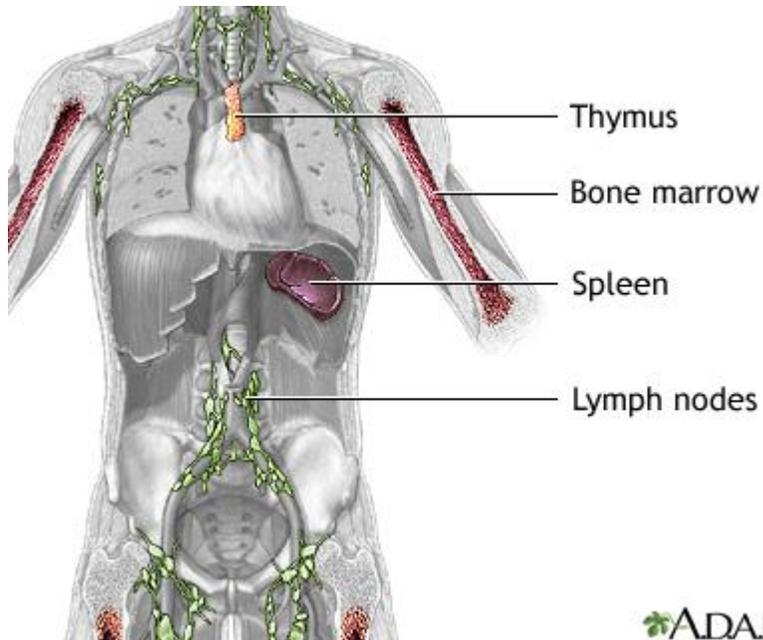


THE IMMUNE SYSTEM



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The immune system protects the body from possibly harmful substances by recognizing and responding to antigens. Antigens are substances (usually proteins) on the surface of cells, viruses, fungi, or bacteria. Nonliving substances such as toxins, chemicals, drugs, and foreign particles (such as a splinter) can also be antigens. The immune system recognizes and destroys, or tries to destroy, substances that contain antigens.

INNATE IMMUNITY

Innate, or nonspecific, immunity is the defense system with which you were born. It protects you against all antigens. Innate immunity involves barriers that keep harmful materials from entering your body. These barriers form the first line of defense in the immune response. Examples of innate immunity include:

- Cough reflex
- Enzymes in tears and skin oils
- Mucus, which traps bacteria and small particles
- Skin
- Stomach acid

Innate immunity also comes in a protein chemical form, called innate humoral immunity. Examples include the body's complement system and substances called interferon and interleukin-1 (which causes fever).

If an antigen gets past these barriers, it is attacked and destroyed by other parts of the immune system.

ACQUIRED IMMUNITY

Acquired immunity is immunity that develops with exposure to various antigens. Your immune system builds a defense against that specific antigen.

PASSIVE IMMUNITY

Passive immunity is due to antibodies that are produced in a body other than your own. Infants have passive immunity because they are born with antibodies that are transferred through the placenta from their mother. These antibodies disappear between ages 6 and 12 months.

Passive immunization may also be due to injection of antiserum, which contains antibodies that are formed by another person or animal. It provides immediate protection against an antigen, but does not provide long-lasting protection. Immune serum globulin (given for hepatitis exposure) and tetanus antitoxin are examples of passive immunization.

BLOOD COMPONENTS

The immune system includes certain types of white blood cells. It also includes chemicals and proteins in the blood, such as antibodies, complement proteins, and interferon. Some of these directly attack foreign substances in the body, and others work together to help the immune system cells.

Lymphocytes are a type of white blood cell. There are B and T type lymphocytes.

- B lymphocytes become cells that produce antibodies. Antibodies attach to a specific antigen and make it easier for the immune cells to destroy the antigen.
- T lymphocytes attack antigens directly and help control the immune response. They also release chemicals, known as cytokines, which control the entire immune response.

As lymphocytes develop, they normally learn to tell the difference between your own body tissues and substances that are not normally found in your body. Once B cells and T cells are formed, a few of those cells will multiply and provide "memory" for your immune system. This allows your immune system to respond faster and more efficiently the next time you are exposed to the same antigen. In many cases, it will prevent you from getting sick. For example, a person who has had chickenpox or has been immunized against chickenpox is immune from getting chickenpox again.

<https://medlineplus.gov/ency/article/000821.htm>