

Name: _____

Date: _____

Immune System

Immune System Guided Reading

Directions: Annotate the following reading passages identifying key information, unknown words, and concepts you still do not understand. I suggest highlighting key information, circling unknown words, and place question marks (?) next to content you are still struggling to understand. After reading each passage, answer the questions regarding the passage in complete sentences. Failure to annotate the reading passage and/or not answering in complete sentences will result in points being deducted from your grade.

Key Concept: The immune system consists of organs, cells, and molecules that fight infections

The **immune system** is the body system that fights infections. However, many parts of different body systems help to prevent infection.

- Your skin blocks pathogens from getting into the body. The skin has sweat and oil glands that make its surface difficult for pathogens to grow on.
- Mucus membranes in your nose, mouth, and ears contain sticky substances that trap pathogens.
- If a pathogen does get into the body, the circulatory system helps fight the infection by transporting the immune system's specialized cells

There are many specialized white blood cells and proteins of the immune system.

- Three important types of white blood cells are phagocytes, B cells, and T cells. **Phagocytes** destroy pathogens by surrounding and engulfing them. **B cells** and **T cells** fight pathogens in other ways.
- Complement proteins might attract phagocytes to an infected area. Antibodies are proteins made by B cells that cause pathogens to become inactive. Interferons are proteins that prevent viruses from reproducing.

People do not get sick every time they become infected because they have immunity.

- **Passive immunity** is the type of immunity that a person gets through their genetic makeup or through the antibodies they ingest as infants through their mother's milk.
- **Active immunity** is acquired only after a person's white blood cells encounter a pathogen

1.) How body systems (other than the immune system) play a role in keeping the body healthy?

2.) Explain how B cells and T cells aid the immune system?

3.) What are the differences between passive and active immunity?

Key Concept: The immune system has many responses to pathogens and foreign cells

Inflammation and fever are called nonspecific immune responses because these responses occur the same way for every pathogen

- **Inflammation** occurs when white blood cells release chemicals that cause blood vessels to become leaky, allowing phagocytes to squeeze out of the circulatory system and toward an infection site.
- Increased body temperatures during a low fever speed up the production and maturation of white blood cells that fight infection

In specific responses, specialized cells fight specific pathogens. White blood cells can identify pathogens because pathogens have protein markers, called **antigens**, on their surfaces. After a specific immune response occurs, **memory**

cells are formed. These cells remember the pathogen, and they are ready to fight immediately if they ever encounter the pathogen again.

- In **cellular immunity**, T cells are the main player. When they encounter specific antigens, they become activated and divide. The activated T cells will destroy the pathogens and the infected cells in the body.
- **Humoral immunity** relies mostly on B cells. When a T cell activates a B cell, the B cell divides and matures. Then the B cell produces antibodies that cause the pathogens to clump, burst or become inactive.

White blood cells will recognize any particle or cell that is not the same as the other cells in the body. If a person gets an organ transplant, the immune system will probably notice that this tissue's protein markers are different and attack the tissue. Tissue rejection occurs when the immune system attacks a transplanted tissue. People who receive organ and tissue transplants usually have to take medications that will weaken their immune system so that their white blood cells do not destroy the donated tissue.

1.) How do inflammation and fever help the immune system?

2.) How can white blood cells tell the difference between body cells and pathogens?

3.) Why do white blood cells sometimes cause tissue rejection?

Key Concept: When the immune system is weakened, the body cannot fight off diseases

Some diseases attack the cells of the immune system. When a person has this kind of disease, it becomes difficult for the immune system to function properly. **Opportunistic infections** are infections that a healthy immune system would be able to fight off.

Leukemia is a type of cancer that affects the bone marrow. When a person has leukemia, the body produces white blood cells that will not mature. The body recognizes that there are not enough mature white blood cells present. So the bone marrow stops producing red blood cells and other blood components. Soon the body is flooded with white blood cells that are ineffective in fighting an infection. The only cure for leukemia is to replace a person's bone marrow with healthy bone marrow from a donor.

The **human immunodeficiency virus (HIV)** also weakens the immune system. HIV works by infecting T cells, which are necessary in both the humoral and cellular immune responses. Infected T cells are no longer able to function. Soon other pathogens infect the body, but without a healthy supply of T cells, the body cannot fight off the infections. **Acquired immune deficiency syndrome (AIDS)** is the final stage of HIV infection. When a person has AIDS, they have very few white blood cells and several opportunistic infections.

People become infected with HIV when the virus enters the bloodstream. A person can contract HIV through sharing infected needles, engaging in sexual intercourse with an infected individual, and transferring other bodily fluids, such as through a mother's umbilical cord to her unborn baby.

1.) How does a person get an opportunistic disease?

2.) How does leukemia weaken the immune system?

3.) What is the difference between HIV and AIDS?

4.) How can a person become infected with HIV?

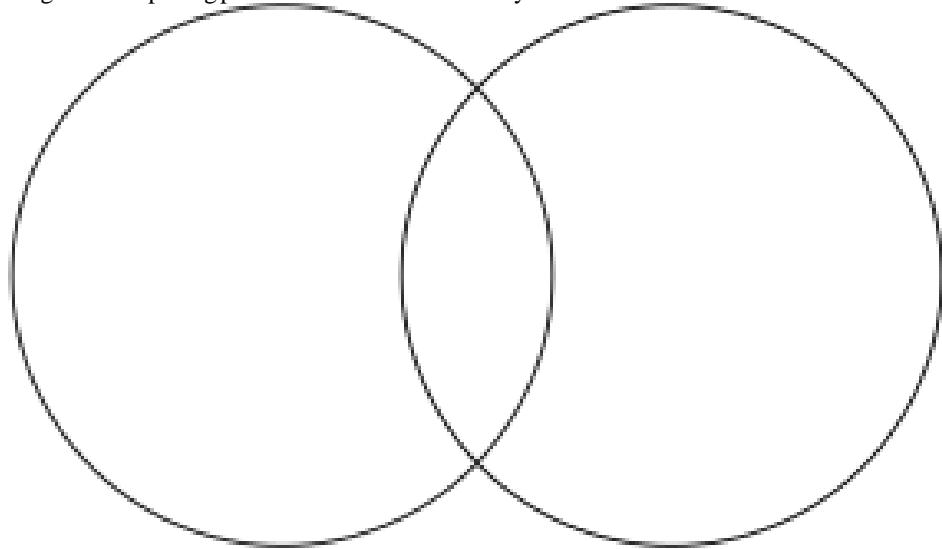
Immune System Guided Reading Notes

Directions: Using chapter 35 section 2 of your textbook, and the following questions. All short answer questions must be answered with complete sentences (failure to do so will result in points being deducted from grade)

1.) What is the immune system?

2.) What are three ways that antibodies help fight infection?

4.) Complete the Venn diagram comparing passive and active immunity



Immune Responses Guided Reading Notes

Directions: Using chapter 31 section 3 of your textbook, and the following questions. All short answer questions must be answered with complete sentences (failure to do so will result in points being deducted from grade).

5.) What is the difference between a specific immune response and a nonspecific immune response?

6.) Nonspecific immune responses are

Example:

Example: