

EVOLUTIONARY TENDENCIES IN LOWER FUNGI

FUNGI

- ❖ Fungi are eukaryotic microorganisms
- ❖ spore-bearing organism that has absorptive nutrition and lacks chlorophyll
- ❖ Each fungal cell has one or more nucleus
- ❖ Fungi secrete enzymes that degrade the variety of source. (Ex. Fruits & chemicals)
- ❖ Sexual and asexual reproduction are occur

THE LOWER FUNGI

- ❖ The LOWER FUNGI are a collection of unrelated groups. Which have been grouped together.
- ❖ As they are either unicellular or possess an aseptate mycelium & multinucleate vegetative bodies.
- ❖ The Lower fungi (Phycomycetes) includes- Chytridiomycetes, Oomycetes & Zygomycetes.

TYPES:

- ❖ Lower fungi may be subdivided into Non-Flagellate and Flagellate members
- ❖ The Flagellate fungi include Myxomycota & Mastigomycotina.
- ❖ The Non-Flagellate fungi include the Zygomycotina. (Ex. Rhizopus, Pilobolus & Mucor etc..)

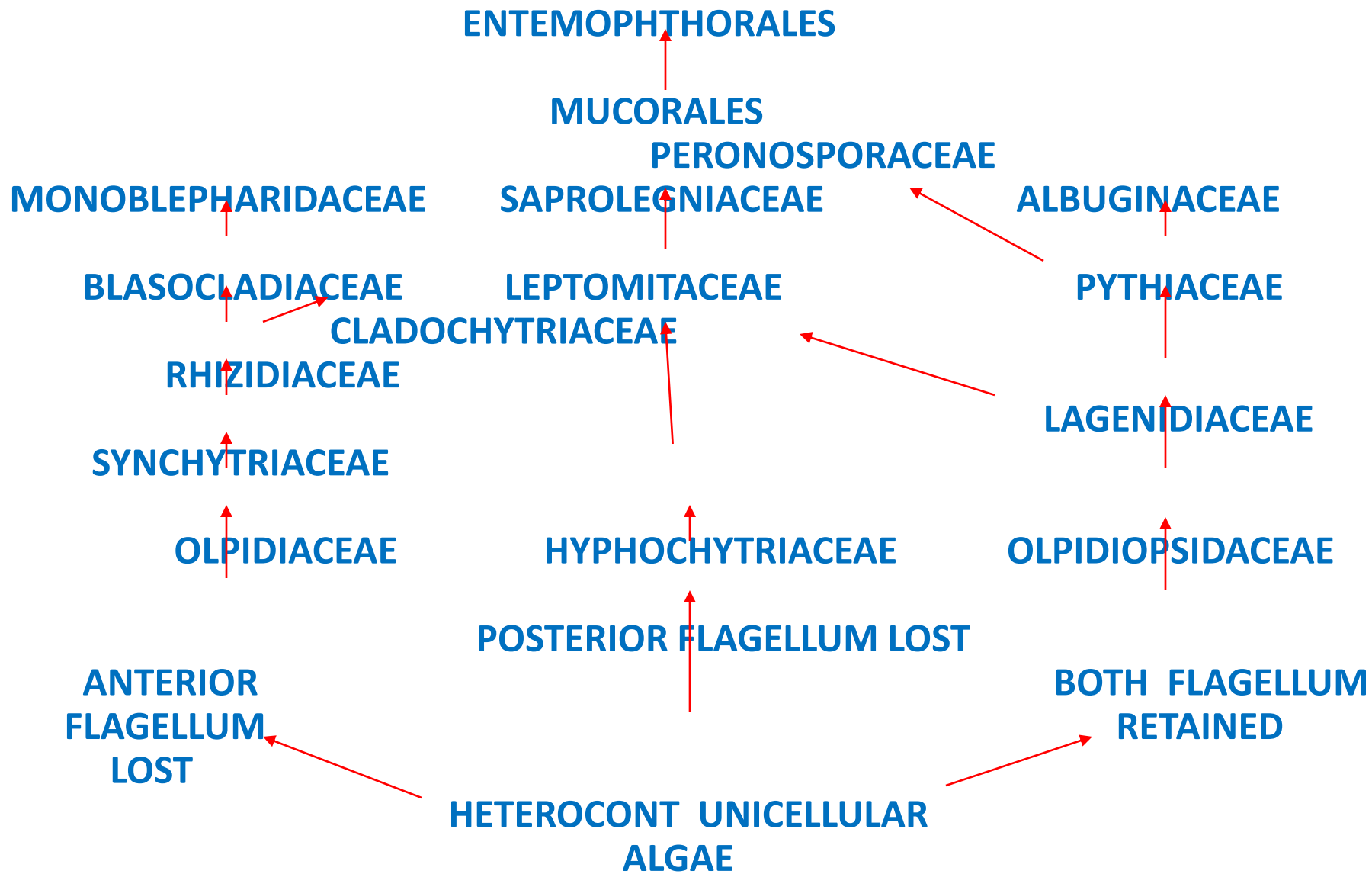
EVOLUTIONARY TENDENCIES IN LOWER FUNGI

➤ In the lower fungi, THREE evolutionary series based upon the structure of the zoospores and the composition of the cell wall were established early, There are:-

(1) Posteriorly uni-flagellate fungi, with a whiplash type flagellum & cell walls of chitin β -glucan

(2) Anteriorly uni-flagellate fungi, with a tinsel type flagellum & cell walls of chitin. Cellulose-chitin may be detected some time

(3) Anteriorly or laterally biflagellated fungi with one flagellum whiplash and other one is tinsel type, Cell walls always Cellulose- β -glucan



Suggested lines EVOLUTION of the FUNGI from the origin of Unicellular ALGAE

STRUCTURE OF THE THALLUS

❖ **Holocarpism** :- (starting phase)

- Lowest families having, uniclular structure that gets transformed into a Single Reproductive structure.

As a Sporangium or Gametangeum.

- There are no differentiation between the VEGETATIVE & REPRODUCTIVE portions.

EX. IN 1ST Series → Olpidium.

 IN 2ND Series → Anisolpidium.

 IN 3RD Series → Olpidiopsis.

- From_HOLOCARPISM to EUCARPISM:- Thallus formation.

Monocentric to Polycentric.

(1) Monocentric :- Rhizoids without nuclei, Ex. Rhizophidium.

(2) Polycentric :- Rhizoids with nuclei, with centers. Ex. Hypochytrium.

- Mycelioid Types :- Rhizoids & hyphae changed in Mycelium.

Ex. Blastocladia.

ASEXUAL REPRODUCTION

1. IN HOLOCARPIC TO EUCARPIC :

- Zoosporangia and Zoospores are developed in all three groups.
- In the Holocarpic – Entire somatic cell gets converted in Zoospores.
- In the Eucarpic – sporangia get developed.
- There were the development of Sporangiphores & their shape & size are play vital role in the evolution series...

2. From SPORANGIUM to CONIDIUM : ANOTHER IMP CHANGES...

- An adaptation of CONIDIA , gets develop.
- conidial chain & conidiophore occur.

SEXUAL REPRODUCTION

Origin of sex and Isogamy

- ISOGAMY reproduction is occurs In the most primitive families.
- By the fusion of TWO gametes.
- Origin of sex in fungi is similar to sex origin in Algae.

1. From Isogamy to Anisogamy :

- Fusion between two flagellated gametes, but they differ in Size.
- Bigger one is FEMALE & smaller one is male.

Ex. Ascomyces (Blastocladales).

2. From Anisogamy to Oogamy :

Male female gametes have fully differentiated.

Non-motile female gametes, fertilized by motile male gametes.

Fertilization tubes are formed. & there spores are called Oospores.

Ex. Mainly in monoblepharidales

3. MULTIOVULATE & UNIOVULATE CONDITION :

An Oogonium with multi eggs. Ex. (Saprolegnia)

An Oogonium with single egg. Ex. (Luptolegnia)

4. PERIPLASM : As a first appearance...

Multinucleated Periplasm Ex. (Rhipidiaceae)

Uninucleated Ooplasm Ex. (perenosporales)