Division 2: Eumycota

Subdivision 2: Zygomycotina

Class 1: Zygomycetes

General characteristics: -

1. Most zygomycetes produce a well-developed mycelium consisting of **coenocytic** hyphae.
2. Producing a thick wall resting spore called a **zygospore**, that develops within a zygosporangium formed because of complete fusion of two equal or unequal gametangia.
3. Asexual reproduction by production **sporangiospores** or **aplanospores**.
4. Most of zygomycetes are saprobes, such as bread-mold, others are parasites such as Fly fungi, and some are obligate parasites in other Zygomycetes or facultative parasites in plants.

Classification of class zygomycetes: this class have divided into **three** orders:

Order 1: Mucorales

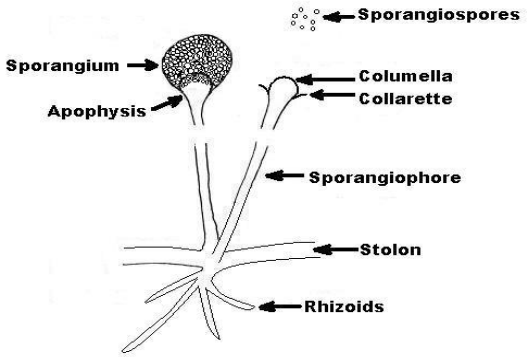
Order 2: Entomophthorales

Order 3: Zoopagales

Order 1: Mucorales: -

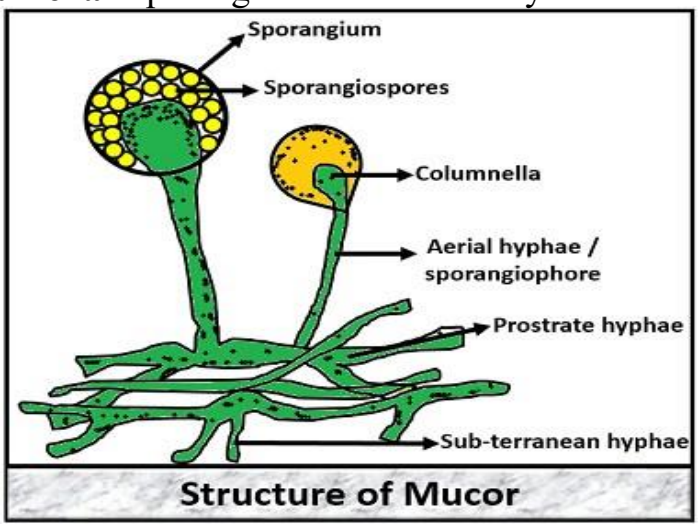
General characteristics: -

1. Most of Mucorales are saprobes, living on decaying plant or animal matter.
2. Some of zygomycetes produce organic acids such as oxalic, lactic, and succinic acids.
3. Few of zygomycetes are parasites such as ***Rhizopus stolonifer*** in fruits during the storage.



A sexual Reproduction:

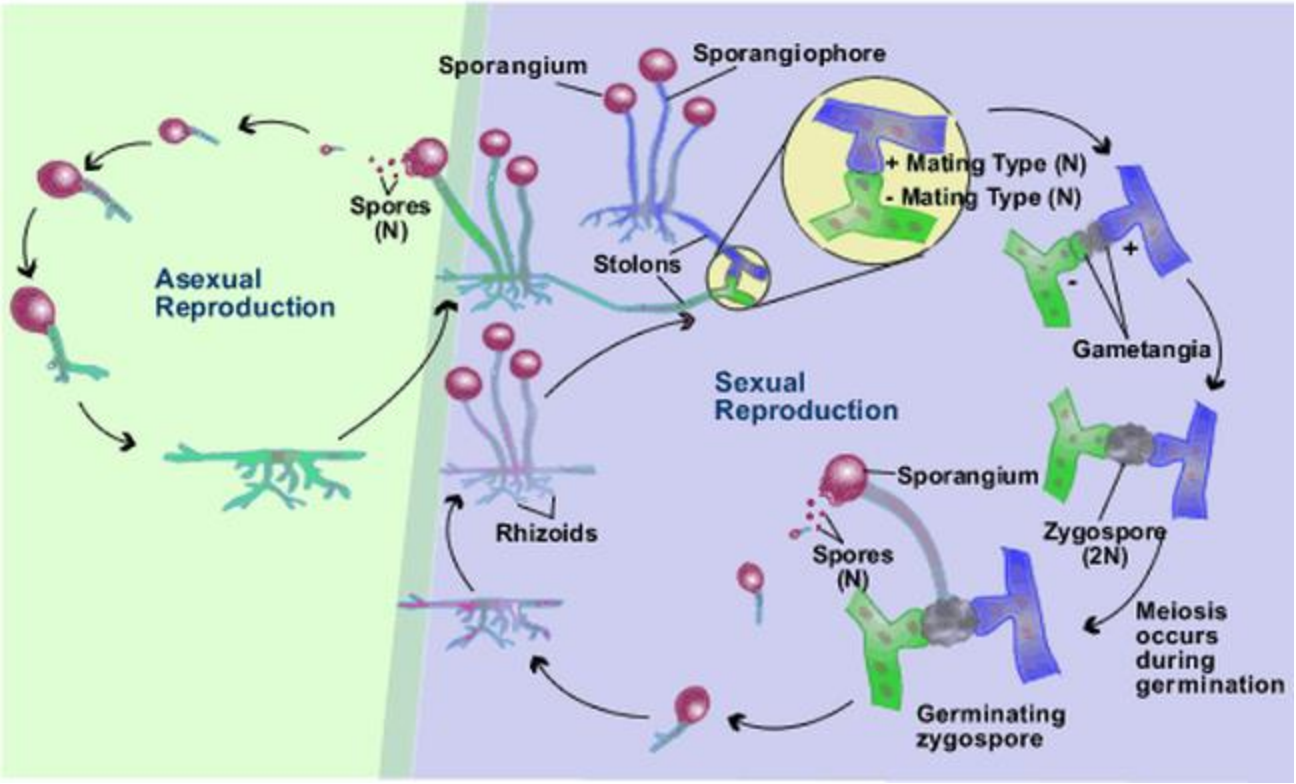
The Mucorales reproduce asexually by **aplanospores** that are produced in sporangia. The sporangia are borne on simple or branched sporangiophores. Such sporangium is formed at the tip of a sporangiophore as globose swelling into which nuclei and cytoplasm have moved from the somatic hyphae below. The part of sporangiophore within sporangium is called **columella**. Sporangium contains many thousands of sporangiospores.



Structure of Mucor

Sexual reproduction:

Sexual reproduction in the Mucorales takes place by the copulation of two **multinucleate gametangia** that are mainly similar in structure, but that may differ in size. The first step leading to the formation and fusion of these gametangia involves the formation of special hyphae called **zygophores**. The tips of the two zygophores swell to from **progametangia**. A septum termed the gametangial septum then forms near the tip of each progametangium, separating it into two cells, a **terminal gametangium** and **a suspensor cell**. The fusion septum then dissolves; plasmogamey and Karyogamey are take place forming prozygosporangium. It enlarges, develops a thick multilayered wall, and becomes the **zygosporangium** in which a single zygospore develops.



Life cycle of *Rhizopus stolonifera*

Order 2: Entomophthorales:

Family: Entomophthoraceae

Ex: *Entomophthora muscae*

Many of these fungi are parasites in insects. The most familiar species is ***Entomophthora muscae*** (from the Greek *entomo*, for insect, and *phthora*, for destruction) commonly called the **fly fungus**, which is often found on the dead bodies of house flies clinging to long unwashed windowpanes in attics, garages, and university classrooms. If you examine such a fly, you will find a wide, white, halo–like zone on the glass surrounding the dead fly. The white zone consists of spores that have been shot off the sporogenous cells growing out of the body of the fly.

The spores, which are produced singly at the tips of un-branched sporogenous cells, are covered by a mucilaginous substance and adhere to any object. If this spore contacts another fly, it quickly germinates and penetrates the cuticle of the body. Infected fly usually dies within a week or so after infection and the sporulation process is repeated. Sexual reproduction in *Entomophthora* takes place when hyphal bodies acting as gametangia, copulate and develop a zygosporangium containing zygospores.

Plate 48. Life Cycle
Aflagellatae: Entomophthorales
Entomophthora sp.