

# BIO 206

## SPRING SEMESTER 2019

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#### 3.) Fungi toxin-example 2

- The Middle Ages- Ergotism was known as St Anthony's fire
  - Killed thousands
- France 943 AD
  - 40,000 deaths were recorded from ergotism
- USA
  - Accusations of witchcraft in Massachusetts communities in the late 1690s due to ergotism?
  - Symptoms of ergot poisoning
    - Visions and fits
    - Psychotic delusions
    - Confusion
    - Odd skin sensations
    - Slurred speech
  - Fungus infested rye was used in bread making
    - High concentration of ergot in metal pans
  - Weather conditions records for 1690-1692 show that New England weather was ideal for growth of the fungus
  - All the conditions for ergot poisoning were present!
  - Ergot toxin- active ingredient **lysergic acid** (street name-LSD)
  - In controlled doses ergot can be used to induce labor, lower blood pressure, and ease migraine headaches
    - Medical uses

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Stachybotrys sp- sick building syndrome

- Produces mycotoxin
- Respiratory problems and asthma

4.) Industrial Processes

- Fungi especially yeasts are essential to many industrial processes involving fermentation
  - Bread, wine, cheese, beer, etc
  - Acetic acid for sodas produced
- Soy sauce production: *Aspergillus oryzae*

5.) Antibiotics

- Some fungi produce metabolic byproducts that are toxic to other microorganisms=**antibiotics**
- We extract and purify the antibiotic to treat human infections!
- Examples:
  - *Penicillium* sp- penicillin
  - *Cephalosporium* sp.-cephalosporin

## **TAXONOMY**

The science of classifying organisms

- Provides universal names for organisms and a reference for identifying organisms
- Formal system created by Carl von Linne (Linnaeus)
  - 1701-1778
  - Divided into three parts:
    - Classification, identification, nomenclature
- **Classification**-placing organisms in groups of related species
  - Lists of characteristics of known organisms

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- **Identification**-matching characteristics of an “unknown” organism to lists of known organisms
  - **Nomenclature**-naming of organism
    - Has a genus and species

#### Classification of Microorganisms

- **3 Domains**-based on ribosomal RNA nucleotide sequences
  - Bacteria
  - Archaea
  - Eukarya
- **5 Kingdoms**
  - Prokaryotes
  - Protists
  - Fungi
  - Plants
  - Animals

#### Taxonomic Hierarchy

- Dear King Phillip Came Over For Green Spiders
  - Domain-largest and most diverse
    - Kingdom
      - **Phylum**- in Micro, replace phylum with Divisions
        - Class
          - Order
            - Family
              - Genus
                - Species-smallest, most specific
- Add complexity:
  - Sub ie: Subclass
  - Super ie: Superfamily