

BIO 206

SPRING SEMESTER 2019

INSTRUCTOR: DR. RITA MOYES

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Fungi

Fungi-distinct group-mushrooms, blights, smuts, molds, yeasts, etc

- Neither plants nor animals
- Resemble plants because:
 - Have a cell wall
 - Nonmotile
- Unlike plants they **lack chlorophyll** and **cannot use photosynthesis**
- **Spore Bearing** organisms with absorptive nutrition can reproduce sexually and asexually
- The science discipline dealing with fungi is called mycology
- >100,000 known species of fungi found in various environments
- Primarily terrestrial environments
- Can adapt to environment extremes
 - Extreme temperature
 - Extreme pH
- Some are pathogenic=infect plants and animals
 - 30%
 - Living tissues
 - Grow best in:
 - dark/cool/ moist conditions
- Majority of fungi are saprobes/saprophytic
 - Can grow pretty much anywhere there's nutrients

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- 70%
 - Live off dead tissues

Fungi

- Majority are unicellular or colonial; a few have cellular specialization-mushrooms
- Divided into 2 groups:
 - **Macroscopic fungi** (mushrooms, puffballs)
 - Can see with eyes
 - **Microscopic fungi**
 - Yeasts
 - Molds

Microscopic Fungi

- Exist in two morphologies:
 - Yeast
 - Round to oval shaped & undergo asexual reproduction by budding
 - Are larger than bacteria
 - Some form **pseudohyphae**=string of budding cells
 - Hyphae=threadlike filaments
 - Circles are bud scars
 - Mold
 - Consists of filaments called **hyphae**=thread-like cells; tubular filaments
- Overall:
 - Some fungi exist in either microscopic form
 - **Dimorphic**
 - Happens at different environmental conditions

Macroscopic view

- **Colonies of yeast**→ like those of bacteria: soft, uniform texture and appearance
- **Colonies of mold**→ look cottony, hairy, or velvety
- The woven, intertwining mass of hyphae that makes up the body or colony of a mold=**mycelium**

Hyphae-classified by structure

- **Nonseptate hyphae**
 - Consist of one long continuous cell=**no cross walls** or divisions, so it just continues to grow and get more organelles
 - Cytoplasm and organelles move freely from one region to another with each hyphae having multiple nuclei
- **Septate hyphae**
 - **Cross walls**
 - Divisions varies from solid partitions to partial walls with small pores
 - If pores are present, allows organelles, fluid and nutrients to move along the hyphae

Hyphae-classified by function

- **Vegetative hyphae**
 - Grows horizontally along the surface/substrate/food source
 - Penetrate the substrate-release enzymes for food absorption
- **Reproductive or aerial hyphae**
 - Orient vertically from the vegetative mycelium
 - Produce and support spores
 - Involved in sexual and asexual reproduction

Spore (not the same thing as endospores)

- Fungal spores are responsible for:
 - reproduction/multiplication
 - Survival
 - Dissemination
 - Producing genetic variations
- Dispersed widely through the environment by air, water, and living things
- Normal outdoor air can contain up to 100,000 fungal spores per cubic meter
- Moist air contains up to a billion spores per cubic meter
- Upon encountering a substrate, a spore will germinate and produce a new fungus colony in a very short time