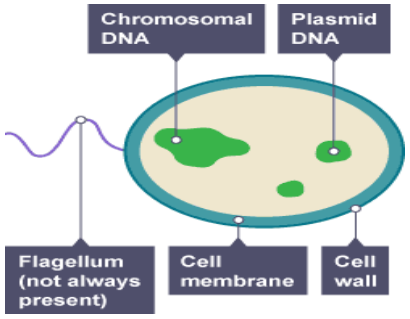
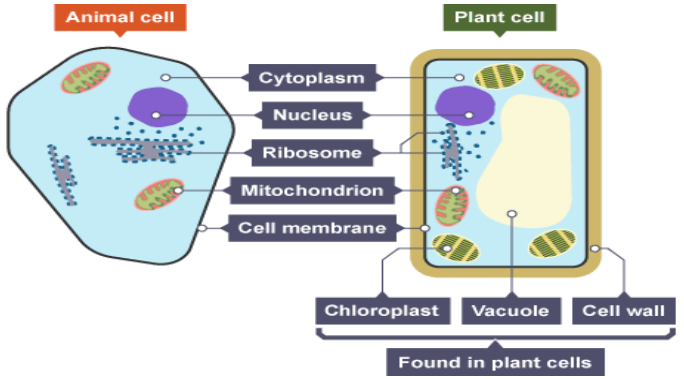
# Cell Biology

| Section 1- Cell Structure | | Eukaryotic Cells | | Prokaryotic Cells |
|---|---|---|---|---|
| **Structure** | **Function** | **Animal Cells** | **Plant Cells** | **Bacterial Cells** |
| 1. Nucleus | Contains the **genetic information** that controls the functions of the cell. | Y | Y | |
| 2. Cell Membrane | Controls what **enters & leaves** the cell. | Y | Y | Y |
| 3 Cytoplasm | Where many cell activities & **reactions** happen. | Y | Y | Y |
| 4 Mitochondria | Provides energy from **aerobic respiration.** | Y | Y | |
| 5 Ribosomes | Make proteins- site of **protein synthesis**. | Y | Y | Y |
| 6 Chloroplast | Where **photosynthesis** occurs. | | Y | |
| 7 Vacuole | Use to store water & other chemicals as **cell sap.** | | Y | |
| 8 Cell Wall | **Strengthens & supports** the cell (made of cellulose in plants) | | Y | Y |
| 9 DNA Loop | A loop of DNA **NOT** in a nucleus. | | | Y |
| 10 Plasmid | A **small circle of DNA**, may contain genes associated with antibiotic resistance. | | | Y |

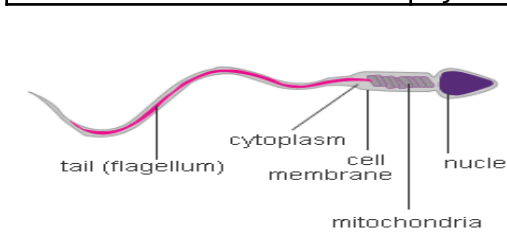
| Section 2- Specialised Cells | |
|---|---|
| **Specialised Cell** | **How structure relates to function** |
| 11 Sperm Cell | Acrosome contains enzyme to break into egg, tail to swim. Many mitochondria to provide energy. |
| 12 Nerve Cell | Long to transmit electrical impulses across a distance. |
| 13 Muscle Cell | Contain protein fibres that contract when energy is available, making the cells shorter. |
| 14 Root Hair Cell | Long extension to provide a large surface area for water & mineral absorption- thin cell wall. |
| 15 Xylem Cell | Waterproofed cell wall, cells are hollow to allow water through. |
| 16 Phloem Cell | Some cell shave a lot of mitochondria to give energy for active transport. Some cells have little cytoplasm for sugars to move through easily. |

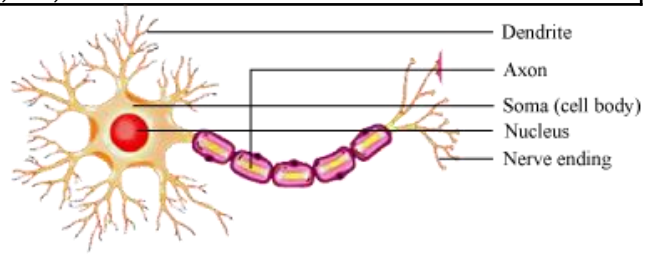
## Bacterial Cell

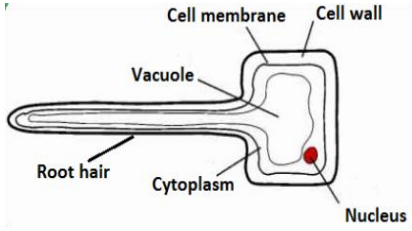



| Section 3- Microscopy | |
|---|---|
| 17 Magnification | Tells you how many times bigger a microscope makes an object. **Magnification = length of magnified object ÷ length of actual object** |
| 18 Resolution | The ability of a microscope to distinguish between 2 separate points. |
| 19 Light Microscope | A basic microscope, using light. Can magnify objects ×1500 |
| 20 Electron Microscope | A microscope which uses electrons, to magnify images more than a light microscope. Gives greater detail. Can magnify objects ×2,000,000 |




| Section 4- Orders of Magnitude | | |
|---|---|---|
| **Unit Prefix** | **Size in Metres** | |
| Centimetre (cm) | 0.01m | 100 cm= 1m |
| Millimetre (mm) | 0.001m | 1000 mm= 1m |
| Micrometre (μm) | 0.000001m | 1000000 μm = 1m |
| Nanometre (nm) | 0.000000001m | 1000000000 nm = 1m |