

Classification of Fungi (Alexopolus and Mims 1996)

- Many classifications were proposed by various scientists before 1990. All these classifications were based on morphology of fungi, colony characters, reproductive characters etc. At present the classification of fungi is in a set of flux (Changing) due to new biochemical analysis and DNA studies. In 1996 Alexopolus, Mims and Blackwell proposed new fungal classification. The classification is based on evolutionary relationship and therefore it is known as phylogenetic classification.
- This classification recognizes the fact that the organism which are called as Fungi are not closely related. These organisms do not share common evolutionary history, only they form a closely related group on the basis of their morphology, nutritional modes and ecology.
- **Fungi and Allied Organisms includes 3 Kingdoms**
 - **Kingdom Fungi**
 - **Kingdom Stramenofila**
 - **Kingdom Protista**

Kingdom Fungi

1. Phylum Chitridomycota
2. Phylum Zygomycota
3. Phylum Ascomycota
4. Phylum Basidiomycota

Kingdom Stramenofila

1. Phylum Oomycota
2. Phylum Hypochitridiomycota
3. Phylum Lambrinthulamycota

Kingdom Protists

1. Phylum Plasmodiophoromycota
2. Phylum Dictrostelimycota
3. Phylum Acrasiomycota
4. Phylum Myxomycota

The kingdom fungi includes four phyla i.e. Chtridiomycota, Zygomycota, Ascomycota, and Basidiomycota. These are true fungi. In 1989, Patterson introduce the term strame nophila in recognizing new monophyletic group of organism based on flagella and hair structure.

Kingdom Fungi

- They are achlorophyllous
- They are heterotrophic
- They are eukaryotic and spore bearing organism
- Fungal cell is surrounded by well defined cell wall made up of chitin i.e. fungal cellulose
- Fungi usually obtain food by absorption

Phylum Chitridomycota

- This phylum includes a single class chitridomycetes which contain 123 genera
- The member of this phylum are popularly called chitrids
- Chitrids produce motile zoospores with single flagella
- The thallus of chitrids is coenocytic with holocarpic or eucarpic mode of reproduction
- Cell wall contain chitin and glucan (Carbohydrate)
- The zygote is converted into resting spore or sporangium.
- Eg. Synchronium

Phylum Zygomycota

- It includes 2 classes zygomycetes and bicomycetes
- Zygomycota is characterized by a thick wall resting spore called zygospore which is non-motile and without flagella
- Asexual reproduction takes place usually by non-motile sporangiospore called aplanospore or arthrospore.
- The members of zygomycota reproduces sexually by fertilization of two equal size gametangia resulting in the formation of thick wall zygospore.
- The mycelium of zygomycota members is coenocytic and cell wall contain chitin.
- The zygomycota members are mostly saprophytes but some members are weak parasite of plant.
- Eg. Mucor, Rhizopus

Phylum Ascomycota

- It includes three classes Ascomycetes, Saccharomycetes, and Filamentous Ascomycetes
- The members of this phylum commonly called ascomycetes or sac fungi
- The production of sac like structure called Ascus within which sexual spore called ascospore are formed
- Eight ascospore are typically form within each ascus.
- In Ascomycota, septed mycelium is formed which has simple pores.
- The Ascomycota members produce non-motile zoospores or gametes

- Formation of oidia or typical asexual reproductive spore is a characteristic feature of Ascomycota.
- Eg. Penicillium

Phylum Basidiomycota

- Basidiomycota includes three classes i.e. Basidiomycetes, Teleomycetes, Uromycetes.
- These organisms have well developed branched and septed mycelium.
- The cell wall is mainly composed of chitin and glucan
- Asexual reproduction takes place by conidia and chlamydospores formation
- In sexual reproduction basidiospores are formed externally on the basidium
- Eg. Agaricus, Polyporus

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