whip-like or helical movements.
- Push or pull the protozoan through aquatic medium.



Class phytomastigophora

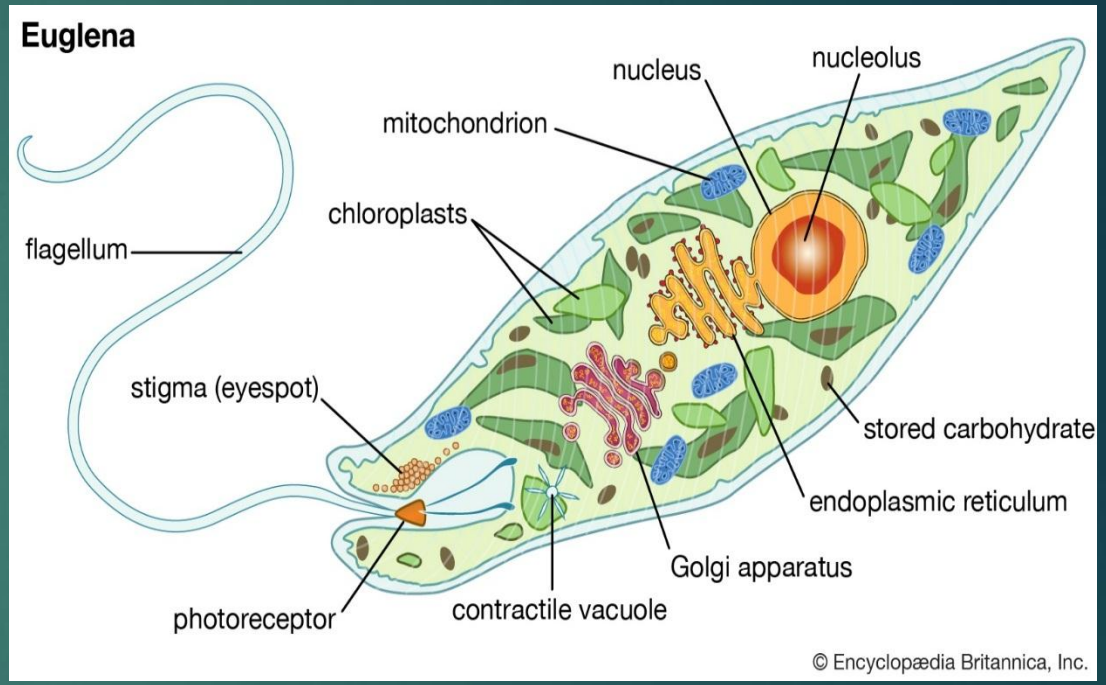
- Flagellated plant-like protists.
- Possesses chloroplasts.
- Autotrophic or heterotrophic.
- Type Examples:
  - Dinoflagellates.
  - Euglena.
  - Volvox.

Dinoflagellates

- Two flagellum; one is transverse and the other is trailing flagellum.
- Second largest producers.
- Xanthophyll in addition to chlorophyll pigment.
- Red tides(water blooms).

Euglena

- Chloroplast having pyrenoid
- Autotrophic in light
- Heterotrophic in dark
- Photoreceptor (stigma)
- Reproduction by asexually



Volvox

- Colonial flagellate.
- Reproduction.

i. Asexual.

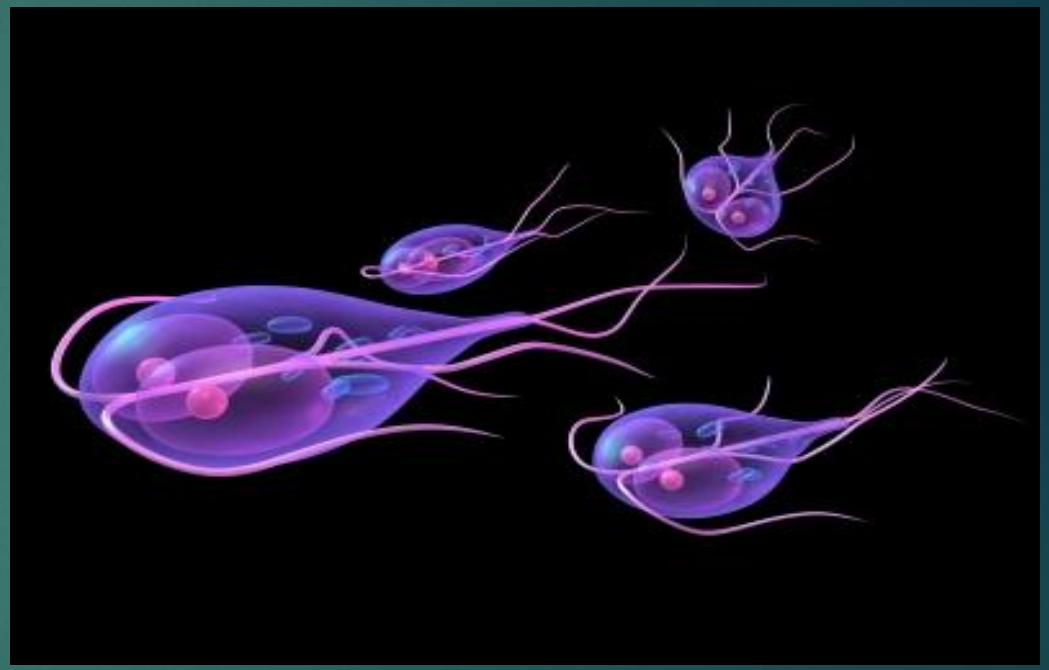
ii. Sexual(microgametes and macrogametes).

Class zoomastigophora

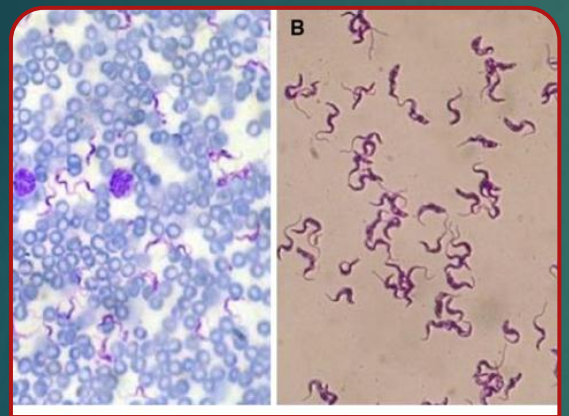
MUSSARAT FAREED

Class zoomastigophora

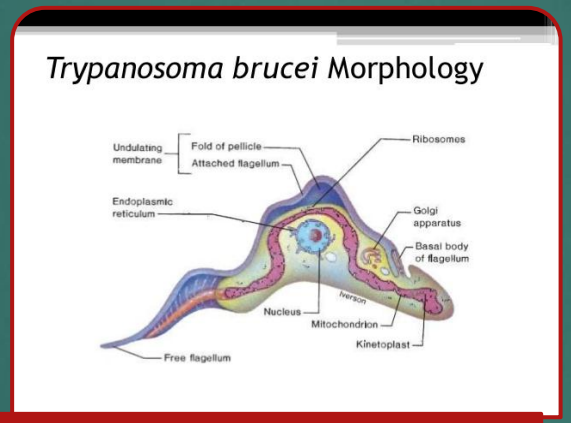
- Lack chloroplast
- Heterotrophic
- Parasites of humans
- Colorless flagellates protozoans
- Type examples: Trypanosoma



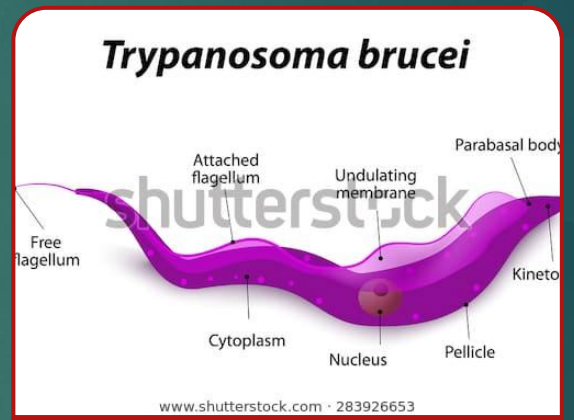
Trypanosoma brucei subspecies



T.B gambiense

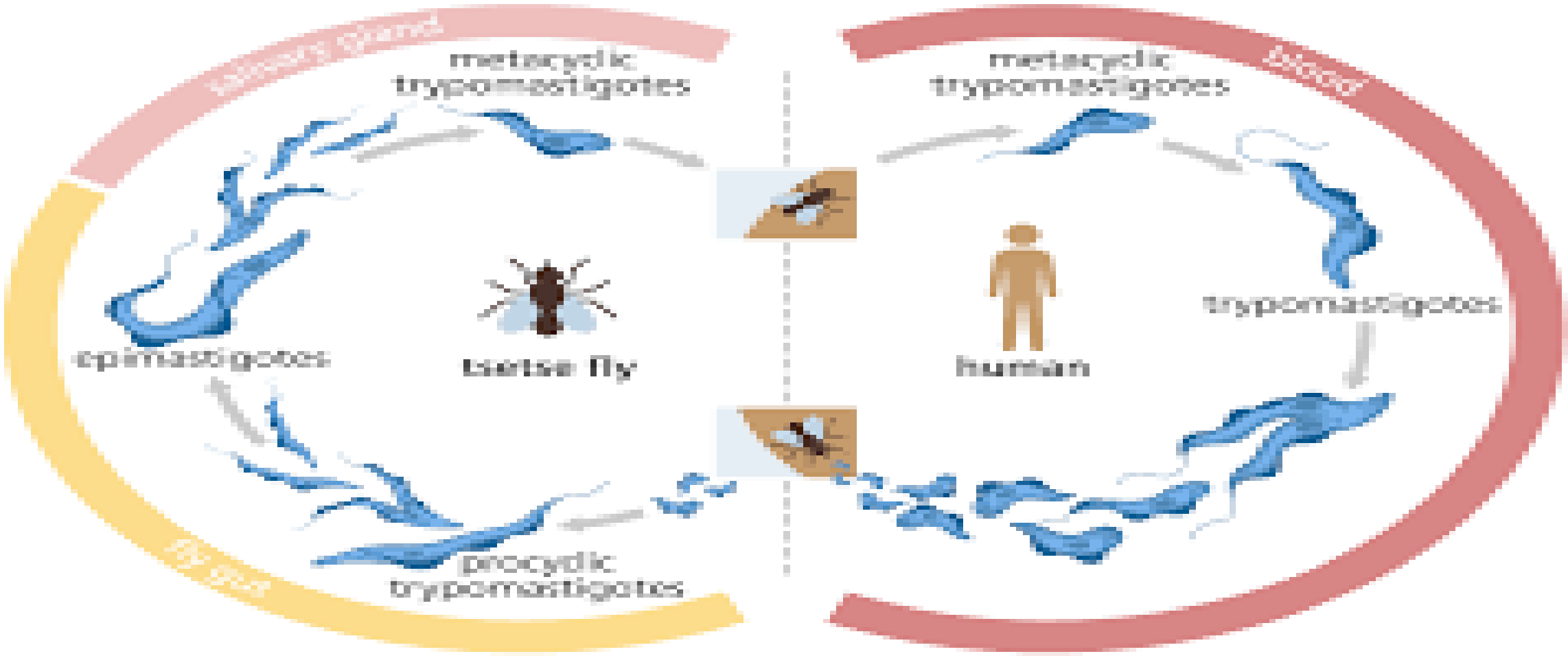


T.B. brucei



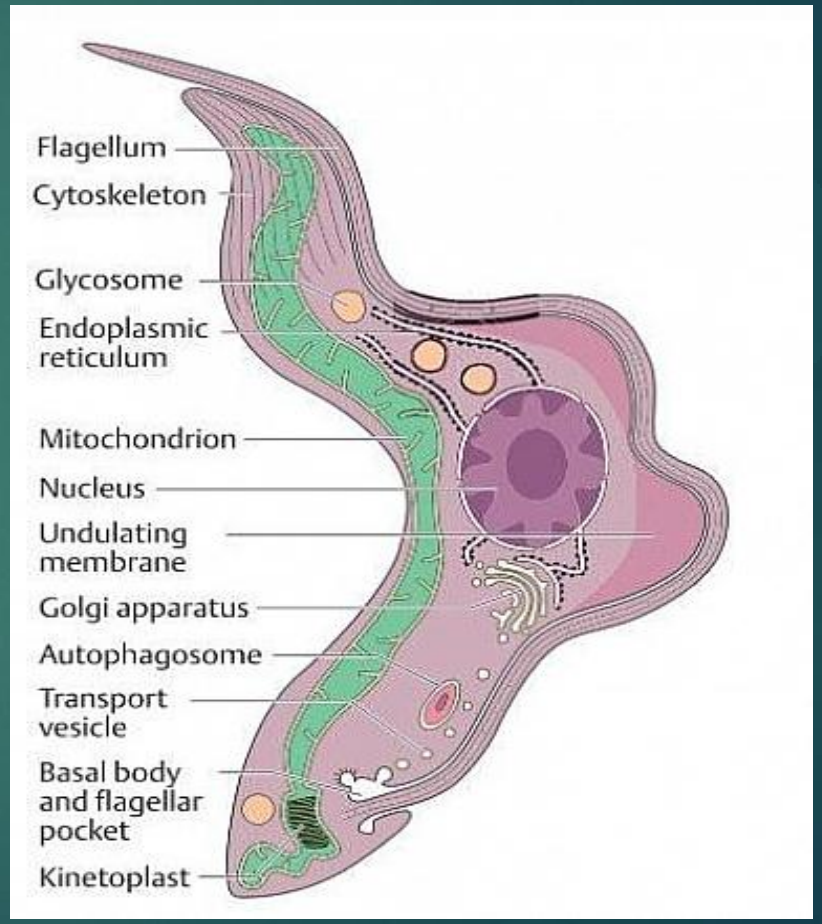
T.B. rhodesiense

Life cycle of trypanosoma



Trypanosoma brucei life cycle

- Cause sleeping sickness in African
- Tsetse fly bite infacted human
- Took trypanosoma parasite
- Asexually multiply in gut of fly
- For 10 days
- Transform salivery gland
- Bite vertebrate host
- Multiply asexually in new host
- Causes serious symptoms
- Again tsetse fly bite

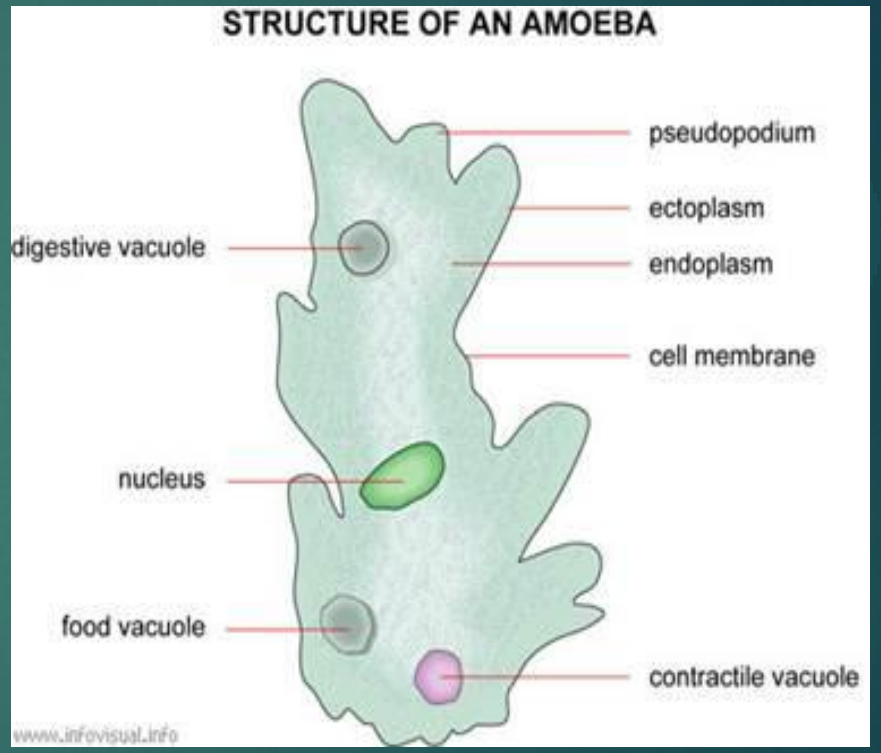


Sub-phylum sarcodina

- Pseudopodia and Amoeboid locomotion.
- Locomotion and feeding by pseudopodia
- False feet

Types of pseudopodia

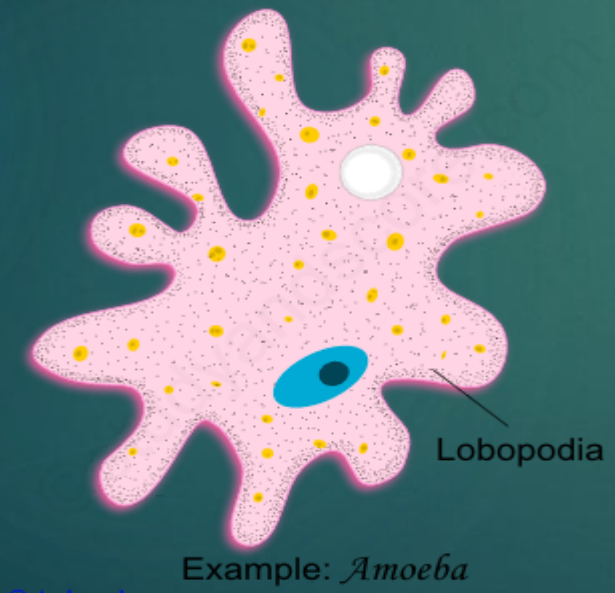
a) Lobopodia
b) Filopodia
c) Reticulopodia
d) Axopodia



Types of Pseudopodia

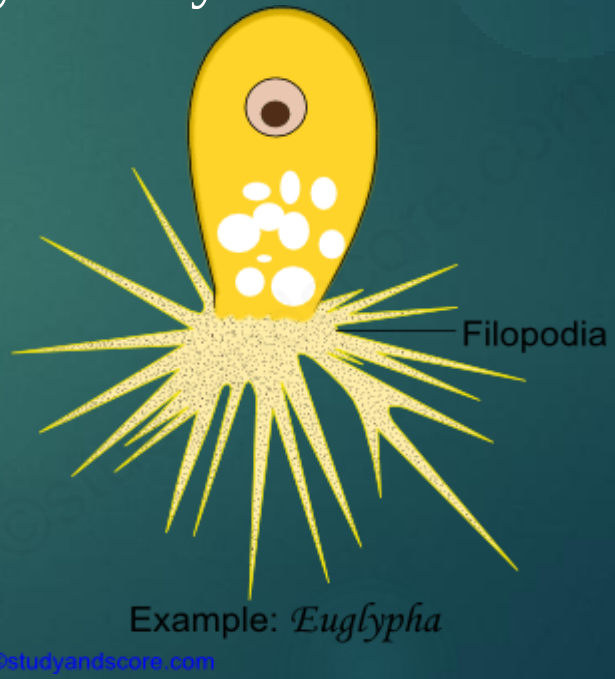
Lobopodia

- Pocesses ectoplasm and endoploasm



Filopodia

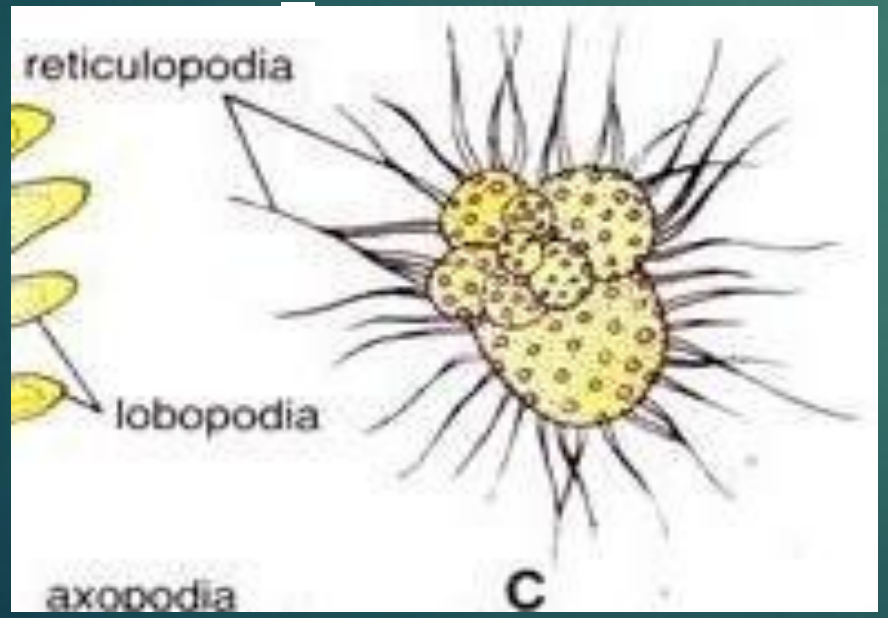
- Containing ectoplasm only
- Feeding by conveyor belt fashion



Types of Pseudopodia

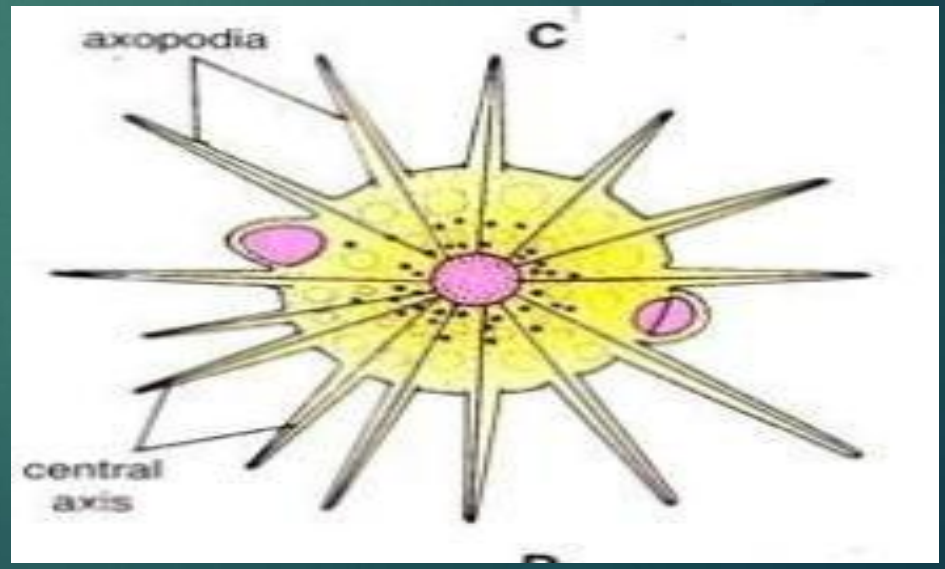
Reticulopodia

- Branched & rejoin.
- Net_ like extensions.



Axopodia

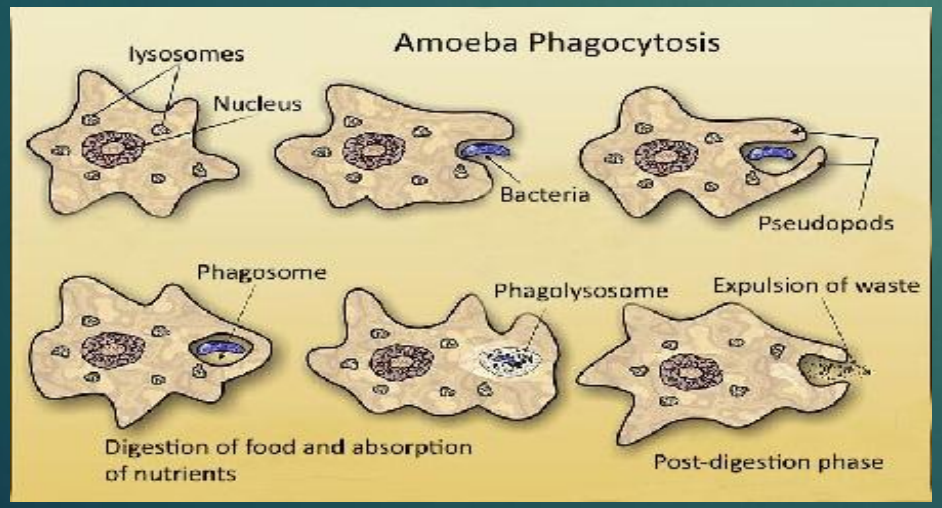
- Supported by central axis.
- Adhesive & moveable.



Superclass Rhizopodia
Class Lobosea

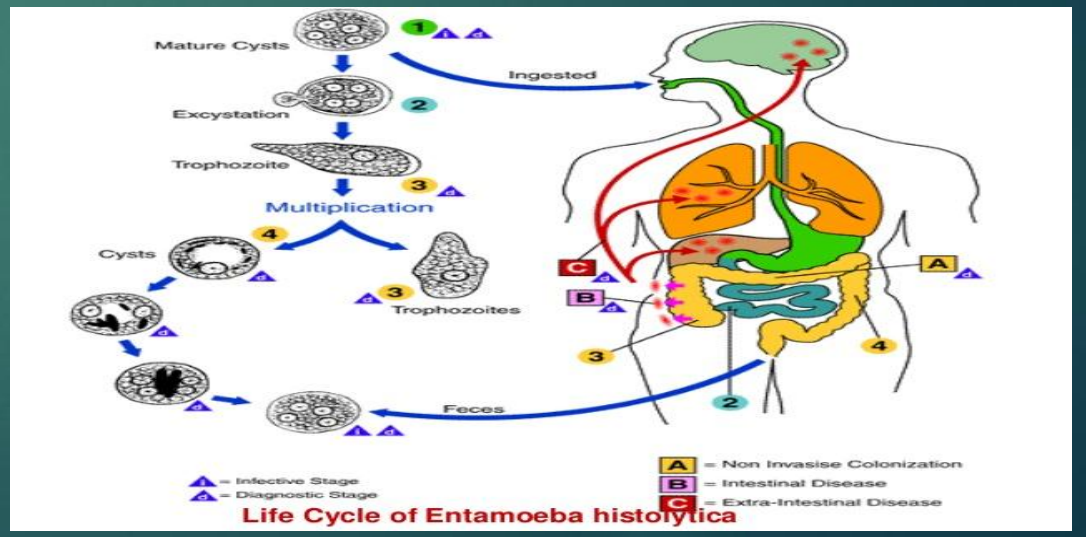
Amoeba

- Naked .
- Feeding by phagocytosis.
- Binary fission.



Entamoeba histolytica

- Causes dysentery.
- inflammation & ulceration.
- In lower intestine



Phylum Apicomplexa

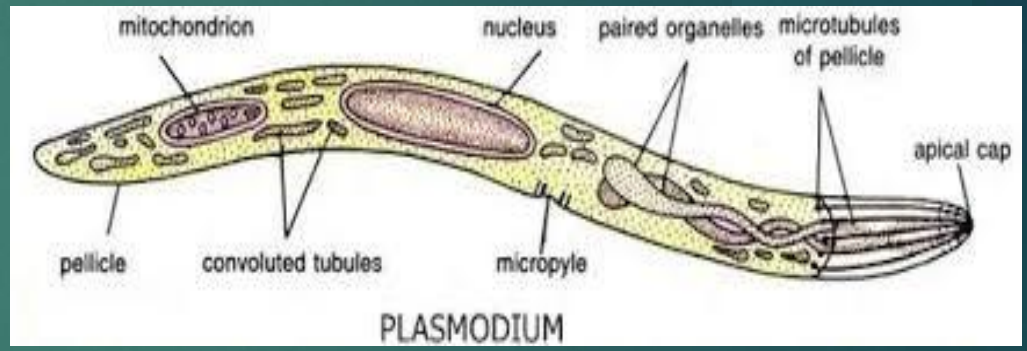
NIMRA SALEEM

PHYLUM APICOMPLEXA

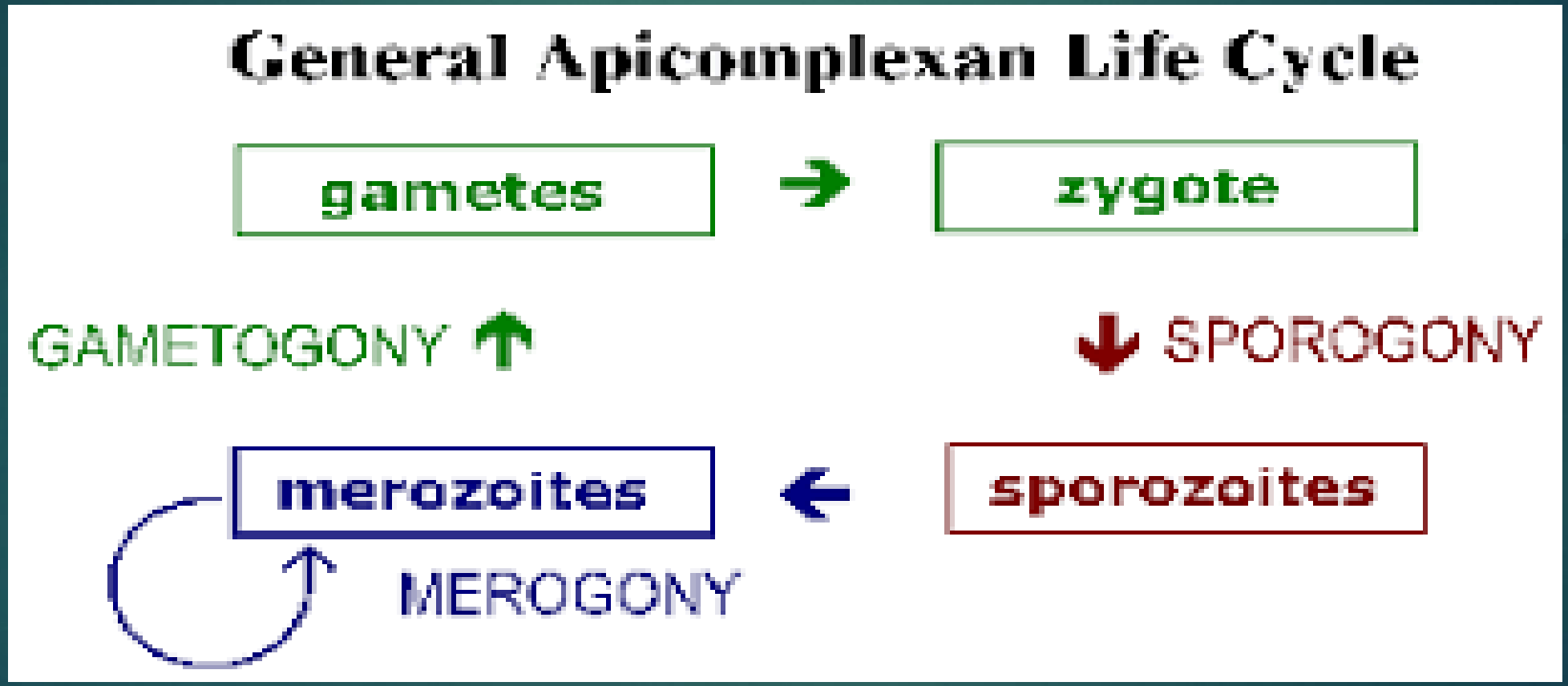
- Parasitic mode of nutrition.
- Apical complex for penetrating the host cells.
- Single type of nucleus.
- No cilia or flagella; except in certain reproductive stages.
- Life cycle involves ASEXUAL (Schizogony, sporogony) and SEXUAL (Gametogony) phases.

Class Sporozoea

- Class name derived from a resistant spore or oocyst.
- Mostly intracellular parasites.
- Cause a variety of diseases in domestic animals and humans.
- Involves sexual reproduction.
- Type Examples:
  - Plasmodium
  - Coccidian
  - Cryptosporidium
  - Toxoplasma

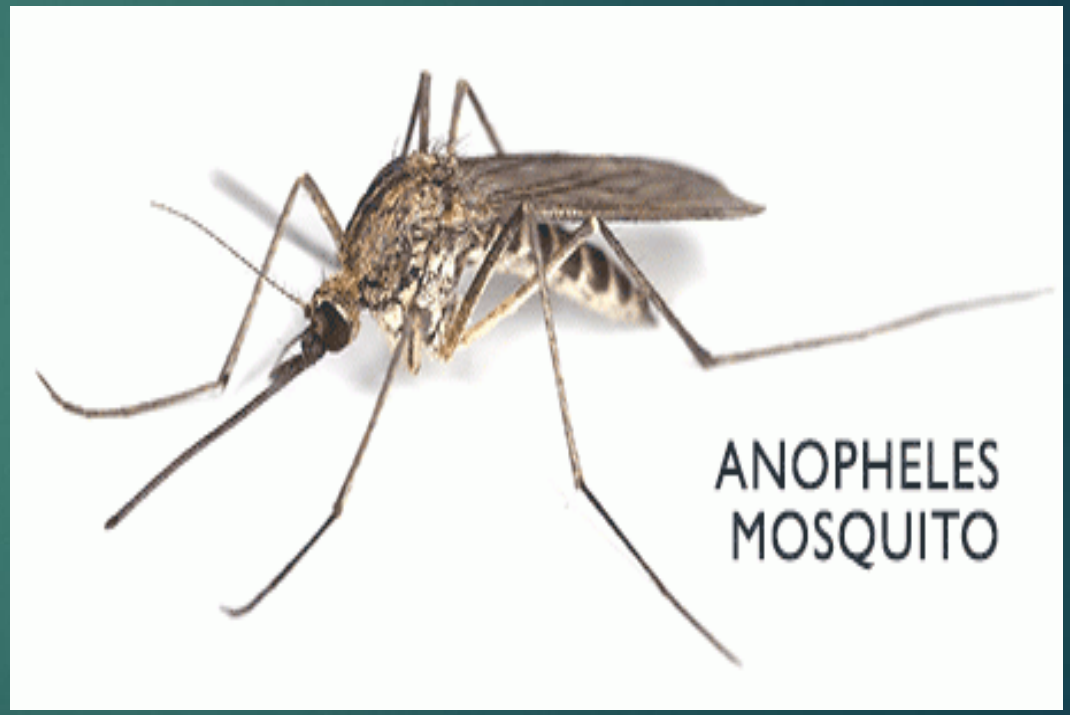


Generalized Life Cycle Of Apicomplexans

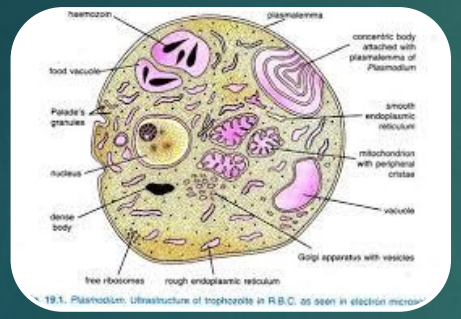


Plasmodium

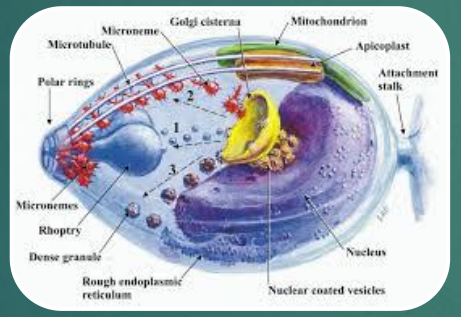
- Causes malaria in humans (*Anopheles* mosquito as vector)
- Possesses long history during crusades period.
- Life cycle involves vertebrates and mosquito as the hosts.



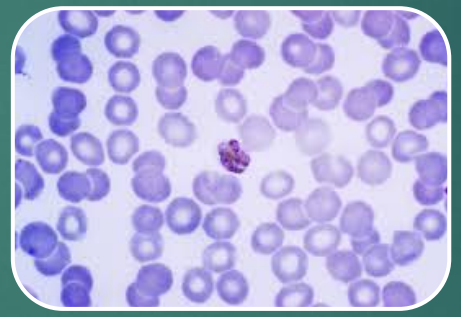
Common Species of Plasmodium



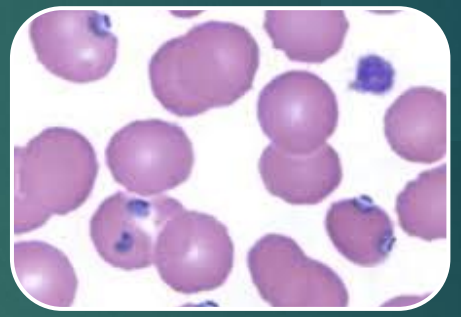
P.vivax



P.falciparum

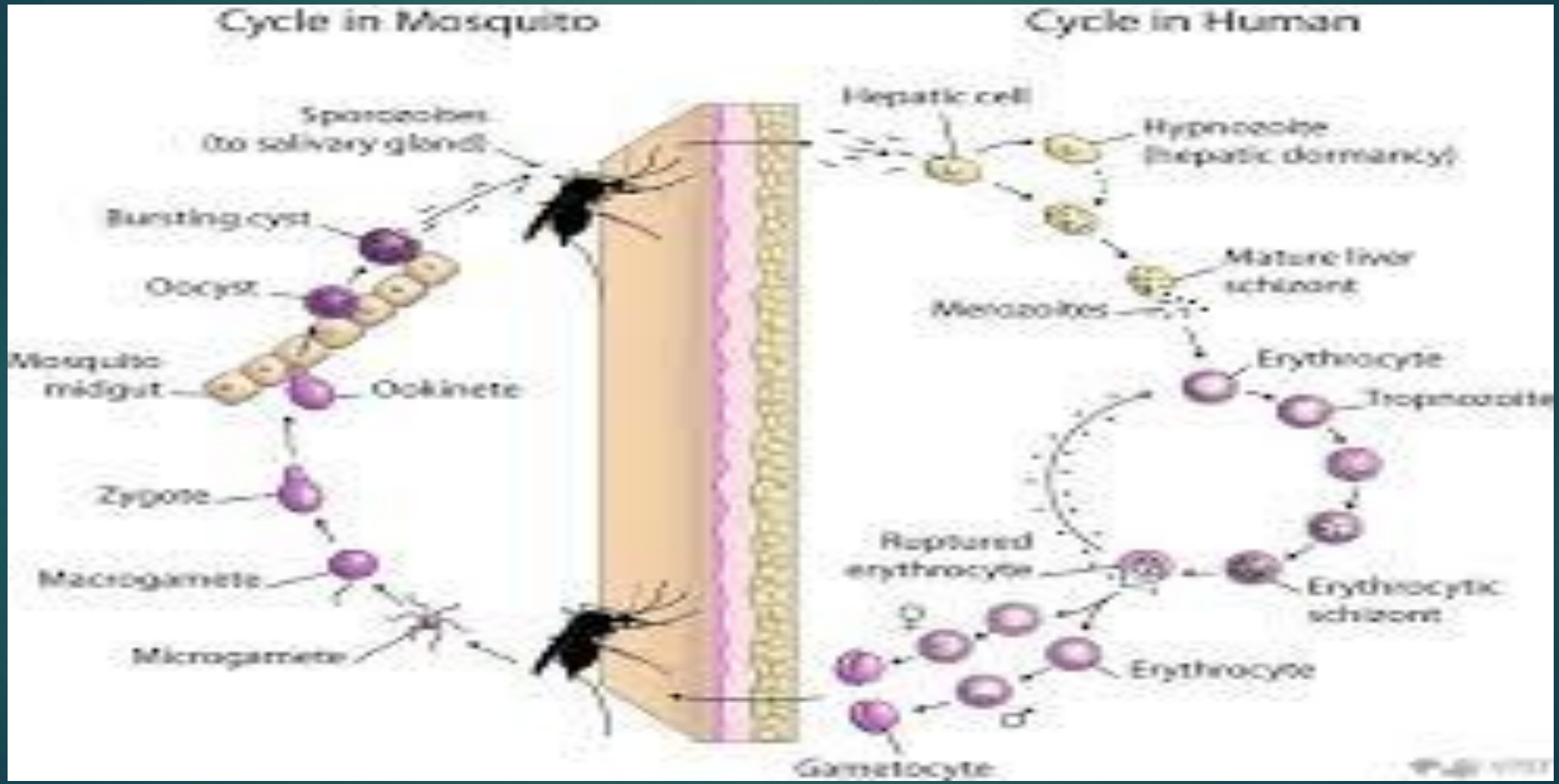


P.malariae



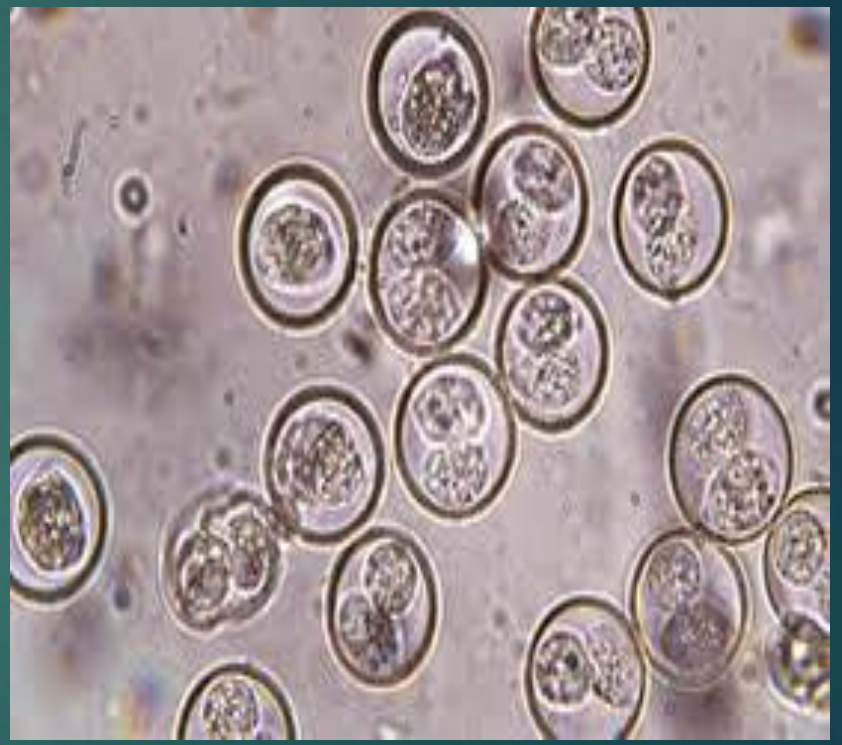
P.ovale

Life Cycle of Plasmodium



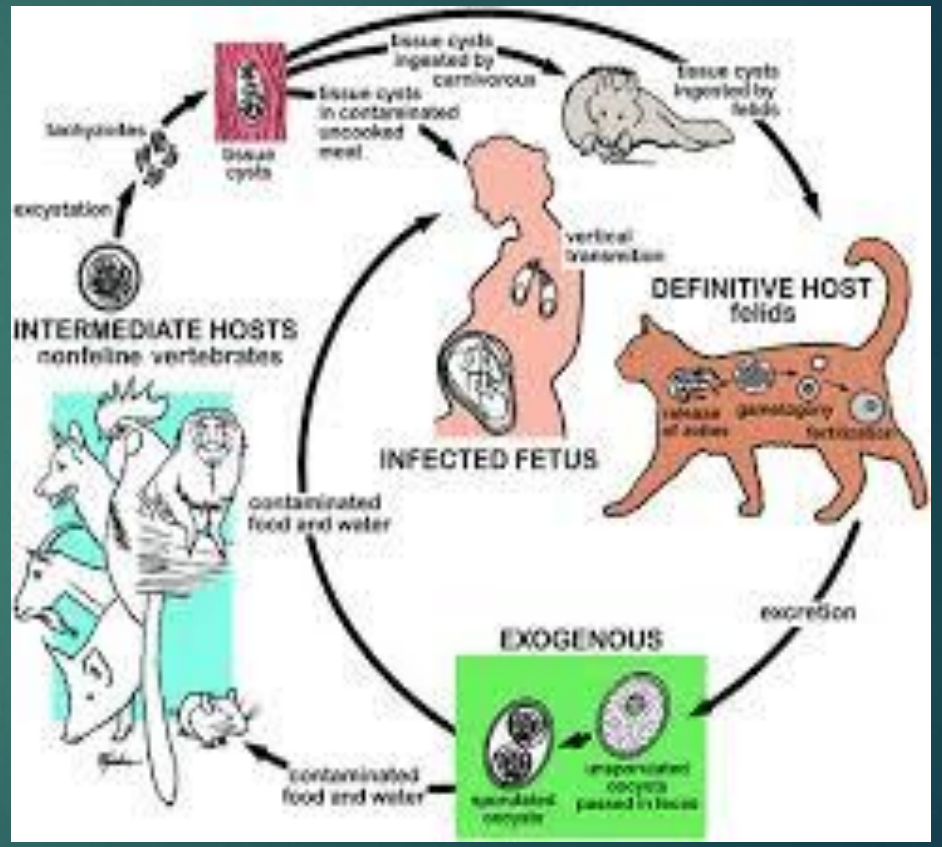
Coccideans

- Parasites in poultry, sheep, cattle and rabbits.
- Two genera; Isospora and Eimeria are particularly poultry parasites.
- US poultry suffered a loss of $35 million.
- Cryptosporidium cause chronic diarrhea in AIDS patients.



Toxoplasma

- Causes disease in mammals.
- Sexual reproduction occurred in cats.
- Infections occur when oocysts are ingested from cats feces or poorly cooked meat.
- Congenital toxoplasmosis; major cause of stillbirths and spontaneous abortions.
- Preventive measures: staying away from pet's sandboxes and don't eat poorly cooked pork.



Some other phylum of animal-like protists

MAHAM SHAHZADI

PHYLUM LABYRINTHOMORPHA

- Smallest phylum.
- Spindle shaped, non-amoeboid, vegetative cells.
- Use gliding motion in mucous tracks.
- Most of them are marine.
- Saprozoic or parasitic in mode of nutrition.
- Feed on algae and sea grasses.
- Type Example:

  Labyrinthula

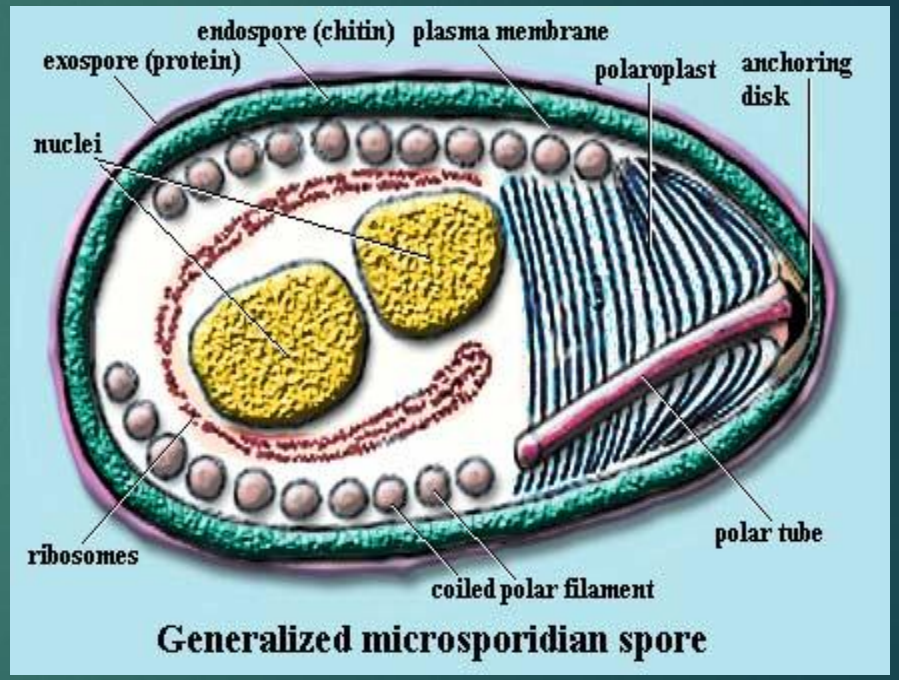
Labyrinthula

- Killed most of “eel grass” on Atlantic coast.
- Starving many ducks that feed on grass.
- Mostly parasitic, commensalistics or mutualistics.
- Absorb nutrients with endoplasmic membrane and network of filaments.

PHULUM MICROSPORA

- Commonly called microsporidia.
- Small obligatory intracellular parasites.
- Some species parasitize beneficial insects.
- Have extremely reduced cell structure.
- Biological control agents.
- Form polar tubes or polar filaments.
- Type example:

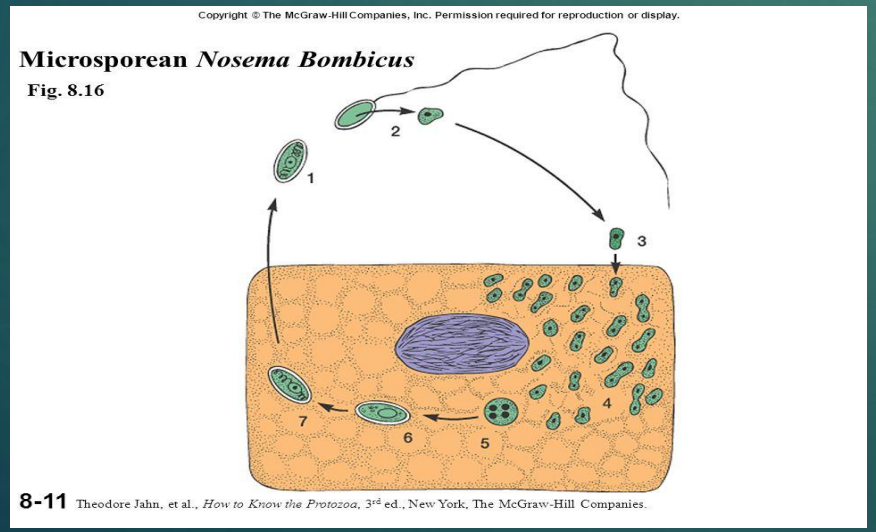
  Nosema bombicus* and *N.apis



Type examples:

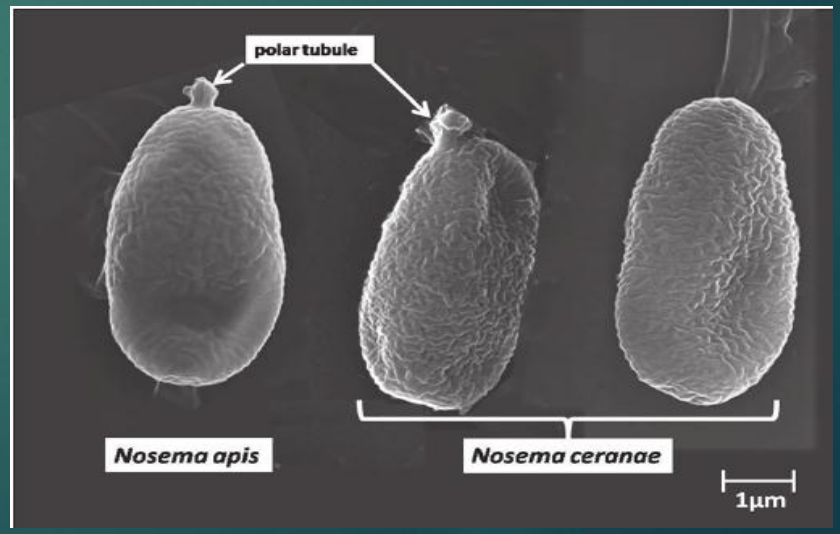
Nosema bombicus

- Microsporidian.
- Parasitize silkworms.
- Cause disease called **pebrine**.



N.apis

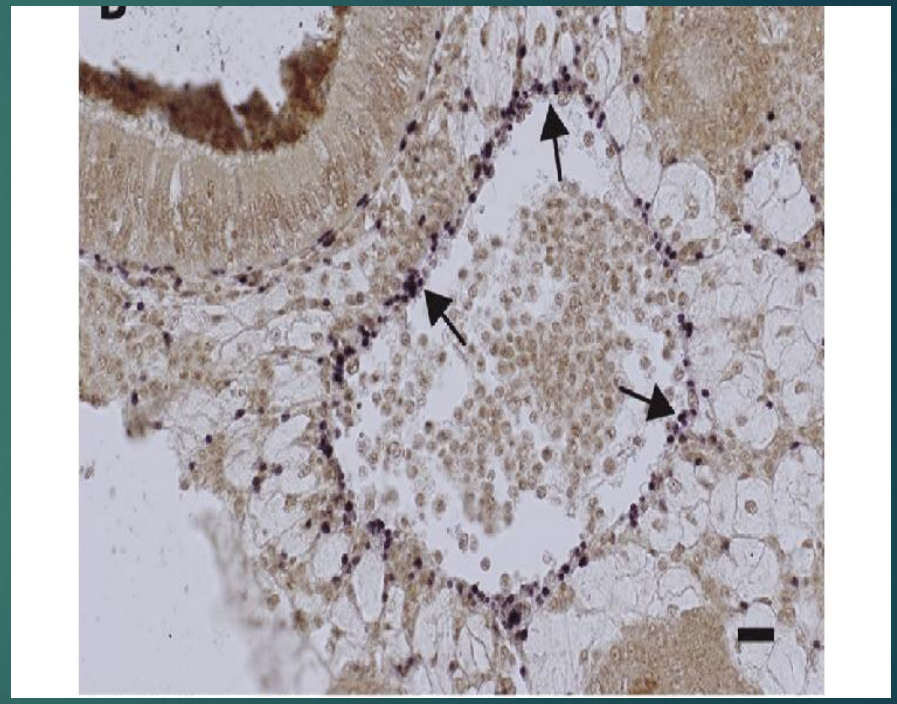
- Microsporidian.
- Cause dysentery in honey bees.
- Disease called **nosemosis.**



PHYLUM ACETOSPORA

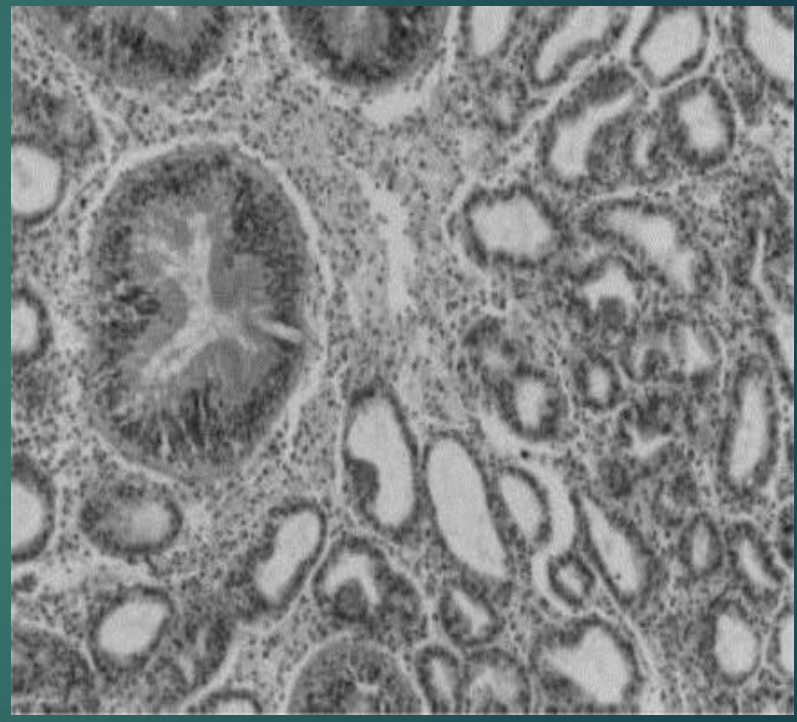
- Relatively small phylum.
- Obligate extracellular parasites.
- Lack polar caps or polar filaments.
- Parasite both in vertebrates or invertebrates.
- Spores are unicellular / multicellular.
- Spores are within sporoplasm.
- Type example:

Haplosporidium



Haplosporidium nelsoni

- Pathogen of oyster.
- Cause **MSX**(multinuclear sphere X).
- MSX cause high mortality in past.
- Moratality rates higher in summer.
- MSX reduced feeding rate of infected oyster.



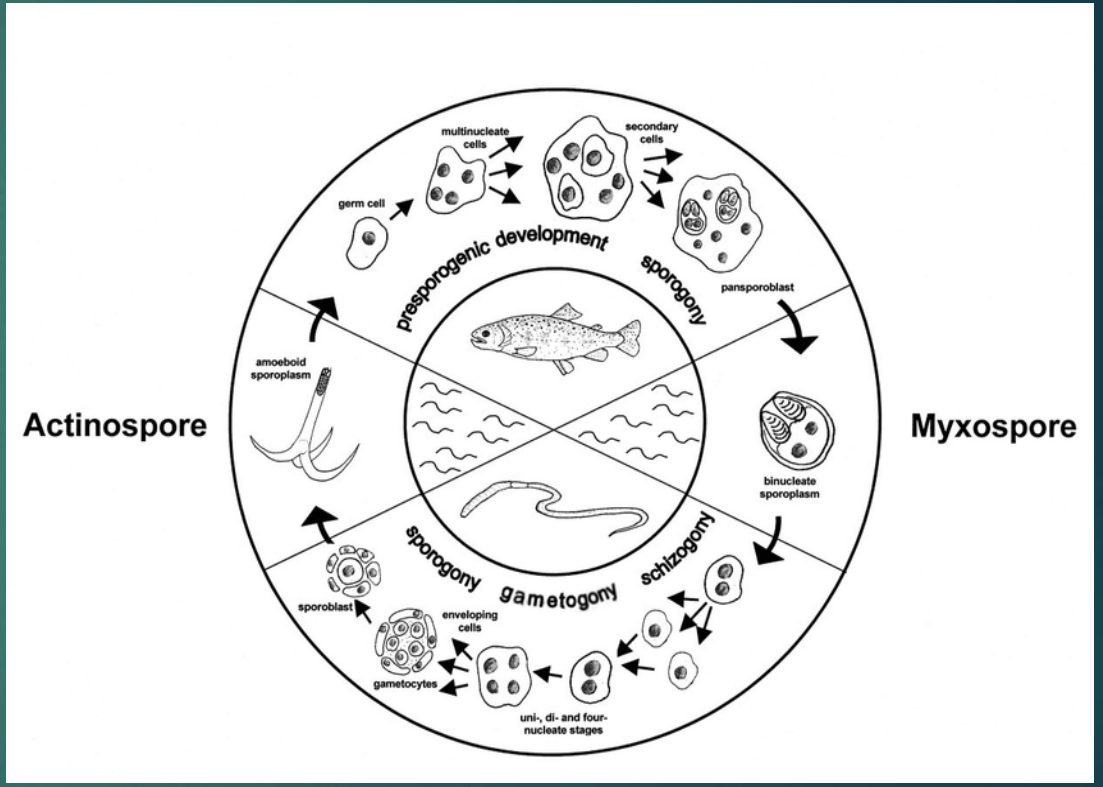
PHULUM MYXOZOA

- Commonly called myxosporeans.
- Most abundant parasite in nature.
- Obligatory extracellular parasites.
- Found in fresh water and marine.
- Parasites of amphibians and reptiles.
- Spores with one to six pollar filaments.
- Type example:

Myxosoma cerebralis

Myxosoma cerebralis

- Cause whirling and trumbling disease in trout and salmon.
- Infect nervous system and auditory organs.
- Have two-host life cycle.
- Spores are within polar filaments.



Phylum ciliophora

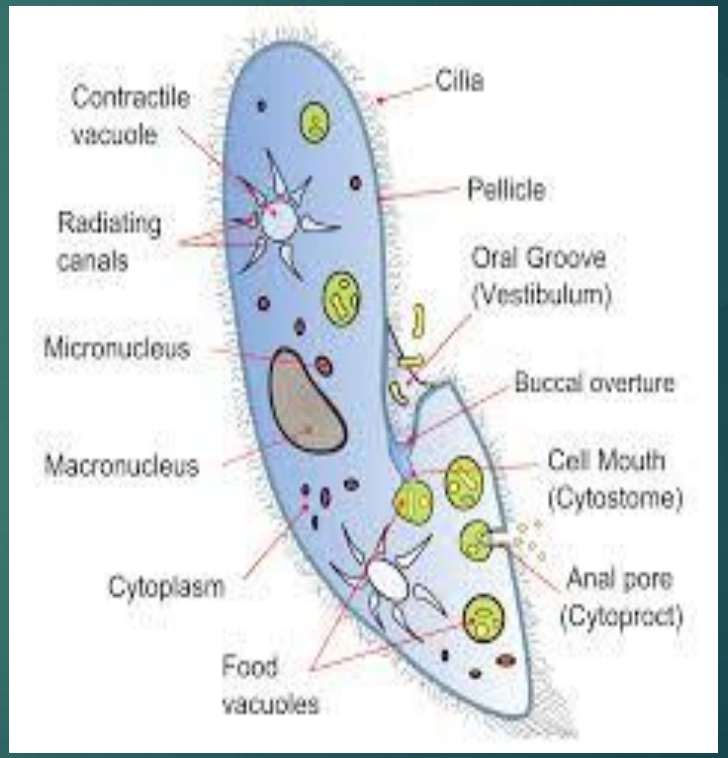
ESHA MOEEZ

Phylum Ciliophora

- Relatively rigid pellicle and more or less fixed shape.
- Distinct cytostome.
- Cilia for locomotion and generation of feeding currents in water.
- Dimorphic nuclei typically a large macronuclus and one or more smaller micronuclei.
- Type example: paramecium.

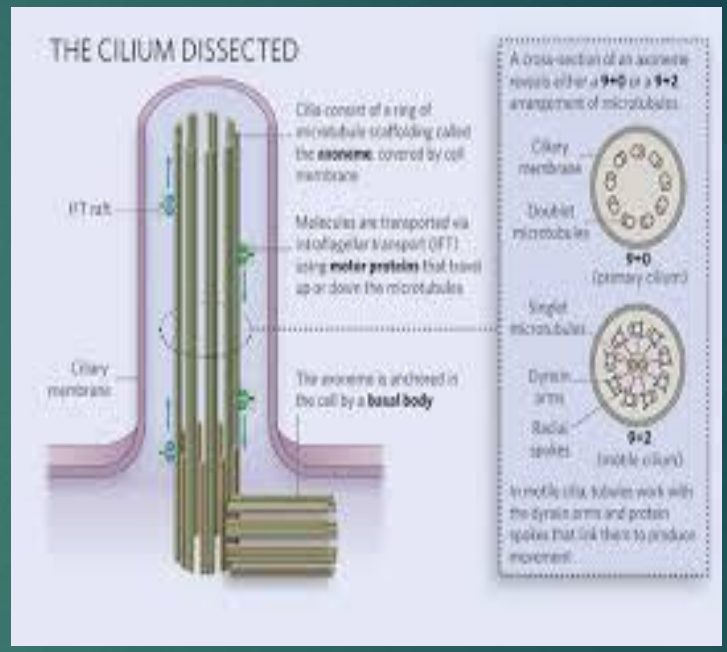
Paramecium

- Cilia.
- Heterotrophic .
- cytostome for feeding.
- Two types of nucleus.
- Micronucleus and macronucleus.
- Reproduction(sexual & asexual).
- Asexually by budding.
- Sexually by conjugation



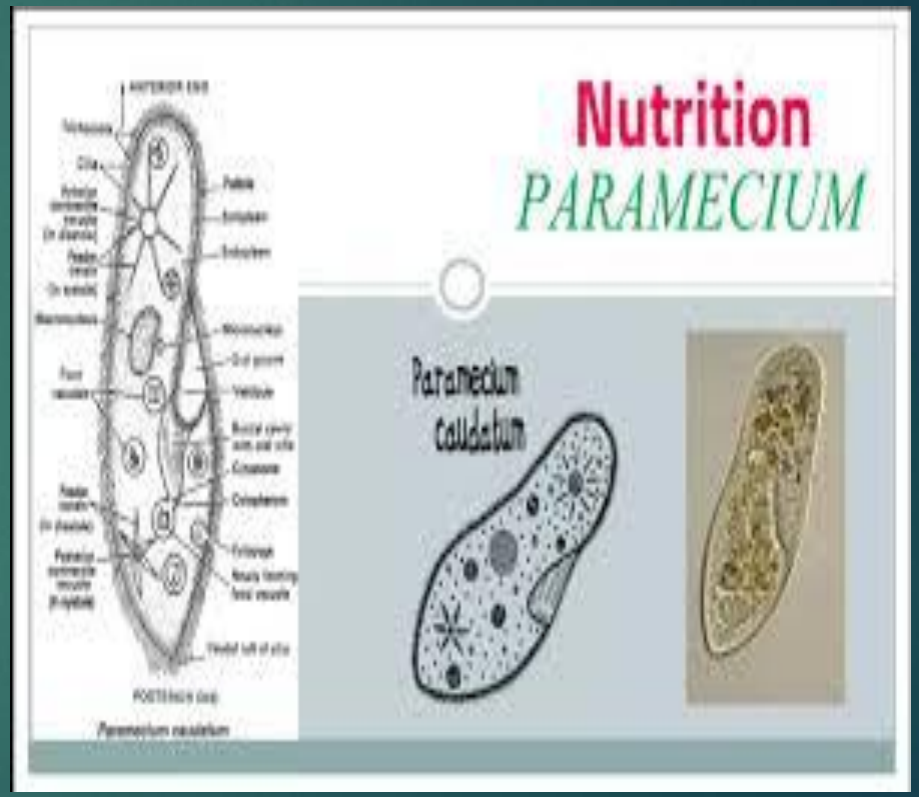
Cilia and other pellicular structure

- Cillia on surface.
- Locomotary organ.
- Basal bodies.
- Cilia join to form cirri.
- Trichocysts for protection.



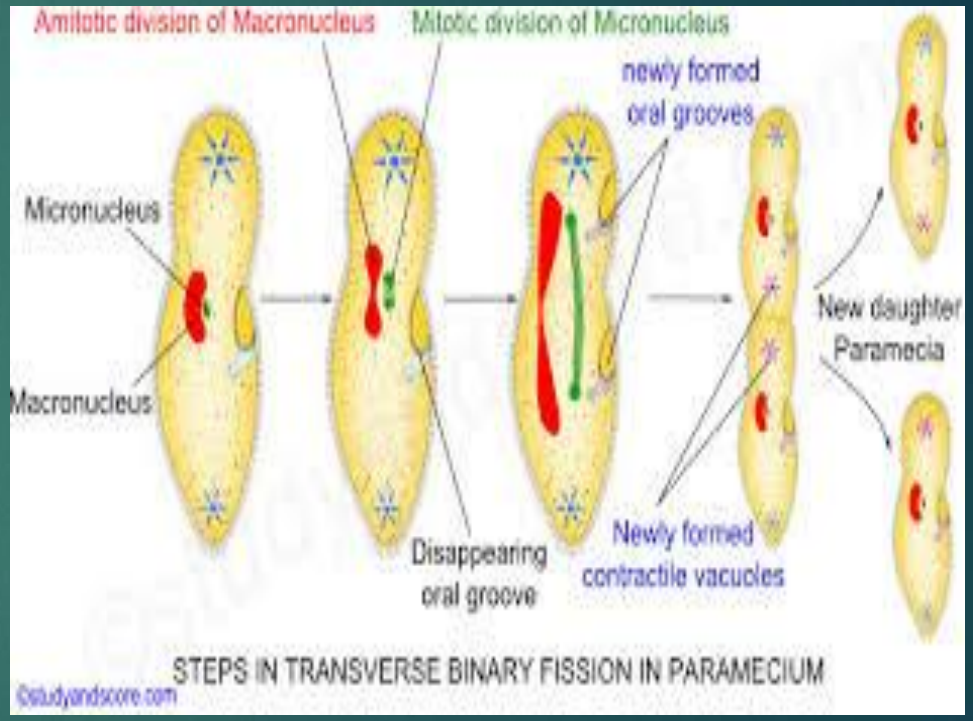
Nutrition

- Ciliated oral groove .
- Food particles towards cytopharynx.
- Food vacule forms.
- Circulate in endoplasm.
- Prey upon other protists.
- Didinium feeds on paramecium.
- Suctorians are sessile.



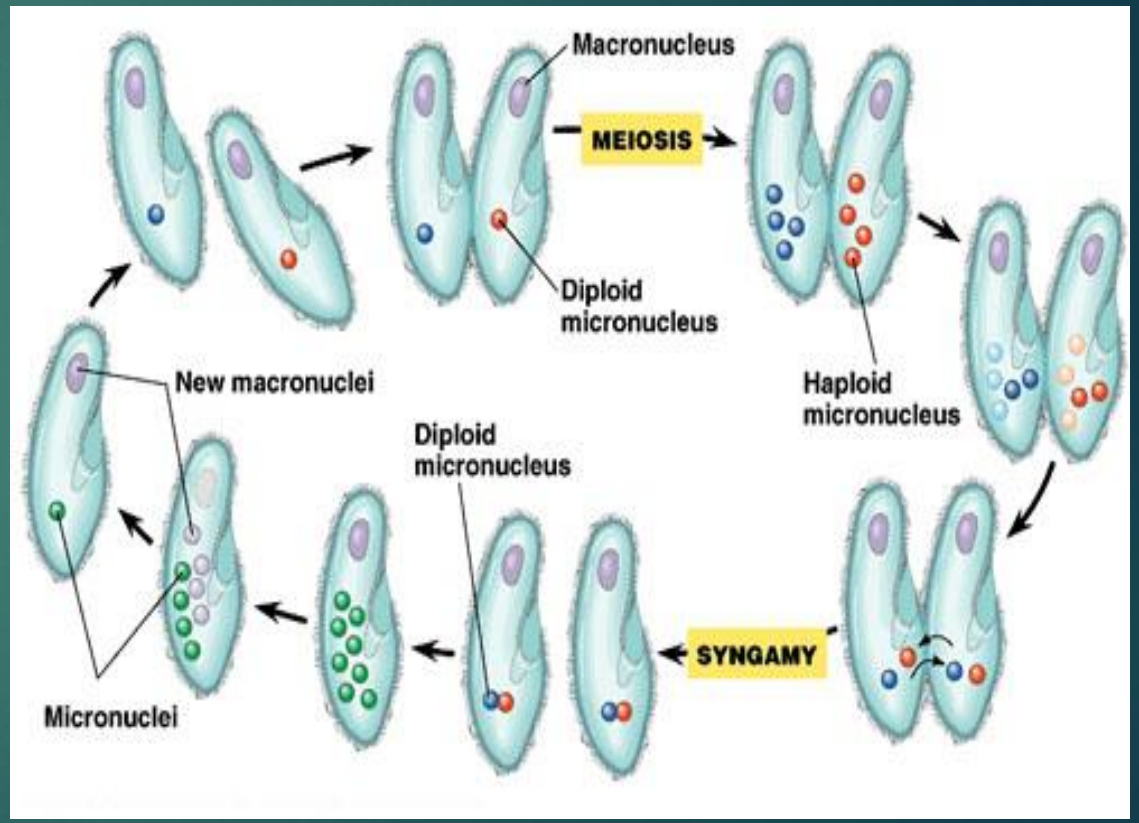
Genetic control and reproduction

- Ciliates have two kind of nuclei.
- A large is macronuclei .
- Regulates metabolic activities.
- Micronuclei genetic material.
- Asexual reproduction by
- Budding & binary fission.
- Sexual by conjugation.



Conjugation in ciliates

- Bring mating types together.
- Meiosis.
- Four haploid pronuclei.
- Three degenerate.
- Mitosis &fusion of pronuclei.
- Conjugants separate.
- Nuclear division.
- Cytoplasmic division.

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