


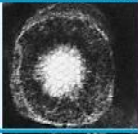


Lesson 24.1: Critical Reading

Name _____ Class _____ Date _____

Read these passages from the text and answer the questions that follow.

The First Line of Defense

The body's first line of defense consists of different types of barriers that keep most pathogens out of the body. **Pathogens** are disease-causing agents, such as bacteria and viruses. These and other types of pathogens are described in the figure below. Regardless of the type of pathogen, however, the first line of defense is always the same.

Type of pathogen	Description	Human diseases caused by pathogens of that type
Bacteria <i>Escherichia coli</i> 	Single-celled organisms without a nucleus	Strep throat, staph infections, tuberculosis, food poisoning, tetanus, pneumonia, syphilis
Viruses <i>Herpes simplex</i> 	Non living particles that reproduce by taking over living cells	Common cold, flu, genital herpes, col sores, measles, AIDS, genital warts, chicken pox, small pox
Fungi <i>Death cap mushroom</i> 	Simple organisms, including mushrooms and yeasts, that grow as single cells or thread like filaments.	Ringworm, athlete's foot, tineas, candidiasis, histoplasmosis, mushroom poisoning
Protozoa <i>Giardia lamblia</i> 	Single-celled organism with a nucleus.	Malaria, "traveller's diarrhea" giardiasis, typano somiasis ("sleeping sickness")

Types of pathogens that commonly cause human diseases include bacteria, viruses, fungi, and protozoa. Which type of pathogen causes the common cold? Which type causes athlete's foot? (From top to bottom, images courtesy of Rocky Mountain Laboratories/NIAID/NIH and under the public domain, courtesy of CDC/Dr. Erskine Palmer and under the public domain, courtesy of Archenzo and under GNU-FDL 1.2, and courtesy of CDC/Janice Carr and under the public domain. Composite created by CK-12 Foundation.)

Mechanical Barriers

Mechanical barriers physically block pathogens from entering the body. The skin is the most important mechanical barrier. In fact, it is the single most important defense the body has. The outer layer of the skin is tough and very difficult for pathogens to penetrate. **Mucous membranes** provide a mechanical barrier at body openings. They also line the respiratory, GI, urinary, and reproductive tracts. Mucous membranes secrete **mucus**, a slimy substance that traps pathogens. The membranes also have hair-like cilia. The cilia sweep mucus and pathogens toward body openings where they can be removed from the body. When you sneeze or cough, pathogens are removed from the nose and throat. Tears wash pathogens from the eyes, and urine flushes pathogens out of the urinary tract.

Chemical Barriers

Chemical barriers destroy pathogens on the outer body surface, at body openings, and on inner body linings. Sweat, mucus, tears, and saliva all contain enzymes that kill pathogens. Urine is too acidic for many pathogens, and semen contains zinc, which most pathogens cannot tolerate. In addition, stomach acid kills pathogens that enter the GI tract in food or water.

Biological Barriers

Biological barriers are living organisms that help protect the body. Millions of harmless bacteria live on the human skin. Many more live in the GI tract. The harmless bacteria use up food and space so harmful bacteria cannot grow.

1. What is a disease-causing agent?
 - a. Barrier
 - b. Pathogen
 - c. Leukocyte
 - d. Platelet
2. Which type of disease-causing agent causes the common cold?
 - a. Virus
 - b. Bacteria
 - c. Protozoa
 - d. Annelid
3. Which type of disease-causing agent causes athlete's foot?
 - a. Nematode
 - b. Fungus
 - c. Bacteria
 - d. Prion
4. What is the body's first line of defense?
 - a. Consists of tiny cells that engulf or eat (phagocytosis) foreign material such as viruses or bacteria
 - b. Consists of rapidly firing electrical impulses in the brain that result in seizures
 - c. Consists of different types of barriers that keep most pathogens out of the body
 - d. Consists of hormones that raise the body temperature in order to overheat the most pathogens, killing them
5. What is a chemical barrier?
 - a. A barrier that includes living things.
 - b. A barrier that breaks neurotransmitters, stopping the message from being sent down the spinal cord.
 - c. A barrier that physically blocks pathogens from entering the body.
 - d. A barrier that destroys pathogens on the outer surface, at body openings, and on inner body linings.
6. What are mucous membranes?
 - a. They provide mechanical barriers at body openings.
 - b. They line the respiratory, GI, urinary and reproductive tracts.
 - c. They secrete mucus, a slimy substance that traps pathogens.
 - d. All of the above.