

The Immune System

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Why is the Immune System Important?

The Immune System does a lot for us from healing wounds to keeping us alive.

There are special cells called “T” and “B” cells which work as partners. The “B” cells fight the invader and the “T” cells learn to recognize it from happening again.



Homeostasis

The Immune system maintains homeostasis this because it counteracts bacteria and viruses with fever it, increases blood flow that helps bring oxygen to cells and it heals wounds by “eating” dead or broken cells which aids in healing, also there are things called memory cells which give us, what we call, immunity to diseases and colds from fighting through them.

Diseases of the Immune System

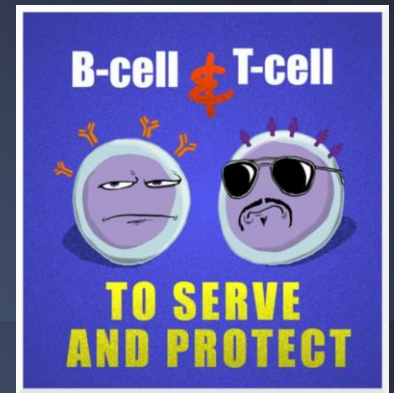
Even with the immune system fighting viruses and colds even it is vulnerable to diseases.

1. Lupus (systemic lupus erythematosus): Lupus attacks healthy cells instead of foreign cells.
2. Guillain-barre syndrome: This disease causes the immune system to attack nerve controlling causing weakness.
3. Psoriasis: Overactive “T” cells collect in the skin cells and causes silvery, scaly skin.

Structures of the Immune System

1. Bone Marrow: produces blood cells
2. The Thymus Gland: produces “T” cells
3. Lymph Nodes: Filter out harmful substances to fight off infection and whatnot.
4. Spleen: Cleanses the blood by taking the defective and used-up red blood cells out of the blood.

Major Concepts



This system has a few concepts that are worth mentioning like:

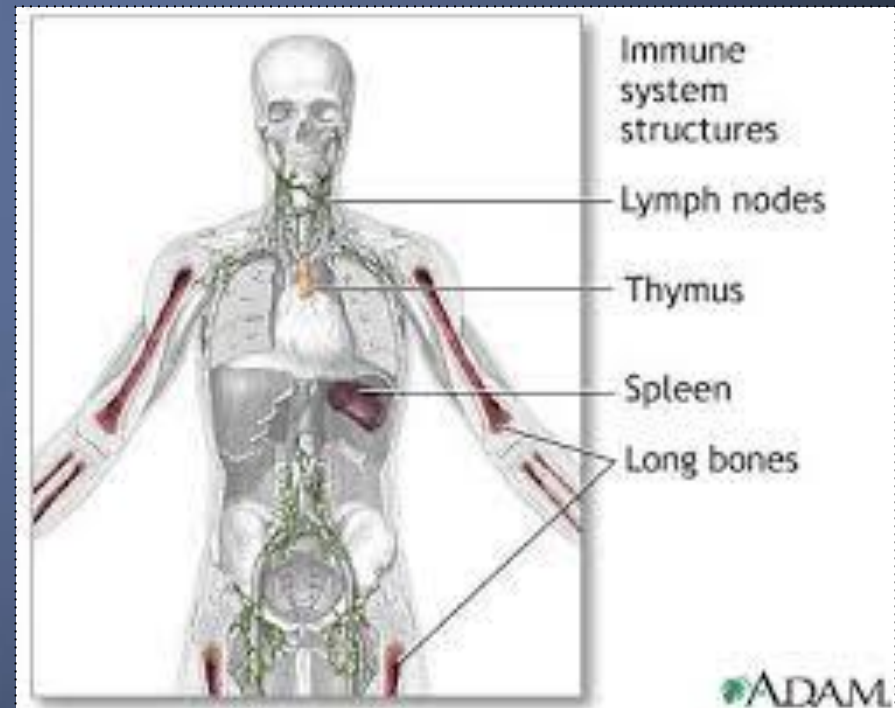
1. The immune system is the patchwork of the defense system in the body.
2. “T” cells and “B” cells are the principal players of the immune system. (B cells manufacture antibodies) (T cells regulate immune system and deal with cellular abnormalities)

The Immune Systems Interdependence.

The Immune System works interdependently with the Endocrine System. They both use some of the same ligands and receptors that are used to communicate with each other.

The Immune System

The Immune System is pretty simple location, but complicated in it's function.



Innate vs. Acquired Immunity

Innate immunity prevents microscopic organisms from entering tissues, or eliminates them once a disease occurs in the tissue.

Acquired immunity is learned when the body is exposed to foreign substances. Innate immunity is present at birth, acquired immunity is not present at birth. Innate immunity is in all animals, acquired immunity is in only vertebrate.

Important Roles of Acquired Immunity

- B cell activation
- Antibody production
- NK cells
- Activation of macrophages
- T cell subtypes that are stimulated by antigens

Plant immunity relates to acquired immunity because plant immunity fights off pathogens once it is recognized by the cell surface.

Recognition and Response

Inflammatory Response: changes that occur by signaling molecules being released upon an injury or a infection.

Natural Killer cells recognize and destroy cells with certain diseases in vertebrates. (As the previous slide mentioned, NK cells are associated with acquired immunity.)

Mononucleosis

A person with mononucleosis is infected with the Epstein-Barr virus. Mononucleosis is spread through exchanging saliva, sexual contact or social contact. Symptoms include: headaches, fatigue, fevers, skin rashes, swollen tonsils, sore throats, soft swollen spleen, and swollen lymph nodes in the neck and armpits.

Mononucleosis is not permanent and can be cured simply. To treat mononucleosis gargle salt water, drink plenty of water and fruit juice, take a pain reliever, and get lots of rest.

Hepatitis

Hepatitis is any swelling or irritation of the liver. There are five main types of hepatitis: Hepatitis A, B, C, D, and E. Hepatitis A is caused by drinking water or food poisoned by bodily waste that was carrying the virus.

Hepatitis B is spread through blood transfusions, sex, or needle sharing. Hepatitis C is caused by touching contaminated needles or blood that have hepatitis. Hepatitis D only occurs when someone has Hepatitis B. Finally Hepatitis E occurs the same way as Hepatitis A.

Work Cited:

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4. <http://www.mayoclinic.org/diseases-conditions/mononucleosis/basics/definition/con-200221164>
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Activity Time!

If time permits a class activity will be done,
grab a partner!

