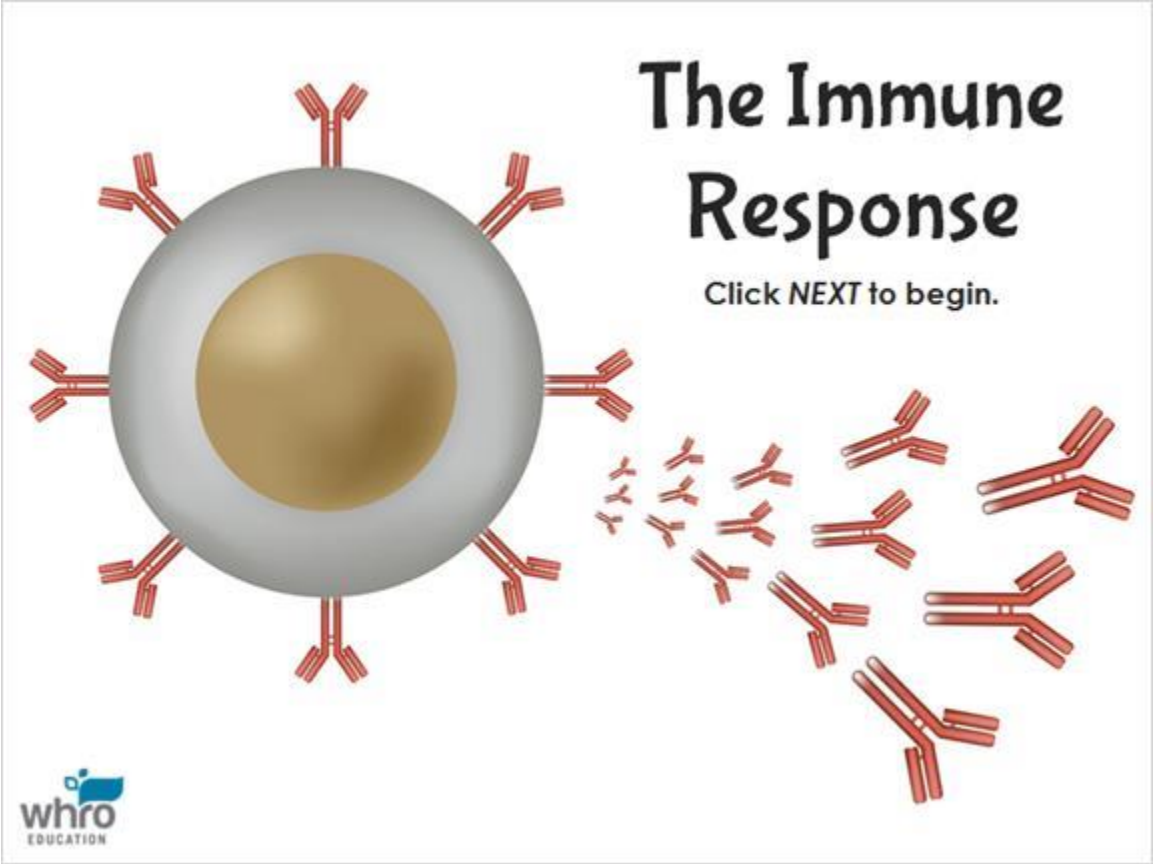
Module 7: Organ Systems and Homeostasis
Topic 4 Content: The Immune Response Notes

Introduction



The Immune Response. Click ***NEXT*** to begin.

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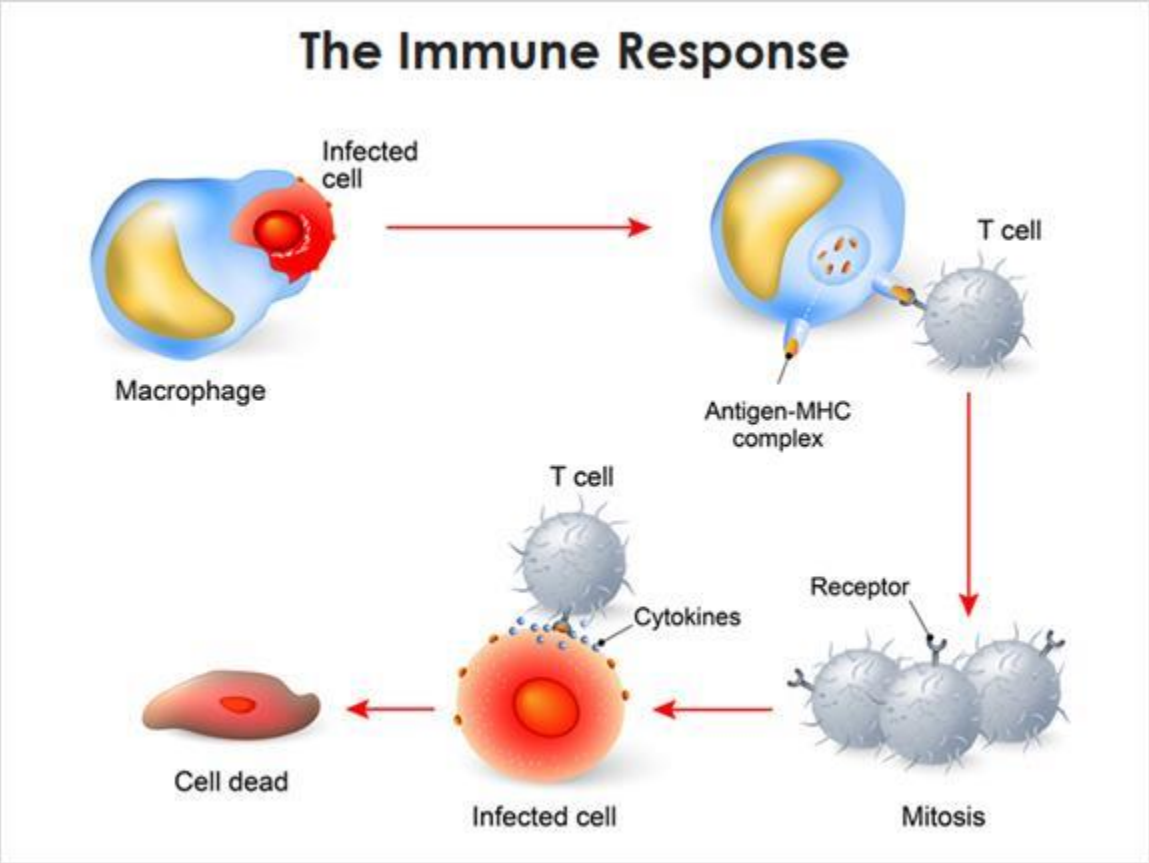
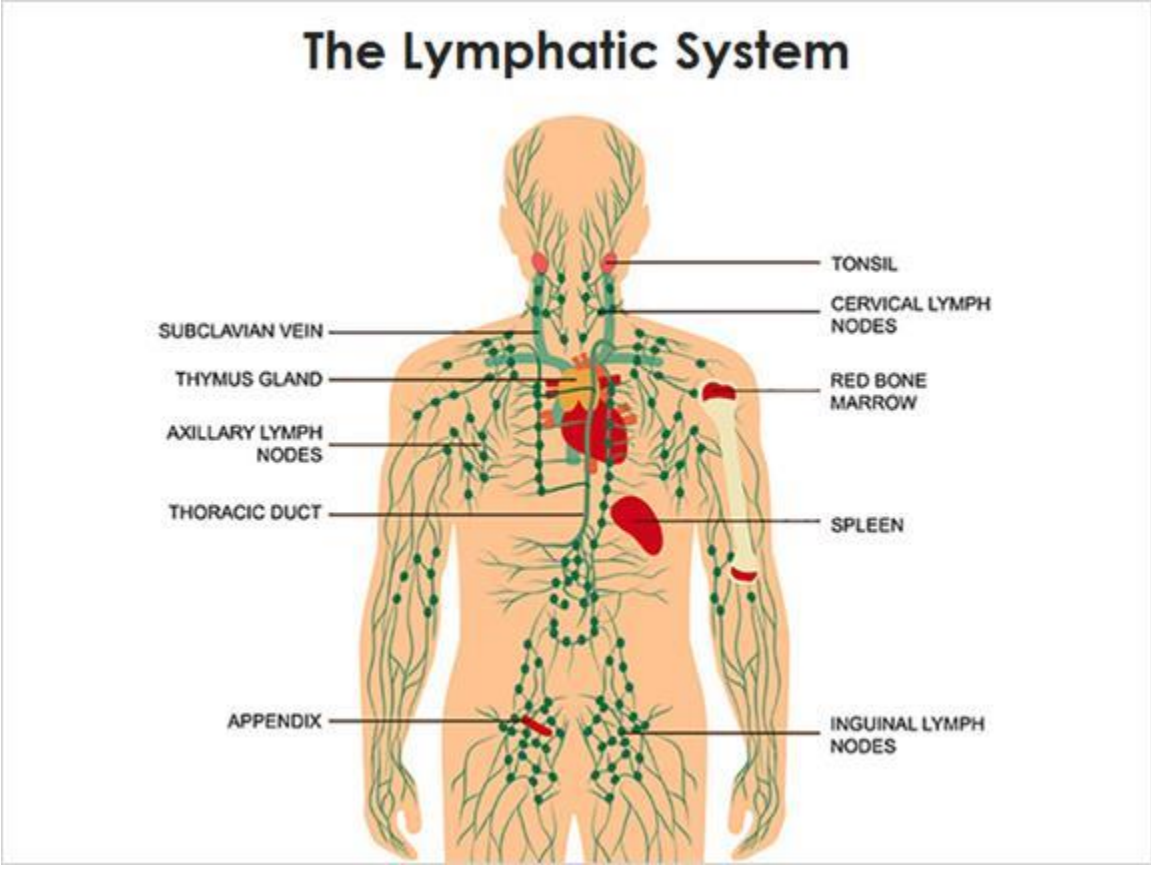
The Immune Response



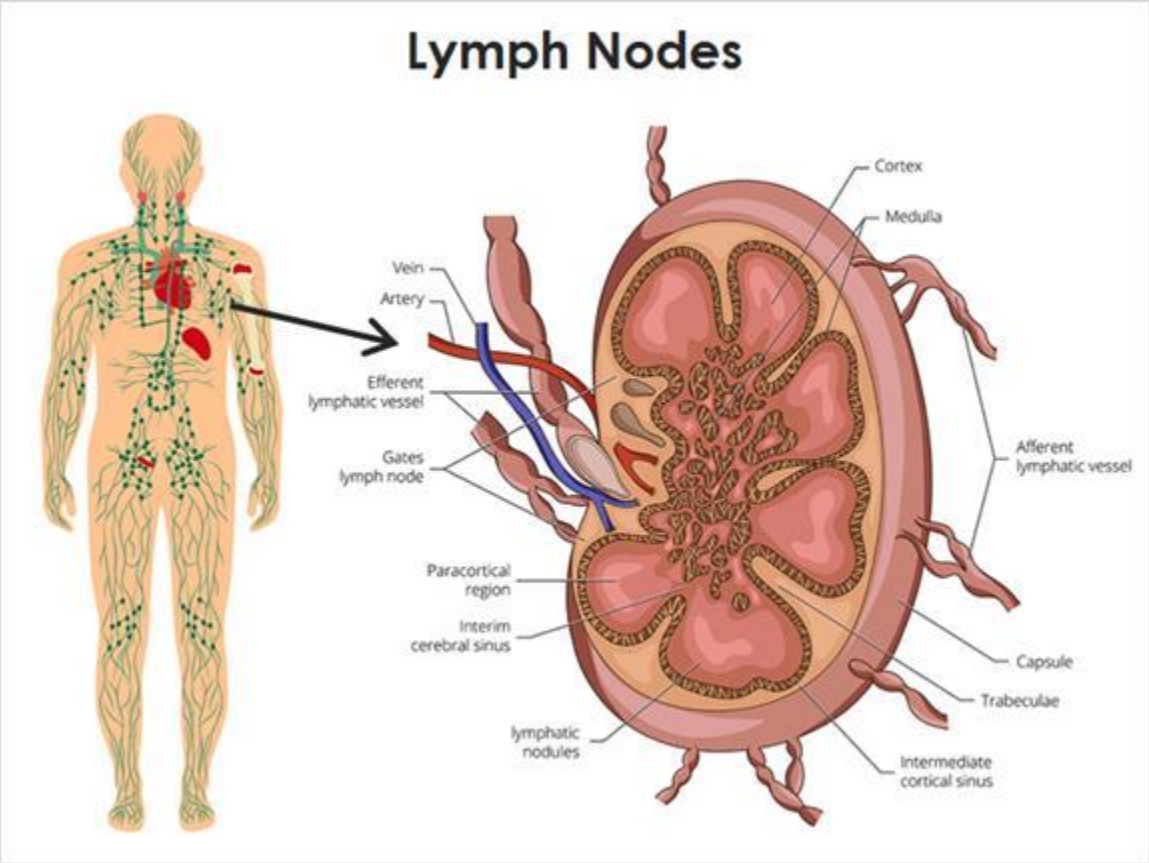
Your immune system provides long term immunity to certain diseases and defends against bacterial and viral infections. When germs invade your body, your immune system attacks these pathogens through a series of steps called the immune response. The cells and other agents of the immune system are located in the lymphatic system.

The Lymphatic System



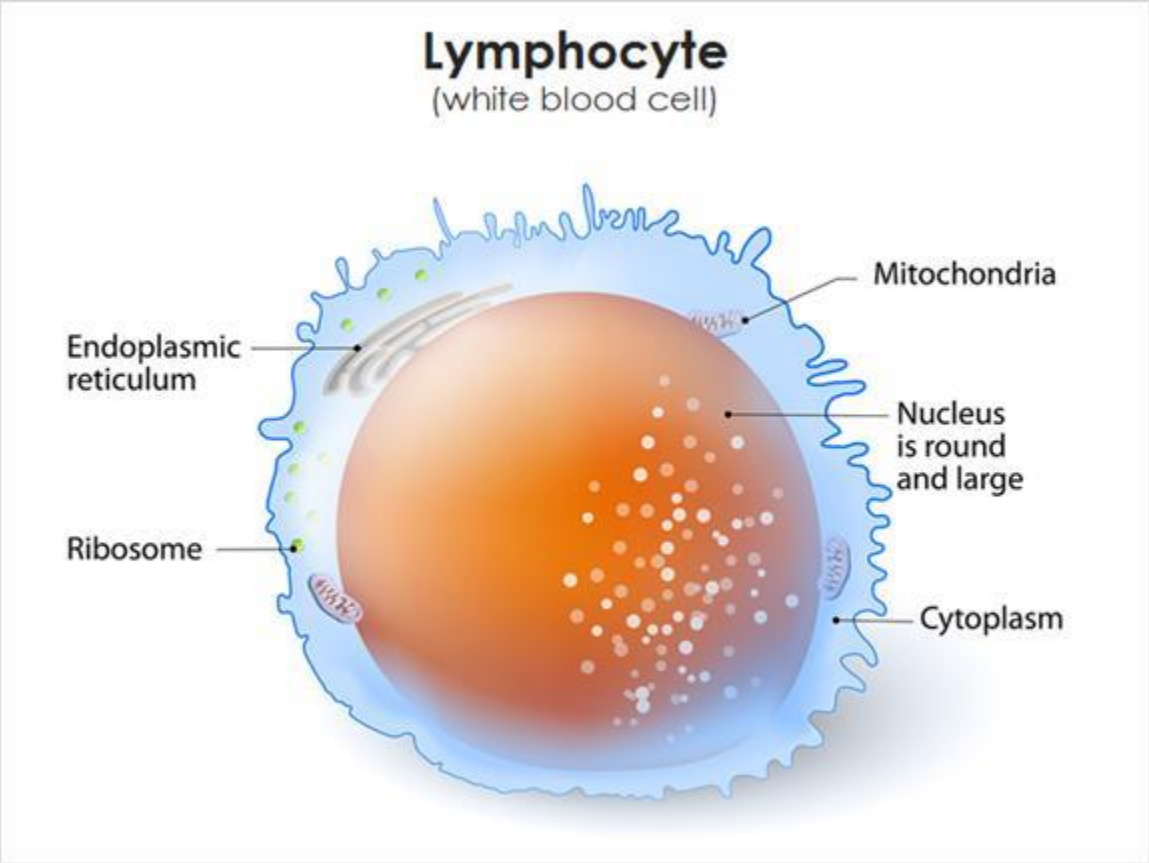
The lymphatic system is made up of a network of lymph vessels, lymph nodes, and lymphoid tissues. The lymphatic system absorbs and transports protein and cellular debris from your body's tissues through a fluid called lymph.

Lymph Nodes



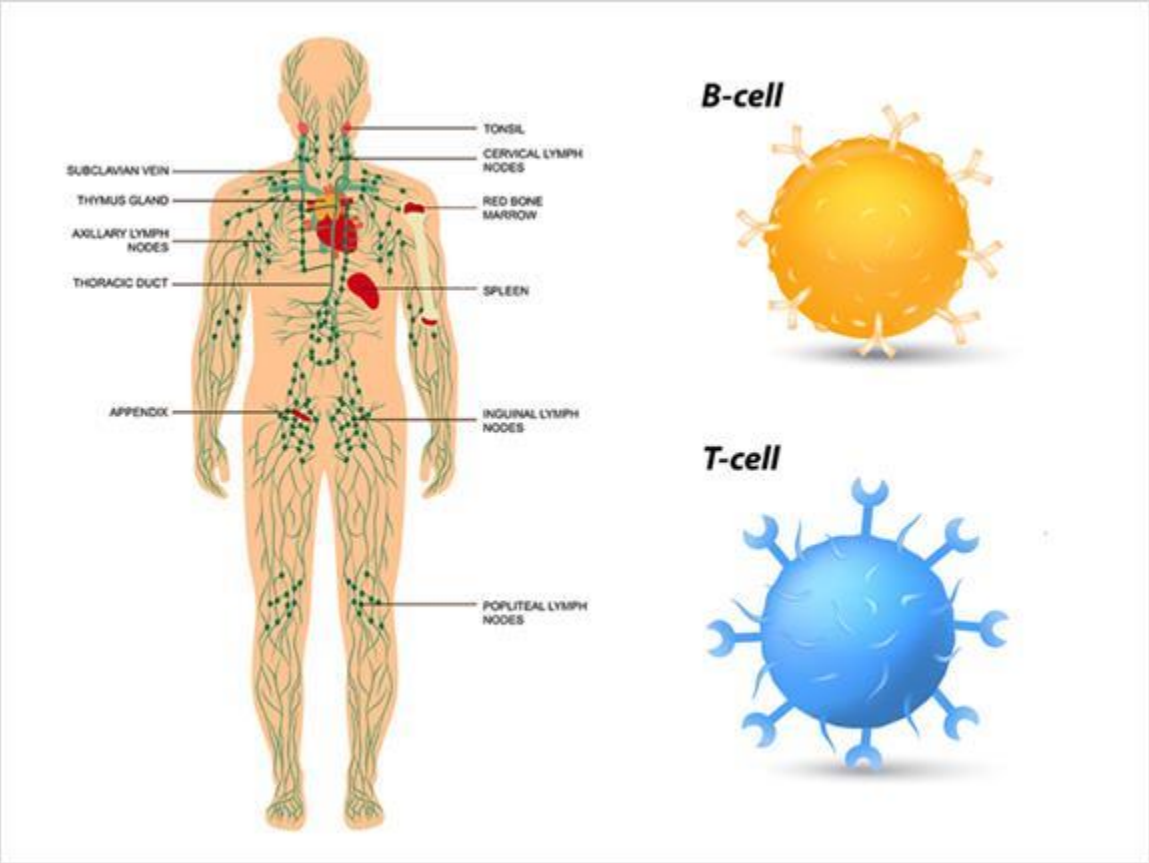
Lymph is transported by the lymph vessels and then to the lymph nodes. Lymph nodes are clumps of tissue that act as filtering stations. These are located throughout your body, including your neck, armpits, groin, tonsils, and chest.

Lymphocyte



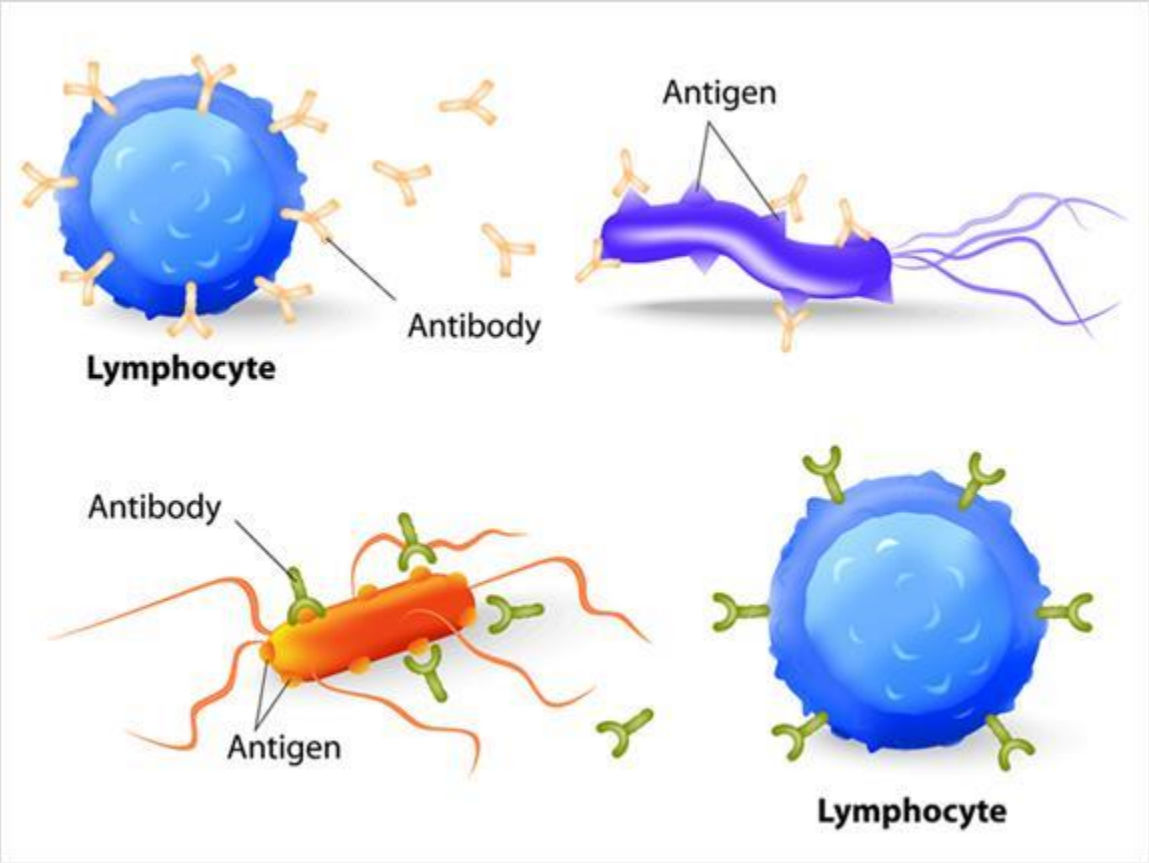
Lymph nodes contain white blood cells called lymphocytes, which help fight infection by attacking and destroying germs that are carried in through the lymph fluid

B cells and T cells



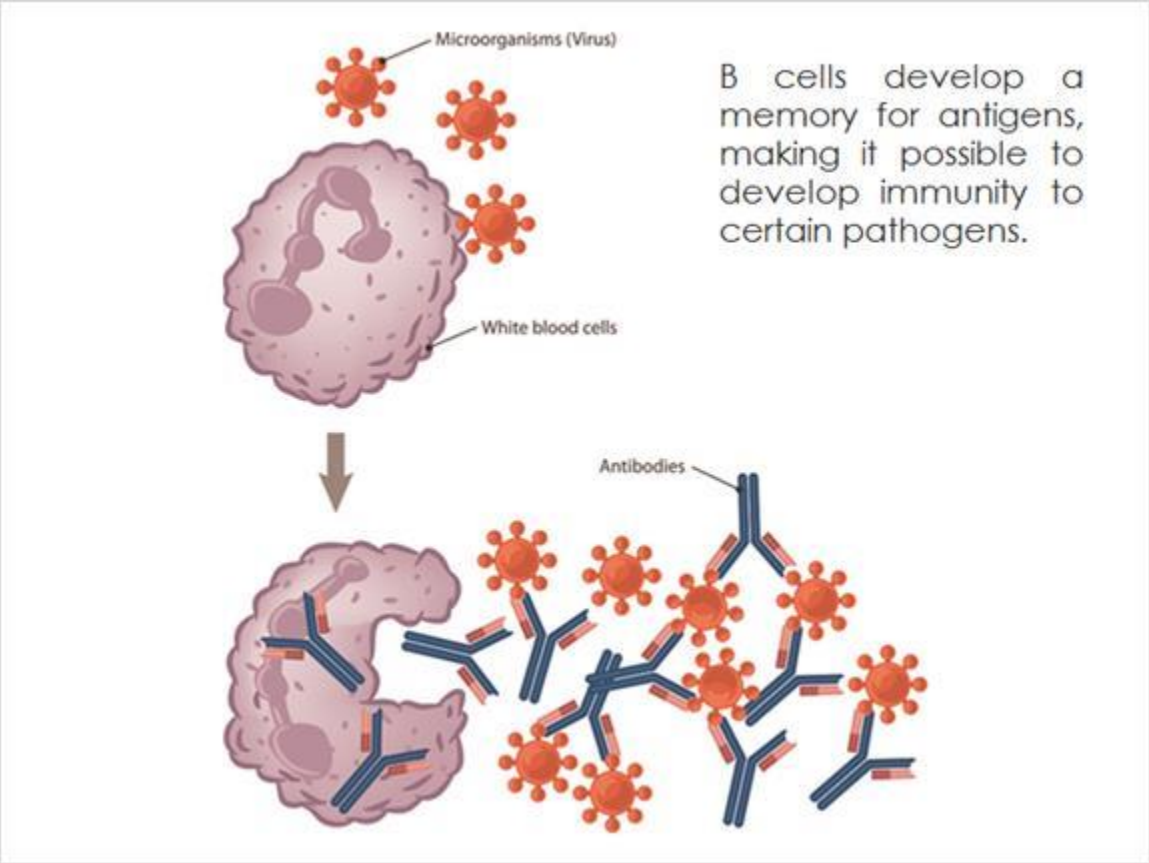
Lymphocytes are made in the bone marrow. As lymphocytes mature, they become either B cells or T cells. B cells mature in the bone marrow while T cells migrate to the thymus, where they undergo further growth. After B cells and T cells fully mature, they move to your lymph nodes or circulate throughout your body through the circulatory and lymphatic systems.

Antigens and Antibodies



An antigen is a foreign substance, such as a virus or bacteria, that causes your body to produce antibodies. Antibodies are special proteins made by B cells. Antibodies stick to antigens, alerting your body of the presence of a foreign substance. T cells attack and destroy the foreign substance, and assist B cells in the creation of antibodies.

Immunity



B cells develop a memory for antigens, so the next time the same antigen enters your body, the cells of the immune system recognize it and are able to respond to it quickly and efficiently, keeping you from getting sick. This process makes it possible to develop immunity to certain pathogens. Sometimes your body does not have the antibody to kill a pathogen, leaving your cells unprotected and at risk for the disease.

Vaccines

Vaccines help prevent certain diseases by building immunity against them. A vaccine introduces the body to a dead or weakened version of a pathogen. B cells recognize the foreign material and produce antibodies to ward it off or kill it. If the body is ever presented with the real pathogen, B cells already know how to make the antibodies necessary to protect the body from the disease.