

Immune System Memory Game

Recommended Age: 12 years old

Time: 45 minutes



Everyday our bodies come in contact with millions of tiny organisms and particles that could potentially make us sick. Despite this, most people only get sick every once and a while. This is because our bodies are equipped with a fantastic defense team called the ***Immune System***. The Immune System works with several other major body systems, including the circulatory system, as well as hormones, proteins, white blood cells and red blood cells to help keep our bodies safe from outside invaders.

In this activity we will:

- To learn about parts of the immune system by playing a memory game.

Materials

- At least one friend or adult
- One set of 30 Immune System Memory cards (attached below)
- Poster board or cardboard
- Glue stick
- Scissors
- Laminating paper (optional)

Safety

- Be careful while using scissors. Ask an adult to help you if necessary.

Preparation

1. Using the glue stick, glue each of the sheets of the memory cards to a piece of poster board or cardboard.
2. If you have laminating sheets, laminate each of the sheets after you have glued them onto the cardboard.
3. Cut out each of the cards along the black lines.
4. You are now ready to play the game!

Pre-Activity

1. There are two types of cards that are going to be used in this game. Half of the cards are description cards and have only words on them. The other half of the cards has a labeled picture on them. For every picture card there is a matching description card. The goal of this game is to match the description with its picture.

Activity

1. Find a flat surface to play the memory game.
2. Mix up all the cards and lay them out on the flat surface in a 5 x 6 grid.

3. The first player begins by choosing two cards of his or her choice. If the player picks two cards that are matching description and picture cards, that player reads the description to the other player(s) and shows them the picture. This player then gets to keep this matching pair of cards. He or she gets to take another turn. If the player does not choose matching cards, he or she turns them back over in the same spot and the next player gets to take a turn.
4. The next player repeats step 3 above.
5. Play continues around to all of the players until all of the cards are turned over and matched. The player with the most matches at the end of the game wins!

Extension Activity

1. If you are interested in finding out more information about the immune system, please refer to the web resources below or search for books about immunity at your local library or favorite bookstore.

Summary

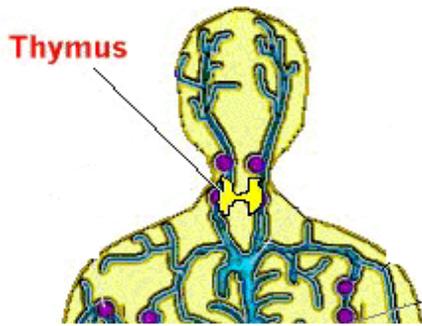
The immune system is one of the many amazing ways your body can keep itself healthy and fit. Now that you have learned about all the different parts of the immune system and how they work, share your game with your friends so that they can learn how their bodies fight off infections and illness too!

Resources

1. <http://wikipedia.org/>
2. <http://www.thebody.com/step/immune.html>
3. <http://health.howstuffworks.com/immune-system.htm>

Picture Credits

1. www.med.umich.edu/opm/newspage/2003/melanoma.htm
2. <http://education.vetmed.vt.edu/Curriculum/VM8054/Labs/Lab6/Examples/xeosinp.htm>
3. <http://www.rothamsted.bbsrc.ac.uk/notebook/courses/guide/blood1.htm>
4. <http://academic.brooklyn.cuny.edu/biology/bio4fv/page/aviruses/cellular-immune.html>
5. http://www.sher.co.uk/_antibiotics/
6. <http://www.okccc.edu/deanderson/hematology/basophil.html>
7. <http://pathmicro.med.sc.edu/bowers/immune%20cells.htm>
8. http://www-immuno.path.cam.ac.uk/~immuno/part1/lec06/lec6_97.html
9. <http://www.ama-assn.org/ama/pub/category/7157.html>
10. <http://www.auburnschl.edu/OtherInfo/immunizations.html>

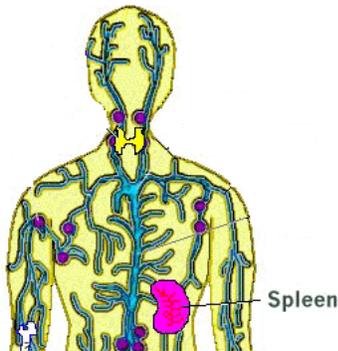


Thymus

Thymus

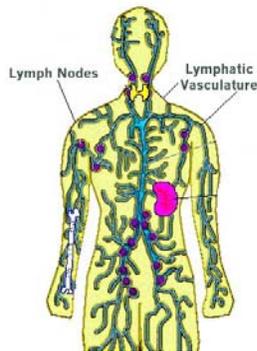
The thymus is like a school for young t-cells. Once the immature t-cells are made in the bone marrow, they move to the thymus where they are selected to fight certain infections. The thymus is most active during childhood and puberty and shrinks when you become an adult.

Spleen



Spleen

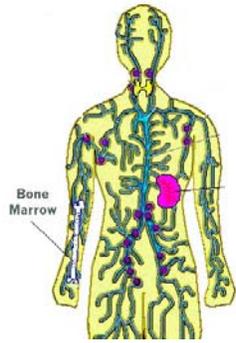
The spleen contains nests of B and T cells that monitor the blood for infections. If one is found, the T cells trigger the B cells to make antibodies. The spleen also contains macrophages to remove old red blood cells and other foreign particles.



Lymphatic System

Lymphatic System

The lymphatic system is a network of vessels that transports watery fluid from the tissues throughout the body. This system has no pump and the lymph fluid moves very slowly due to contractions of skeletal muscles. The lymphatic system also contains lymph nodes, which house white blood cells that filter bacteria and viruses.

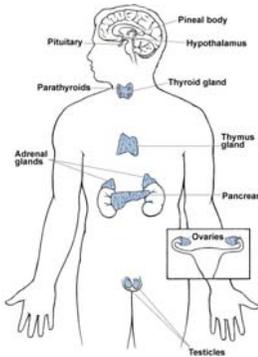


Bone Marrow

Bone Marrow

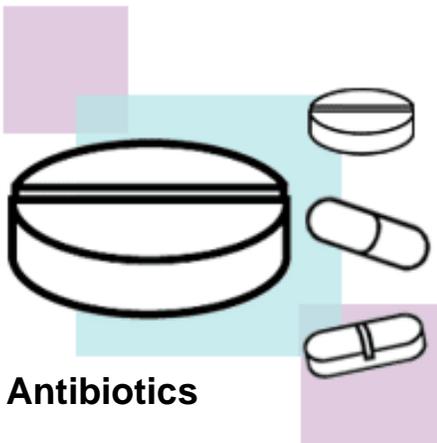
Large bones in the body contain a central area of spongy material called bone marrow. The bone marrow contains stem cells that are capable of producing red and white blood cells.

Hormones



Hormones

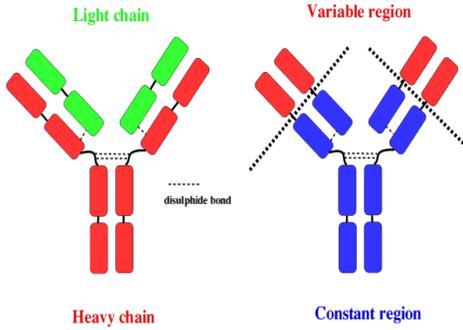
Hormone producing glands also produce lymphokines, which are special hormones that activate other parts of immune system.



Antibiotics

Antibiotics

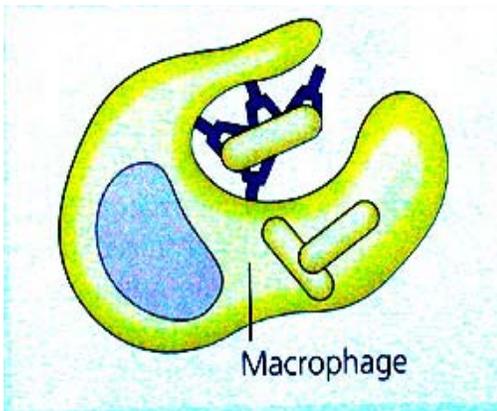
Man-made substances that have the ability to kill certain types of bacteria that invade the body. Antibiotics cannot kill viruses or fungus. Misuse of antibiotics can cause bacteria to become antibiotic resistance.



Antibodies

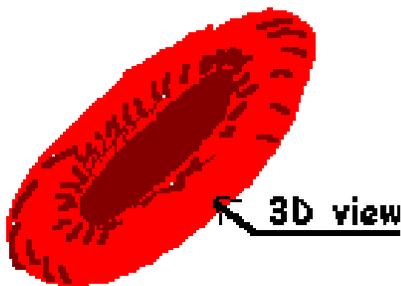
Antibodies

Antibodies are proteins that are used by the immune system to identify and remove foreign particles from the body. Each antibody is composed of a heavy chain and a light chain. The light chain varies between types of antibodies, while the heavy chains remain fairly constant.



Macrophage

A macrophage is a type of white blood cell that can enter tissue and engulf and destroy large foreign particles.

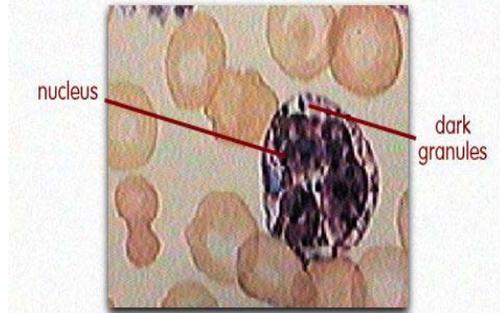


Red Blood Cells

Red Blood Cells

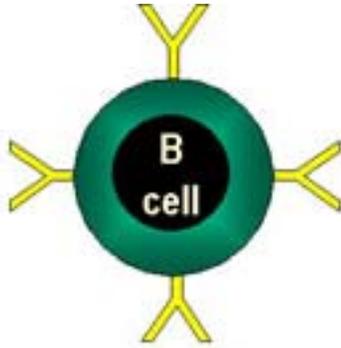
Red Blood Cells are the most common type of cell found in the blood. These cells are responsible for transporting oxygen throughout the body. Each cell contains hemoglobin, which gives the cells their red color. Red Blood Cells take about 7 days to develop and live for about 120 days.

Basophil



Basophil

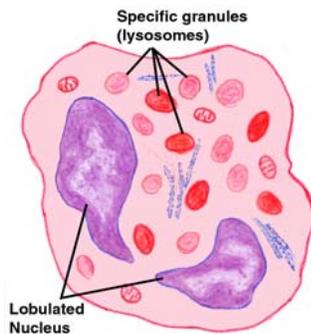
Basophils are the least common of the white blood cell types and usually make up 1% of the white blood cell population. Basophils release histamine and are linked to most allergic reactions in the immune system.



B Cell

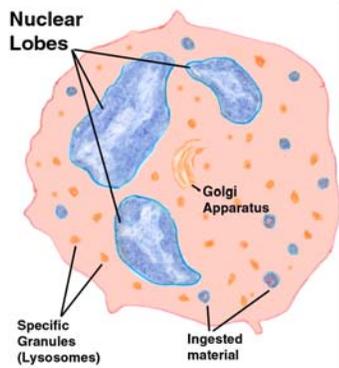
B cells produce antibodies. There are two types of B cells. Memory B cells form antibodies during a first encounter with a foreign particle and remember these antibodies in case the same particle invades again. Plasma B cells secrete antibodies to make it easier for macrophages to destroy invading particles.

Eosinophils



Eosinophils

Eosinophils are white blood cells that are primarily responsible for immune responses that deal with parasites.



Neutrophil

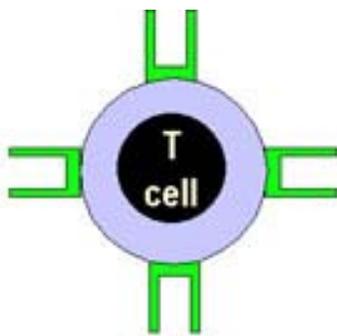
Neutrophil

Neutrophils are the most common white blood cell and make up 70% of the white blood cell population. Neutrophils behave similarly to macrophages as they are able to engulf foreign particles. Unlike macrophages, though, neutrophils are found in the bloodstream and can only engulf one particle before it is destroyed.



Vaccines

Vaccines are injections of a weakened form of a particular disease. The weakened form of the disease does not make you sick but still triggers your immune system to produce antibodies against the particle. Vaccines can be used against both bacterial and viral infections.



T Cells

The T cells are another type of white blood cell. The T stands for Thymus, which is where the final development of these cells occur. There are two types of T Cells. Killer T cells detect cells that are infected and kill them. Helper T Cells either activate or suppress the immune system.