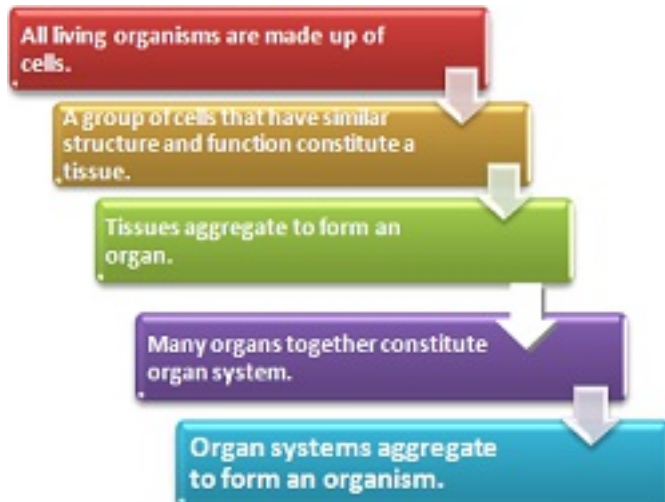


## Chapter – 8

### Cell — Structure and Functions

- **Cell:** The smallest structural and functional unit of an organism, which is typically microscopic and consists of cytoplasm and a nucleus enclosed in a membrane.



- All organisms are made of smaller parts called organs.
  - Organs are made of still smaller parts. The smallest living part of an organism is a 'cell'.
  - Cells were first observed in cork by Robert Hooke in 1665.
  - Cells exhibit variety of shapes and sizes.
  - Number of cells also varies from organism to organism.
  - Some cells are big enough to be seen with the unaided eye. Hen's egg is an example.
  - Some organisms are single-celled, while others contain large number of cells.
  - The single cell of unicellular organisms performs all the basic functions performed by a variety of cells in multi cellular organisms.
  - The cell has three main parts, (i) the cell membrane, (ii) cytoplasm which contains smaller components called organelles, and (iii) the nucleus.
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- **Cell membrane:** The basic component of a cell. The cytoplasm and nucleus are enclosed within cell membrane. There is an outer thick layer in cells of plants called **cell wall**.
  - **Cytoplasm:** The jelly-like substance present between the cell membrane and the

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nucleus. Various organelles present in the cytoplasm are:

- (i) Mitochondria
- (ii) Plastids (present only in plant cell)
- (iii) Endoplasmic reticulum (ER)
- (iv) Ribosome
- (v) Lysosomes
- (vi) Vacuole
- (vii) Golgi body
- (viii) Centrosome (present only in animal cell).

- **Nucleus:** Nucleus is separated from cytoplasm by a nuclear membrane. It is generally spherical in the centre of the cell.
- **Nuclear membrane:** Nucleus is separated from the cytoplasm by a membrane called the nuclear membrane.
- **Nucleolus:** Nucleus contains a still smaller round body known as nucleolus.
- **Chromosomes:** Nucleus contains thread-like structures called chromosomes. These carry genes and help in inheritance or transfer of character from the parents to the off springs
- Cells without well organised nucleus, i.e. lacking nuclear membrane, are called **prokaryotic cells**.
- Plant cells differ from animal cells in having an additional layer around the cell membrane termed cell wall.
- Coloured bodies called plastids are found in the plant cells only. Green plastids containing chlorophyll are called chloroplasts.
- Plant cell has a big central vacuole unlike a number of small vacuoles in animal cells.
- **Size of cells:** The size may be as small as a millionths of a metre or may be as large as a few centimetres. Size of the cells has no relation with the size of the body of the animal or plant. It is related to its function.