

# DIVERSITY IN LIVING ORGANISMS

Samacheer, Science, Class – VIII, Term- 3

**Types of cells in the human body are quite few.**

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## Introduction:

Cells are the smallest unit of life that can replicate independently, and are often called the "building blocks of life". Plant cells and animal cells have some common features like cell membrane, nucleus, cytoplasm, mitochondria and ribosome. But plant cells differ from animal cells by having cell wall and cell organelles like chloroplast and vacuole. Animal cells are generally irregular in shape. Cells found in different parts of our body are also not alike; they differ in size, shape and function.

Observation of different types of animal cells

**Activity 1** - Observation of unicellular animal cells

### Materials:

- Infusion, a medicine dropper, a small piece of absorbent cotton, clean slides, cover slips and microscope.

### Procedure:

- Place a few drops of water from the infusion in the middle of a clean slide.
- Carefully cover it with a round cover slip.
- Observe the slide first under low magnification and then under high magnification of the microscope.

### Observation:

You will see tiny forms of moving animal life.

Some protozoa will be darting back and forth across your field of vision. Protozoa of many different shapes and sizes will be visible.

**Preparation of infusion:** Take dried grass and some water. Add 2 drops of milk. Let the beaker stand open under shade for several days till the water and starts to smell.

**Activity 2** – Human cheek slide

### Materials required:

- A flat-ended toothpick, a pipette or medicine dropper and a dilute iodine solution.

### Procedure:

- Using the medicine dropper or pipette, place a drop of iodine solution in the middle of a clean glass slide.
- Gently scrape the inside lining of the cheek with the flat end of a clean toothpick.
- Put the scrapings in the drop of iodine solution on the slide.
- Observe the slide first under low magnification and then under high magnification of the microscope

### Observation:

- Small cells, some folded and some flat, scattered either by themselves or in groups will be visible in the microscope field

Different types of cells in human body

What is the human body made up of? Why does the shape of the heart differ from that of the kidney? Why are the lungs unable to pump blood to all parts of our body? Why are we able to taste our food only with the tongue and not by lips?

Some such questions can mark the beginning of the discussion in class to elucidate student understanding on human cells. Each organ is made up of unique type of cells to perform its specific function.

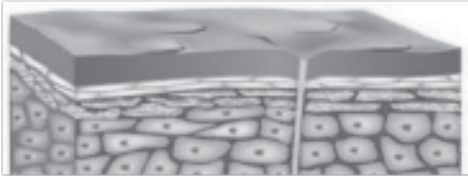
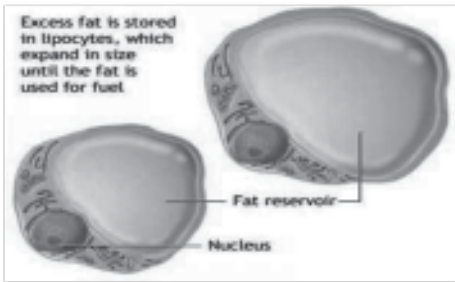
Our body is not made up single type of cells; it is made up of many types of cells. Cells club together to form tissues. Tissues unite to form an organ to perform some specific functions. These cells found on each organ differ in size and shape.

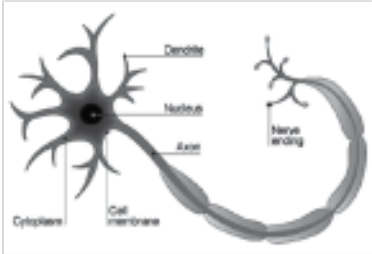
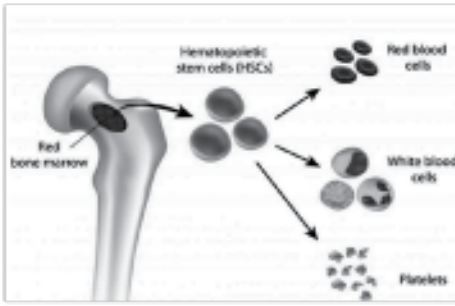

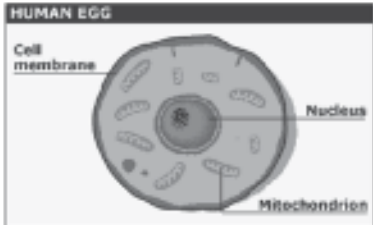
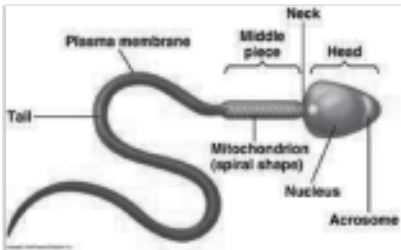
Conduct a discussion using the pictures of epithelial cell, muscle cell, fat cell, nerve cell, bone cell, eye cell, ear cell, gland cell, nephron, and neuron. They can be fixed on the human anatomy chart. This will make them realize that our body is made up of many types of cells and each cell performs specific special functions.

Some questions for evaluation:

1. Are all the cells are of same size and shape or are they different? If so, Why?
2. How and why do cells with the same genome have different structures and functions?
3. How do cells send, receive and respond to signals from the environment?
4. Are all the cells of an organisms the same? Are there any cells with specialization?
5. What are specialized cells? And why are only some cells specialized?
6. What factor/ structure makes a cell a specialized one?
7. Can we consider a group of eggs as tissue?
8. How are blood cells different from ordinary cell?
9. Is there any difference between RBC and WBC cells? What and why?

**Video reference:** <https://www.youtube.com/watch?v=URUJD5NEXC8>.

Sl. No	Cell	Shape	Function
1	Epithelium		Epithelial cells play a key role in protection, secretion and sensing in our body.  All glands are made up of epithelial cells.
2	Fat		These cells are specialized cell for storage of fat.  Fat is also used in the process of building new cells.

3	Nerve cell		<p>Nerve cells are specialized cells. These cells are used to send signals from the brain to all parts of the body and vice versa.</p> <p>These cells play a key role in controlling the body movements.</p>
4	Blood cell		<p>Blood cells are used to transport oxygen and nutrients to the lungs and other tissues in the body.</p>
5	Rods and cones		<p>These cells are responsible for vision.</p>
6	Egg cell		<p>Female gamete is called egg or ovum. Egg cell joins with the sperm cell, the male gamete, during fertilization to form the embryo, which eventually grows into a new organism.</p>
7	Sperm cell		<p>Sperm cell has a tail to help it move towards the egg. It also has a large number of mitochondria to supply the energy needed for the movement.</p>



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## Worksheet No.1

### Match the cells with its function

- |                        |                                |
|------------------------|--------------------------------|
| 1. Squamous epithelium | - Conduction of nerve impulses |
| 2. Muscle cells        | - Conduction of sound waves    |
| 3. Fat cells           | - Rigidity                     |
| 4. Nerve cells         | - Contractile & Retractable    |
| 5. Bone cells          | - Secretory                    |
| 6. Rods and cone cells | - Storing more fat droplets    |
| 7. Ear cochlear cells  | - Protective & give shape      |
| 8. Gland cells         | - Vision                       |

## Worksheet No.2

### Locate the following organelles in the animal cell

1. Lysosomes
2. Rough Endoplasmic reticulum
3. Smooth Endoplasmic Reticulum
4. Mitochondria
5. Cytoplasm
6. Nucleolus
7. Nucleoplasm
8. Nuclear envelope
9. Golgi bodies
10. Centrioles

