

## The Fungi Kingdom

**Mycology** - the study of fungi  
 fungi - *singular*  
 fungus - *plural*

### 4 Main Characteristics of Fungi

- 1) fungi are **eukaryotic**
  - they have a nuclei & mitochondria
- 2) they are **heterotrophs**
  - they depend on other organisms for food
- 3) they are **multicellular**
- 4) they cannot move on their own

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### 4 Reasons Fungi Are Different From Plants

- 1) fungi lack chlorophyll
- 2) fungi are not photosynthetic
  - cannot produce their own food
  - most are **saprophytes** →
  - some are parasites
- 3) they never reproduce by seeds
- 4) most fungi have cell walls made of chitin... **Except molds**

**Saprophyte** - feeds on dead/decaying organisms

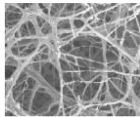


- Plant cell walls are made of what? **cellulose**
- **molds** have cell walls made of cellulose...like plants

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### Parts of fungi:

**Hyphae** - network of thin thread-like structures that form the "body" of a fungus



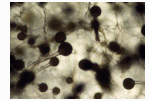
hypha - *singular*  
 hyphae - *plural*

- hyphae contain cytoplasm
- hyphae grow and branch until they cover and digest the food source (upon which the fungi is growing)

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### Parts of fungi:

**Mycelium** - a mass of hyphae  
 mycelia - *plural*

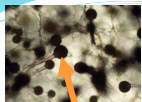


- The mycelium is usually hidden in the soil, in wood, or another food source

- A mycelium may fill a single ant, or cover many acres

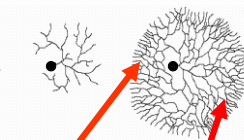


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Germ tube (Growing Spore) (initial hypha)

single hypha



Mass of hyphae (mycelium)

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What are we looking at when we see a... fungus-among-us?

- ✦ The part of the fungus that we see is only the "fruit" of the organism



- ✦ The 'living' body of the fungus is a mycelium

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### 4 Main Types of Fungi:

#### 1. Sporangium Fungi/Mold

Sporangium fungi reproduces by spores in the sporangia

- **Sporangia**- structures found on the tips of hyphae that make spores

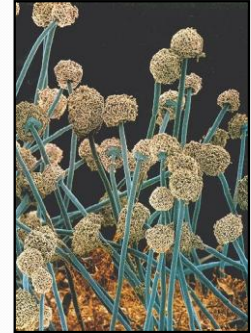
- EX: Bread Mold

- Bread mold produces spores in sporangia that stick up above the bread



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**Rhizoids**- hyphae of bread mold that digest bread for ingestion



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### 4 Types of Fungi

2. Club fungi - have a club-shaped part which produces the spores

- Example: Mushrooms



3. Sac Fungi - produce spores in sac-like structures



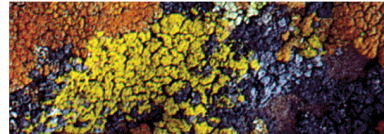
EX: bakers yeasts, cup fungi, powdery mildews, & lichens

**Lichens** - a fungus and an organism with chlorophyll that live together

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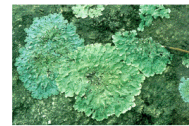
### Lichen morphology



b. Mixture of crustose lichens



c. Fruticose lichen, *Cladonia*



d. Foliose lichen, *Xanthoparmelia*

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### 4 Types of Fungi

4) Imperfect - sporangium/mold, sac, and club fungi that can only reproduce asexually

- cause most fungal diseases in humans

EX: ringworm, athlete's foot, thrush



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### Fungi Reproduction:

- the structure of the fungi that you can see, is the part that carries out reproduction

- most fungi reproduce by using spores

- fungi spores are microscopic

EX: Mushrooms & puffballs release large clouds of spores. Each cloud contains millions of spores

Reproduction is classified according to:

1) the way they form the spores

2) the shape of the structure in which spores are made

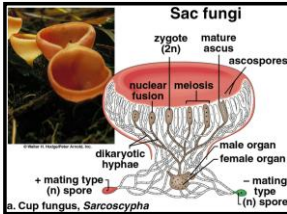
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### Fungi Reproduction of 4 types of fungi:

1) Mold - reproduce asexually & sexually



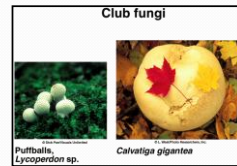
2) Sac fungi - reproduce asexually & sexually



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### Fungi Reproduction of 4 types of fungi cont'd:

3) Club fungi - reproduce asexually & sexually

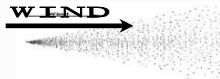


4) Imperfect - can only reproduce asexually

## How Do Fungi Get Around Not Being Tall Enough?

• Fungi have a major problem:

• Many fungi do not grow tall enough to clear the "boundary layer" of still air next to the ground so they...



1) Shoot their spores

2) Use animals, water or wind for dispersal

• Once spores are caught by something they can be carried long distances

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### Spore dispersal Examples



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### Fungi Reproduction Cont'd:

• Fungi can also reproduce from pieces of hyphae.

• Wind and water can carry pieces of hyphae to new places.

• If enough moisture and food is present, the spores/hyphae can grow into new fungi

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1. Define the term mycology.
2. List the 4 main types of fungi and give an example of each.
3. List the 4 main characteristics of fungi.
4. Explain 2 reasons why fungi are different from plants.
5. Define hyphae. Explain what it does and where it is located.
6. Define mycelium. Explain what it does and where it's located.
7. Which of the 4 types of fungi is bread mold?

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8. Define lichen. List 2 places that you can find them.
9. Which part of the fungi carries out reproduction?
10. List the two ways fungi reproduction is classified?
11. Which type of fungi causes most fungal diseases in humans?
12. List 3 types of human diseases caused by fungus.
13. What is the number one problem fungi have when they are reproducing?
14. List two ways a fungi can release spores

A mushroom walks into the bar and says to the bartender "Hey , could I get a beer please"

The bartender looks at him shaking his head and say "No, we don't serve food here"

The mushroom says "Why not I'm a Fungi!"