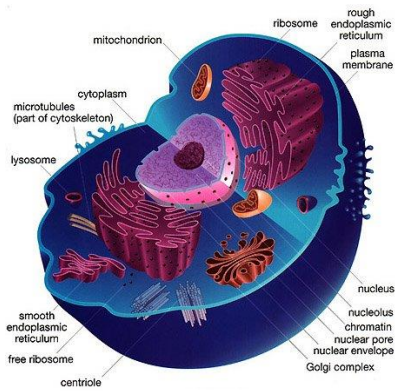
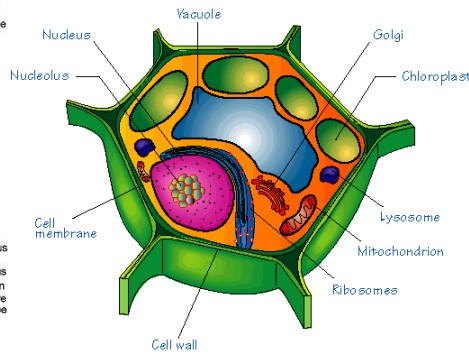


# Cell Structure | Topic Notes

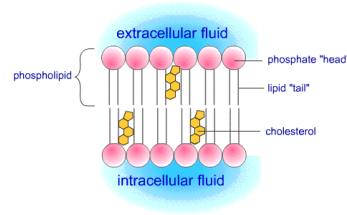
**Animal cell**



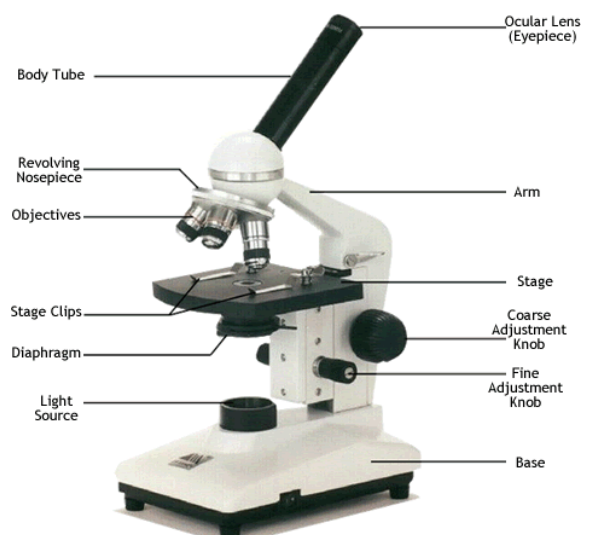
**plant cell:**



**cell membrane:**

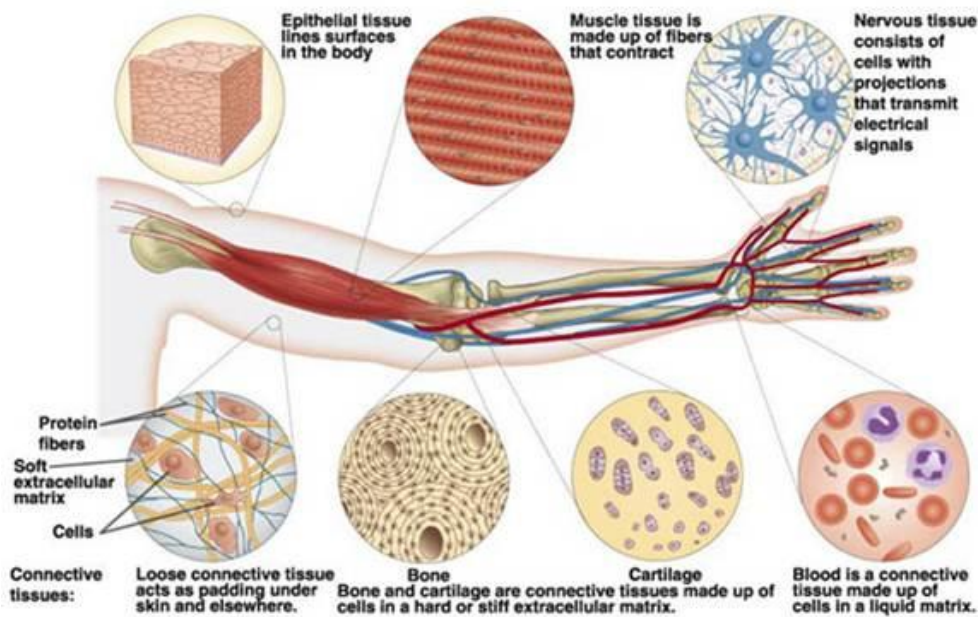


- **An organelle** is a specialised membrane-bound compartment within a cell that has a specific function.
  - **Cell membrane** consists of phospholipids arranged into a bilayer. It controls what enters and leaves the cell.
  - **Cytoplasm** is where all the chemical processes of the cell occur.
  - **Nucleus** contains DNA (used for the manufacture of all proteins needed by the cell), which is organised into chromosomes.
  - **Ribosomes** are made from RNA and produce the proteins needed by the cell.
  - **Mitochondria** are responsible for carrying out the major metabolic process of respiration. They've their own DNA and can replicate by themselves.
  - **Lysosomes** have enzymes for breaking down cell debris, viruses, bacteria & old organelles.
  - **Chloroplasts** are plant cell organelles that are responsible for making food using sunlight, h<sub>2</sub>o and co<sub>2</sub>. Similarly to mitochondria they can replicate themselves.
  - **Cell wall** (plants) is the strong rigid structure made of **cellulose** that gives plants their shape.
  - **Middle lamella** holds plant cells together giving them strength.
  - **Vacuole** is a large fluid filled sac that stores water, food and wastes which help maintain the shape of a plant cell.
- Parts of the light microscope:**
- **1000µm = 1mm** (micrometre)
  - **Prokaryotic cells** have no membrane bound organelles other than ribosomes. They are bacteria and range in size from 0.1-10µm.



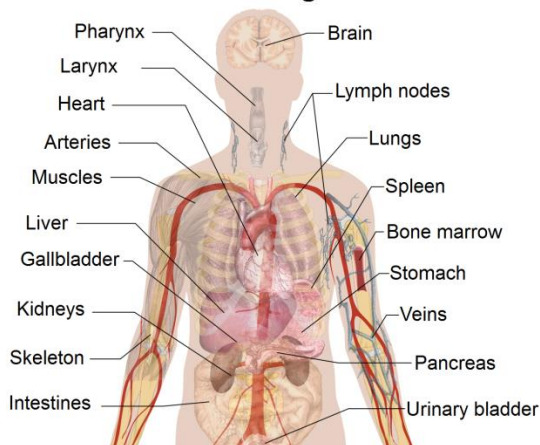
- **Eukaryotic cells** have membrane bound organelles. They are all other cells and are 10-100µm.
- **Transmission electron microscopes** use a beam of electrons to illuminate the specimen and can magnify it up to 1,000,000x.

- A **tissue** is a group of similar cells with a shared function.



- An **organ** is a group of tissues joined together to carry out a specialised function.

### Internal organs

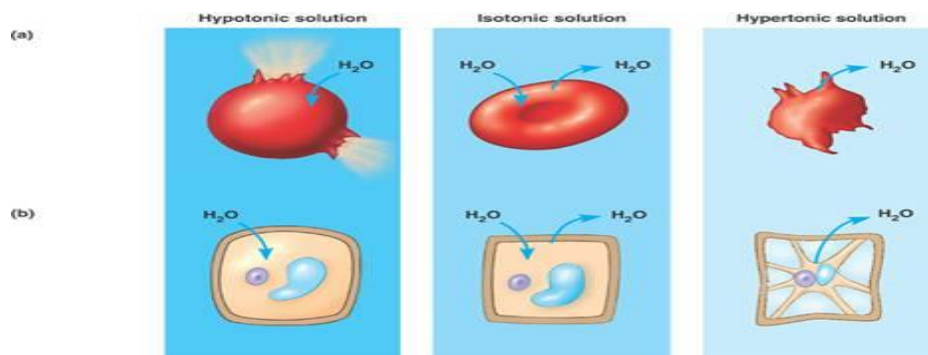


- An **organ system** is a group of organs that work together to carry out a number of linked functions.(eg. Skeletal, muscular, circulatory and nervous systems)



- **Tissue culture** involves growing tissue and/or cells outside an organism.

- ❖ **Osmosis** is the movement of water molecules from a region of high water concentration to a region of low water concentration across a semi-permeable membrane. (*uses include jam making and salting fish*)
- ❖ **Diffusion** is the passive movement of particles from a region of high concentration to a region of low concentration.
- ❖ **Turgor** is the pressure of the contents of a cell against its cell wall.
- ❖ **Plasmolysed** cells are cells that have a low water concentration (*hypertonic solution*)
- ❖ **Flaccid** cells are cells that that have a normal water concentration (*isotonic solution*)
- ❖ **Turgid** cells are cells that have a high water concentration (*hypotonic solution*)



#### **Experiment to demonstrate osmosis:**

1. Cut two equal lengths of visking tubing and tie both at one end.
2. Half fill one with a known vol. of water (control), and the other with the same vol. of a 60% sucrose solution.
3. Tie the other end of both tubes.
4. Measure their masses.
5. Place each tube in separate beakers of water for at least ½ an hour.
6. Reweigh both tubes and record results.

RESULT: **Difference in solute concentration causes osmosis.**

