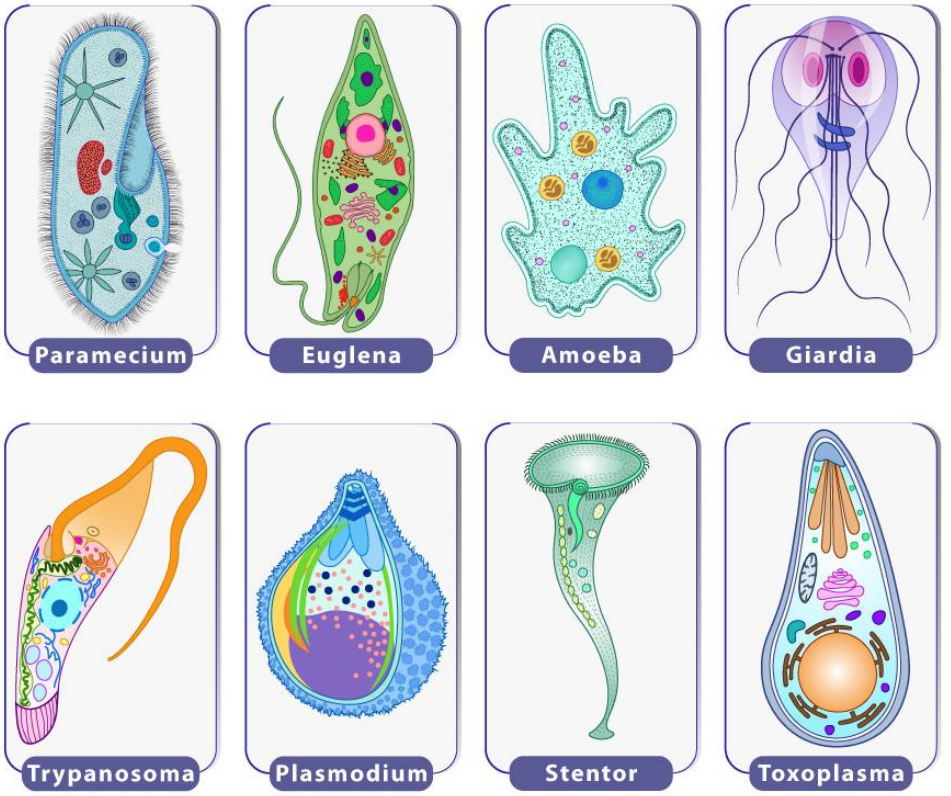
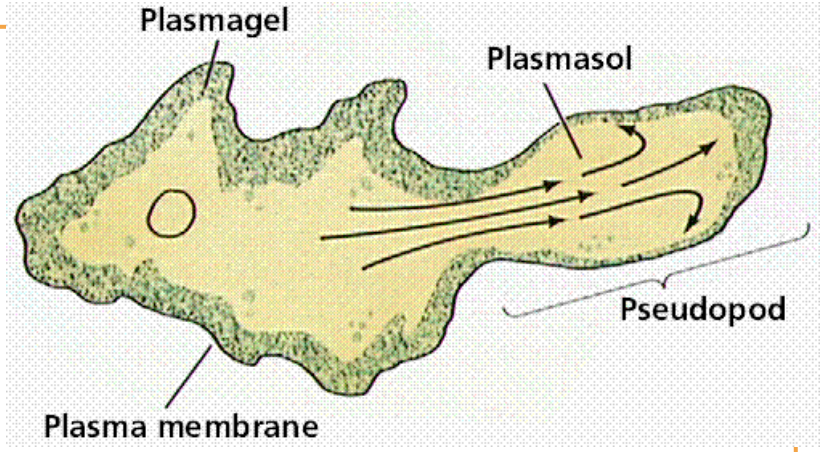
PROTOZOA - MODES OF LOCOMOTION



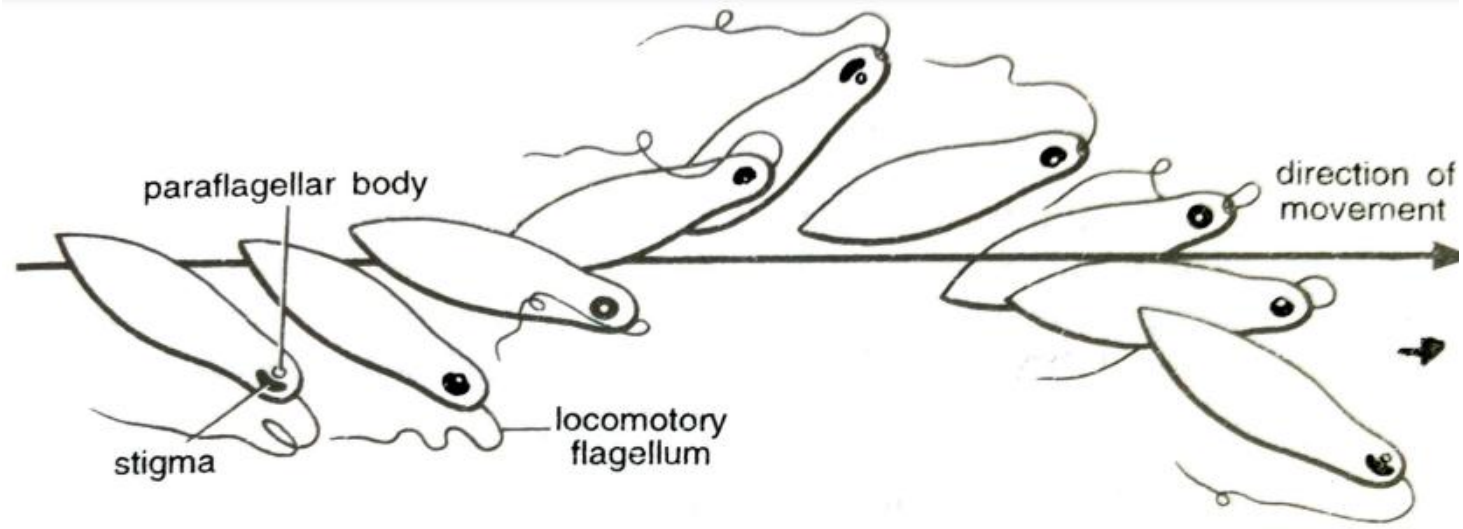
Amoeboid locomotion



- Amoeba – **pseudopodia**
- Projection of ectoplasm in which endoplasm flows
- **Change of viscosity theory** or **sol-gel theory** –Hyman supported by Pantin and Mast – way of formation of pseudopodia
- **Attachment** to the substrate
- Conversion of **plasmasol** into plasmagel
- Conversion of **plasmagel** into plasmasol
- Contraction of plasmagel at the posterior to push the plasmasol forward

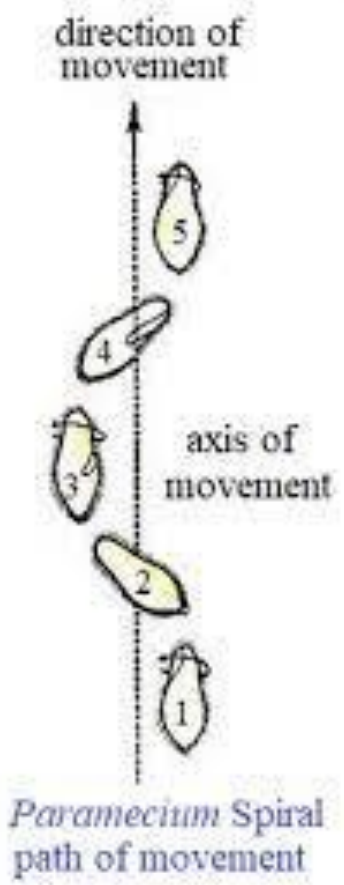
Flagellar movement

- *Euglena* - **lashing the flagellum**
- rowing - **rigid** but **slightly concave**
- undulating - **beats obliquely** - rotate
- **spiral fashion**
- 15 microns to 30 microns /second



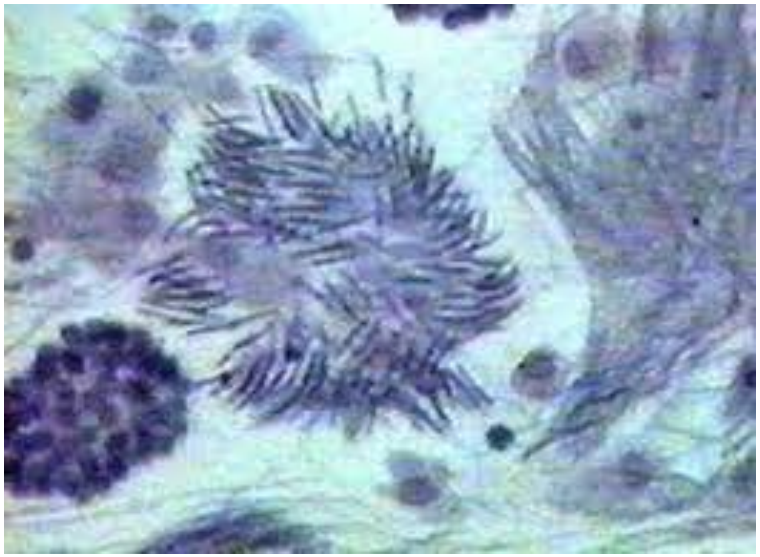
Ciliary movement

- Cilia – backward – **forward movement.**
- **spiral path**
- *Paramecium*
- 400 microns to 2,000 microns per second.



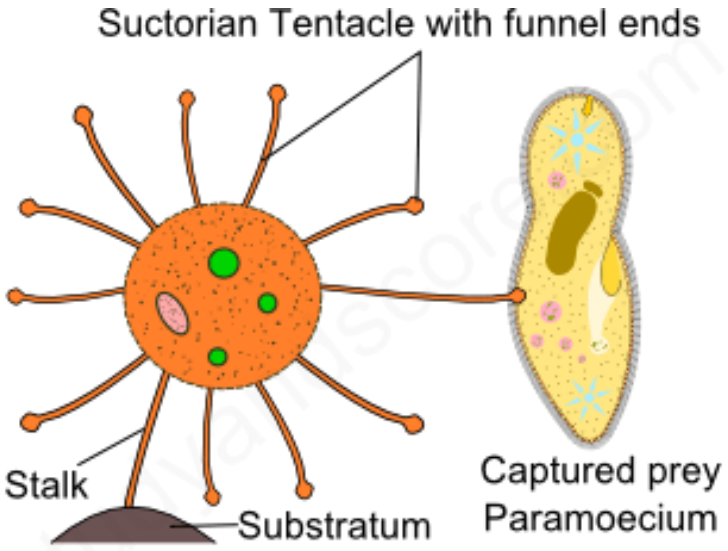
Gliding movement

- **myoneme fibrils** - contractile and elastic
- change in the shape of the body.
- parasitic forms- *Monocystis*.



MODES OF NUTRITION

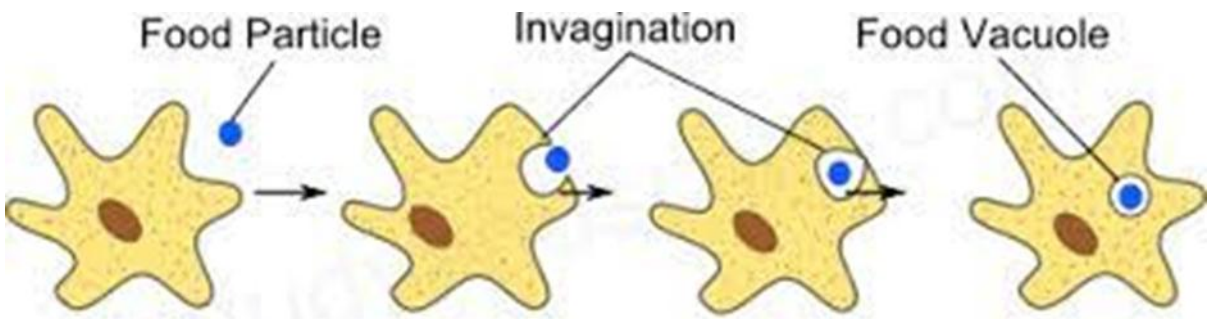
- **Nutrition** – food taken in, digested, absorbed and assimilated
- derive their **nutrients** essential for the **growth** and **maintenance**



FEEDING IN SUCTORIANS

Holozoic or Zootrophic

- solid food - bacteria, diatoms, rotifers, crustacean larvae, other protozoans, algae
  - **Ingestion**
  - **Digestion**
  - **absorption and**
  - **egestion of undigested residues.**



HOLOZOIC NUTRITION IN AMOEBA

Ingestion

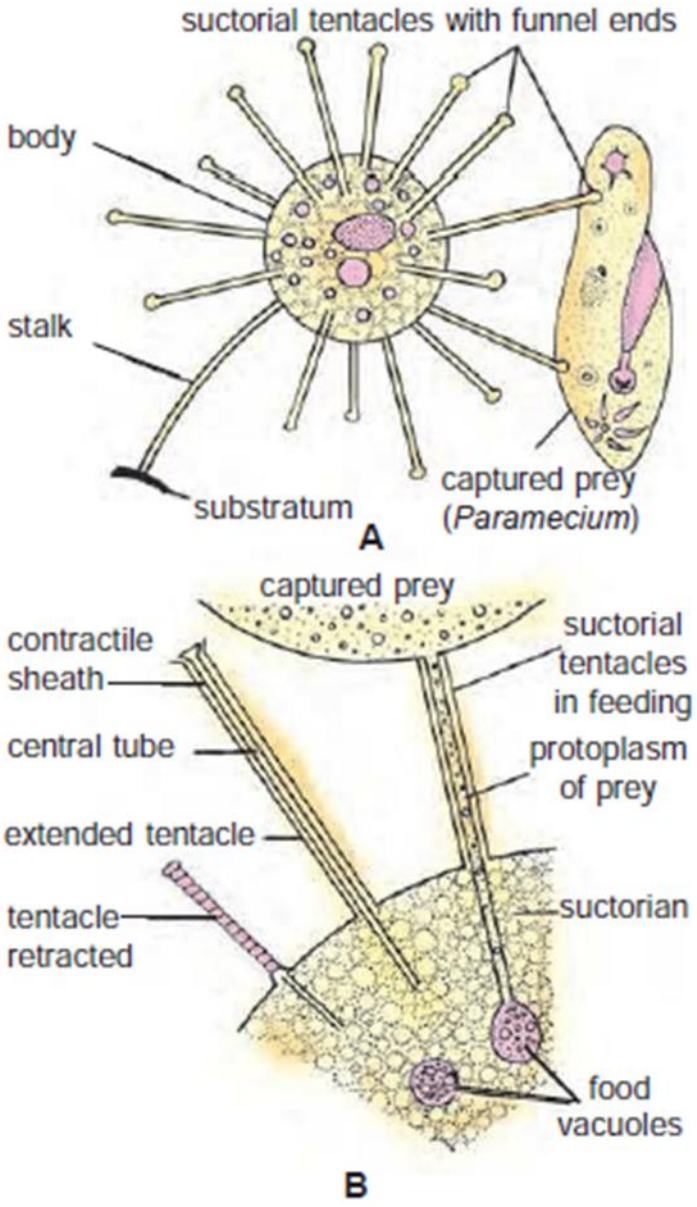
- **Phagocytosis**
- *Paramecium*- **cytostome** - base of the oral groove leads to **cytopharynx** - cilia
- beating - whirl pool of water current
- The food particles - cytopharynx

Suctorians

tentacles - central **tubular canal** surrounded by a contractile sheath

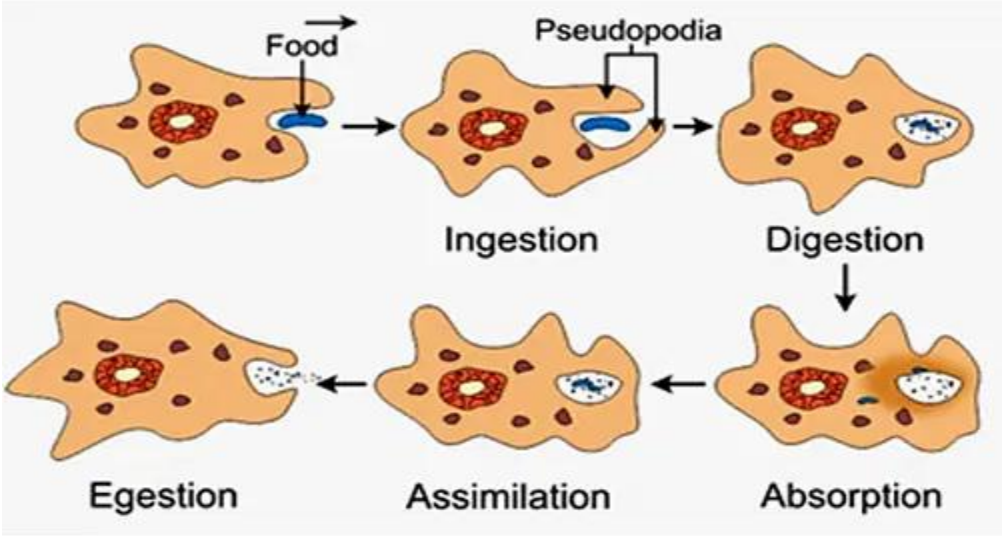
Prey - tips of tentacles – adhered and paralysed – **toxin**

The prey's cytoplasm - sucked



Digestion

- **intracellular** within food vacuoles
- **changes in pH** and in their **size**
- At first **acidic** and decrease in size - living prey dies
- Next, produces enzymes - **alkaline** - increase in size - digestion
- **proteolytic** and **carbohydrate** digesting enzymes
- Proteins into dipeptides -acidic medium
- dipeptides into amino-acids - alkaline medium
- carbohydrates - alkaline medium



Absorption and assimilation

- Digested food (food vacuole) - diffused out into the endoplasm and finally assimilated in the body to manufacture the protoplasm.
- The excess of food is stored in form of glycogen in the endoplasm.

Egestion

Undigestible remains of the food – egested – at any body surface. Eg. *Amoeba*
Ciliates – definite opening – cytopyge

Pinocytosis

- Cell drinking – Amoeba, flagellates, ciliates
- **pinocytic channels** – form - **pinocytic vesicles** or **pinosomes**
- separated after engulfing liquid food through the channels
- separated pinosomes become the food vacuoles
- induced in presence of certain salts and some proteins

Autotrophic or Holophytic Nutrition

- Protozoa with chlorophyll - manufacture complex organic food
- e.g., *Euglena, Noctiluca.*
- pyrenoids which are the centres of **photosynthesis**

Saprozoic Nutrition

- Protozoa absorb complex organic substances in solution – **osmosis**
- Saprozoic forms need - ammonium salts, amino acids, or peptones for their nutritional requirements

Parasitic Nutrition

The parasitic forms feed either **holozoically** or **saprozoically**

1. **Food-robbers.** The parasites feeding upon the undigested or digested foodstuffs of their hosts are known as food-robbers
2. **Pathogenic.** The protozoan parasites causing harm to their hosts, usually feed upon the living tissues of the host.

Coprozoic Nutrition

- Certain free-living protozoans are in habit of feeding upon the faecal matters of the other organisms

Mixotrophic Nutrition

Some Protozoa nourish themselves by more than one method at the same time or at different times due to change in environment.
E.g. Euglena -saprozoic and autotrophic