

# STUDENT POST

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# HOW DOES THE HUMAN BODY WORK ?

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## Different type of cells in a human body



Bone cell



Columnar epithelial cell



Nerve cell



Smooth muscle cell

## Have you ever wondered about how the human body works?

The human body is like a complex machine, with many little parts that work by themselves or with other parts to perform specific functions. Sometimes, it seems like our body has a mind of its own and it embarrasses you. Have you ever passed gas accidentally when other people were around? In most cases, the things that your body does are normal, but it's important to know your body so you can recognize what is normal body behaviour and what is not. If there is a problem with how your body works, by recognizing that there is a problem, you can take steps to fix it or get help.

To understand how the body works, it helps to understand how the body is organized. The smallest living unit in any organism is a **cell** and the human body is made up of trillions of them. That is more than **1,000,000,000,000** cells! Cells are so small you cannot see them without a microscope. Cells are important for many reasons. They produce the energy in your body to do daily activities, or hold the coded instructions for everything from the colour of your hair to whether you have freckles or not. Cells differentiate from each other to perform different, important tasks within the body. For example, some cells might become brain cells while others make bone, and red blood cells carry oxygen throughout the body, while white blood cells fight infection.

When a group of cells work together to perform a specific function, they are called **tissue**. There are four types of tissue within the body. The first, **epithelial tissue** protects the body and the organs by forming a protective outer layer. The skin, which is an example of epithelial tissue, is the first line of defence against infections. **Nerve tissue** carries messages from the brain to the rest of your body by sending electrical impulses. The electrical impulses tell the muscles when to contract and affect everything from the beating of your heart to the wiggling of your toes. **Muscle tissue** functions in movement because the muscle cells contract, shorten and relax. Muscle cells know when to contract or shorten because they receive electrical signals from nerve tissue. Finally, **connective tissue** holds the body together, provides support, insulation, and protection. Bones, tendons, and ligaments are all examples of connective tissue.

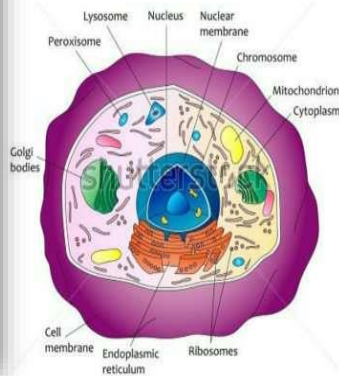
## Two type of cell blood cell: Red blood cell, White blood cell.

The red blood cells account for the most proportion of alive blood cells in a human body. In terms of carrying out oxygen, minerals, and other nutritional substances throughout body, and keep normal temperature (36,6 C), bringing back the carbon dioxide to lungs, the red blood cells are the first and foremost responsible.

The white blood cells are quite fewer in human blood. They are in charge of protecting body from viruses and bacteria. When any kind of small lining things that cause illness or disease appear in blood, they get them, and sacrifice themselves.



## Human cell



**Organs** are two or more types of tissue that work together to perform a specific task. For example, the stomach has all four types of tissue and is responsible for breaking down food. **Organ systems** are formed when two or more organs work together to perform a larger task. The mouth, throat, stomach, large and small intestines, liver, pancreas, and gallbladder all work together, as the digestive system, to process the food we eat so that our cells can absorb the nutrients and convert it into energy.

There are many systems in the body, such as the skeletal, muscular, circulatory, nervous, digestive, immune, respiratory, urinary, and reproductive systems and they all interact with each other every second of our lives. Without these systems, humans would not be able to grow, maintain life, and reproduce. Doing something beneficial for one system (like taking an antibiotic for an ear infection) might cause problems in another (like disrupting the digestive process). Doctors call these side effects and you have to decide if the benefits from the medication are worth the risk of the side effects. Sometimes, the side effects are minor and undetectable; other times they have very serious consequences. For example, birth control pills lose effectiveness if you are also taking certain antibiotics. That's why it's important to listen carefully to your doctor's and pharmacist's instructions when taking a new medication and tell them about any prescriptions, recreational or street drugs, vitamins, alcohol, etc., that you are taking.

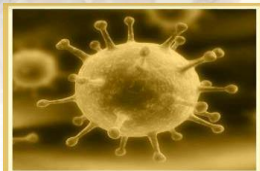
When you take any drug, it may interact negatively with other drugs or substances. A new phenomenon called **pharming**, involves raiding the medicine cabinets for prescription medications and mixing them with the intent of getting high. Pharming is extremely dangerous and potentially fatal. Prescription drugs that are meant to treat a specific condition in an ill person can have the exact opposite effect in healthy people because of drug interactions and the effect on internal organs. The effects on the body depend on what was taken, what it was taken with, and in what quantities. Drug interactions can lead to overdose and death.

**What makes people sick?** As long as there have been people on earth, people have gotten sick. Throughout the centuries, the diseases and how they affect people have changed because humans have adapted, developed resistance to certain infections, and there have been many advances in medicine. Some illnesses are mild and eventually go away. Other diseases are very serious and can change the way the body works. But what makes people sick? Why can some people be cured, and others cannot?

There are a variety of reasons people develop a disease: exposure to a bacteria or a virus, consuming contaminated water or food, poor nutrition, genetic factors, or exposure to certain chemicals, and from environmental factors such as breathing in second-hand cigarette smoke and asbestos.

**Bacteria** are single-celled organisms and they are normally found inside and outside of the body, except in the blood and spinal fluid. Most bacteria are beneficial, but some bacteria cause disease. Harmful bacteria are often referred to as germs because they cause disease such as ear infections, pneumonia, or strep throat. When bacteria cause infections, antibiotics prescribed by your doctor will typically destroy the harmful bacteria. Antibiotics should only be taken when prescribed by a doctor because one of the side effects is that antibiotics can also destroy the beneficial bacteria in the body. For example, over a hundred species of bacteria live in the large intestine and colon. This type of bacteria helps the body process food and keep harmful bacteria from traveling up the digestive track and harming other parts of the body. When bacteria in the colon and large intestine are disturbed, people can experience symptoms like constipation, gas, or diarrhea. (While gas is a natural bi-product of digestion, excessive gas accompanied by other symptoms may require medical treatment.)

**Viruses** are infectious agents that must live inside a host cell to survive and replicate. As the virus replicates, it will take over more and more cells. Your immune system is responsible for fighting the infection caused by a virus since viruses don't respond to antibiotics. For some viral infections, like HIV, there are anti-viral medications available that help slow the rate of the virus's replication, but they can't kill it.



In many cases, you can avoid catching a bacterial or viral infection or disease by practicing good hygiene. Most germs are spread from person-to-person contact, and even if someone doesn't feel sick, they can still be carrying the infection. To help minimize the spread of germs, wash your hands frequently for at least 20 seconds using soap and water. (Sing the "Happy Birthday" song in your head to make sure you have washed long enough and be sure to use warm water and soap!) It's also important to wash your hands after handling raw meat or animals since they can carry organisms that cause disease. Put the toilet lid down before you flush because whatever is in the bowl aerosolizes (mists) onto everything within 6 feet of the toilet. (How close is your toothbrush to the toilet?) Cough or sneeze into the crook of your elbow instead of your hands so you can avoid spreading the germs through the air or via your hands. Always wash your fruits and vegetables and cook meats and eggs thoroughly to kill bacteria on your food.