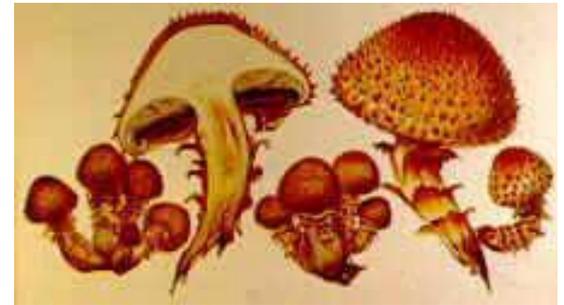


Chapter 21: Kingdom Fungi Notes



Mysterious Molds,
Mildews,
And Mushrooms



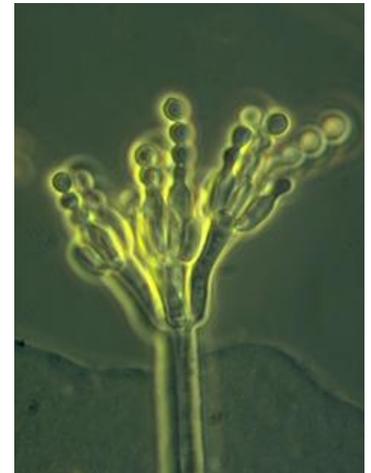
What do we already know about Fungi?

- From our Classification unit, we should already know many things about fungi
 - Eukaryote or prokaryote?
 - Unicellular or multicellular?
 - Cell wall or not?
 - What is it made of?
 - Autotroph or heterotroph?
 - Kingdom:

Characteristics of members of the Kingdom Fungi:

1. _____
2. _____
3. _____

Penicillium



Characteristics of members of the Kingdom Fungi:

4. are **NOT** plants because

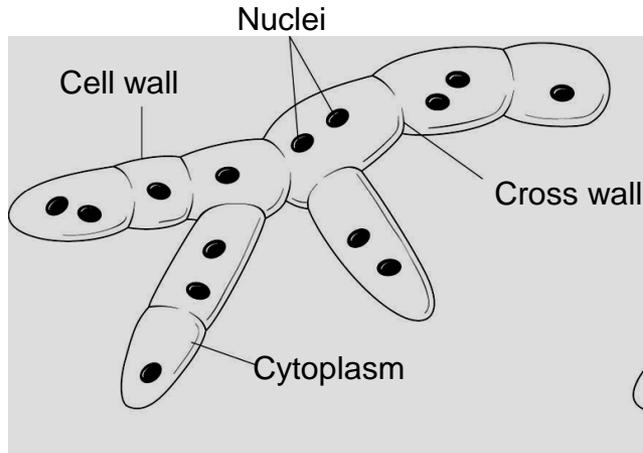
a. Plants are autotrophs and fungi are heterotrophs- Plants use photosynthesis to make their own food using chlorophyll and accessory pigments. Fungi do not!

b. _____

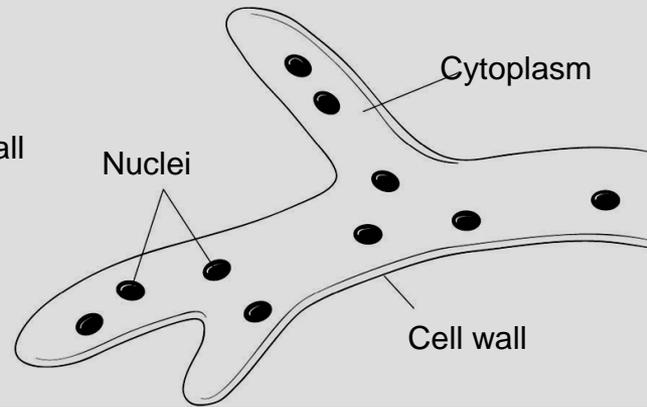
Multicellular fungi are composed of:

1. Hyphae – _____

Hyphae With Cross Walls



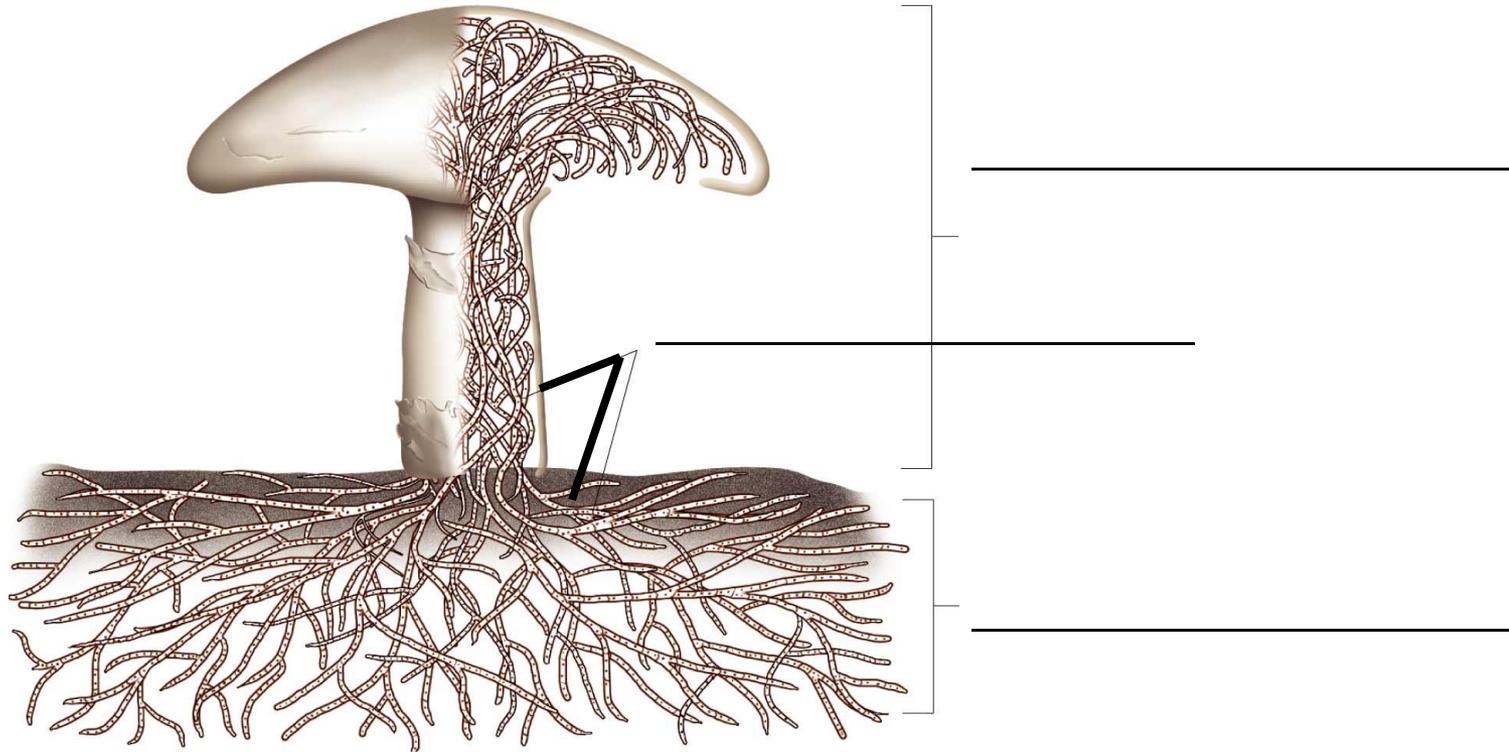
Hyphae Without Cross Walls



2. Mycelium – _____

3. Fruiting body- _____

Club Fungus

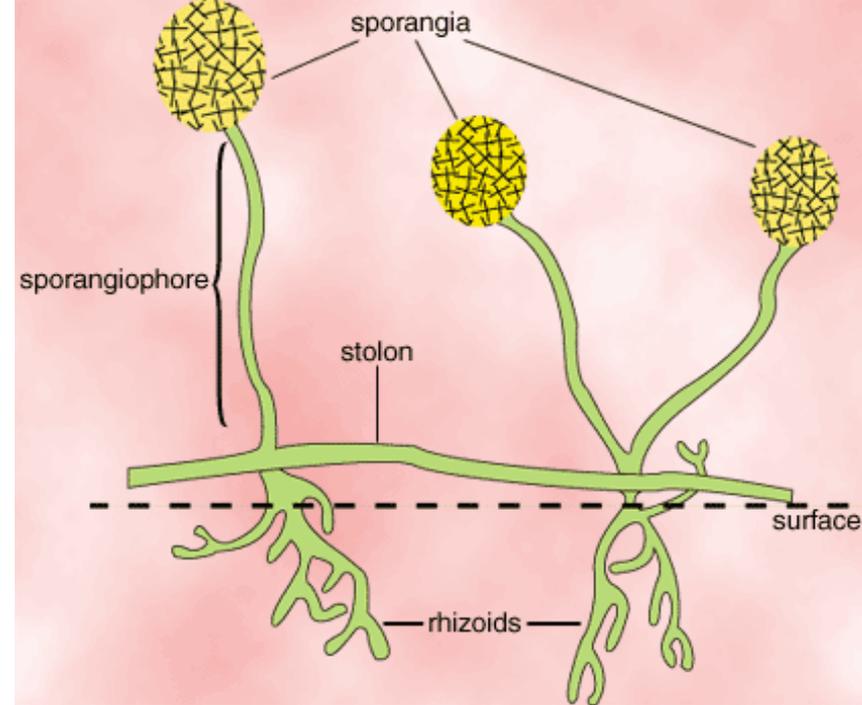


Fungi Reproduction

1. In their life cycle, most fungi reproduce both sexually and asexually.
2. They can produce spores that can spread (think of them like fungus seeds) and grow into a new fungus.



Types of Fungi



Common Name: _____

Phylum: _____

Characteristics

Can grow on foods such as meat, cheese, and bread. They appear fuzzy and can be different colors.

Characteristics:

Reproduce asexually by producing haploid spores on the sporangium atop long supportive hyphae called a sporangiophore.

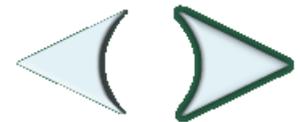
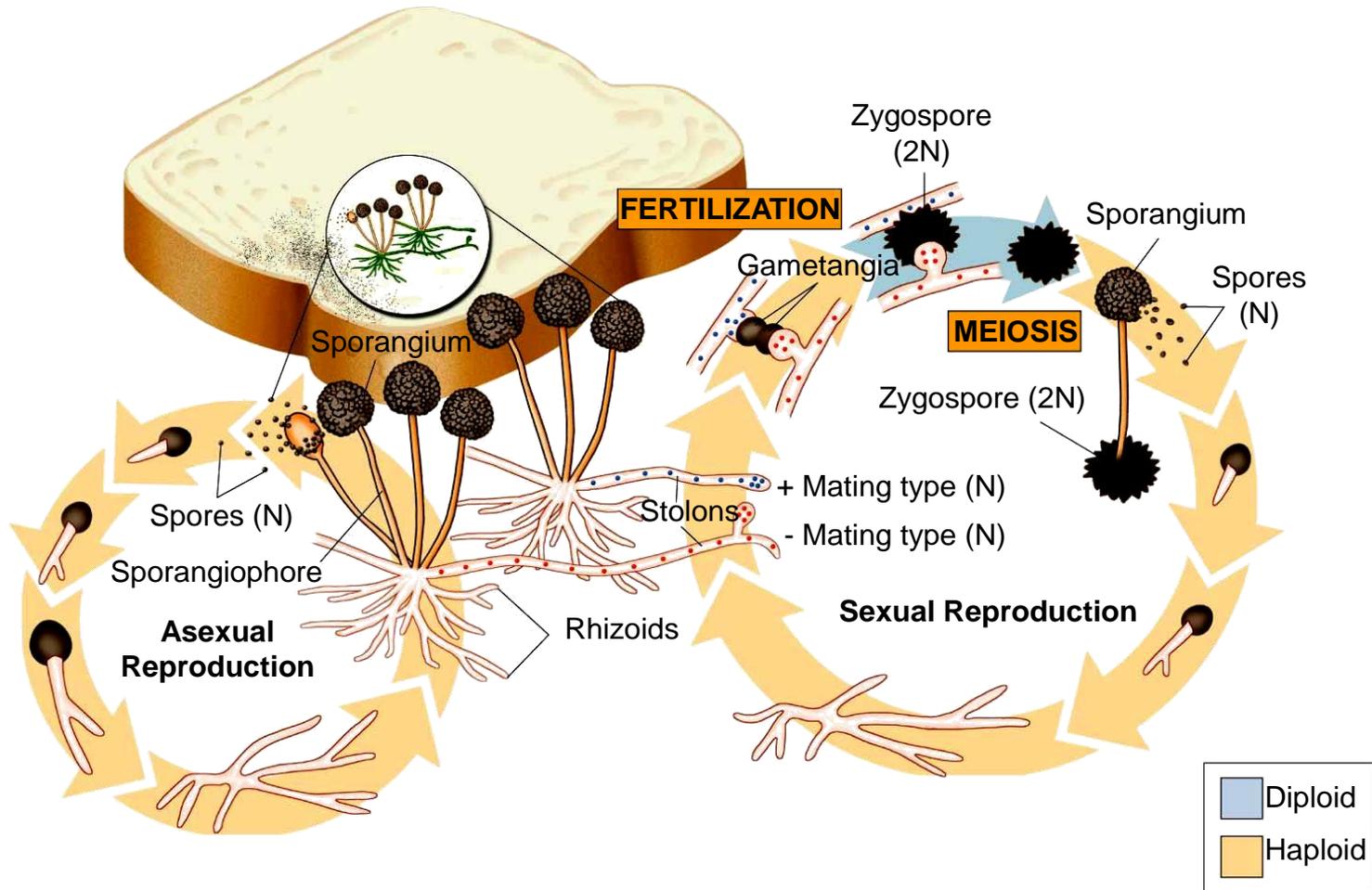
Example:

- _____
- _____
- _____



Mold is intentionally added to blue cheese which gives it its unique taste.

Figure 21-5 The Life Cycle of *Rhizopus*



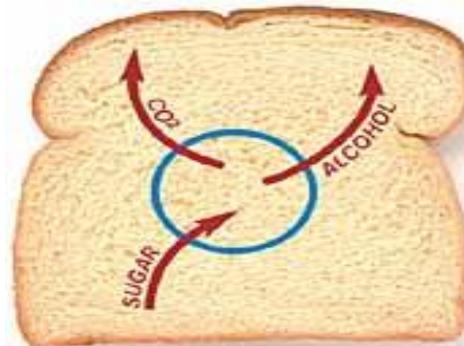
Types of Fungi

Common Name: _____

Phylum: _____

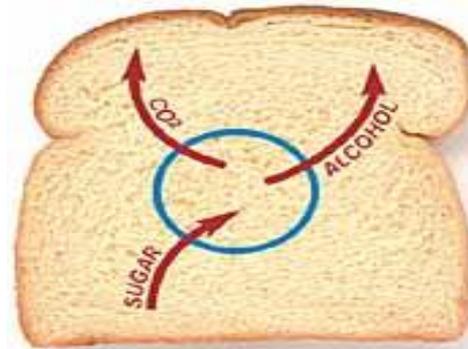
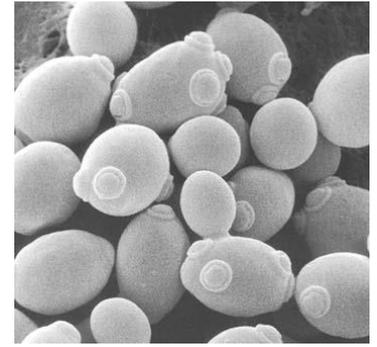
Characteristics:

- In a moist, warm, anaerobic (without oxygen) environment, yeast will rapidly divide and perform alcoholic fermentation.
- *Saccharomyces* in the presence of sugar will perform alcoholic fermentation converting sugar into carbon dioxide and alcohol.
- This is what makes bread rise (CO₂ makes the “holes” in the bread, and the alcohol evaporates) and alcoholic beverages alcoholic (alcohol stays there and CO₂ make beverages bubble)



More Sac Fungi

Phylum: Ascomycota



Example:

•

•

More Sac Fungi

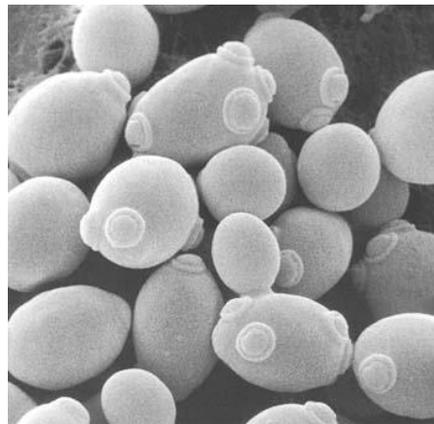
Common Name: _____

Example: morels, truffles

Morels



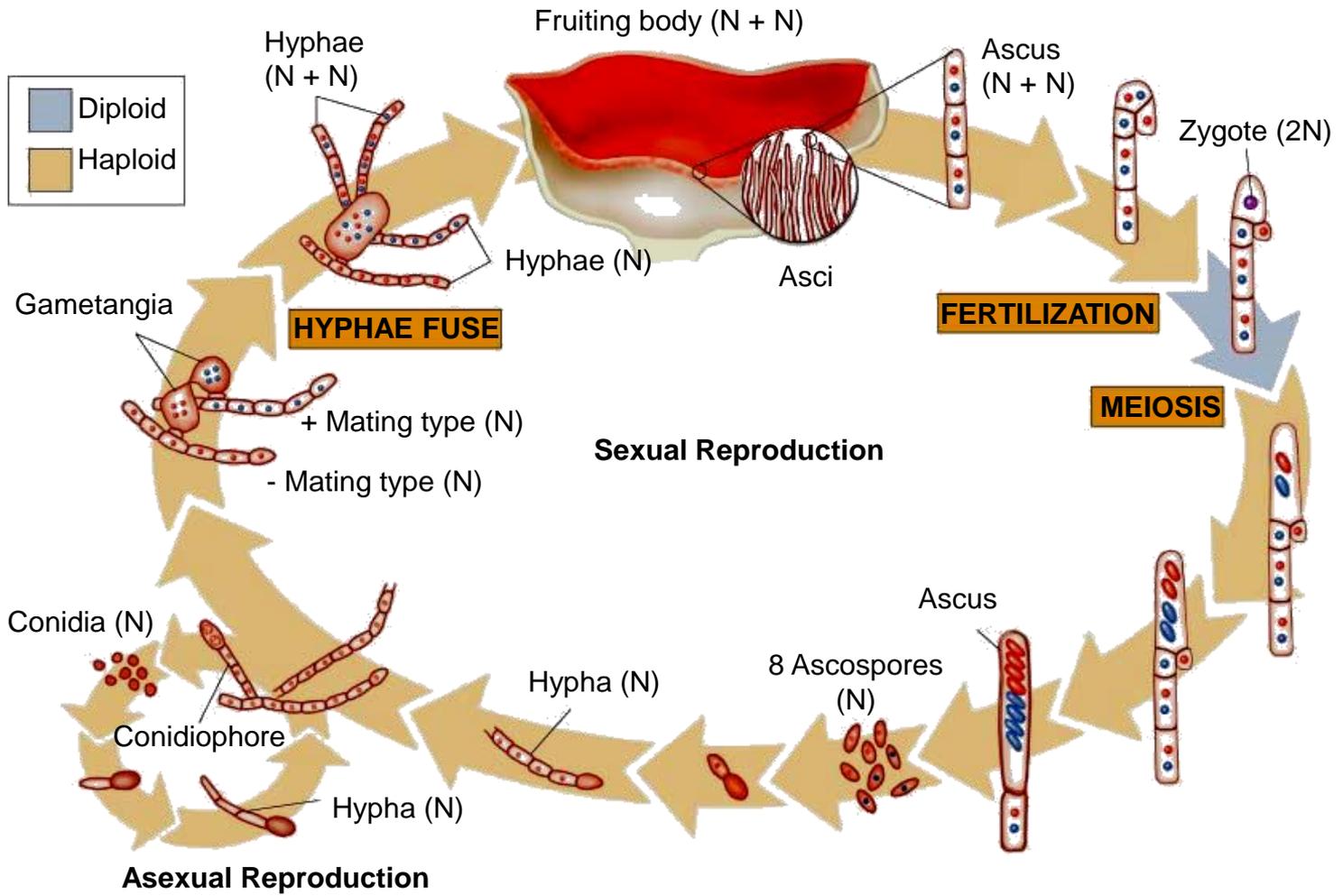
Yeast



Truffles



Figure 21-7 The Life Cycle of an Ascomycete



Types of Fungi

Common Name: _____

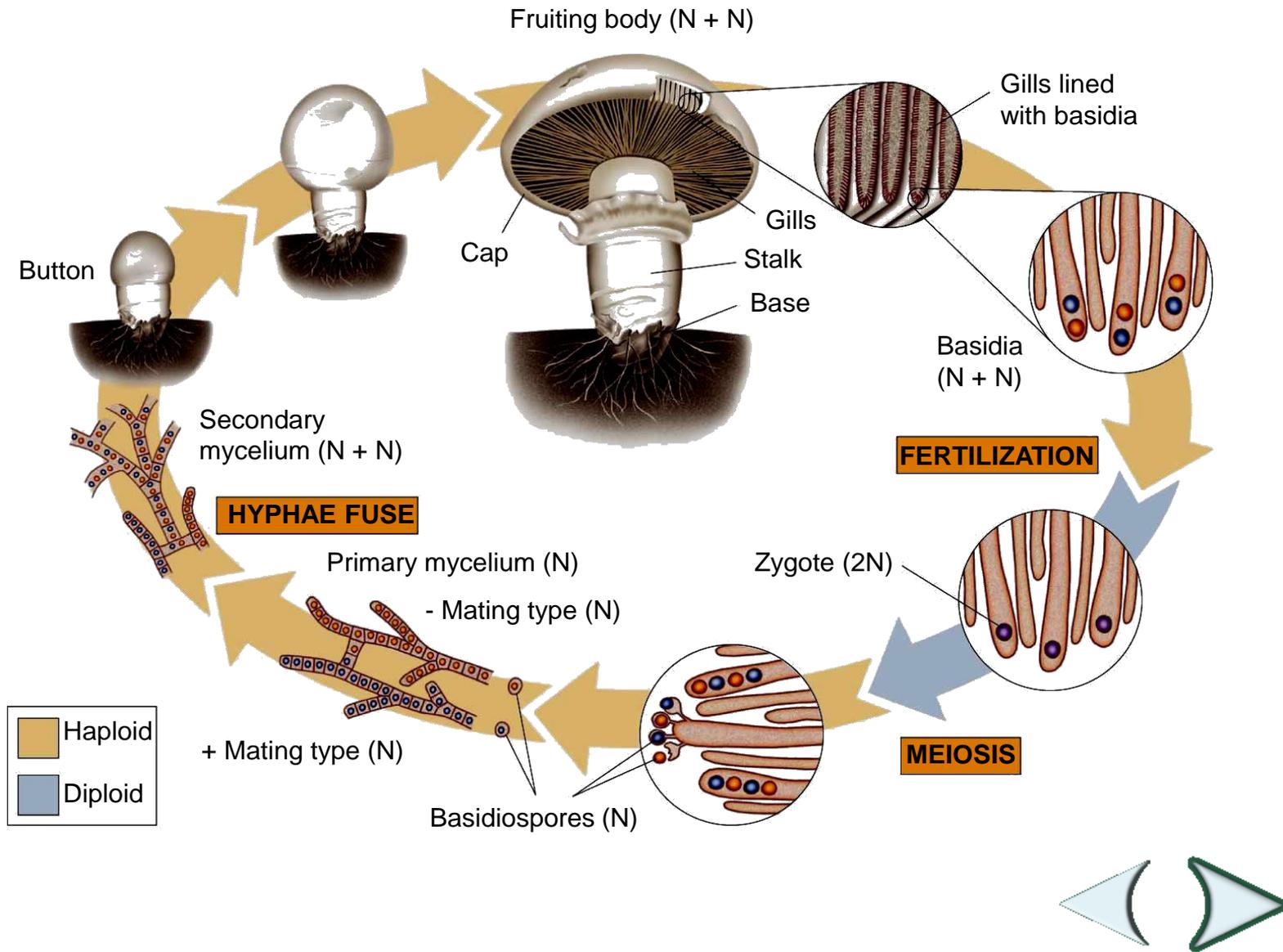
Phylum: _____

Characteristics:

The fruiting body resembles a club, that has basidia (spore-bearing part) on the underside of the club part.



Figure 21-8 The Life Cycle of a Basidiomycete



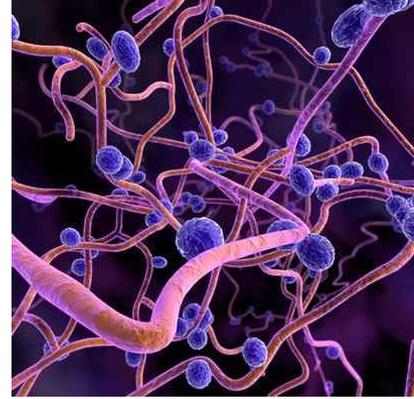
More on Club Fungi

Club Fungi are the ones we eat, but most are poisonous.

Examples: Mushrooms, puffballs



Types of Fungi



Common Name: _____

Phylum: _____

Characteristics:

They do **not** appear to go through a sexual reproductive stage.

*Includes all the fungi that scientists cannot place into the other phyla because they have never observed a sexual phase in the life cycle.

More on Imperfect Fungi

Common Name:

Imperfect Fungi

Example: *Penicillium* is a mold that grows on fruit- it is the source of penicillin (an antibiotic).



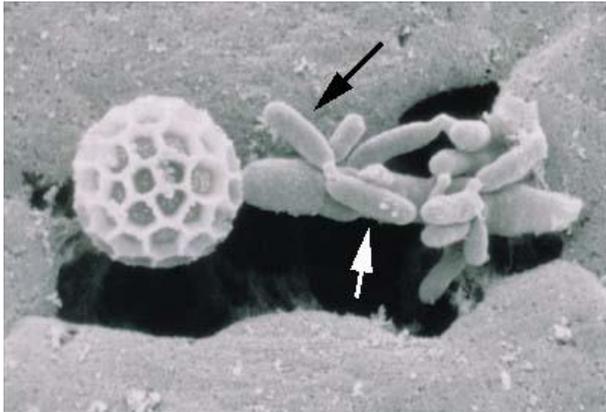
Diverse Roles of Fungi

- Fungi are not all gross (like we sometimes assume)
- What do we already know about fungi and their niche (role in the ecosystem)
 - What are some good fungi?
 - What are some bad fungi?

Diverse roles of fungi

1.

a. Plant pathogens: smut and rusts



Corn smut



Rust fungi
Melampsora

Diverse roles of fungi

Animal pathogens:

- i. Some species can kill insects and use their body as food (see page 539)

Planet Earth time:27:00



Diverse roles of fungi

- ii. Fungi known as dermatophytes cause athlete's foot, jock itch, and ringworm
**The fungus forms a mycelium within the outer layers of the skin.



Diverse roles of fungi

- iii. The fungus *Candida albicans* causes thrush (mouth infection), diaper rash, and yeast infections in the female reproductive tract.



Diverse roles of fungi

2.

breaking down dead material & returning the organic material to the soil.



Diverse roles of fungi

3. _____ :
mushrooms, bleu cheese, production
of soy sauce

Edible mushrooms



Soy sauce



Diverse roles of fungi

4. _____ :
can cause destruction of cells and organ failure, neurological symptoms, and gastrointestinal irritation

“Angel of Death”



Amanita Muscaria



Diverse roles of fungi

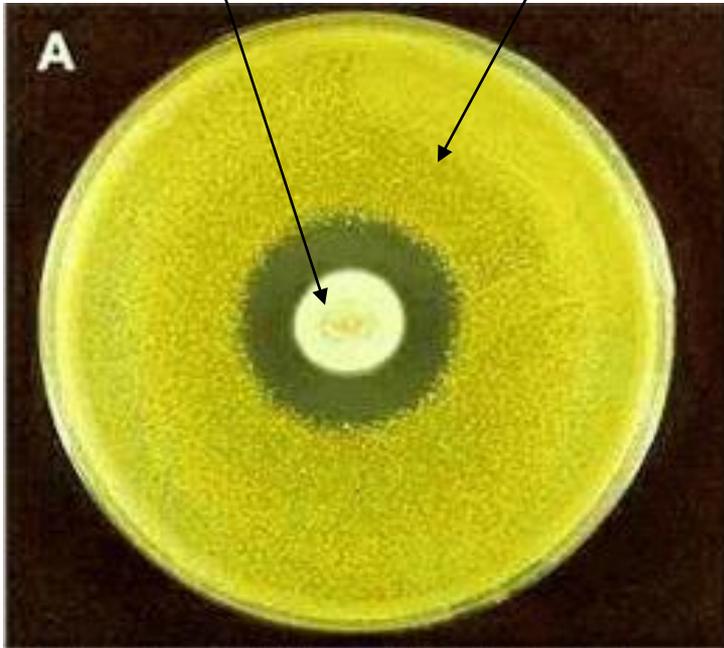
5. _____
- a. _____: toxin produced by the mold *Penicillium notatum* kills some bacteria by interfering with their ability to synthesize the cell wall.



Penicillium produces a substance that is toxic to some bacteria- discovered by Alexander Fleming in 1928.

penicillin

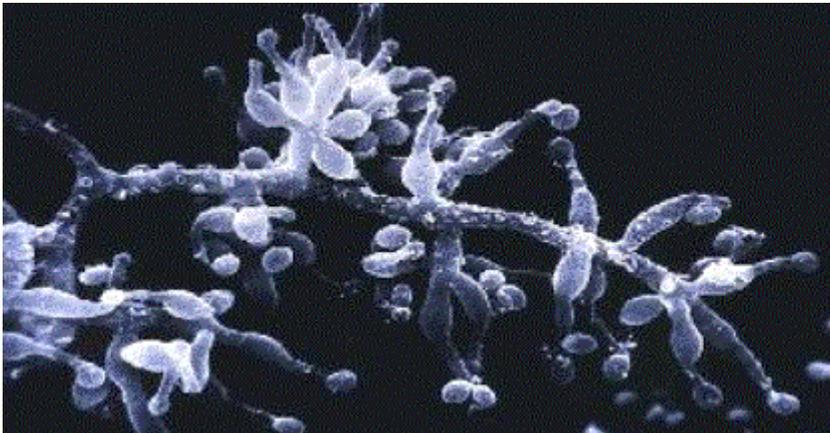
bacteria



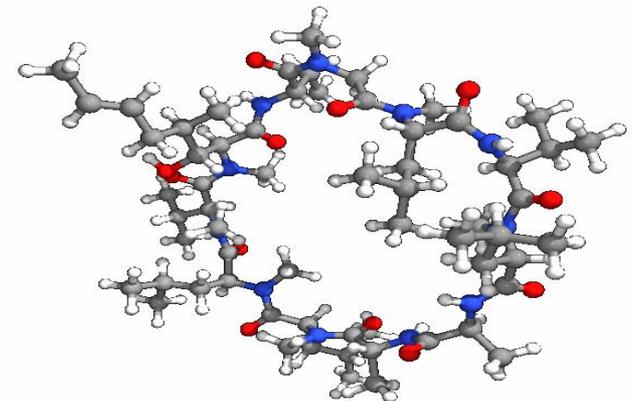
Diverse roles of fungi

- b. _____ :
an immunosuppressant drug widely used in organ transplant patients to reduce the activity of the patient's immune system to decrease the risk of organ rejection.

Tolypocladium inflatum



Cyclosporine



Diverse roles of fungi

6.

- a. Lichens: Lichens are not a single organism, but rather a combination of **two** organisms, an alga and a fungus.
 - i. The alga provides energy by photosynthesis and the fungus provides water and minerals to the algae.



Diverse roles of fungi

- b. _____
are plant roots entangled with fungal hyphae. The fungus releases nutrients from the soil and aids in the absorption of water by the plant roots, and the plant provides energy by photosynthesis to the fungus.

Ectomycorrhizae on roots of southern yellow pine

Image at right shows fungal hyphae.
Image below of Y-shaped mycorrhizae

