Human Body

Immune System and Germs
Immune System

Your immune system is your body’s defence against certain bacteria, viruses and fungi that cause infections and illnesses. The immune system knows the cells in your body and when it identifies new germs, it tries to get rid of anything that is unfamiliar to it.

The organs involved with the immune system are called the lymphoid organs. They affect the growth, development and release of lymphocytes. Lymphoid organs include:

- adenoids - two glands at the back of the nasal passage
- blood vessels - arteries, veins and capillaries which the blood flows through
- bone marrow - tissue found in bone cavities
- lymph nodes - organs shaped like beans that are located throughout your body
- lymphatic vessels - channels that carry lymphocytes to the lymphoid organs and bloodstream
- Payer’s patches - lymphoid tissue in the small intestine
- spleen - organ located in the abdominal cavity
- thymus - two lobes that join in front of the trachea
- tonsils - two masses in the back of your throat.
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Immune System

What does your immune system do?___

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________________________________________.

What are the organs involved with the immune system called? _____________________________________________.

Research cancer and find out how it affects the immune system? _____________________________________________

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Immune System

When new germs are found, the body can react in a couple of ways.

- Phagocytes - engulf, absorb or eat pathogens
- Lymphocytes - create antibodies to attack antigens

After defeating a disease, the lymphocytes will keep a record of the disease throughout your life, so that if it should appear again, they know how to quickly eliminate it.

Vaccinations

Your body usually only becomes immune to infections after it has overcome them. You can also become immune to them by having a vaccination.

Vaccines contain altered germs which can't make you ill, but can still trigger the immune system. Your immune system fights the vaccine and builds up its memory cells.
# Immune System

There are foods that you can eat to help boost your immune system. Can you think of any more.

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Foods Found In</th>
<th>What they do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>carrots, butternut squash, sweet potatoes</td>
<td>key role in production of white blood cells that are vital for fighting infections</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>chilies, guavas, bell peppers, broccoli, papayas, strawberries</td>
<td>help boost the immune system</td>
</tr>
<tr>
<td>Zinc</td>
<td>sesame seeds, pumpkin, squash, peanuts, oysters</td>
<td>is necessary for the creation and activation of lymphocytes.</td>
</tr>
</tbody>
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Immune System

Your skin is the first line of defence. It is like a plastic wrap that keeps germs from getting into your body. Then you have the mucous membranes in your mouth, throat, lungs and bowl that also act as a barrier to germs.

Your saliva and tears contain special enzymes that can break down the cell walls of many bacteria and viruses.

The mucous that is created in your nose, throat and lungs, capture bacteria, viruses and dust. While the acid in your stomach can kill many germs.

Your body has many friendly bacteria that live on the surfaces, they do not try to invade the body, so the immune system does not try to get rid of them.

Sometimes your body reacts to infections by raising your temperature. This is called a fever and helps to stop the germs from multiplying. It also helps boost the activity of germ-killing white blood cells.
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Immune System

What is your first line of defence?_____

________________________________________.

How do your saliva and tears help you?____________

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What is a fever? Why can you get them and how do they help your body? ______________

________________________________________

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Immune System

How do you know that your immune system is working?

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What are some things that can go wrong with the immune system?

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Immune System

How do you know your immune system is working?

• you get better after you are sick
• cuts heal without getting infected
• don’t get the same diseases over and over again
• you get swollen glands
• you get swelling and soreness around a cut

What are some things that can go wrong with the immune system?

• it may attack your body eg. insulin dependent diabetes is caused by the immune system attacking the cells in the pancreas that make insulin
• allergies like hay fever and asthma are caused by the immune system over-reacting
• when skin or an organ is transplanted, the immune system may attack the new part
• when the immune system is damaged and cannot recognise infections or abnormal cells eg. AIDS
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Lymphatic System

Lymph is a clear liquid that carries only white blood cells to the parts of your body that needs them.

Some bacteria and viruses that enter your body are collected by the lymph and then passed onto the lymph nodes where they are destroyed. These lymph nodes are sometimes called glands.

A doctor can tell if you have an infection by checking the lymph nodes in your neck and under your arms. If they are swollen, it means they are working to get rid of an infection.

Can you find your lymph nodes? __________________________
Antibodies

1. INFECTION
2. DETECTION
3. ACTIVATION
4. SEEKING
5. DESTROY

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Antibodies

1. INFECTION
A germ invades the body and begins to multiply. It gets carried to your lymph node.

2. DETECTION
Antibody cells touch the germ trying to identify it. When a cell with matching molecules recognises it as an enemy, it sticks to it.

3. ACTIVATION
The matching antibody is activated and produces an army of clones and memory cells, for future reference.

4. SEEKING
The clones make matching antibodies that match the unique molecules on the germ. These antibodies are released into the blood to find matching germs, which they stick to.

5. DESTROY
These antibodies are like beacons to white blood cells called phagocytes. These come and destroy the germs.

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Germs and Diseases

The tiniest germs are viruses. To reproduce, viruses much invade one of the cells in your body. This can result in you getting a cold, flu, warts and measles.

Bacteria are single-celled organisms that are much bigger than viruses. Some of these are helpful to your body and some cause diseases like food-poisoning, typhoid, and plague.

Tapeworms and roundworms are types of worms that can live in your body. There live in the intestines and steal the nutrients from the food you eat.

Some types of fungi can grow on or inside the human body. Athlete’s foot is an example of a fungi that grows as a network of tiny threads and causes soreness, itching and cracked skin.

Malaria is a disease that is caused by a single-celled organism called plasmodium which lives inside mosquitoes.
Germs and Diseases

What are the tiniest germs called?_______

____________________________________.

Bacteria are ____________________________—____________________
organisms that are much bigger than ________________________.

Research malaria and find out how you can get it and how
to treat it. __________________________________________________

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