

Immune System – Your Body's Defense



What is the immune system?

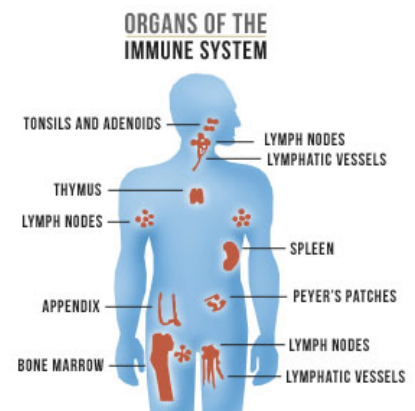
The **immune system** is a collection of organs, tissues, and cells within an organism's body that protects it from bacteria, viruses, parasites, and other things that would otherwise get you sick.

What are the different parts of the immune system?

The immune system has a special transport network called the lymphatic system. Its job is to get rid of wastes, toxins and other unwanted and harmful substances.

Within the lymphatic system there are many specialized cells, **tissues** and organs including:

- Lymph nodes: Small organs that store and create **cells** that fight off infections and diseases. When you are sick, your lymph nodes become more active and get larger.
- Thymus: Organ where some immune cells **mature**.
- **Spleen**: Contains white blood cells and controls the amount of blood circulating inside the body. It gets rid of damaged and old blood cells.
- **Bone marrow**: Found in the center of bones and produces white blood cells used for fighting infections.



Immune System: A collection of organs, tissues, and cells that work together to protect the body.

Tissues: Collection of cells that perform a similar function.

Cells: The basic structure of living things. Humans have trillions of cells that perform the functions of life.

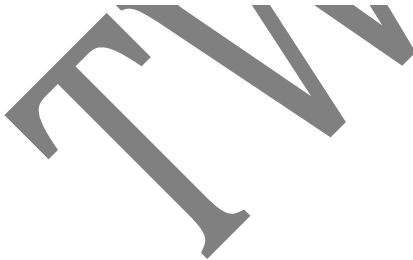
Mature: Are now able to perform a certain function or role inside the body.

Reading Sample



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Antibodies: Proteins that help identify and target foreign substances to be removed.

Anaphylactic shock: An extreme and possibly fatal response by the immune system to a harmless substance.

If you are born with an under-reactive immune system or develop it (someone with AIDS by definition has an under-reactive immune system) you can become very sick due to something that most people can fight off easily. These otherwise mild or short-lived infections can be fatal.

Leukemia:

Leukemia is a type of cancer that affects the blood producing cells (bone marrow), mainly the white blood cells that make up the immune system. In people with leukemia, the bone marrow produces abnormal white blood cells that don't work properly. Treatments usually involve chemotherapy, bone marrow transplants and radiation therapy.



A woman receiving chemotherapy

How are diseases of the immune system diagnosed and treated?

Doctors specializing in the immune system are called immunologists or allergists. In order to test the ability of the immune system, they will take a blood sample and determine the amounts of the various immune system agents such as T cells, B cells, etc.

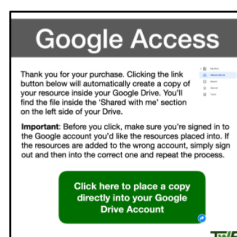
There are different treatments to help people with immune system diseases. If someone has an overactive immune system, they may be prescribed medications that help them reduce their immune system's response. If someone has an underactive immune system, they could be prescribed medications that help them make up for the under activity of their immune system.

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- Vaccines don't prevent your immune system from developing properly. They allow your immune system to create antibodies so if the virus or bacteria ever gets in, your body can fight it off much more easily.
- White blood cells only make up about 1% of your entire blood supply!
- Your immune system remembers. Once an infection is defeated, the B cells keep a small portion of the infection so that if it ever comes back, it will be able to recognize it much more quickly and therefore, fight it off faster.
- "In the U.S., approximately three million people report allergies to peanuts and tree nuts. Studies show the number of children living with peanut allergy appears to have tripled between 1997 and 2008." Food Allergy Research & Education (FARE)

Reading Comprehension Questions:

1. What is
2. What
3. What
4. What causes allergies?
5. Why are
6. What causes leukemia?
7. What is the name of a doctor who specializes in the immune system?
8. List two

Extension Questions:

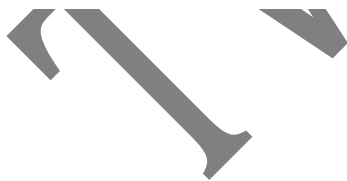
9. Scientists believe
10. What is organ rejection? Why does it occur? When does it most often happen? What two main things are usually done to limit organ rejection?
11. Why

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