

Fungi and Humans

Section 22-3



Fungi and Industry

Key Idea: Fungi are used for food, medicines, research, alternative fuels, and pest control.



Fungi and Industry

- Fungi are probably most familiar as food. White button, shiitake, and portabella mushrooms are common in grocery stores.
- Yeast is used in baking, brewing, and winemaking.
- Fungi also produce the citric acid that is used in soft drinks and candies.



- Fungi are an important part of the medical industry.
- They produce the antibiotics penicillin and cephalosporin.
- Black bread mold produces cortisone, a drug used to treat skin rashes and to reduce joint swelling.
- Yeast cells have been genetically engineered to make a vaccine for hepatitis B.



Fungi and The Ecosystem

Key Idea: Fungi play important ecological roles by **decomposing organic matter and by breaking down and absorbing minerals from rocks and soil.**



Fungi and The Ecosystem

- The main role of fungi in ecosystems is decomposition of dead organisms.
- By doing this, fungi release nutrients which other organisms can then use.



- As part of lichens, fungi slowly break down rocks and prepare environments for other organisms.
- As part of mycorrhizae, fungi absorb minerals from the soil and transfer them to plant roots.
- Almost all plants have mycorrhizae.
- Some plants, such as orchids, could not survive without them.



Fungi and Disease

Key Idea: Fungi cause disease by **absorbing** nutrients from host **tissues** and by **producing toxins**.

A **dermatophyte** is a fungi that infect the skin and nails.



Fungal Infections

- Fungi cause disease in plants and animals.
- Fungi can grow on and inside tissues of the body.
- They cause athlete's foot, toenail fungus, and ringworm.
- These fungi absorb nutrients and release metabolic wastes that irritate the skin.



- Yeast is a normal resident of the human body.
- Antibiotics, hormonal changes, or illness can cause yeast to grow too much.
- The result is a yeast infection.



- Histoplasmosis is a lung infection caused by a fungus that grows in bat and bird feces.
- When its spores are inhaled, this fungus can cause severe respiratory illness.
- The fungus sometimes spreads from the lungs to other organs. If untreated, it is fatal.



Fungal Toxins

- Many fungi produce dangerous toxins.
- Toxins in mushrooms can cause vomiting, diarrhea, liver damage, and even death.
- A type of fungus that contaminates corn, peanuts, and cottonseed produces *aflatoxins* and causes liver cancer.
- Indoor molds can aggravate allergies.

