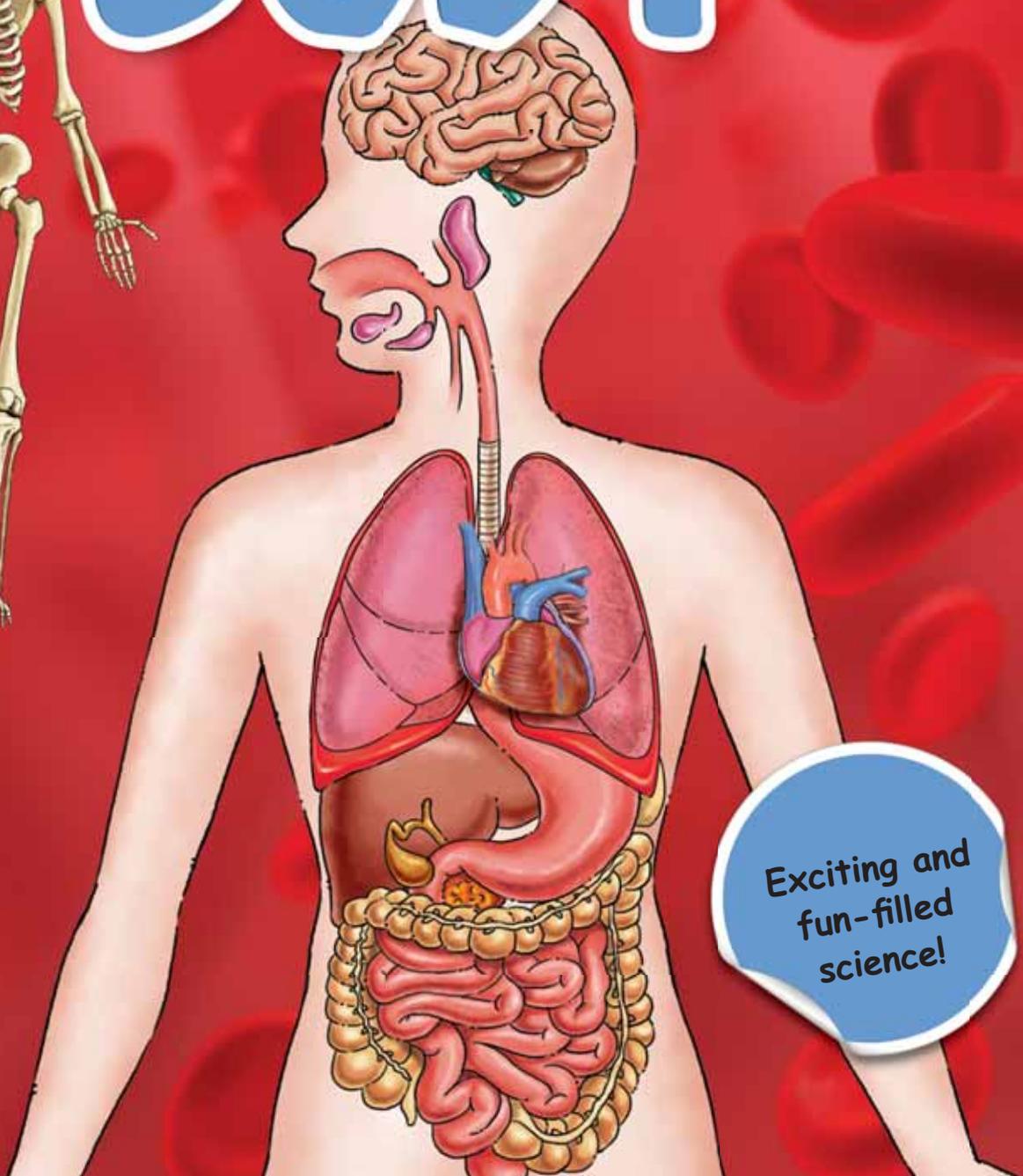


+ SCIENCE IN OUR ENVIRONMENT +

# HUMAN BODY



Exciting and fun-filled science!







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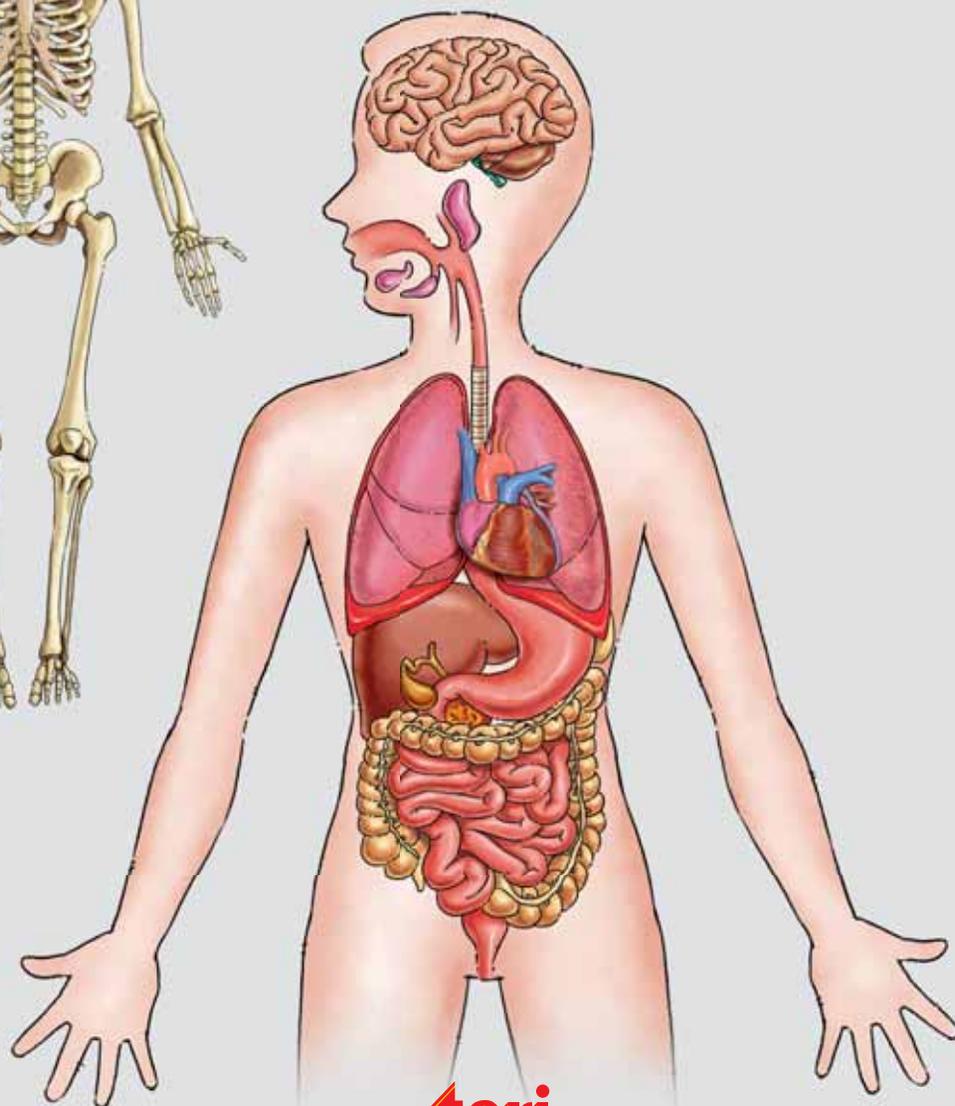
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# HUMAN BODY



## **A note from Dr R K Pachauri**

The field of science has witnessed remarkable advancements during the past century. We have made breakthroughs in space exploration, reduced global distances through innovations in communications, and unravelled mysteries of the human body while continuously adding to our knowledge of the plant and animal kingdoms. Some of these advancements, however, have had adverse effects on the environment, and have endangered the lives of those they were supposed to benefit.

This series throws light on the basic concepts of science while relating them to the environment. For example, what are the various sources of energy we use in our daily lives? What is clean energy? How was our universe formed? How have humans changed the way they communicate over the ages? Who are the members of the plant and animal kingdoms, and what are their special features?

Exploring the world around us through the eyes of budding scientists, these books intend to inform, inspire, and inculcate a spirit of scientific discovery. This series encourages young readers to keep a balance between scientific growth and the environment as they innovate and add to the ever-growing list of scientific inventions that make our lives better.



**R K Pachauri**  
Director-General, TERI  
Chairman, Intergovernmental Panel on Climate Change

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# HOW THE BODY WORKS

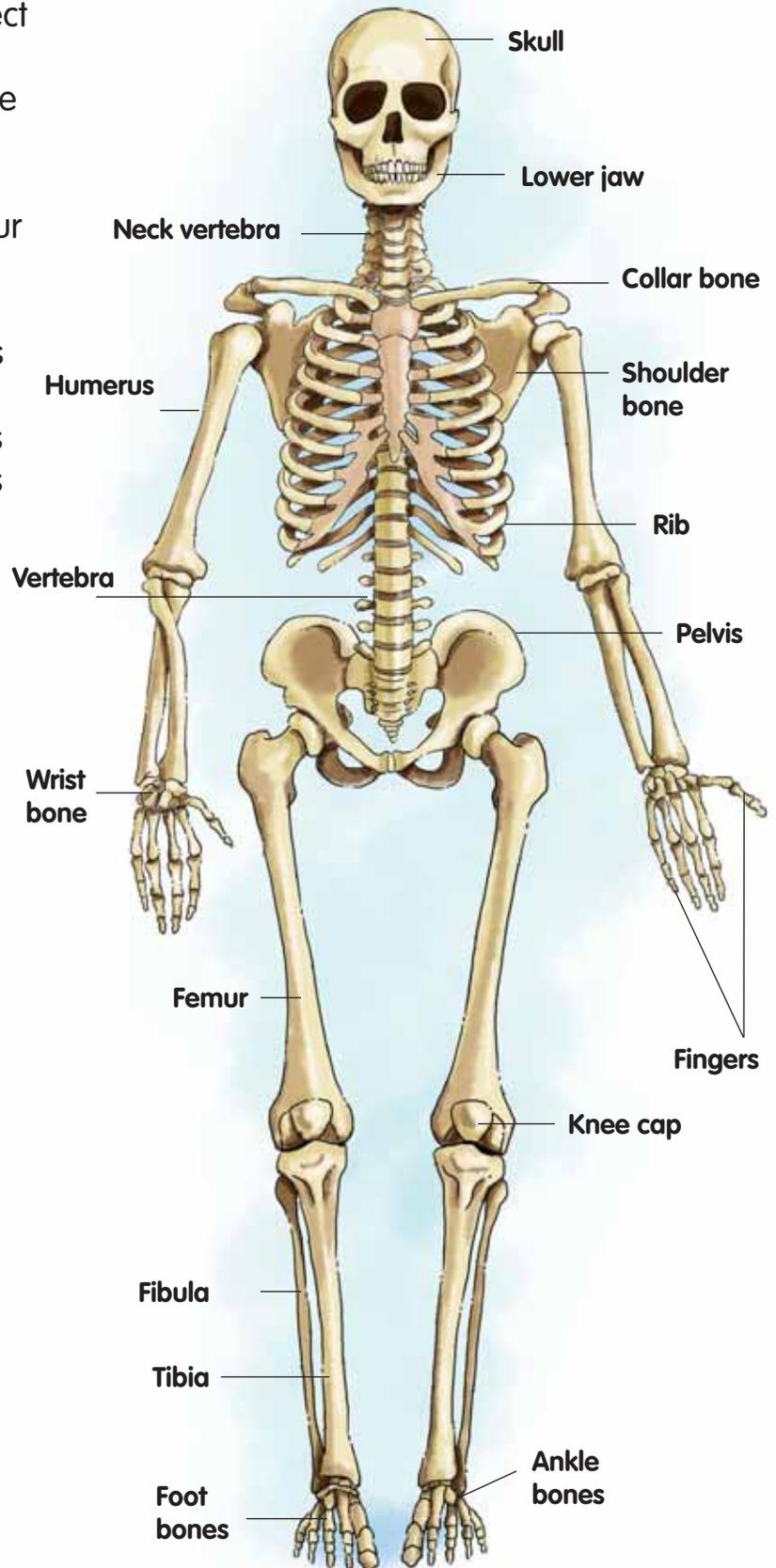
The human body is unique in many ways. Unlike animals, we can stand erect and walk on two feet. We can use our hands to grasp things, because we have thumbs that can move around to touch the other fingers. Try to write something or button up your shirt without using your thumb. You will find it very tough!

The inside of a human body has organs like heart, lungs, and liver to perform different functions. There are 206 bones that form our skeleton and 600 muscles that help in movement.



**Smarten  
Up!**

**About 72 per cent of our body weight is water, while 20 per cent is solid bone and tissue, and 8 per cent, other substances. Therefore, a person should drink about two litres of water every day.**



HUMAN SKELETON

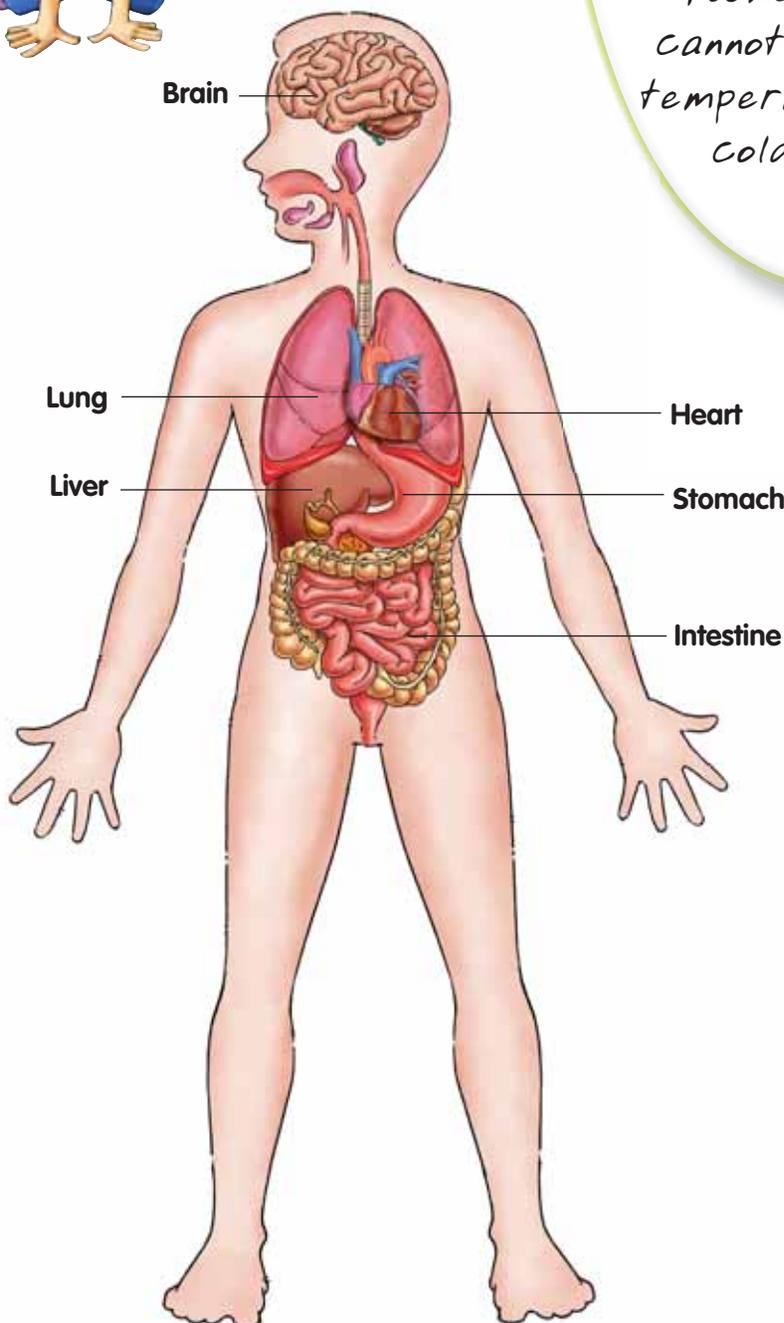
**REMEMBER** Our body has some unique features that make it work like a machine.

## Question time!



What are warm-blooded animals?

Warm-blooded animals have the same body temperature regardless of the outside temperature. All mammals and birds are warm blooded. On the other hand, reptiles, fishes, and amphibians cannot control their body temperature and are called cold-blooded animals.



IMPORTANT ORGANS OF THE HUMAN BODY

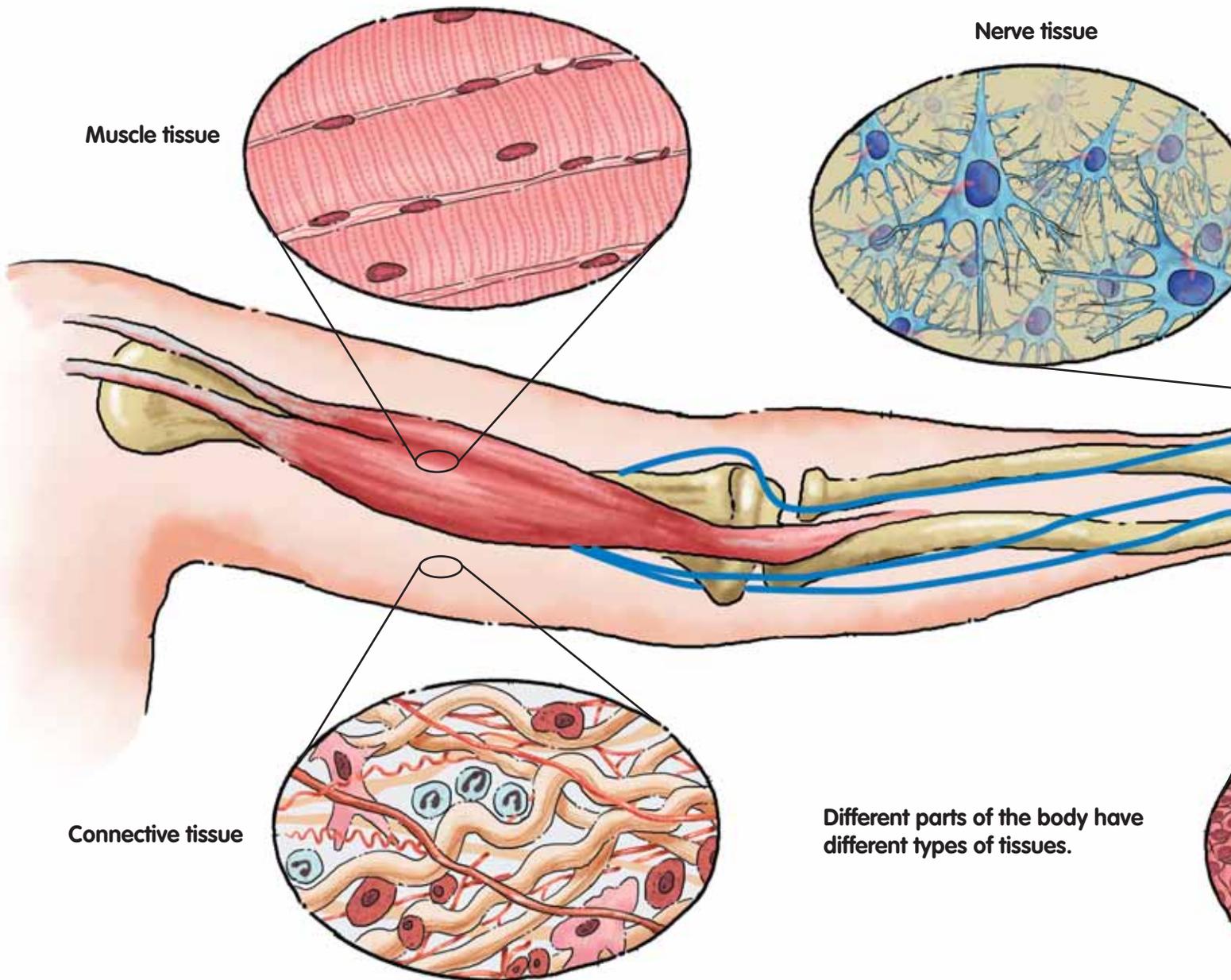
Then there is a specialized red fluid called blood that flows in the human body. Blood is made up of cells that travel to all parts of our body in a yellowish fluid called plasma. This plasma is mostly made up of water.

The average adult human is 5–6 feet tall, and a healthy man weighs 70–80 kilograms. Our body temperature remains constant at 98.6 degrees Fahrenheit, or 37 degrees Celsius. This is because we are warm-blooded animals.

# LET'S CHECK OUT THE HUMAN BODY!

Our body is made up of millions of cells. These are so tiny that you need a powerful microscope to see them. Similar kinds of cells join to perform specific functions for the body. These groups of similar cells are called tissues. There are four basic types of tissues—epithelial, connective, muscle, and nerve tissue.

Epithelial tissue acts as a lining in different parts of the body. Our skin has epithelial tissue. Connective tissue gives support and structure to the body. It is found under the skin. It also joins muscles and bones. Muscle tissue allows movement. All muscles in our body are made of muscle tissue. Nerve tissue generates and sends electric signals. The brain and spinal cord have nerve tissue.



Different parts of the body have different types of tissues.

**REMEMBER** Cells →→ Tissues →→ Organs →→ Organ systems

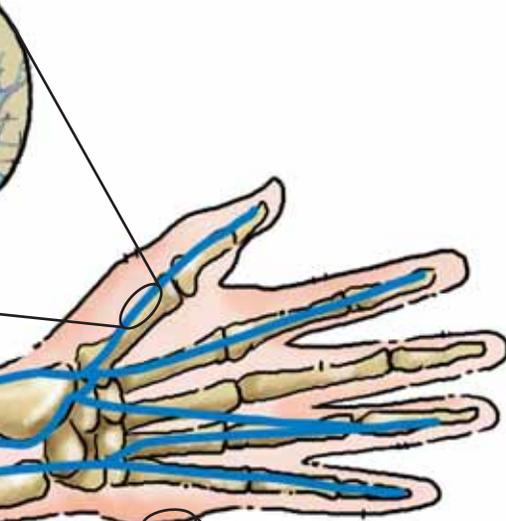


Why do organ systems need to work together?

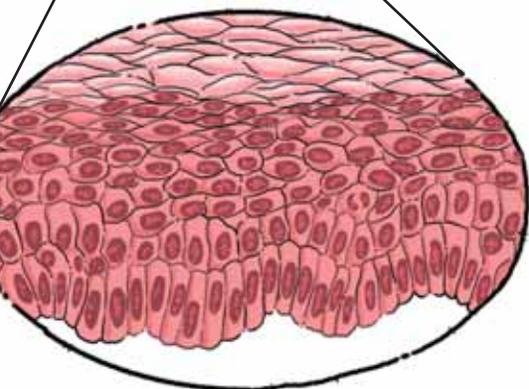
One organ system performs only one function, and then the other takes over. When we breathe, the respiratory system works to get oxygen in our body. After this, the circulatory system takes over and pumps the oxygen to all parts of our body.



**Question time!**



Epithelial tissue



**Smarten Up!**

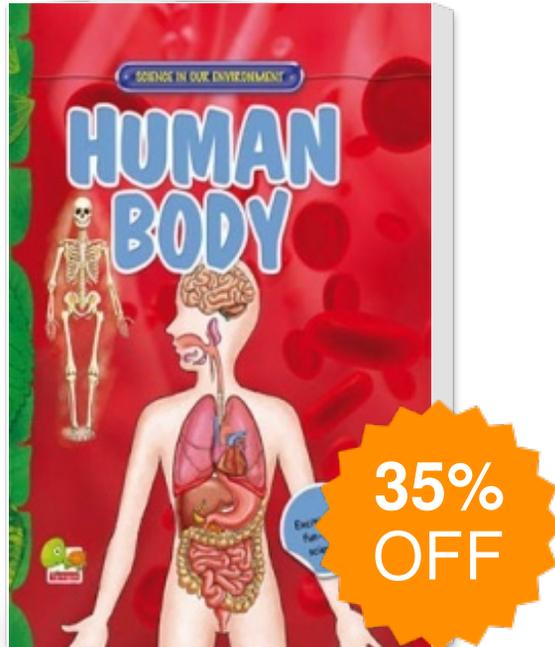
The skin is the largest organ of our body. It covers the entire body and accounts for nearly 15 per cent of the total body weight.



Tissues cannot do all the work on their own. Two or more kinds of tissues combine to form an organ that carries out complicated functions. Our body has twenty-two organs, each with a specific task to perform.

When organs work together, they form an organ system. For example, three organs—the nose, trachea, and lungs—have to work together to help us breathe. These organs form an organ system called the respiratory system. The human body has ten organ systems that work together to keep us alive.

# Science in our Environment : Human Body



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