

Lecture (6) Kingdom Fungi

General Characteristics of kingdom true fungi or fungi

- eukaryotic
- mostly multicellular or (Yeasts – unicellular)
- cell walls composed of chitin (arthropod exoskeletons) and glucan .
- reproduce sexually or asexually mostly forming spore
- heterotrophs – acquire nutrients via absorption;
- “external digestion” – secretes enzymes to decompose complex molecules into simpler compounds
- major role in ecosystems = decomposition = nutrient recycling

Phylum :- chytridiomycota (single posterior flagellum)

Chytridiomycota, a phylum of fungi (kingdom Fungi) distinguished by having zoospores (motile spores) with a single, posterior, whiplash flagellum. Species are microscopic in size, and most are found in freshwater or wet soils. Most are parasites of [algae](#) and animals or live on organic compounds (as saprobes). A few species in the order [Chytridiales](#) cause [plant](#) disease, and one species, has been shown to cause disease in frogs and amphibians.

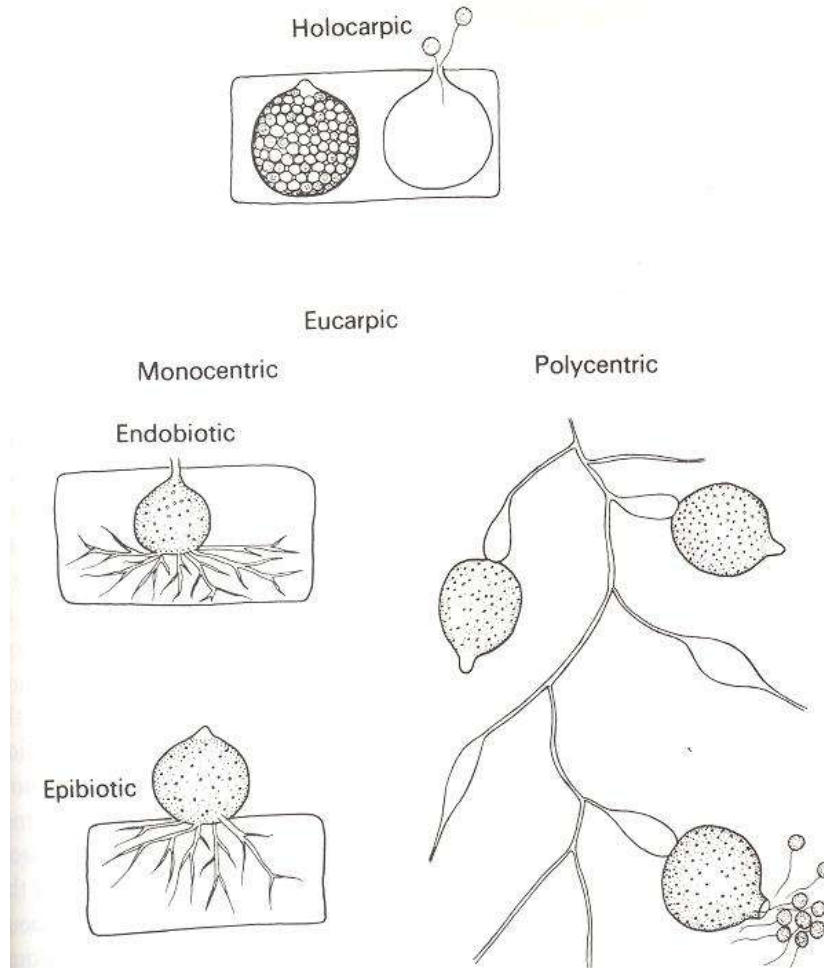
Many studies were shown most fossils of fungi belonged to chytridiomycota and This confirms that this is a fungus that first appeared Which is believed to have evolved from flagellated protista . the individuals of this kingdom also is called lower fungi or phycomycetes that is forming aseptated hyphae (coenocytic) . The Chytridiomycota, often called chytrids, are unique among all fungi in having motile spores in their life cycles , The phylum has a single class, the Chytridiomycetes,.

- 1- Cell walls are made of chitin and glucan , cellulose is not known to occur.
- 2- Chytridiomycota feed on both living and decaying organisms. They are heterotrophic and absorptive nutrition
- 3- They are mostly **aquatic**, and not terrestrial.
- 4- Sexual reproduction is variable and may be isogamous, anisogamous or oogamous.
- 5- Asexual reproduction by zoospores have a single, posterior **whiplash flagellum**.
- 6- Some individuals have alternation of generation in their life cycle
- 7- Somatic phase consists from unicellular with rhizoids or multicellular (mycelium with aseptated hyphae).

Rhizoids : it is a part of somatic phase or thallus , root like structure having protoplasm without nuclei bearing vegetative structures (zoosporangia) some rhizoids bearing one zoosporangium per thallus – monocentric .Others produce multiple zoosporangia – polycentric

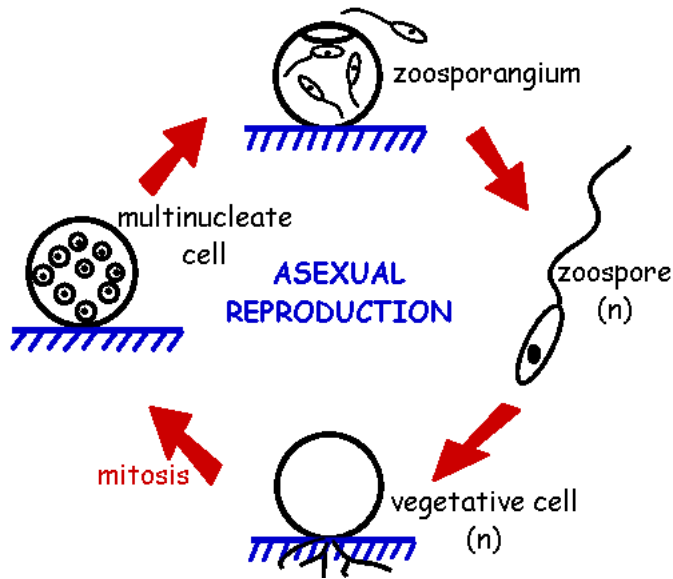
The benefit of rhizoids to confirm thallus on the surface of feed and increase surface area for absorption of nutrients) .

- 8- some individuals are causing plant diseases such as *Synchytrium endobioticum* causes black warts of potato.



Reproduction of chytridiomycota

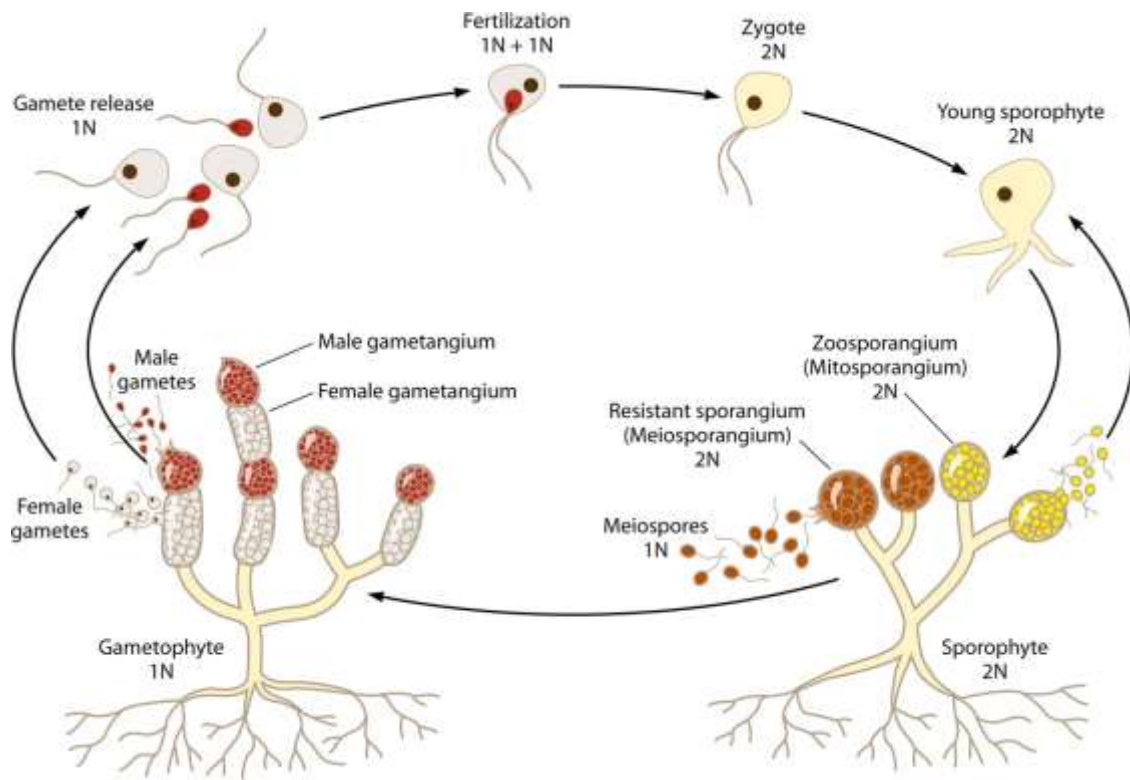
Asexually, Chytridiomycota reproduce through the use of zoospores. In asexual reproduction, zoospores release from zoosporangium within a pore at the top of zoosporangium called operculum then will swim until located a fresh substrate each will eventually lose its flagellum , The nucleus undergoes several MITOTIC DIVISIONS - resulting in a MULTINUCLEATE.. Finally, cleavage of the protoplasm occurs, which produces individual zoospores that are released through a pore.



Sexual reproduction is haploid dominant. It also depends on alternation of generations in most individuals {alternate between sporothallus which is considering asexual cycle (2n) and gametothallus sexual cycle (1n)} .

The haploid thallus, called the gametothallus, produces female and male gametes. These occur in pairs and are terminal and subterminal. Male gametes are orange-colored, while female gametes are colorless. In addition, female gametes are much larger than male gametes.

The diploid thallus is called the sporothallus. The sporothallus produces two types of zoosporgia: zoosporgangium (meitosporangium) and resistant sporangium (meiosporangium). Zoosporangia produce diploid zoospores, which can function as a means of asexual reproduction, while meiosporangium produce haploid zoospore after suffering meiosis division , Sexual reproduction may be isogamous, anisogamous, or oogamous.



Life cycle of chytridiomycetes (alternation of generation)

