



See the following picture what is relation between them ?



Scientist Robert Hooke,  
who discovered  
the cell first



**Building**



**Different  
room**



**Room**



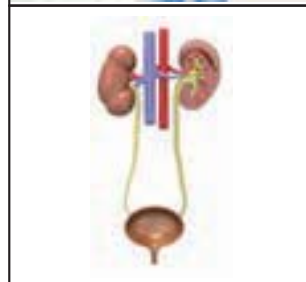
**Wall**



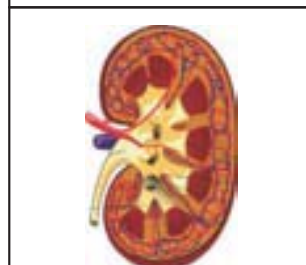
**Brick**



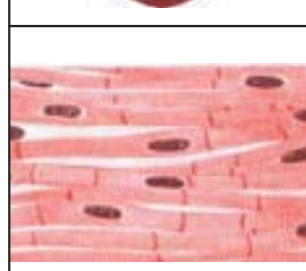
**Body**



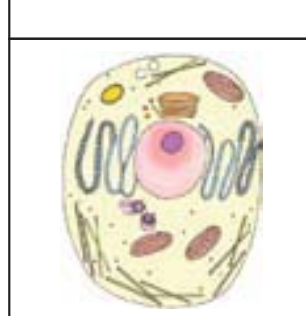
**System**



**Organ**



**Tissue**



**Cell**



**As the brick is the basic unit of a building, in the same way cell is the basic unit of body.**

- Our body is also made up of cells.
- Cell is a very minute thing.
- Cell cannot be seen with naked eye.
- Microscope should be used to observe a cell.

Now we will observe the cell.

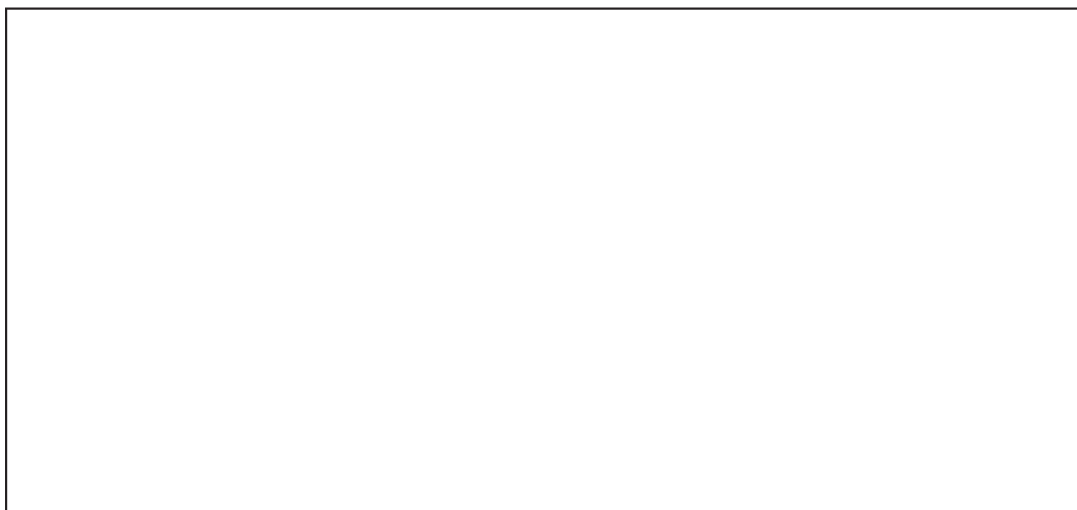


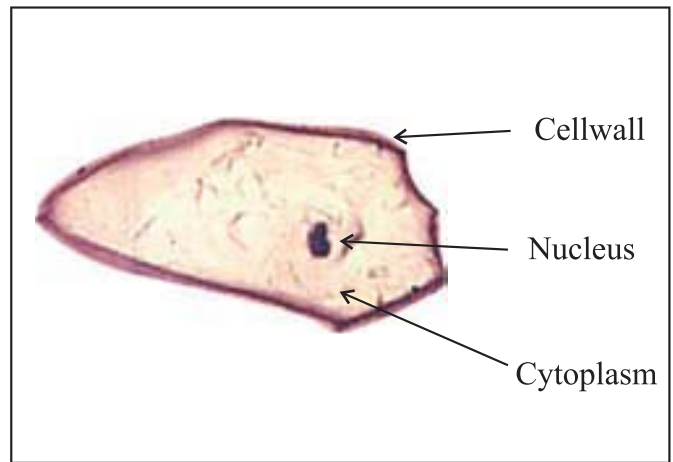
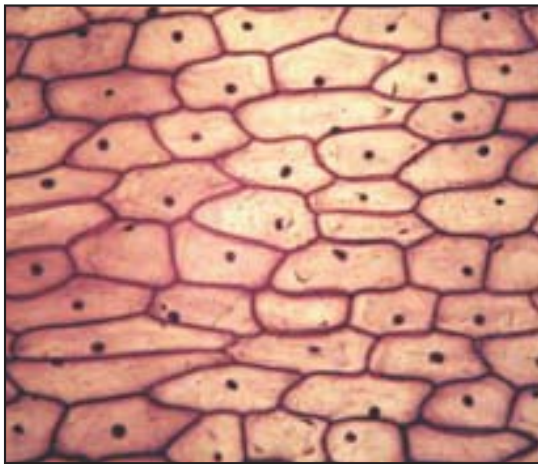
### **What is required ?**

Onion, microscope, watch-glass, slide, cover slip, forceps, dropper, blotting-paper, methylene blue

### **What to do ?**

- ☞ Take some water in a watch-glass and add two-three drops of methylene blue.
- ☞ Put thin layer of onion in the colourful liquid.
- ☞ With the help of a dropper put a drop of water on the slide.
- ☞ Take the peel of onion from watch-glass to slide with the help of forceps.
- ☞ Cover the peel of onion with cover slip to avoid air bubbles.
- ☞ Remove additional water with the help of blotting-paper.
- Observe the prepared slide with the help of microscope.





**An onion cell**



**What is required ?**

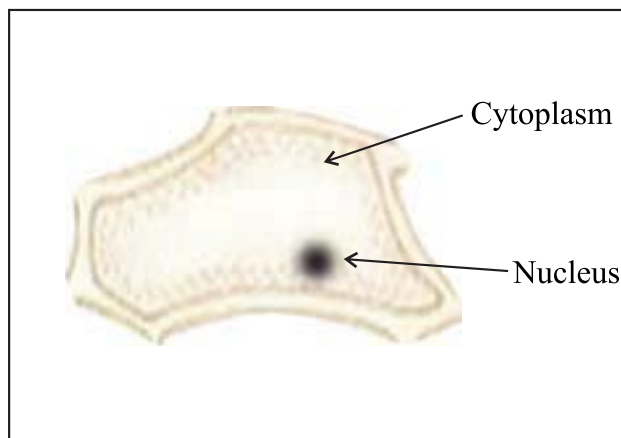
Microscope, slide, cover slip, tea-spoon, water, dropper, blotting-paper and methylene blue

**What to do ?**

- ☞ Take some water in watch-glass and add 2-3 drops of methylene blue in it.
- ☞ Rub the spoon on the inner surface of chick.
- ☞ Put the drop of liquid from tea-spoon of slide.
- ☞ Take a drop of water on the slide from watch-glass.
- ☞ Cover the slide with cover slip.
- ☞ Remove excess water with the help of blotting-paper.
- ☞ Observe the slide with the help of microscope.



- Draw a diagram of cheek cells observed in microscope.



**A chick cell**

- Note down the things you have noticed while observing the diagram.

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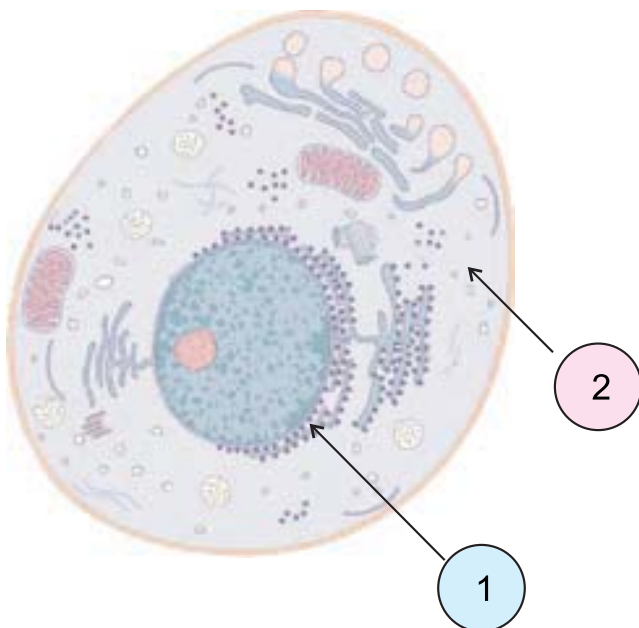
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Here we saw plant (onion) cell and animal (cheek) cell. Very minute organelles present in this cell can be seen with the help of E.M.

The structure of typical plant cell and animal cell show following peculiarities :

(1) Nucleus (2) Cytoplasm

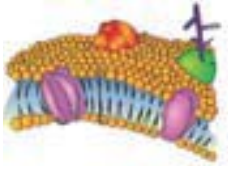










**(1) Nucleus :**

- Chromosomes, Nucleus, Nucleoplasm.
- Nucleus is a regulatory centre of various cellular activities.

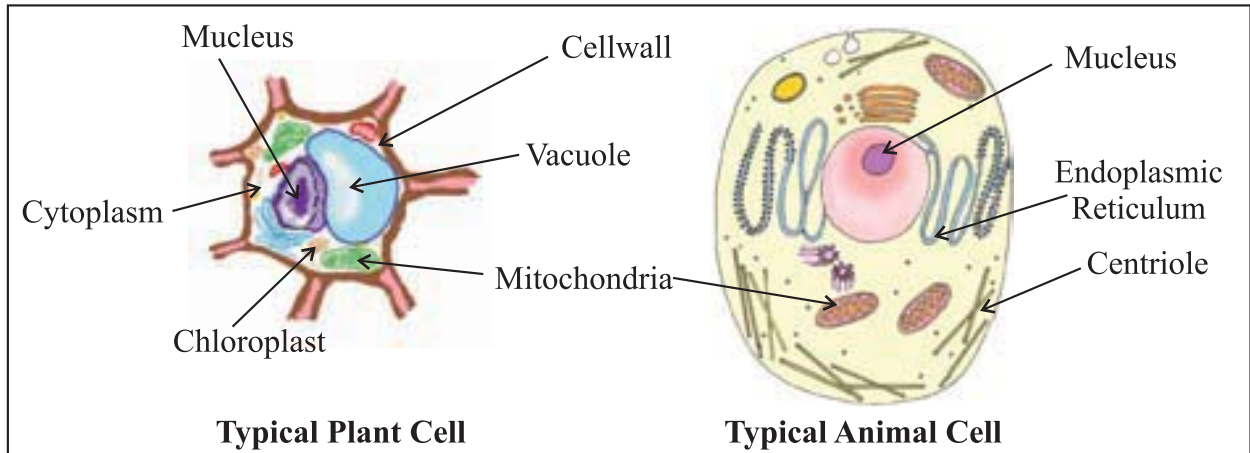
**(2) Cytoplasm :**

- Endoplasmic reticulum, Vacuole, Ribosome, Golgi body, Lysosome, Mitochondria, Centriole (absent in the plant cell).
- Chloroplast, Plasma membrane, Cellwall.

Diagram of organell	Name of organelles	Function
	Cell-membrane	Regulates the transportation of different materials coming to cell and going out of the cell.
	Endoplasmic Reticulum	They are related to the synthesis of protein. Secretes protein, steroids etc.
	Ribosomes	Protein synthesis occurs on its surface.
	Golgibody	It secrets the proteins and other substances produced in the cell.
	Lysosome	It contains many digestive enzymes. Performs the intra cellular digestion.
	Mitochondria	Produces energy required for the metabolism. This energy is stored in the form of ATP. Hence it is known as the powerhouse of the cell.
	Centriole (only in The animal cell)	Produces bipolar spindles during the cell division.
	Chloroplast	Produces the organic food by the process of photosynthesis. Contains the chlorophyll.
	Cellwall	Supports and protects the cell.

Actually all the organelles are not found in animal cell and plant cells at a time. This imaginary diagram is prepared to learn all these organelles at once. Plant cell is covered by the cellwall (made up of the non-living cellulose).

**Observe the following diagram of plant cell and animal cell and note down the differences between them in the following table :**

[illegible]

**Group of cells associated for specific function is called tissue, whether it is plant cell or animal cell.**





**Basic unit of an organism - cell**



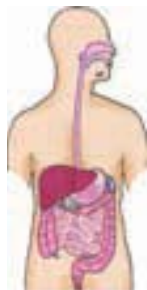
**Group of cells - Tissue**



**Group of tissues - Organ**



**Group of organs associated with specific function - Organ system**

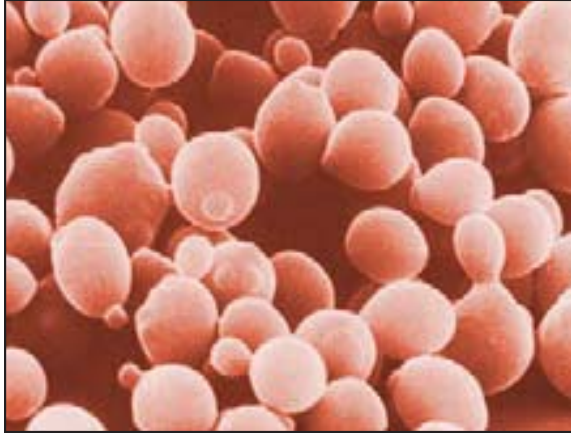


**Isn't it a funny thing ?  
Cell -Tissue - Organs-System-Body ?**

- The organism whose body contains more than one cell is called multicellular organism. E.g. Human
- The organism whose body contains only one cell is called unicellular organism. E.g. Amoeba

Unicellular and multicellular organisms are found in plant kingdom as well as animal kingdom.

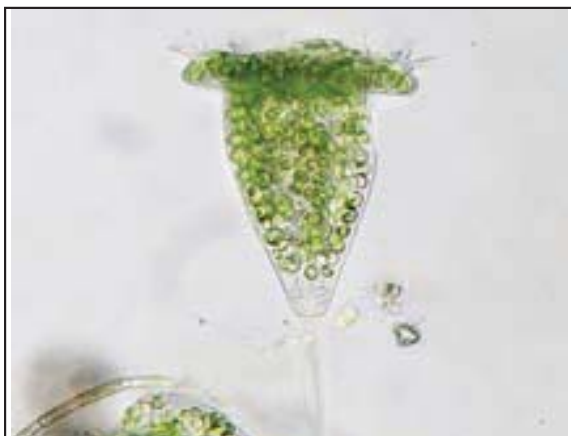
### Unicellular plants



Yeast



Chlamydomonas

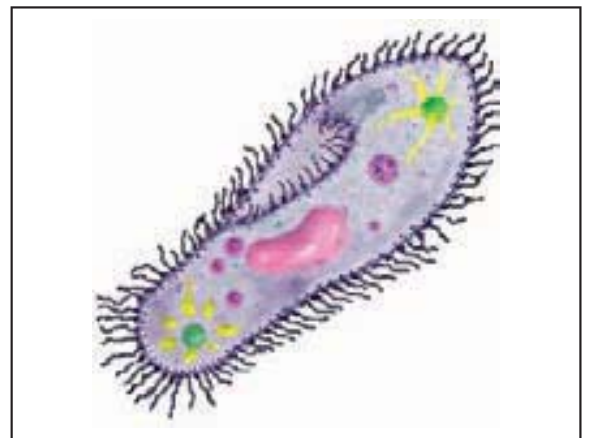


Verticella

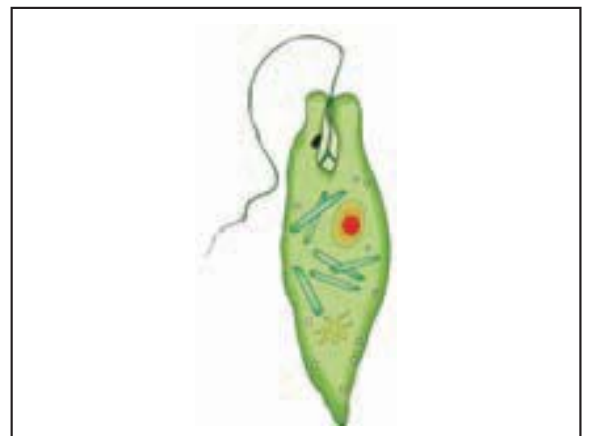
### Unicellular animals



Amoeba



Paramecium



Euglena



**Note down :**

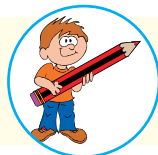
Unicellular organisms – \_\_\_\_\_

Multicellular organisms – \_\_\_\_\_

Cell is the basic unit of organism. Body of unicellular organism is made up of one cell only. The body of a multicellular organism is made up of many cells. Thus, cell is the structural unit of the body of an organism. All the life processes are the result of processes running within the cell. Thus, cell is the functional unit of an organism.



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**Q.1** What is a cell ?

**Q.2** Describe the structure of cell to organism ?

**Let us try :**

- (1) Tore a leaf of a plant gently. You will find a thin white layer, observe this layer under microscope and draw a diagram of the cell you observed.
- (2) As we saw the onion cell in the same way take a transverse section / longitudinal section of a twig of a plant, stain it with methylene blue and observe it under a microscope.
- (3) Observe a slide of unicellular organism under a microscope by preparing it with the help of your teacher. Draw a diagram of it.

