

BIO 206

SPRING SEMESTER 2019

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Parasitic Fungi

- The enzyme **lysozyme** apparently plays a role in invasion
 - The fungus then digests cell components and absorb nutrients
- As cells die, the fungus invades adjacent cells and continues to digest and absorb
- Example:
 - Oak wilt at TAMU
 - Breaks down H₂O conduits
 - Fungi spread through the root system
 - Mats on trees
 - Exudes a fruity odor that attracts insects especially beetles
 - The insects pick up and spread spores
 - Treatment is very difficult
 - Fungicide
 - Deep trenches
 - Remove infected trees

Fungal Diseases (Mycoses)

- **Systemic mycoses:** deep within the body
 - Throughout bloods and organs
- **Subcutaneous mycoses:** beneath the skin
 - Living tissues
- **Cutaneous/superficial mycoses:** affect hair, skin, and nails, localized, e.g., hair shafts

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- **Opportunistic mycoses:** takes advantage of a cut to enter the body
 - Caused by normal microbiota or environmental fungi

Fungal Human Diseases

- **Cutaneous mycoses/dermatomycoses-ringworms or tineas**
 - Occur worldwide and represent the most common fungal diseases in humans
 - *Tinea corporis* → ringworm
 - *Tinea pedis* → athlete's foot
 - *Tinea cruris* → jock itch (groin)
 - All caused by various *Trichophyton* species
- **Candida albicans-** nosocomial pathogen
 - Yeast infections
 - HAI-healthcare acquired infections
 - Part of the normal flora- GI tract, mouth, and vagina
 - Opportunistic
 - Does not usually cause disease → bacteria normal flora suppresses growth → keeps them in check
 - Immune system helps to keep yeast in check
 - Change occurs: a decrease (i.e. taking antibiotics/other drugs)
 - Absence of normal flora=yeast proliferates and causes disease
 - Oral candidiasis (thrush) = infect neonate during birth
 - Thrush in immunocompromised individuals→ systemic candidiasis
 - AIDs/ diabetes
 - Corticosteroid usages
 - Denture wearers
 - Candidal vaginitis→ transmitted during sexual intercourse (STI)
 - Discharge is curd-like
 - Vaginal canal-lactobacillus sp (produces lactic acid which lowers the pH)
 - Change occurs→ alkaline= overgrowth of yeast (transmitted during the birth process)
 - Treatment with intravaginal drugs

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- Effective/safe for baby
 - Pregnancy- hormone changes → change in pH of vagina
 - ~90% of women have a yeast infection during the third trimester

3. Fungi- produce mycotoxins

- *Aspergillus flavus* produces **aflatoxins**
 - That are highly toxic and carcinogenic to animals and humans
 - These toxins are the **most potent carcinogens** (cancer causing agents) yet discovered
 - Liver cancer
 - Infests corn and peanuts
 - Must screen for aflatoxin before being used for the food industry
 - Checked using fluorescence
- Example 2
 - *Claviceps purpurea* parasitizes rye and wheat causing the formation of the toxin ergot
 - **Ergotism**- the toxic condition in humans and animals
 - Gangrene, psychotic delusions, nervous spasms, abortion, and convulsions
 - Most grains grown in the US are genetically resistant to the ergot fungus but many strains grown in other parts of the world are not