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

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Diploid stage (2N)  →
Nuclear fusion → zygote

Dikaryotic Stage (N+N)
Haploid gametes undergo} cytoplasmic fusion only

{Meiosis

Haploid stage (N)
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There are 3 body plans to know for fungus:

1. Typical Mold body plan

![Typical Mold body plan diagram]

2. Yeast body plan

![Yeast body plan diagram]

3. Typical Mushroom body plan

![Typical Mushroom body plan diagram]
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