

**DIFFERENCE PATHOGENE AND THEIR GROWTH SITES**  
**MICROBIOLOGY**  
**UNITE-6**



**Mr. Muhammad Alam**  
**Lecturer**  
**PSNC SWAT.**



# Pathogens

**Pathogen – A microorganism that causes disease.**

**Reservoir – A natural environment in which a pathogen typically lives.**

- A human
- An animal
- An environmental component like soil or water

**How do pathogens spread?**

**Pathogens must leave the reservoir through some portal of exit.**



# Pathogens

## Human Portals of exit:

- Saliva for mumps
- Mucous membranes for sexually transmitted diseases
- Blood for HIV and hepatitis
- Feces for intestinal infections
- Nose and throat discharges for colds and influenza



Pathogens can be transmitted directly or indirectly.

Directly transmitted – pathogens are passed from one person to another without an intermediary.

- Sneezing
- Coughing
- Sexual contact
- Blood
- Mosquitoes



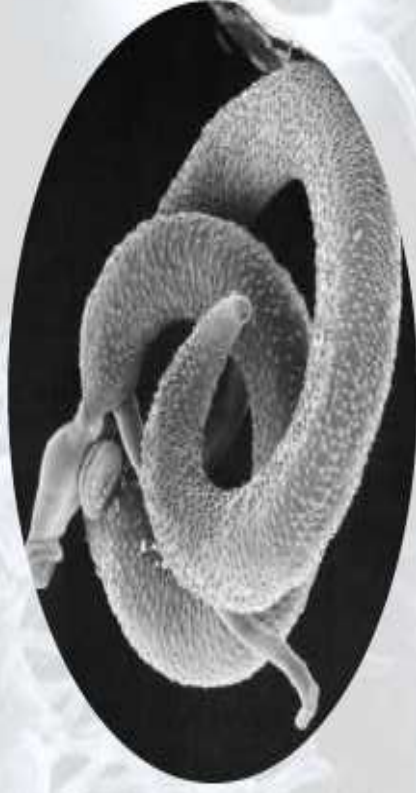
# Types of Pathogens

Indirectly transmitted – animals or insects serve as vectors carrying the pathogens from one host to the next.

- Ticks
- Mosquitoes

Different types of pathogens may include:

- Bacteria
- Viruses
- Fungi
- Protozoa
- Parasitic worms
- Prions





# Bacteria

**Bacteria** – single-celled organism that usually reproduce by splitting in two to create a pair of identical cells.

- Most abundant living things on earth
- Helpful and harmful bacteria
- Helpful bacteria: produce vitamins
  - help digest nutrients
  - keep harmful bacteria in check by competing for food and resources
  - secreting substances toxic to pathogenic bacteria



**Diseases associated with bacteria:**

**Pneumonia** – inflammation of the lungs

- Symptoms: fever, chills, shortness of breath, cough
- Leading infectious cause of death worldwide
- Vaccinations are recommended for adults 65 and older

# Bacteria cont.



**Meningitis** – infection of the membranes covering the brain and spinal cord

- Symptoms: fever, headache, stiff neck, confusion
- Usually mild and goes away on its own
- Vaccinations are recommended for children 11-18.



**Strep throat** – red, sore throat with white patches on the tonsils

**-Symptoms:** swollen lymph nodes, fever, headache

**Tuberculosis** – chronic bacterial infection that usually affects the lungs

- Symptoms: coughing, fatigue, night sweats, weight loss
- 10- 15 billion Americans have been infected and carry



**Ulcers** – 25 million Americans suffer

- Symptoms: pain in abdomen, nausea, loss of appetite



# Virus

**Virus – a very small infectious agent composed of nucleic acid surrounded by a protein coat; lacks an independent metabolism and reproduces only within a host cell.**

- Inside the host cell, it sheds its protein covering, and its genetic material takes control of the cell and creates more viruses.
- Most common form of contagious disease



**Diseases associated with viruses:**

**Common cold – lasts 1-2 weeks**

- Almost always transmitted by hand-to-hand contact
- Reduce risks by washing hands frequently and avoid touching face
- Avoid multi-symptom cold remedies

# Virus cont.



**Influenza – infection of the respiratory tract**

- Commonly called the flu
- Symptoms: fever and extreme fatigue
- Recover within 1-2 weeks but can develop pneumonia
- Highest rates occur in children

**Herpesvirus- a family of viruses responsible for cold sores, mononucleosis, chickenpox, and herpes.**

- Once infected, the host is never free of the virus
- Virus lies latent within cells and become active periodically
- Two herpesviruses can cause severe infections in people with suppressed immune system which infects the lungs, brain, colon, and eyes



**INFLUENZA**  
Your Shot







# Virus cont.

**Viral Hepatitis- inflammation of the liver**

- Caused by Hepatitis A, B, or C
- Symptoms: fatigue, jaundice, abdominal pain, loss of appetite, and nausea
- Recover in one month
- 5-10% of people infected with Hepatitis B and 85-90% of Hepatitis C become chronic carriers of the virus
- 500 million people worldwide may be carriers
- People who should get checked are people who had injected drugs, received blood transfusion, have tattoos or piercings

# Fungi & Protozoa



**Fungus**- an organism that absorbs food from organic matter

- Usually restricted to the skin, mucous membrane, and lungs
- Athlete's foot, jock itch, and ringworm are common
- Can be deadly in people with an impaired immune system

**Protozoa**- a microscopic single-celled organism that often produces recurrent, cyclical attacks of disease



- Malaria is a major killer worldwide
- Mostly among infants and children
- Giardiasis- parasite that lives in the intestines of humans
- Symptoms: nausea, diarrhea, bloating, abdominal cramp

# Parasitic Worms & Prions



Parasitic Worms- a pathogen that causes intestinal and other infections

- Examples include: tapeworms, hookworms, and pinworms
- Tapeworms can grow many feet
- Pinworms are most common in United States
- Originate from contaminated food or drink



Prions- responsible for degenerative disorders of the central nervous system

- Lack DNA or RNA and consist of only protein
- Sponge-like holes in the brain
- Symptoms: loss of coordination, weakness, dementia, and death
- Examples include: Mad Cow Disease

THE END



THANK YOU STUDENTS