

DAY 18

TOPIC: THE HUMAN BODY

Organisation of the Human Body: Organs, Tissues, Cells

Aim:

- Differentiate between an organ, a tissue and a cell.
- Order, from the simplest to the most complex of body organization.

Activities :

- Study pages 11-12 attached below.
- Do the exercise questions and review questions on page 4.

The organ systems do not work independently of each other. They depend on each other to help meet the needs of the body.

For example: The digestive system which takes food and breaks it down into small molecules depends on the muscular system. Your teeth chew the food – chewing requires muscles in your jaw; muscles help the food to move down the oesophagus (food tube); muscles in your stomach help to churn the food around as it is being broken down.

The muscular system depends on the digestive system for nutrition to provide for the muscle cells to use to produce energy to work.

Another example: For the body to be able to move, the skeletal and muscular systems must both work together. The bones of the skeletal system give the body support (stiffness) while the muscles which are attached to the bone contract and relax to produce movement. The muscles couldn't produce movement of our arms and legs without the skeleton and neither could the skeleton without the muscles. They both work together.

2. ORGANS, TISSUES AND CELLS

Organs

Organ systems are made up from units called organs which all work together. For example: the main *organ* in the *nervous system* is the brain. This works together with the spinal cord and the nerves to control the other organ systems.

In the digestive system there are many organs such as the stomach and the small intestine all working together.

Organs are made up from issues.

Tissues

An organ is made up of a group of tissues which work together as one unit. The heart is an organ and it is made up of muscle tissue, nerve tissue and connective tissue. Different organs are made up of different types of tissue, depending on the job of that particular organ.

Tissues are made up of cells.

Cells

Cells are the basic unit of life. There are many different types of cell, each type has a different job to do. The basic shape of all animal cells is shown in the diagram below (Figure 7). Some of the many specialized cells in the human body are shown in the diagram also. Specialized cells have a special shape to do a particular job.

Figure 7. Examples of specialized cells

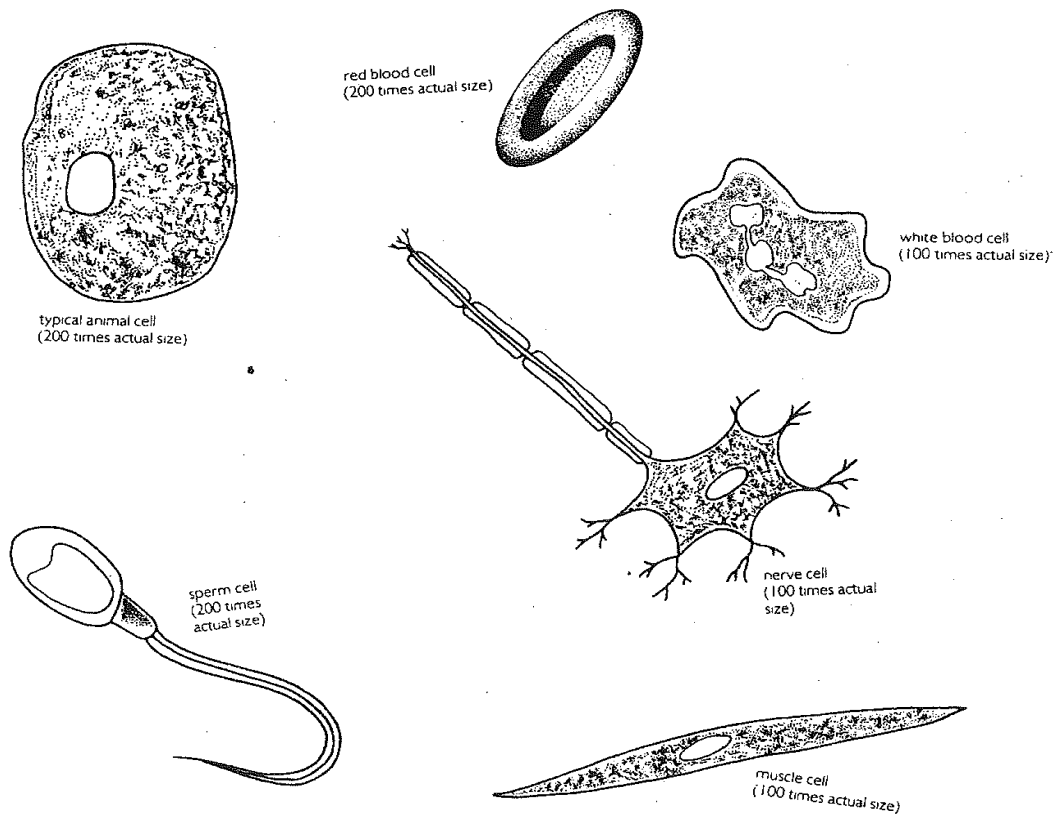
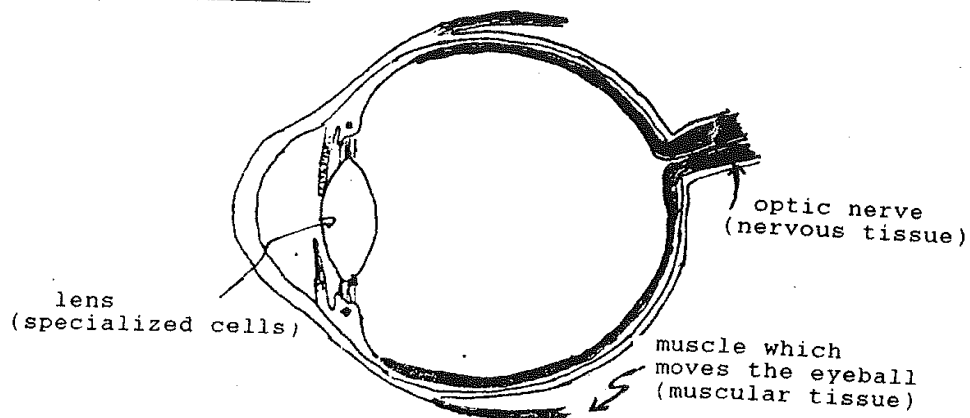


Figure 8. An eye showing the organizational levels of the body. It is made up of specialized cells which make different tissues, with the tissues all making the organ which is part of the nervous system.



Exercise Examples of Cells, Tissues,
Organs and Systems.

Using the list of words at the bottom of the table, complete the following table giving the specialized cells, tissues and organs in each of the organ systems.

ORGAN SYSTEM	ORGAN	TISSUE	SPECIALIZED CELL
reproductive		sperm producing	
circulatory	heart		muscle cell
		nervous tissue	nerve cell

WORDS TO USE:

testis, sperm, circulatory, heart (cardiac) muscle tissue, blood vessels, red blood cell, nervous, brain.

Review Questions

- Put this list of things into order from most complex (complicated) to least complex (simple):
organ, specialized cell, tissue, organ system.
- Match the organ system with the organs which are part of it.

skeletal respiration circulatory reproductive excretory endocrine muscular nervous digestive	muscles, tendons bones, cartilage glands brain, spinal cord, nerves stomach, intestine lungs, nose, windpipe heart, blood vessels kidneys, bladder ovaries, testes, uterus
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- What needs of the body does the respiratory system supply?
- Which organ system supplies a means of transport around the body for food and oxygen?
- Explain how the respiratory and circulatory systems might work together to get oxygen to the cells for respiration.
- Give one example of an organ system, the organs which it contains, and the tissues and specialized cells involved.