

Hello, I'm Miss Gautami Manakikar. Today I'll be explaining Unit 1 Kingdom Protista and under this the module 5, i.e. locomotory organelles and locomotion in protozoa.

So in this module will study about the various locomotory organelles such as pseudopodia, cilia, flagella and also understand the locomotion and protozoa by the different movements.

At the end of this module you will be able to list the different. Locomotory organelles in protozoa and also explain the mode of locomotion in protozoa.

The locomotory organelles in protozoans are mainly associated with the body surface.

The locomotion can occur by cellular extension, as in case of pseudopodia, with contractile structures, such as myonemes or with the help of locomotory organelles such as Cilia and flagella..

In protozoans, the locomotory organelles are a four main types:

pseudopodia, which is a characteristic of amoeba, flagella which is a characteristic of euglena,

Cilia, a characteristic paramecium and myonemes which are commonly seen in sporozoans.

The four modes of locomotion present in protozoans first, the amoeboid movement, second, the flagellar movement, third the ciliary movement and forth the gliding type of movement.

The first locomotory organelle is the pseudopodia, the pseudopodia is a temporary finger-like projection which is formed from the ectoplasm. It not only aids in locomotion, but in Nutrition too.

A common example of an organism which shows the pseudopodia is Amoeba Proteus.

There are four types of pseudopodia which are commonly seen. Lobopodium, filopodium, rhizopodium and axopodium.

The Lobopodium is a short, blunt finger-like projection, which is commonly seen in amoeba.. A filopodium is a short, filamentous structure, rhizopodium, which is also called as reticulopodia is a short branched structure. An axopodium is a long, slender structures which is stiff and consist of an Axial filament in the center.

The type of movement that is seen with the help of pseudopodia is called the amoeboid movement. It is formed by the flow of cytoplasm in the direction of the movement.

The ectoplasm first forms a blunt projection in the

endoplasm then flows into it in the direction of the movement.

The amoeboid movement is commonly seen in amoeba.

The pseudopodia is formed and it attaches to the substratum and the cytoplasm is withdrawn from any other part of the body.

The second locomotory organelle is the flagella. The flagella is a filamentous whiplike extension of the cytoplasm. It arises from the basal granules that is present on the interior side of the body.

The flagellar consists of two parts, an axial zone and an outer layer, which is called protoplasmic sheet. The flagella is commonly seen in organisms such as euglena.

The main axis of Flagella are will possess lateral processes which are called mastigonemes.

At the distal end of the flagella, there are filaments which are called the terminal

filament. So basically there are five main types of flagella. They are Stichonematic , pentonematic,acronematic pentachronematic and a simple type of flagellal.

In stichonematic type of flagella, the mastigonemes are present only one side of the flagellum. In Pentanematic,the mastigonemes are present on

both the sides of the flagella.

In achronematic, the mastigonemes are absent, but the distal end of the flagellum shows the presence of terminal filament.

In Pentachronomatic, mastigonemes are present as lateral processes and the distal end of the flagellum also shows the presence of terminal filament.

In simple type of flagella, both the mastigonemes and the terminal filament are completely absent.

The flagellates commonly show a type of locomotor movement, which is termed as flagellar movement. Now these movements occur due to continuous rapid movements of the Flagella.

There are series of lateral movement which exerts pressure at right angles to the water surface. This pressure creates two types of forces.

A parallel force and a force that is directed at right angles.

The parallel force helps Organism to move forward, whereas the force that is directed at right angles helps the Organism to rotate the body.

So combination of the forward movement and the rotation helps the Organism to move in a spiral path.

The next locomotory organelle is cilia. Cilia are short ectoplasmic projections which are formed from the ectoplasm. The cilia can cover the entire body or can be restricted to certain parts of the body. Cilia can be arranged in longitudinal, oblique or in spiral lines.

The type of movement with the help of Cilia is termed as ciliary movement. Individual arranged cilia usually bend with rapid strokes. The Organism always moves in opposite direction of the stroke. If the Cilia moves backwards,, the Organism moves forward and this backward movement of the cilia is termed as an effective stroke.

And when the cilium moves in the forward direction, the Organism moves backward and this forward movement of this Organism is called as the recovery stroke. When the body cilia moves in the backward direction, the Cilia that are present in the oral groove will move continuously and help to rotate the Organism towards the left.

So combination of the forward movement and the rotation results in a spiral path of movement that is commonly seen in organisms such as paramecium.

So when the cilia moves backward, the Organism moves forward. And similarly, when the cilia moves forward, the Organism can move backwards.

The fourth locomotory organelle is the myoneme. The myoneme are fine contractile fibers which are present in the pellicle which is present just below the plasma membrane. These myonemes may be arranged longitudinally, transversely or spirally. An example of an Organism which shows the presence of myonemes is Monocystis.

The type of movement which occurs with the help of myonemes is called a gliding type of movement. The contraction and expansion of the myonemes help in gliding type of movement, which is also called as a gregarian movement. In case of monocystis.

So these were the different locomotory organelles and the locomotion that is seen in protozoa.