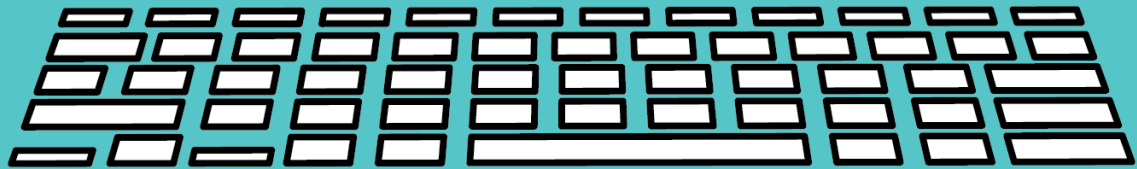


WHAT ARE THE
RESULTS OF
YOUR IMMUNE
SYSTEM
REACTING TO
FALSE ALARMS

Short Answer	Type Answer Here
1. What are the proteins that fight antigens called?	
2. What are white blood cells also called?	
3. What's the fluid called lymphatic vessels carry?	
4. What is the body part in the back of the nose & throat?	
5. What do doctors prescribe for a bacterial infection?	
6. What tiny organisms cause itchy rashes?	
7. Where can Peyer's Patches be found?	
8. Where is the thymus gland located?	



Short Answer	Type Answer Here	Fill in the Blank	Type Answer Here
1. What are the proteins that fight antigens called?		9. The spleen is found under the ____.	
2. What are white blood cells also called?		10. B cells are located in bone ____.	
3. What's the fluid called lymphatic vessels carry?		11. ____ are foreign invaders that can cause disease.	
4. What is the body part in the back of the nose & throat?		12. Innate, adaptive and ____ are types of immunity.	
5. What do doctors prescribe for a bacterial infection?		13. The ____ and ____ help fight germs.	
6. What tiny organisms cause itchy rashes?		14. ____ cells are located in the ____.	
7. Where can Peyer's Patches be found?		15. ____ remember and recognize previous antigens.	
8. Where is the thymus gland located?		16. Tonsils are located in the ____.	



IMMUNE SYSTEM

The immune system helps protect the body against diseases. Foreign organisms, such as germs, bacteria, viruses, fungus, and parasites can enter the body and cause disease. Various causes of disease include chickenpox and the flu. Fungi are often found on the skin, especially in areas of moisture, including athlete's foot. Parasites can develop in the intestines, causing diarrhea. Bacteria can lead to strep throat and pneumonia. The immune system attacks and destroys these germs in various parts of the body:

- adenoid – in the back of the throat
- appendix – in the lower right abdomen
- bone marrow – inside the bones
- lymphatic vessels – carry fluids called lymph that are drained from tissues
- lymph nodes – throughout the body, but clustered at the armpits and groin
- Peyer's patches – in the small intestine
- spleen – under the ribs
- thymus gland – in the chest
- tonsils – in the throat

These tissues, organs, vessels, cells, and proteins are ready to attack dangerous germs that enter the body.

The immune system sets up a battle between antigens and antibodies. Antigens are foreign invaders that can cause disease. Once they enter the body, proteins develop to fight the antigens. These proteins are called antibodies. These Y-shaped proteins ignore the good cells. They bind with bad antigens with specific markers. In other words, they fit together (like Legos).

White blood cells, also called leukocytes, are considered the disease police. These cells are always looking for enemies. There are two types of leukocytes:

- phagocytes which chew up germs
- lymphocytes which remember and recognize previous antigens

First, white blood cells called macrophages eat germs. This process of capturing and destroying germs is called phagocytosis. Second, other white blood cells make antibodies. These antibodies attach to germs and signal other

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white blood cells to join the fight. Such antibodies either break germs up or make them useless.

There are specific white blood cells to combat infection.

- B cells are called B lymphocytes. These are the cells in the bone marrow that bind with antigens. Each B cell makes a particular antibody and fights a specific antigen. For instance, a specific B cell fights the flu. B cells are similar to the military intelligence system. They find the targets and send in the troops.
- T cells are called T lymphocytes. These cells in the thymus gland eliminate the good cells that have been infected. T lymphocytes are the soldiers that fight the battle.
- Helper T cells inform other white blood cells. Some tell the B cells to make antibodies. Others send the signal to T cells to attack.
- Killer T cells destroy infected cells.
- Memory cells remember antigens that have already invaded. These cells help fight new attacks by previous antigens.

The human body includes three types of immunity: innate, adaptive, and passive. Innate immunity is the natural immunity within the body. For example, the skin offers a natural protection for the body. Adaptive immunity develops over time through exposure to disease and vaccinations. When the body gets exposed to germs, the immune system learns how to fight the disease. If the body comes across an antigen and can produce antibodies more quickly, passive immunity only has short-term and is borrowed. For instance, breast milk gives babies infection and immunity.

When the body gets sick, it can produce a fever. The immune system causes the body to raise its temperature to jump-start the healing process. The fever helps to harden the virus and bacteria to give

the body time to fight. The number of white blood cells between 4,000 and 11,000 white blood cells per microliter of blood. Did you know that a drop of blood the size of a pinhead can have about 25,000 white blood cells?

There are many preventive measures to help the immune system and protect the body. First, vaccinations are a great way to combat diseases like whooping cough, tetanus, and the flu. Second, good hygiene, such as frequent hand-washing helps combat germs. Third, eating a healthy diet of fruits and vegetables keeps the body running well. Also, exercise and great sleep help the body function at its best. Should there be a bacterial infection, doctors can prescribe antibiotics.

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