



## CLASSIFICATION OF FUNGI

### 1. Define the Ainsworth G. C. classification of fungi.

Many scientist classified fungi in so many different ways from time to time. Earlier systems of classification were based mainly on: i) Thallus organization and composition of cell wall, ii) Life cycle patterns, iii) Type of asexual spores, iv) Presence or absence of sexual reproduction and its type. However, recent systems are based on physiological, biochemical, cytological, genetical, serological characteristics etc., in addition to morphological characteristics.

**Ainsworth G. C. (1966, 71, 73)** proposed a natural system of classification of fungi. This classification is based on morphology, especially of reproductive structure. He includes fungi along with slime molds under the kingdom Mycota (Myceteae of Alexopoulos and Mims, 1979). Based on the presence or absence of plasmodium and pseudoplasmodium; the kingdom Mycota is further divided into two divisions: Myxomycota i.e., slime molds (Gymnomycota of Alexopoulos and Mim, 1979). Divisions are subsequently divided into subdivision, class, subclass, order, family and then to genus. According to his classification, division ends in mycota, subdivision in mycotina, class in mycetes, subclass in mycetidae order in ales and family in aceae.

Kingdom: Mycota

Free living, parasitic or mutualistic symbionts, devoid of chlorophyll. Cell wall composition is very variable, majority contain chitin and glucan. Reserve food materials are oil, mannitol and glycogen. Except some unicellular members, majority are filamentous.



A. Division: Myxomycota

Wall-less organisms possess either a plasmodium (a mass naked multinucleate protoplasm having amoeboid movement) or a pseudoplasmodium (an aggregation of separate amoeboid cells). Both are of slime consistency, hence slime molds.

1. Class: Acrasiomycetes (cellular slime molds)
2. Class: Hydromyxomycetes (net slime molds)
3. Class: Myxomycetes (true slime molds)
4. Class: Plasmodiophoromycetes (endoparasitic slime molds)

B. Division: Eumycota

- a. Subdivision: Mastigomycotina (motile cells-zoospores present, perfect state spore-oospore).
  1. Class: Chitridiomycetes (unicellular, zoospore with single whiplash flagellum)
  2. Class: Hyphochytridiomycetes (unicellular, zoospore with single tinsel flagellum)
  3. Class: Oomycetes (aseptate mycelium, zoospore with two flagella)
- b. 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)
- c. Subdivision: Ascomycotina (yeasts or septate mycelium, perfect state spore-ascospores formed in ascus, usually within ascocarp).
  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)

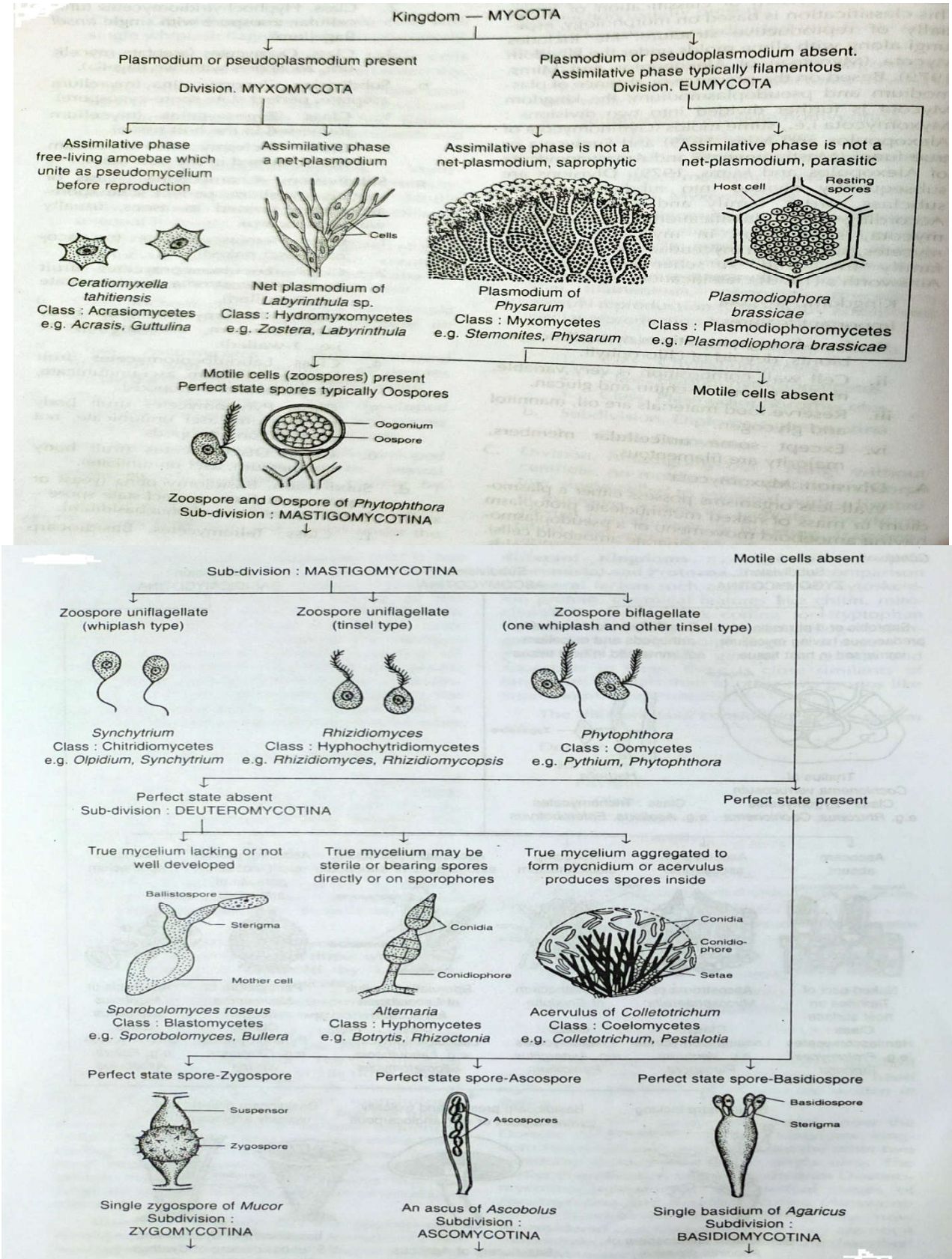


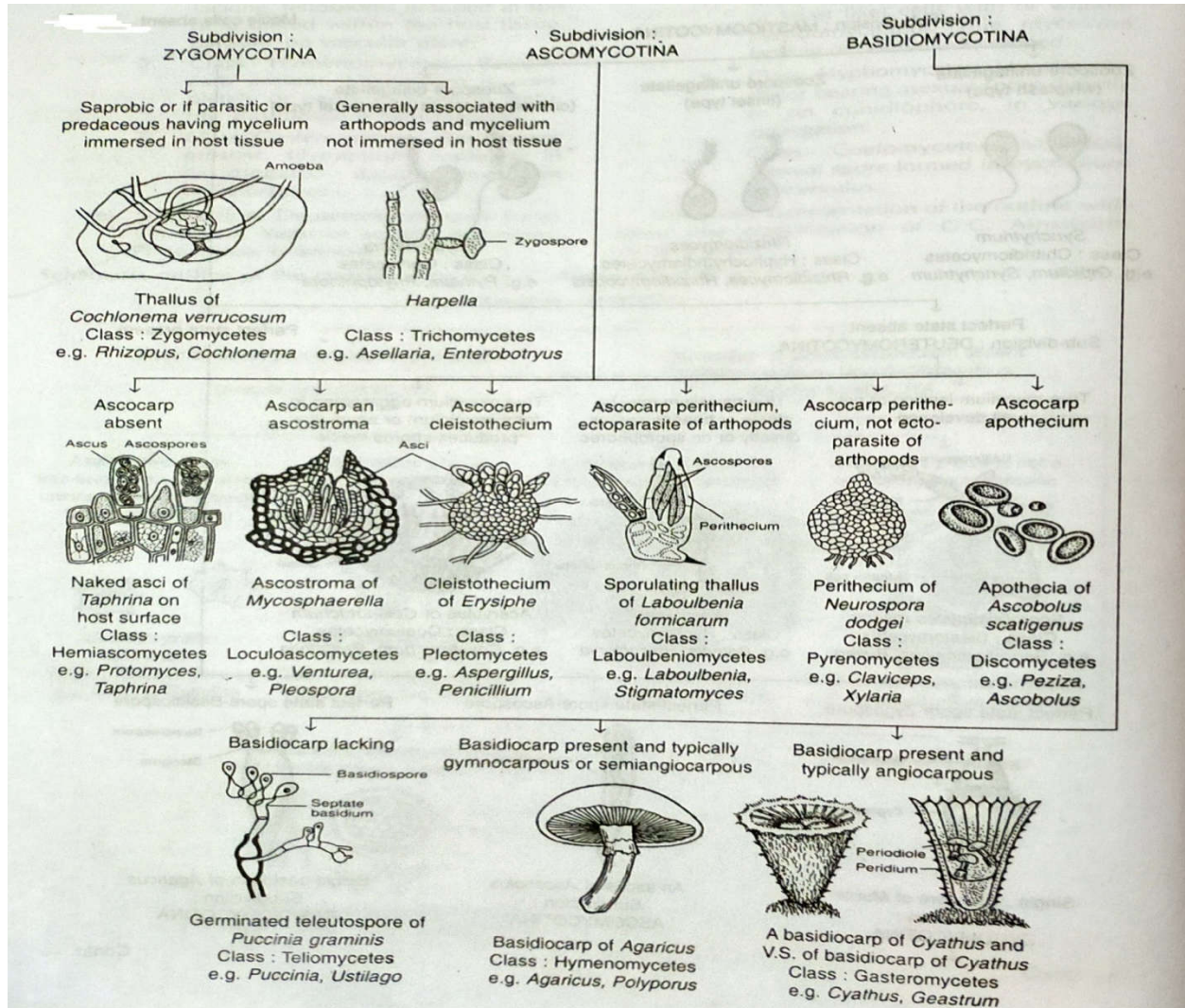
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4. Class: Laboulbeniomyces (fruit body perithecium, asci unitunicate, exoparasite of arthropods)
  5. Class: Pyrenomycetes (fruit body perithecium, asci unitunicate, not parasitic on arthropods)
  6. Class: Discomycetes (fruit body apothecium, asci unitunicate)
- d. Subdivision: Basidiomycotina (yeasts 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 (Basidiocarp present. Hymenium is completely or partly exposed at maturity. Basidiospores ballistospores)
  3. Class: Gastromycetes (Basidiocarp present. Hymenium enclosed in basidiocarp. Basidiospore not ballistospores)
- e. Subdivision: Deuteromycotina (Yeast or mycelium)
1. Class: Blastomycetes (Budding cells with or without pseudomycelium. True mycelium lacking or not well developed)
  2. Class: Hyphomycetes (Mycelia sterile or bearing asexual spore directly or on conidiophores, in various aggregation)
  3. Class: Coelomycetes (Mycelial, asexual spore formed in pycnidium or acervulus)

Schematic representation of the outline with figure, the classification of G.C.

Ainsworth (1973) is given here:





References:

- Hait G, Bhattacharya K, Ghosh A k. A Textbook of Botany (vol.1). New Central Book Agency (P) Ltd. 2017; ISBN:81-7381-547-x

(All the information is collected from above references and will be used only for teaching and learning purposes)