

Date - 26/04/2021

Zoology Honors (B.Sc-I)

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## LOCOMOTOR ORGANELLES

Q2) FLAGELLA — Flagella are the locomotor organelles of flagellated protozoa, like Euglena, Trypanosoma, etc. These are thread like projections on the cell surface. A typical flagellum consists of an elongate shaft, the axoneme, enclosed by an outer sheath. In the axoneme, nine longitudinal peripheral paired fibres form a cylinder which surrounds the two central longitudinal fibres, enclosed by a membranous inner sheath. Each of the peripheral pairs bears a double row of short arms.

The axoneme ends at the base in a granule called the blepharoplast or basal granule or kinetosome. Mostly, it is a cylindrical body formed by the bases of the peripheral fibres. Blepharoplasts may either be derived from or develop into centrioles, as the two structures are homologous.

The fibres of the axoneme remain embedded in a fluid matrix. In between the outer ring of peripheral fibres and inner ring of central fibres mostly occurs nine accessory fibres. In certain groups of mastigophora one found flagellar appendages or mastigonemes extending laterally from the outer sheath.

The number and arrangement of flagella vary in mastigophora from one to eight or more.

Free-living species have usually one or two, while in parasitic species the number ranges from one to many.

(3) CILIA — Cilia, characteristic of ciliata, resemble flagella in their basic structure. These are highly vibratile small ectoplasmic process. The electron microscope reveals the presence of an external membranous sheath, continuous with the plasma membrane at the cell surface and enclosing the fluid matrix. Running along the entire length of the body of cilium are nine paired peripheral fibres and two central fibres.

All embedded in its structureless matrix. The central fibres are enclosed within a delicate sheath and in between the outer and inner fibre rings are present nine spoke-like radial lamellae. In addition to ~~these~~ these, one sub-fibre or microfibre of each peripheral pair bears a double row of short projections, called arms, all pointing in the same direction.

At the base of the cilium is a thickened structure, the basal granule, basal body or blepharoplast. It is a tube-like structure formed by the proximal ends of peripheral fibres.

According to Lenz and Henneguy (1898), the basal granules

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are Centrioles or their derivatives.  
The basal granules show nine peripheral subfibre triplets, each disposed in a twist-like fashion.

#### (4) PELLICULAR CONTRACTILE STRUCTURES—

In many protozoa are found contractile structures, called the myonemes, in the outer pellicle, these may be in the form of ridges and grooves (e.g. Euglena), or contractile fibrils (e.g. larger ciliates) or microtubules (e.g. Trypanosoma).

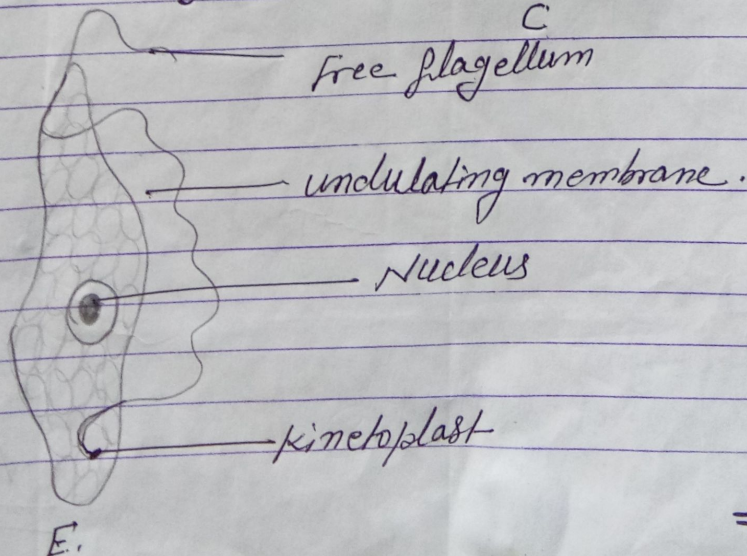
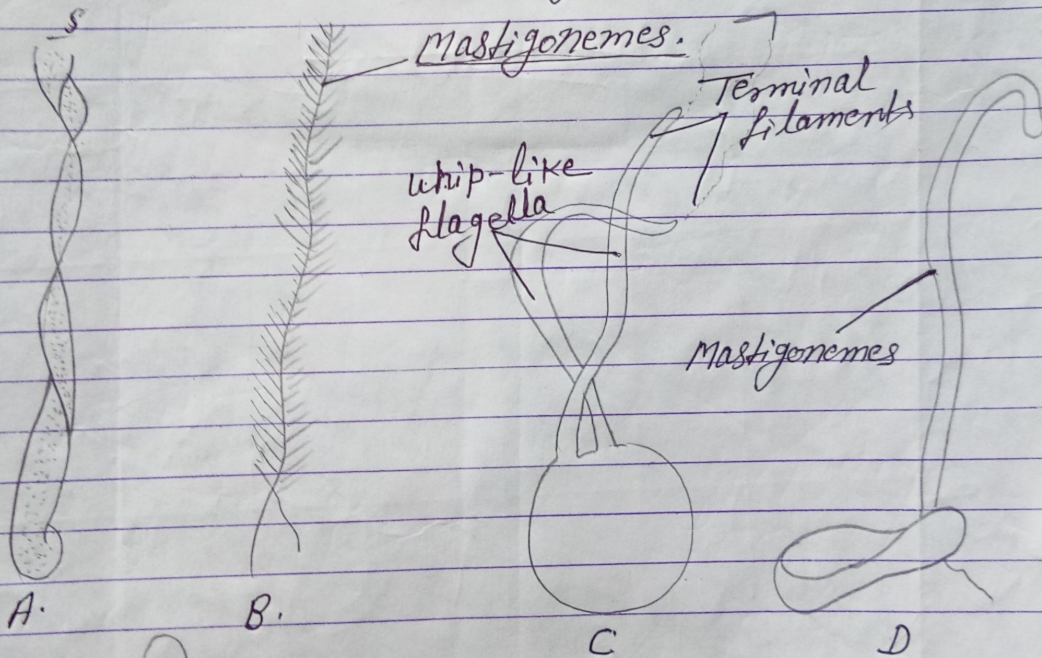


Fig - Types of flagella in protozoa. A - Flagellum of Trachelomonas, B - Flagellum of Euglena with mastigonemes. C - whip like flagella of polytoma. D - Flagellum of ureocelus with mastigonemes. E - undulating membrane of Trypanosoma with a flagellum.

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