TOPIC: CLASSIFICATION OF LIVING ORGANISMS

LECTURE NO:03
CLASS:XI
DATE: 26TH MARCH 2020
AUTHOR: DR.NIRMAL KUMARI

Kingdom Fungi

Fungi are heterotrophic in nature. Some acts on dead organic matter and so known as saprophytes. Some can feed on living organisms so known as parasites. Some fungi can live in mutual relationship with other organisms such as algae, they are known as lichens. Such fungi are known as symbionts. Lichens are symbiotic association between the fungi and the algae. Mycorrhiza are the symbiotic association between the fungi and the roots of the higher plants.

Reproduction in fungi can occur by- **budding, fragmentation, and fission**. Asexual reproduction occurs by means of spores known as **conidia, zoospores or sporangiospores**.

Sexual reproduction occurs by **oospores, ascospores and basidiospores**. There are three steps of sexual cycle in fungi-the first step is the fusion of the protoplasm which is known as **plasmogamy**. Then, the fusion of nuclei occurs which is known as **karyogamy**. This results in the formation of the zygote. Then finally, the meiosis of zygote results in the formation of the spores.

The vegetative part of the fungus is known as **mycelium**. The network of hyphae is known as mycelium. During sexual cycle of fungi, two haploid hyphae fuses to form diploid cells. Kingdom fungi is divided into different classes-

- **Phycomycetes (lower fungi)**-Asexual reproduction occurs by motile spores known as zoospores and non-motile spores are known as aplanospores. Spores are produced inside the sporangium. Fusion of gametes give rise to zygospore. Mycelium is coenocytic (multiple nucleus) and multicellular. For example, such as *Mucor, Rhizopus, Albugo*.

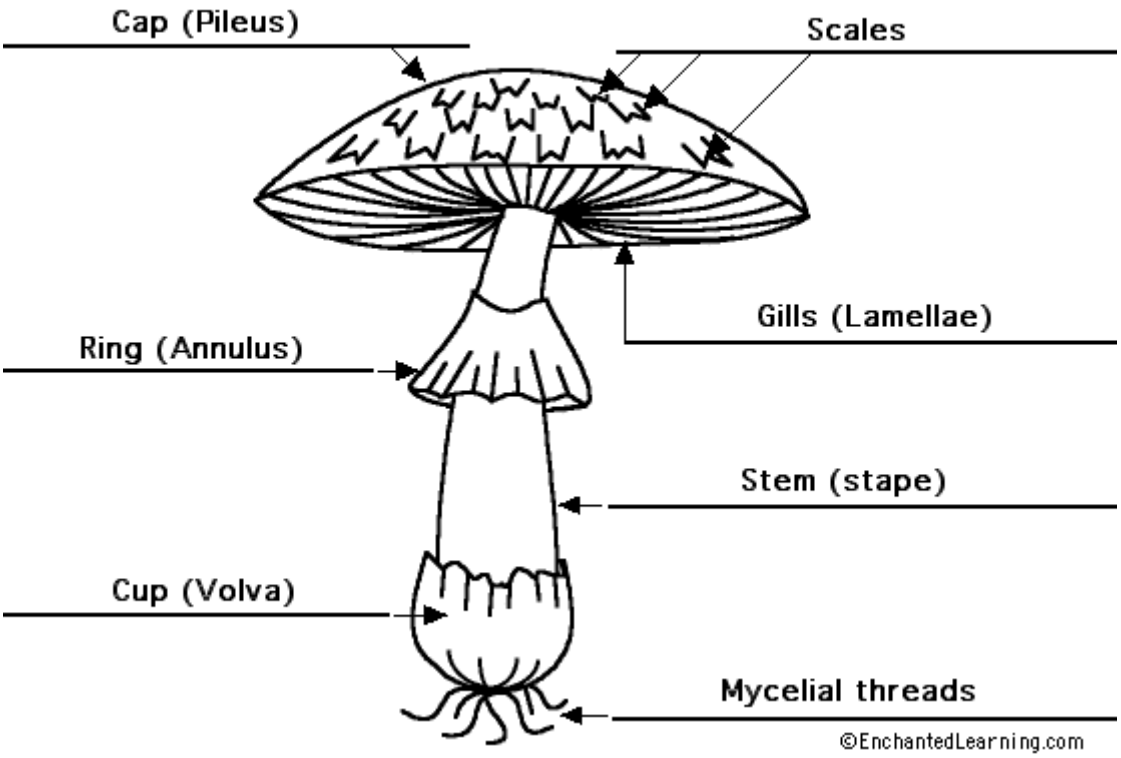

Fig.9. Common fungi

- **Ascomycetes (sac fungi)-**They can be saprophytic as well as parasitic. Asexual reproduction occurs by conidia. Sexual reproduction occurs through ascospores. Branched and septate mycelium is found in Ascomycetes. For example, *Penicillium, Aspergillus, Claviceps* etc.

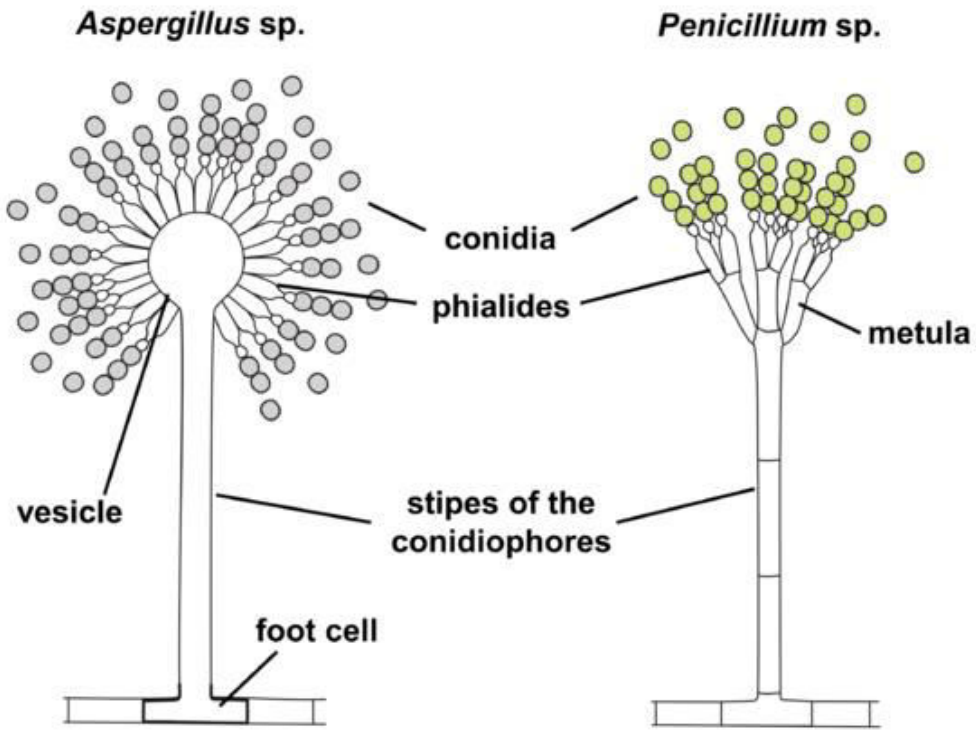

Fig.10. Ascomycetes

- **Basidiomycetes (club fungi)-**Vegetative reproduction occurs through fragmentation. Absence of sex organs. Plasmogamy between two vegetative or somatic cells results in the formation of basidium. Basidium undergo karyogamy and meiosis to form four basidiospores. For example, *Agaricus* (mushrooms), *Ustilago* (smut) etc.

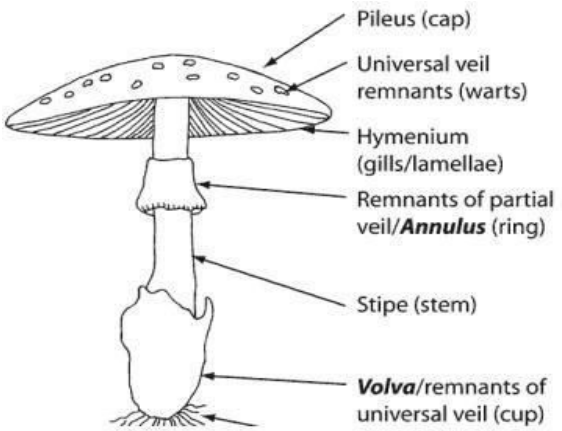

Fig.11. *Agaricus*

- **Deuteromycetes are** commonly known as *imperfect fungi* as they do not have sexual reproduction at any stage of the life. The asexual reproduction occurs by conidia. Mycelium is septate and branched. For example, *Alternaria, Trichoderma* etc.

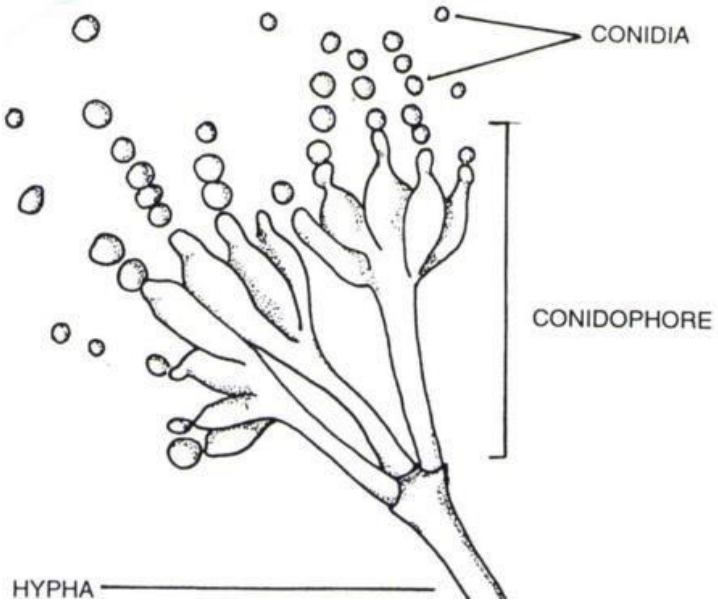

Fig.12. Deuteromycetes

- **Zygomycetes (conjugation fungi)** are primitive group of fungi. Asexual reproduction occurs by non-motile sporangiospores. For example, *Rhizopus*.

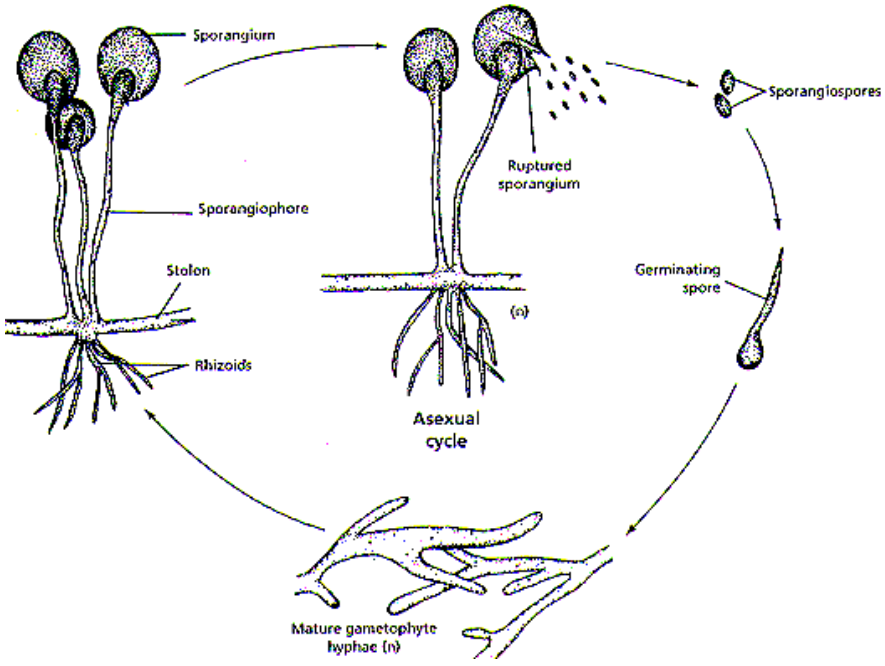

Fig. 13. Zygomycetes

Kingdom Plantae

It includes all photosynthetic, multicellular, eukaryotic plants. Characteristics of members of Plantae are as follows-

- Mostly they are eukaryotic in nature.
- The main pigment present is chlorophyll.
- Their cell wall is made up of cellulose.
- Photosynthesis helps in the synthesis of the food.
- Reproduction can be sexual as well as asexual.
- They exhibit the phenomenon of alternation of generation, that is, diploid sporophyte and haploid gametophyte.

Kingdom Animalia

They are heterotrophic, eukaryotic organisms. Some of the characteristics of members of Animalia are as follows-

- They are multicellular organisms with variable size.
- They have well developed organ system such as skeleton system, circulatory system, respiratory system etc
- They are bilaterally symmetrical.
- They have well developed locomotory organs.
- Respiration occurs by gills, book lungs, book gills, skin, lungs etc.
- Membrane bound cell organelles with nucleus bounded by a nuclear membrane.
- Circulation occurs via blood, blood vessels, and heart.
- Reproduction occurs by the formation of the haploid gametes. The fusion of gametes give rise to a new diploid organism.
- Kidneys are the main respiratory organs.

Viruses:

They are acellular structures and therefore do not find a place in Whittaker's five kingdom classification. They consist of a nucleic acid (either DNA or RNA) that is surrounded by a protein coat. They can grow and multiply only inside a host cell. Outside the host cell the viruses exist as crystals. They cause diseases and damage to the host. Examples of common viruses are the viruses causing common cod, influenza, polio, AIDS, etc.

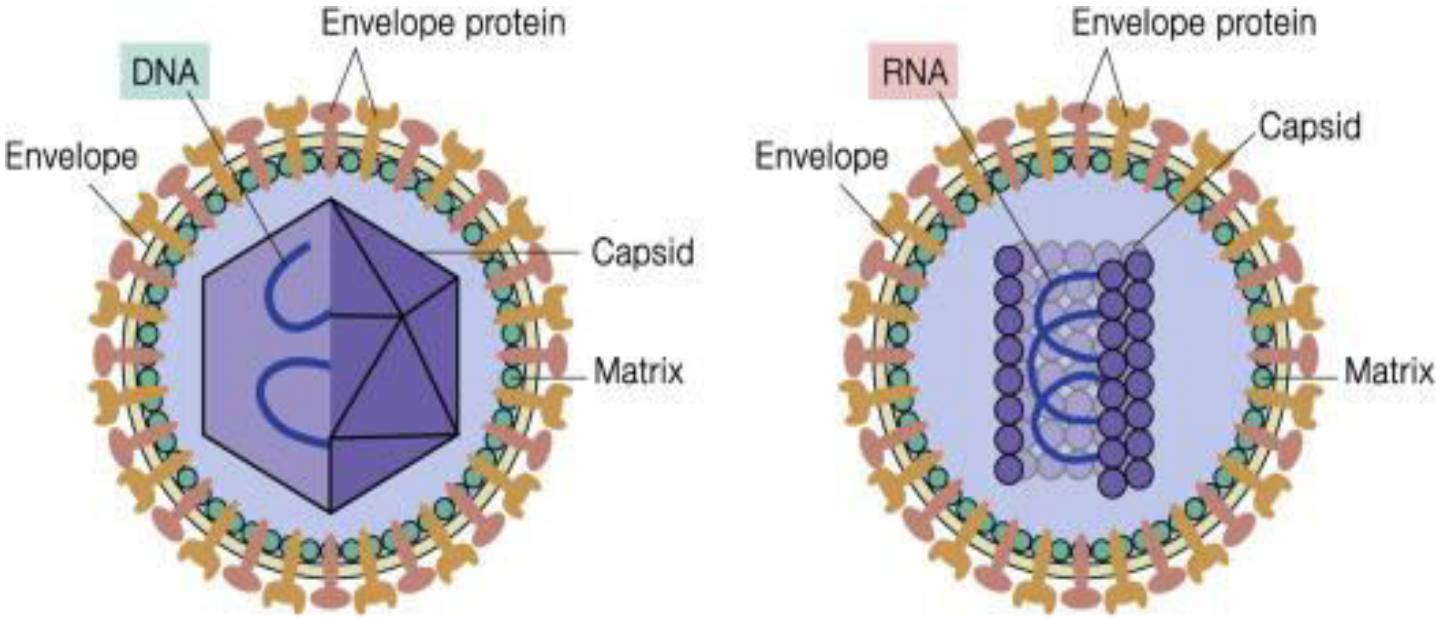

Fig. 14. Virus

Viroids:

They are the smallest structures known that are capable of infection. They consist only the nucleic acid without the protein coat.

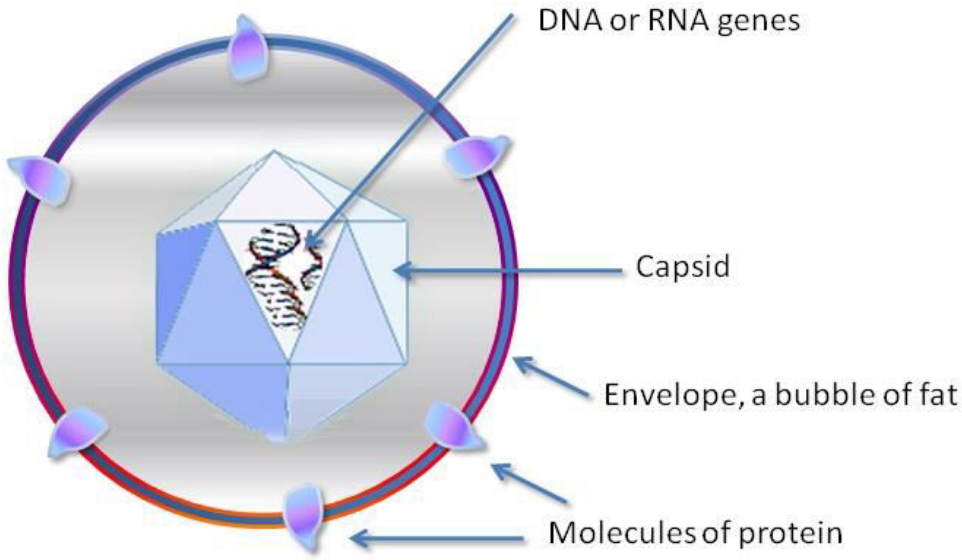

Fig. 15. Viroids

Lichens:

They are symbiotic associations of algae and fungi. The algal partner is autotrophic and synthesizes and provides food. The fungal partner offers protection and shelter.

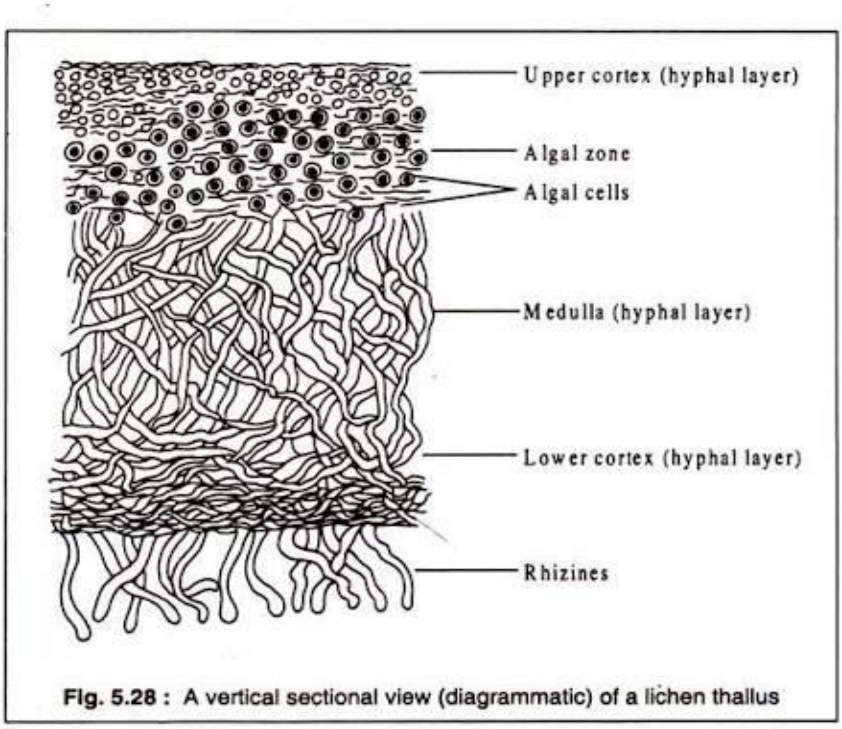

Fig. 16. Lichens