KINGDOM FUNGI NOTES

CHARACTERISTICS:

- Eukaryotes
- Prefer dark, warm, moist areas
- Unicellular (yeast) or Multicellular (molds, mushrooms)
- Have cell wall in L.C. - *NOT part of K. Plantae because they lack chlorophyll
- All heterotrophic – digestion is extra cellular (external), and then the food is absorbed through the cell wall/ cell membrane.
  a) saprobes = absorb food from dead/ decaying organisms ex) mushrooms
  b) parasites = obtain food from living host ex)ringworm, Athlete's foot.

REPRODUCTION:

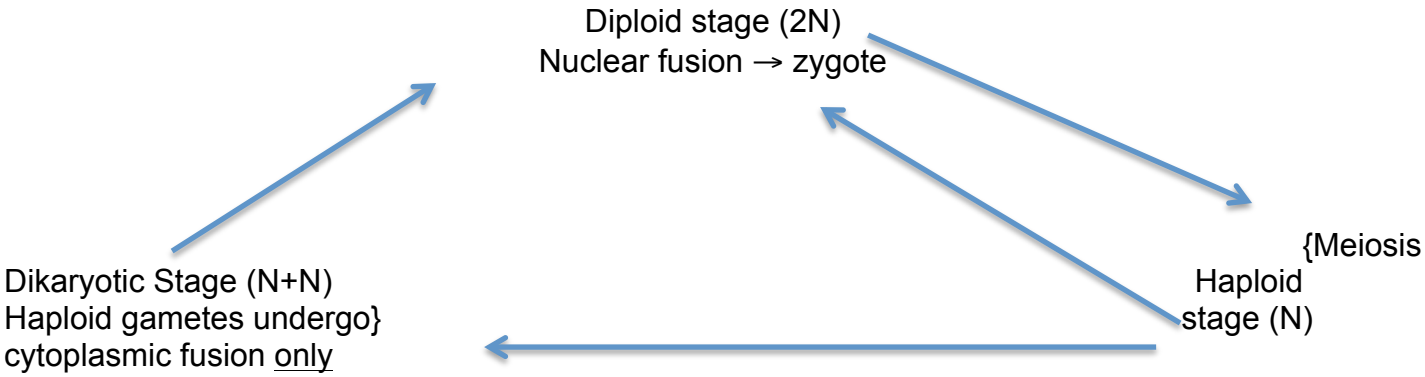
Fungi always produce spores.
Dispersed by air currents.

1.**Asexual Reproduction** (4 types)
a) Fission = simple cell division (mitosis)
b) Budding = new organism grows from body of parent and detaches
c) Fragmentation= hyphae broken apart
d) Spores = reproductive cell that is ***haploid*** and has a thick outer covering for protection. Spores are produced in sporangia. Spores develop in haploid hyphae (N).

2.**Sexual Reproduction** (1 type)
Spores = produced when 2 haploid cells called gametes undergo fusion (2 gametes fused together). The 2 nuclei may or may not fuse right away.

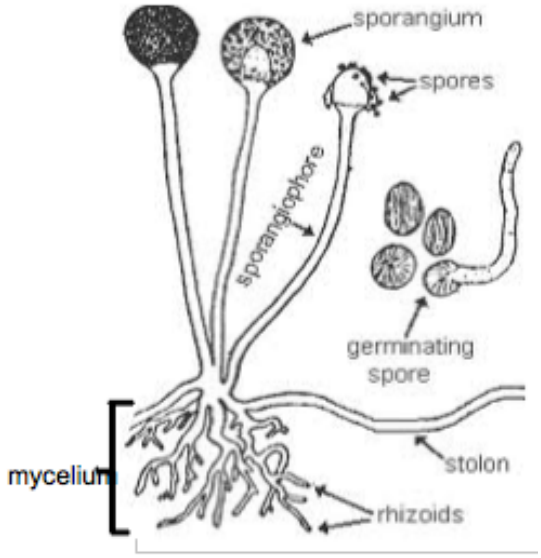
- If fuse immediately = diploid (2N) – zygote created.
- If don't fuse immediately = 2 nuclei divide independently creating a **dikaryotic stage** (2 nuclei) N+N
- This stage can last for a short or long period of time. However, eventually the 2 nuclei fuse and form a zygote.
- Haploid gametes are produced again.

General L.C. of Sexual Reproduction in Fungi

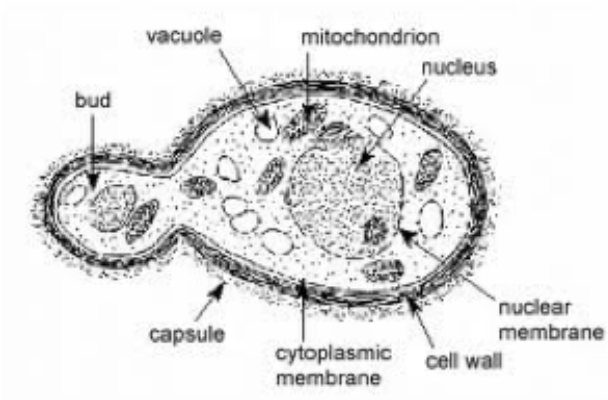


There are 3 body plans to know for fungus:

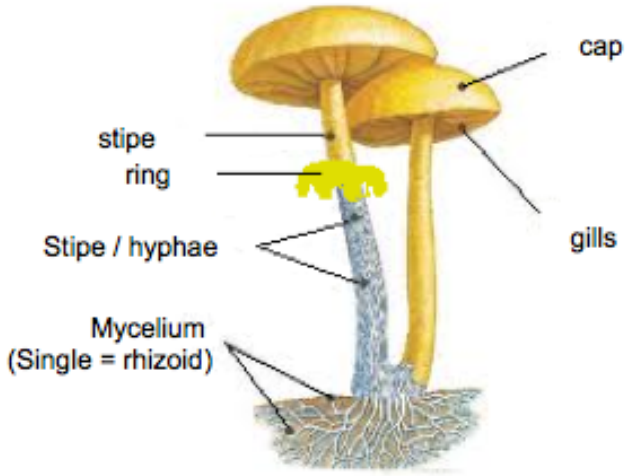
1. **Typical Mold body plan**



2. **Yeast body plan**



3. **Typical Mushroom body plan**



CLASSIFICATION OF FUNGI

Fungi are organized based on the type of spore bearing structure they produce = sporangium.

3 Phylums:

Phylum Mastigomycota Ex) Water Molds

- Motile spores ⇨ flagella with cellulose cell walls
- Mainly saprophytes
- Sexual and asexual reproduction

Phylum Amastigomycota

- Non – motile spores ⇨chitin cell walls

3 classes:

Class Zygomycetes Ex) Bread mold = *Rhizopus*

- Form zygospores (sexual reproduction)
- Some saprophytes
- Sexual and asexual spores
- **NO** dikaryotic stage

Class Ascomycetes Ex) Yeast, truffles

- SAC fungi (sac shaped sporangia)
- Sexual and asexual spores
  Sexual spores called ascospores.
- **SHORT** dikaryotic stage
- Many pathogens of plants ex) Dutch Elm's disease

Class Basidiomycetes Ex) mushroom, bracket fungi, puff balls

- CLUB fungi
- No asexual spores (sexual spores only = basidiospores)
- **LONG** dikaryotic stage
- Many are pathogens ex) smuts & rusts

Memory trick: ZAB – no, short, long for dikaryotic stage.

Phylum Deuteromycota Ex) Athlete's foot, ringworm, thrush, yeast infections

- Imperfect fungi – resemble sac & club fungi
- NO sexual spores (asexual spores only)
- Pathogens of animals ⇒ ringworm, Athlete's foot
  - Parasites!!

CONTROL OF FUNGUS

1. Use **fungicides** = chemicals that kill fungus
   – Ex) sulphur – lime compounds, mercury, selenium, & copper compounds
   – Fabrics are treated with fungicides to prevent rot
2. **Breed** plants resistant to fungus
   – Ex) Wheat resistant to rust
3. **Alter conditions** so not favourable for fungal growth – dry…

Problem: overuse of antibiotics can lead to fungal infections. This is because antibiotics kill bacteria in the body that destroy fungus. The fungus produces antibiotics to prevent bacteria from killing/decomposing them = protection!! Ex) Penicillin