

We are going to learn from the paper Diversity of Non-coordinates and Cell Biology.

Topic is Phylum Protozoa classification upto classes part II, from the Unit1 Kingdom Protista. In this module we are going to learn about classification of Phylum Protozoa up to class level and characters of each subphylum superclass and class and examples of each class.

By the end of this module you will be able to classify Phylum Protozoa, explain characteristic feature of different classes of phylum protozoa and site examples of different classes.

Already in the previous module that is module number 3 we have discussed in detail about one of the subphyla of phylum protozoa that is Sarcomastigophora. Now in this module we'll be focusing on Subphylum Sporozoa, Subphylum Cnidosporea and Subphylum Ciliophora.

So let us begin, Subphylum Sporozoa. This subphylum is classified into three different classes, class Telosporia, class Toxoplasma and class Haplosporidia. We'll see in detail what these and their characters are.

Before that let us try to learn about subphylum Sporozoa. The meaning itself is sporos means seed and Zoon means animals, these are very minor seed-like and they attain a spore-like stage in their life cycle and locomotor organelles are totally absent in this subphylum Sporozoa. These are exclusively endoparasites and incapable of having active life outside their host. Now what do you mean by endoparasite, these are the parasites which are living within the body of the organism unlike ectoparasite which lives outside the body and if they had to survive outside the body of the host they will not be able to since they all are endoparasites, they are so dependent on their host and that's the reason the body is covered with thick pellicle, now as already told to you pellicle is a thin layer or skin of the organism but here in this case it is a thick pellicle. Now why there is a need of thick pellicle, since these organisms are endoparasite they are living within the gut of the organism and in the organism body there are lots of enzymes there are lots of chemicals releasing out every now and then and in such a condition they have to survive. So for their survival from enzymatic action not to work on the organism they have called a thick pellicle which will make them survive in the host body for a longer time and cilia flagella may be present in the gametes but added as such they are not having any locomotory organelles. Here pseudopodia is absent and that's how locomotion is by gliding or body flexion either they glide or the body does flexion to move from one place to another. Spores are formed and there are flagellated micro gametes in some during their life cycle. There are various stages that will come in picture and that's how the microgametes.

They have got flagella and reproduction we see both asexual and sexually. The very common example is plasmodium, to the right corner of the slide you can see the picture of plasmodium vivax wherein two stages of the life cycle is shown, one towards the left side is macro gametocyte and one towards the right side is microgametocyte.

Next class is Toxoplasma. Here spores are absent in class toxoplasma spores are not there and there is no pseudopodium or flagella. At any stage you will not see any pseudopodia or flagella in that and reproduction is mainly by binary fission wherein already explained to you division of one individual into two that is binary fission and these are always found as parasites infecting birds and mammals examples are sarcocystis and toxoplasma.

The image you can see here is the sarcocystis in pig muscle okay, so this is how it looks. The pointer is showing you one of the stages of the sarcocystis.

Next class is Haplosporidia here spores are present and pseudopodia may be present but flagella are totally absent and reproduction is by asexual and which Schizogony takes place and this is found as a parasite in fish and invertebrates. Examples are Ichthyosporidium caelosporidium and haplosporidium. Next we have Subphylum Cnidospora which is again divided into two classes, class myxosporidia and class microsporidia. In this subphylum Cnidospora you will see spore formation throughout their life and spores have got several cells having one or many polar filaments and one or more sporoplasms. Now what is this polar filament, polar filament is a thread-like coiled thing which will help the spores to get attached to the host and sporoplasm it's a part of the protoplasm which will form spores.

Okay, and these all are parasitic. Let us see about

two classes that are class myxosporidia, here spores are of multicellular origin and one or more sporoplasm with two to three valves in their membrane is seen and they are acting as a parasite in fish. Example is mixobolus.

Next class microsporidia, here spores are of unicellular origin unlike myxosporidia which was a multicellular. This is unicellular origin and here spores have got only one valve and one long tubular polar filament through which full plasma emerges and as we know polar filament will help them to get attached to their host and very interesting thing is they are cytozoic, which means intracellular parasites which are seen in some of the arthropods like honeybee and silkworm and also invertebrates like fish, so they are seen as a parasite within the cell. One of the examples is Nosema. That is about subphylum Cnidospora.

Now the last subphylum Ciliophora and it has got only one class that is class ciliata. Most of the species of ciliophora are free living very few are known as parasitic and they all use a simple ciliary organ for locomotion that means they have got cilia as organ of locomotion and they have got two nuclei macronucleus and micronucleus based on the sites and they show heterotrophic nutrition that means they are dependent on others for their food. Let us see what class ciliata has got different characters. This is the highly organized group of protozoa compared to any other class and they are free living found in marine as well as fresh water and locomotory organelles are cilia which is present all over the body and throughout their life and this cilia is not only acting as a locomotor organelle but it is also acting as a feeding organelle wherein they can catch hold their prey and they can have their food. Binary fission or conjugation is the mode of reproduction. Binary as we already discussed wherein one individual is divided into two and conjugation is one more mode of reproduction where two individuals will come together to share that nuclei but again remain as one single individual and the common examples are paramecium and vorticella. These are the pictures showing you paramecium and vorticella. As you can clearly see the entire body of paramecium is covered with cilia and towards the right hand side what you can see is the microscopic picture of vorticella. So that's all about the entire classification of phylum protozoa up to classes; these are the references which you can refer to later. Thank you..