

classification of fungi by G.C Ainsworth 1973

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Fungal Classification

- Initial classification – based on sexual reproduction
- Modern classification-phylogenetic relationship using biochemical and molecular aspects
- Whittaker (1969) – 5 kingdom classification-kingdom fungi.

Earlier classification of fungi

- Based on habitat association.
- 3 types
- Terrestrial fungi- growing in soil
- Hypogean fungi-under the ground
- Epiphytic fungi- growing on plants

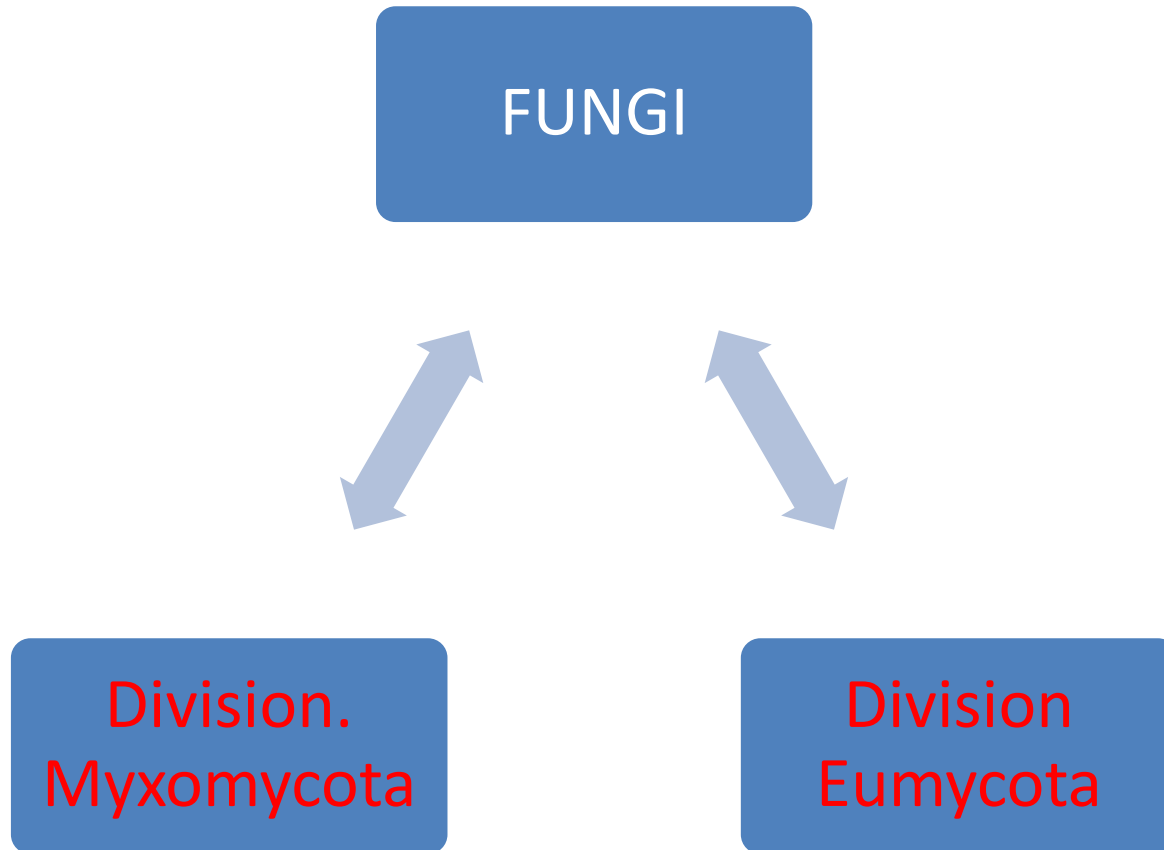
Fungal characters

- Cell wall
- Chemical composition of cell wall
- Somatic phase
- Reproduction
- Nutrition
- Structure that formed by fungi.:-
 - fruiting bodies
 - spores
- Kuraishi et al (1985)- ubiquinone systems are useful in fungal taxonomy.

- Important systems of fungal classification
- 1. classification by G.C Ainsworth
- Classification by Alexopoulose.

- Ainsworth G. C. (1973) proposed a more natural system of classification of fungi.
- Based on morphology, especially of reproductive structure.
- He includes fungi along with slime molds under the kingdom Mycota.
- Based on the presence or absence of Plasmodium and pseudoplasmodium-kingdom Mycota -2 division.
- **Myxomycota** (slime molds) and **Eumycota** (true fungi).

Ainsworth classification



Division. Myxomycota

- Wall-less organisms possess either
- a Plasmodium (a mass of naked multinucleate protoplasm having amoeboid movement) or
- pseudoplasmodium (an aggregation of separate amoeboid cells).
- Both are of slimy consistency, hence slime molds.
- 1. Class. **Acrasiomycetes** (cellular slime molds)
- 2. Class. **Hydromyxcetes** (net slime molds)
- 3. Class. **Myxomycetes** (true slime molds)
- 4. Class. **Plasmodiophoromycetes** (endo- parasitic slime molds).

- **Division Eumycota**
- i. Free-living, parasitic or mutualistic symbionts, devoid of chlorophyll.
- ii. Cell wall-chitin and glucan.
- iii. Reserve food materials: mannitol and glycogen.
- iv. majority are filamentous (some unicellular)

- Division Eumycota (True fungi, all with walls):
- Subdivision:- **Mastigomycotina** (motile cells – zoospores present, perfect state spore-oospore).
- **Zygomycotina** (mycelium aseptate, perfect state spore-zygospore).
- **Ascomycotina** (yeasts or septate mycelium, perfect state spore- ascospores formed in ascus, usually within ascocarp).
- **Basidiomycotina** (yeast or septate mycelium, perfect state spore – basidiospore formed on a basidium).
- **Deuteromycotina** or Fungi imperfecti. Yeast or septate mycelium. Perfect state unknown.

Subdivision Mastigomycotina

- 1. Class. **Chitridiomyces** (unicellular, zoospore with single whiplash flagellum).
- 2. Class. **Hyphochytridiomyces** (unicellular, zoospore with single tinsel flagellum).
- 3. Class. **Oomyces** (aseptate mycelium, zoospores with two flagella).

Subdivision. Zygomycotina

- mycelium aseptate, perfect state spore-zygospore.
- 1. Class. **Zygomycetes** (mycelium immersed in the host tissue).
- 2. Class. **Trichomycetes** (mycelium not immersed in the host tissue).

Subdivision. Ascomycotina

- Ascomycotina (yeasts or septate mycelium, perfect state spore- ascospores)
- 1. Class. **Hemiascomycetes** (no ascocarp, asci naked).
- 2. Class. **Loculoascomycetes** (fruit body an ascostroma, asci bitunicate i.e., 2-walled).
- 3. Class. **Plectomycetes** (fruit body cleistothecium, asci unitunicate i.e., 1-walled).
- 4. Class. **Laboulbeniomyces** (fruit body perithecium, asci unitunicate, exoparasite of arthropods).

- 5. Class. **Pyrenomyces** (fruit body perithecium, asci unitunicate, not parasitic on arthropods).
- 6. Class. **Discomycetes** (fruit body apothecium, asci unitunicate).

Subdivision. Basidiomycotina

- Basidiomycotina (yeast or septate mycelium, perfect state spore – basidiospore formed on a basidium).
- 1. Class. **Teliomycetes**. Basidiocarp lacking, teliospores grouped in sori or scattered within the host tissue, parasitic on vascular plant.
- 2. Class. **Hymenomycetes**. Basidio- carp present. Hymenium is completely or partly exposed at maturity. Basidiospore ballistospores.
- 3. Class. **Casteromycetes**. Basidiocarp present. Hymenium enclosed in basidiocarp. Basidiospore not ballistospores.

Subdivision. Deuteromycotina

- Subdivision. Deuteromycotina or Fungi imperfecti. Yeast or septate mycelium. Perfect state unknown.
- 1. Class. Blastomycetes. Budding (Yeast or Yeast like) cells with or without pseudomycelium. True mycelium lacking or not well-developed.
- 2. Class. Hyphomycetes. Mycelia sterile or bearing asexual spore directly or on conidiophore, in various aggregation.
- 3. Class. Coelomycetes. Mycelial; asexual spore formed in pycnidium or acervulus.