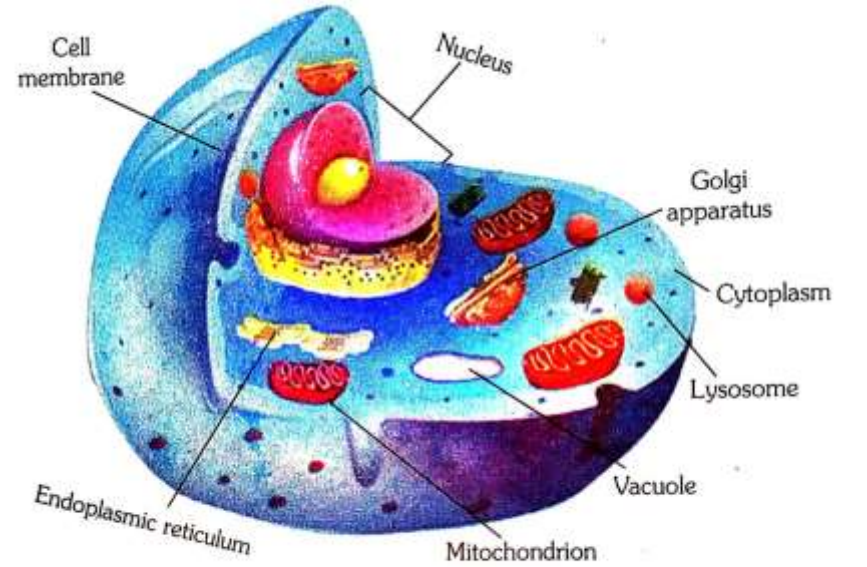
# Cell Structure




Different cell organelles in cytoplasm

## Part - 3

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# REFERENCES


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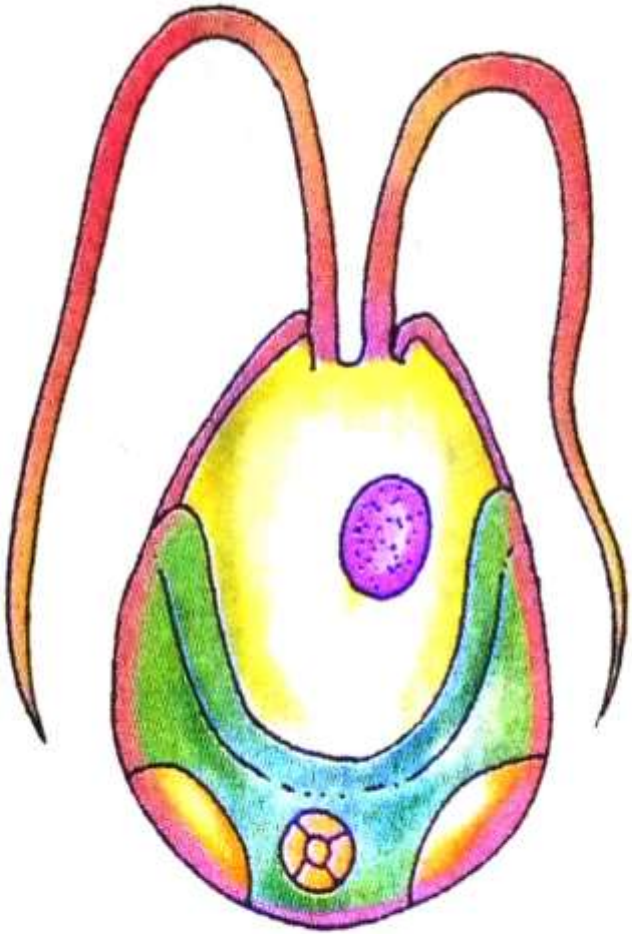
# Diversity in size & shape of cells

## Cell Size

Most cells are microscopic, visible only under the high power of microscope, but the size varies greatly from 80 mμ to about a meter. Few cells are large enough to be seen by the naked eye. The nerve cells are regarded to be the longest. The egg of ostrich is about 175 × 135 mm and hen's egg measures about 50 mm. The muscle cells and nerve cells attain extraordinary length. In human body the cell size ranges from 3-4μ (leucocytes) to over 90 cm (nerve cells). The cells of *Acetabularia* (a unicellular alga) are about 10 cm long. Certain algae have gigantic cells.

The largest cell :
ostrich egg



**Chlamydomonas**
**(A unicellular alga)**

## Size of few cell types

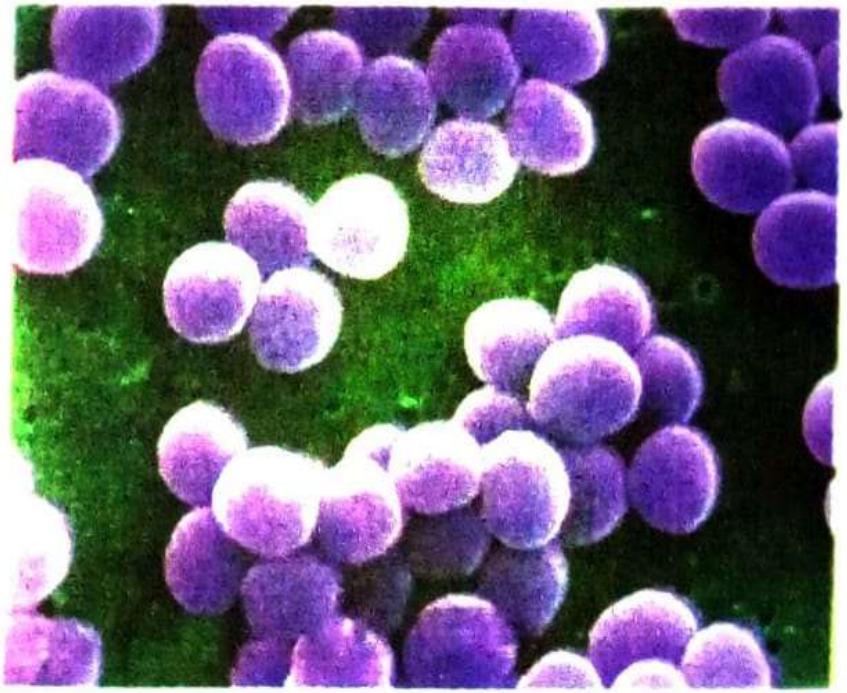
| | | |
|---|---|---|
| 1. | Bacteriophage | 80 mμ |
| 2. | PPLO | 0.1–0.5 μ |
| | *Mycoplasma gallisepticum* | 0.25 μ |
| | *Myocoplasma laidlawii* | 0.1 μ |
| 3. | Bacteria | 1μm– 15 μm |
| | *Escherichia coli* | 3.3 μ |
| | *Influenza bacillus* | 0.5 μ |
| | *Typhoid bacillus* | 2.4 × 0.5 μ |
| 4. | Leucocytes | 3–4 μ |
| 5. | RBCs | 7 μ |
| 6. | Liver Cell | 20 μ |
| 7. | Sea urchin egg | 70 μ |
| 8. | Human egg | 100 μ = 0.1 mm |
| 9. | Hen's egg | 50 mm |
| 10. | Ostrich egg | 175 × 135 mm |
| 11. | Human nerve cell | 90 cm |

# Cell Shape and Number

- **Cell Shape** The shape of the cell is variable. Cells may change their shape accordingly. Some cells like leukocytes of blood & Amoeba change their shape whereas others have constant shape.
- The cells may be sherical , oval , rounded, elongated, cuboidal , cylindrical, tubular, polygonal, plate-like, discoidal or irregular.

- **Cell Number** Unicellular organism is made up of single cell. Multicellular organisms may consist of countess cells , correlated with body size.

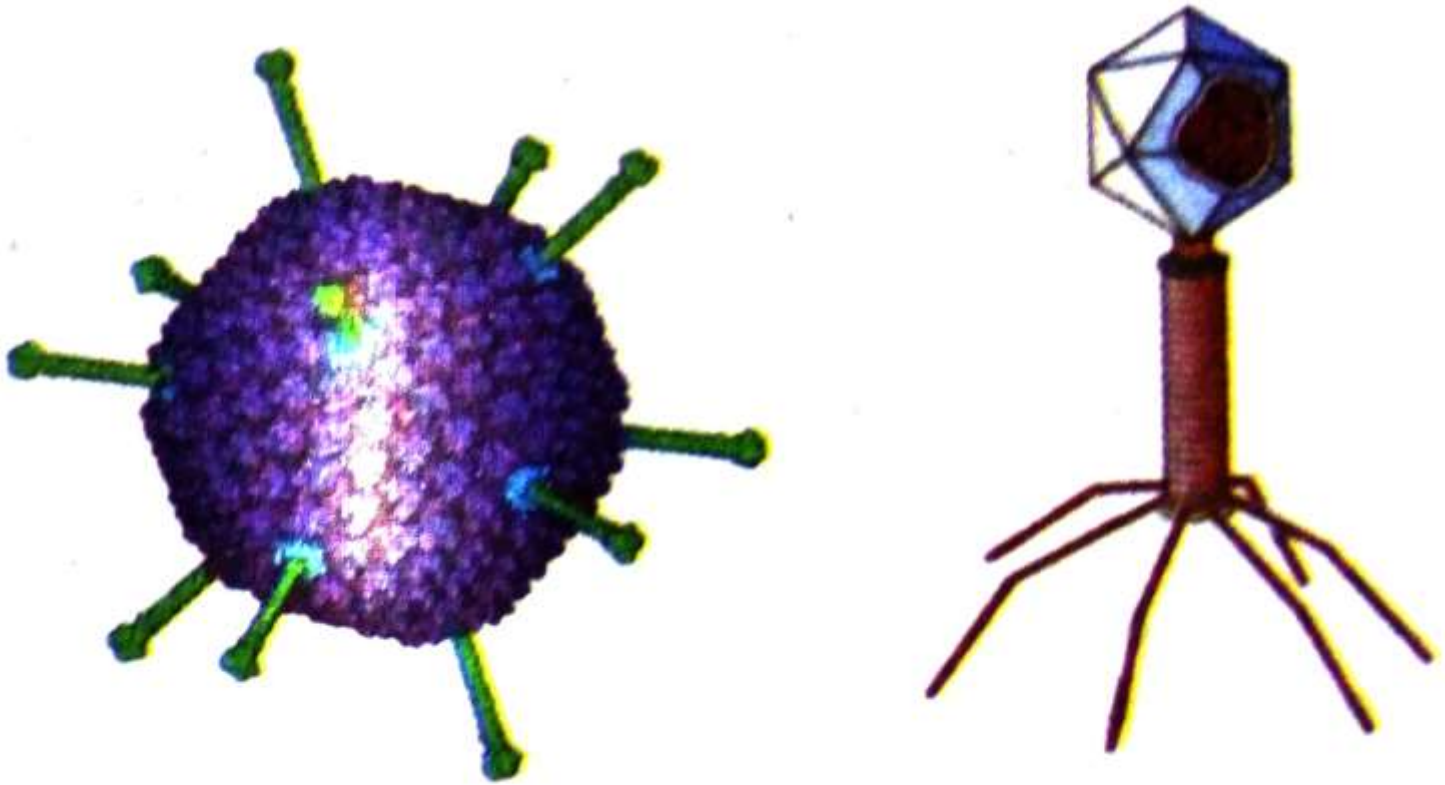
Bacilli (rod-shaped)



Cocci (spherical shaped)

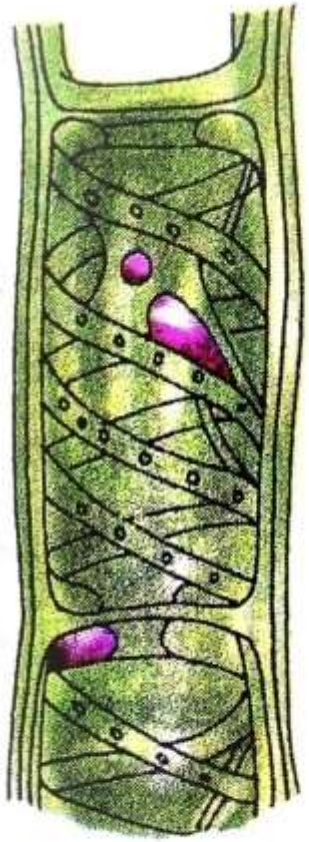
# Bacteria

**Polyhedral Virus (Adenovirus), Bacteriophage (virus which infect bacteria), having complex structure.**



Viruses

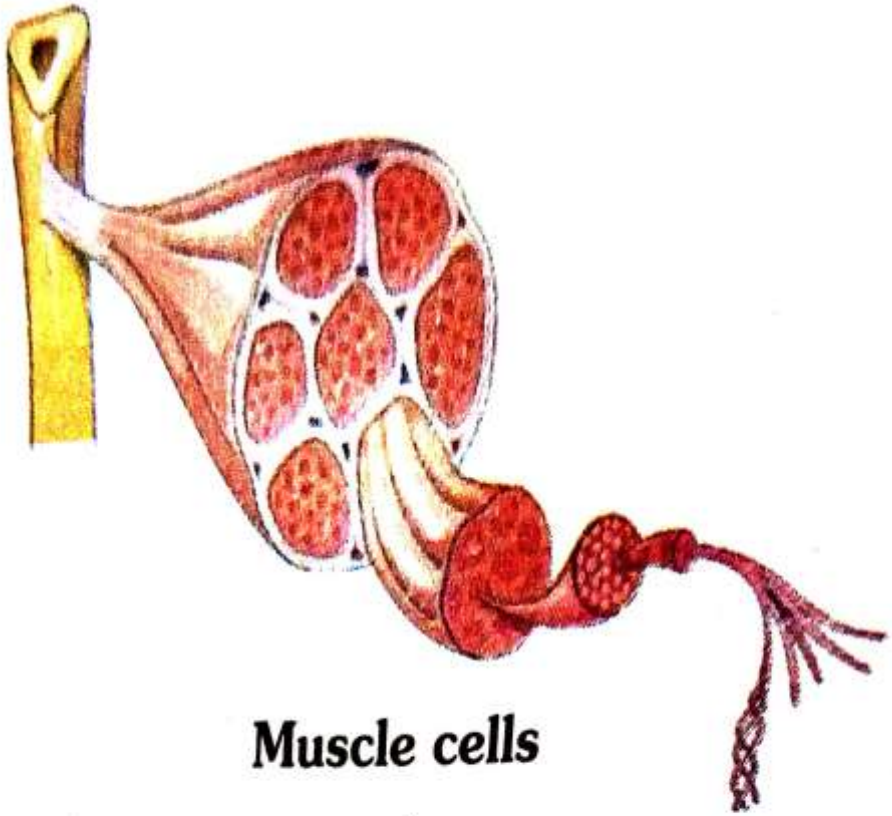
# Spyrogyra Algae (multicellular) and RBCs



Spirogyra
(A multicellular alga)

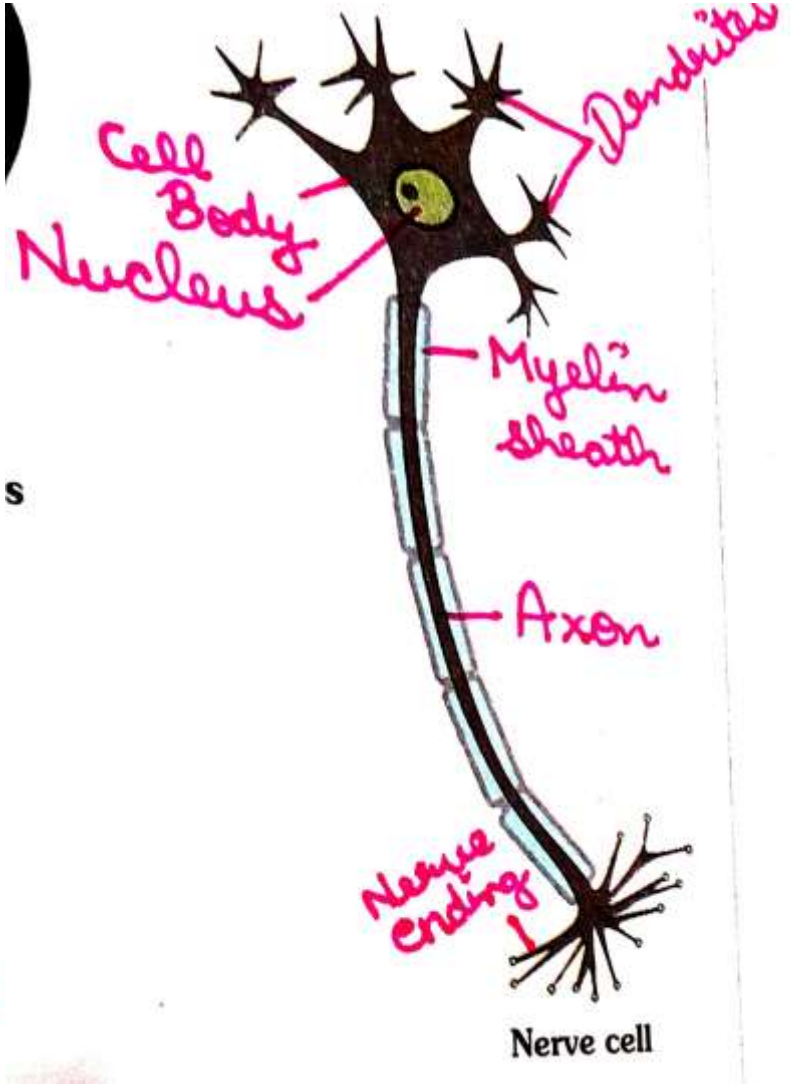
Red blood cells

**Cells are of different shape & sizes. Figure showing structure of muscle cell & Nerve cell.**

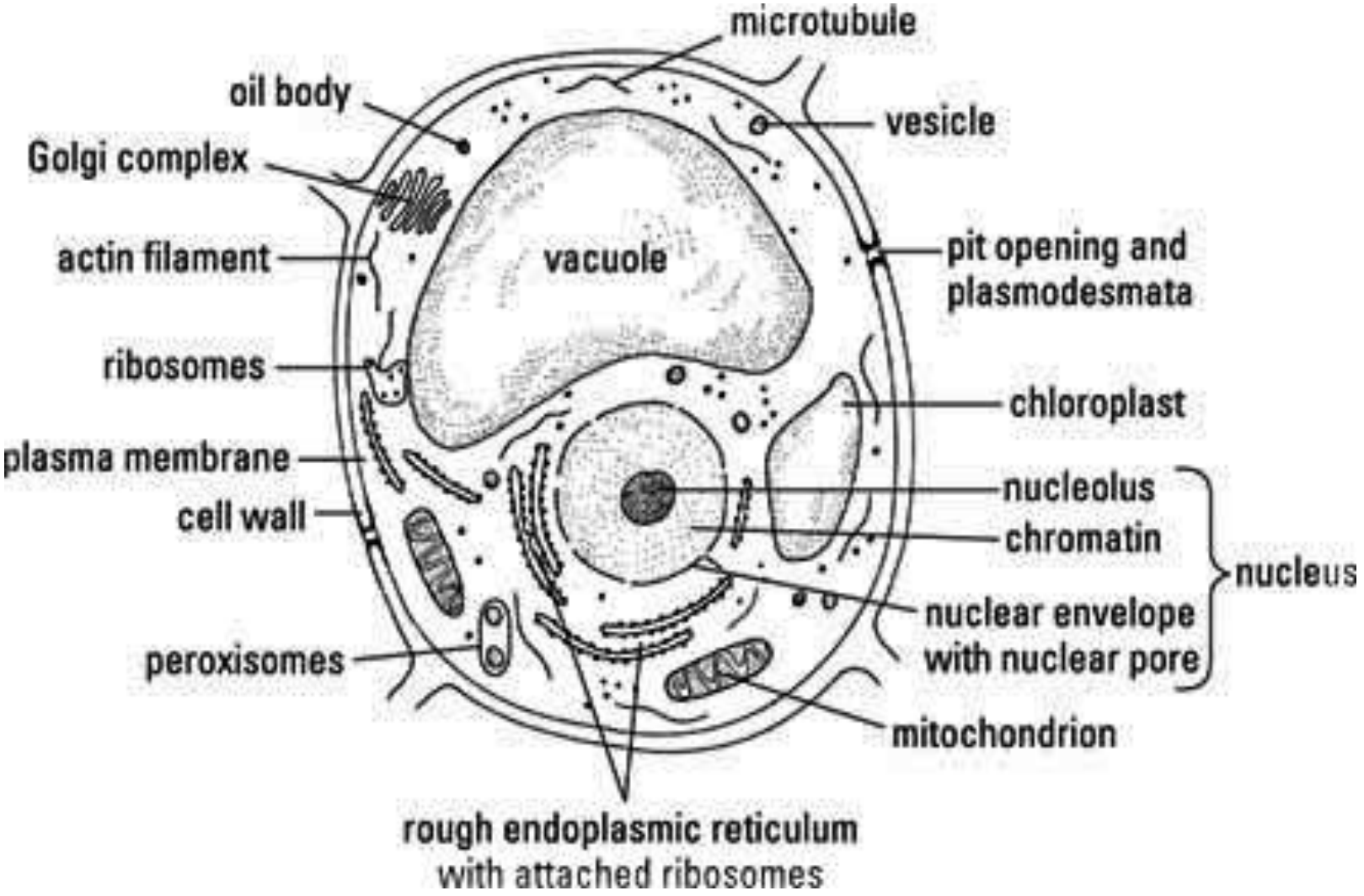


Muscle cells

Cells of different shapes

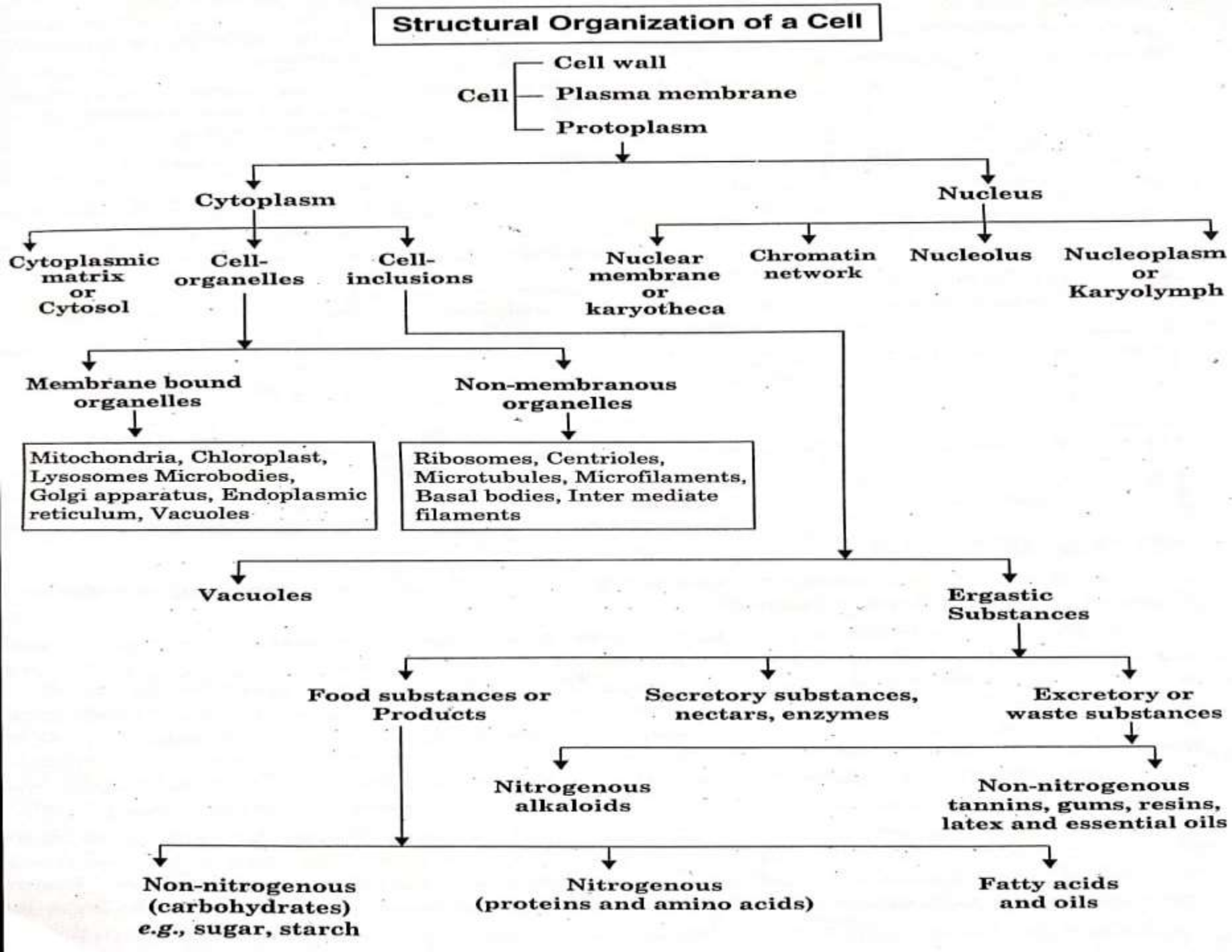



Nerve cell



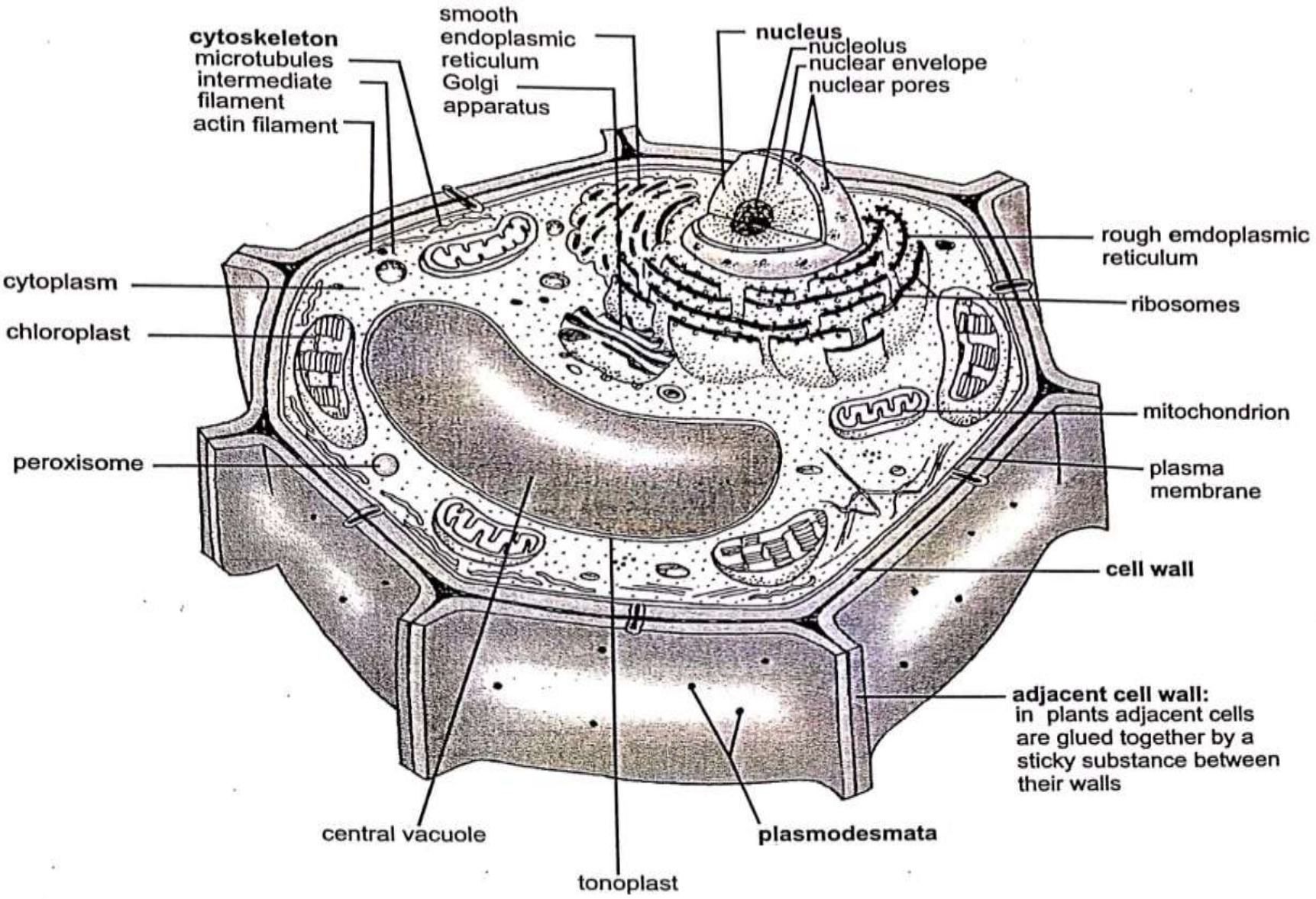

# Ultra Structure of a Plant cell

# Structural Organization of a Cell



## Components of a plant cell and their function

| | | | |
|---|---|---|---|
| 1. | Cell Wall | : | Protection |
| 2. | Plasma membrane | : | Selective permeability |
| 3. | Nucleus | : | Genetic informations processing system |
| 4. | Nucleolus | : | Synthesis of ribosomes |
| 5. | Cytoplasm | | |
| | (a) Enzymes in matrix | : | Glycolysis |
| | (b) Cytosol (microtubules and microfilaments) | : | Cell shape and motility |
| 6. | Mitochondria | : | Cell respiration |
| 7. | Chloroplast | : | Photosynthesis |
| 8. | Lysosomes | : | Digestion |
| 9. | Peroxisomes | : | Breakdown of peroxides ($H_2O_2$) |
| 10. | Golgi complex | : | Processing, packaging and secretion of materials, lysosome formation |
| 11. | Endoplasmic reticulum | : | Synthesis and transport of materials and secretion. Smooth ER is a site for lipid and steroid synthesis |
| 12. | Ribosomes | : | Protein synthesis |
| 13. | Spindle fibres | : | Cell division |
| 14. | Cilia and flagella | : | Cell motility |
| 15. | Large central vacuole | : | Storage of various substances, contributes to osmotic properties of cell |




# Three dimensional view of Ultra structure of a Plant Cell

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Paper II- Cytology, Genetics, Evolution & Ecology