

# The Cell

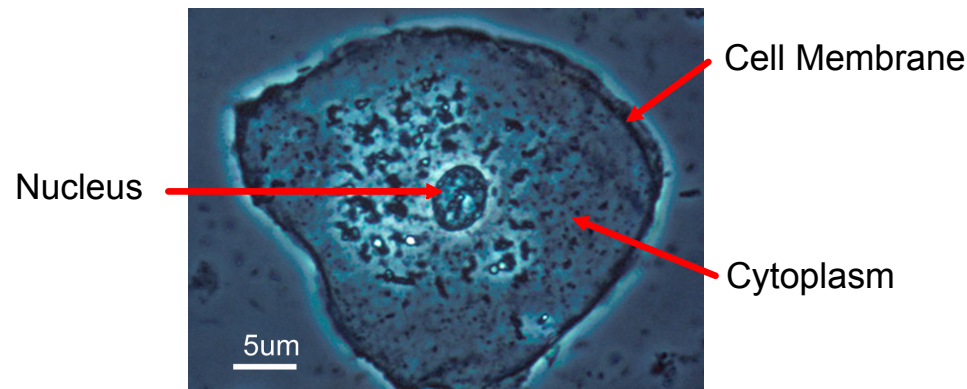
All living things are made of cells.

Cells are made up of 3 main parts,

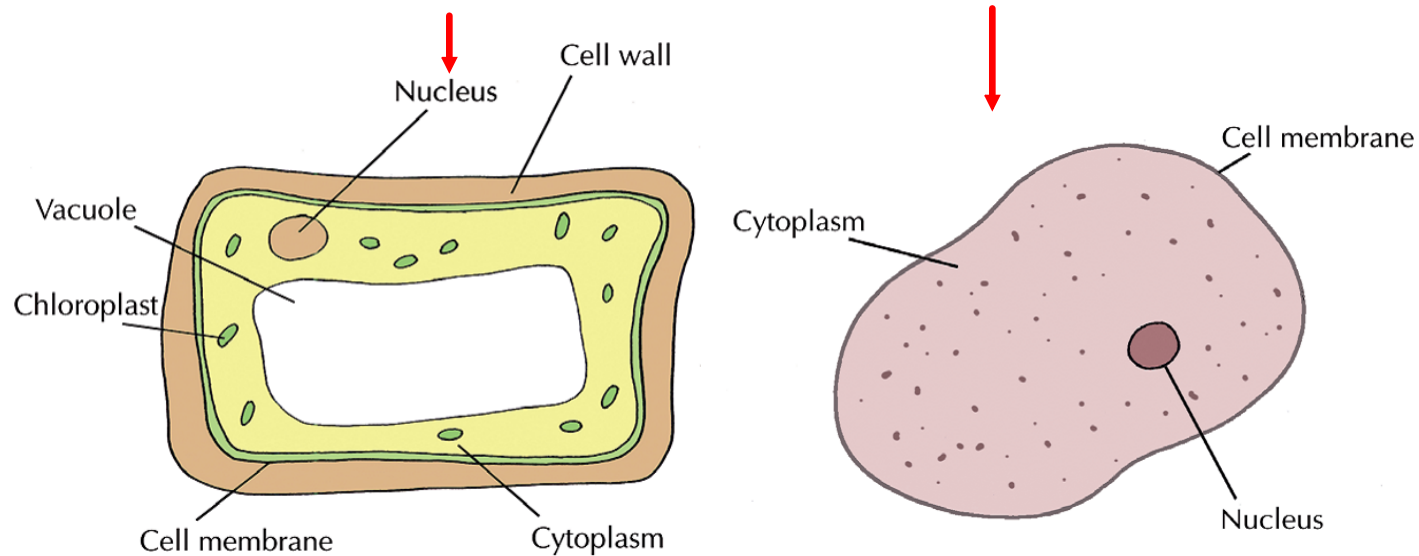
**Cell Membrane** - A skin that controls what enters the cell.

**Cytoplasm** - Watery substance that has proteins and sugar.

**Nucleus** - the control centre of the cell. It contains DNA.



## Plant Cells and Animal Cells



|                                  |                 |
|----------------------------------|-----------------|
| Cell Wall - Protection           | No Cell Wall    |
| Chloroplasts - make food         | No Chloroplasts |
| Large Vacuole - store food/waste | Small Vacuoles  |

# Plant Cells

These cells are usually rectangular in shape.

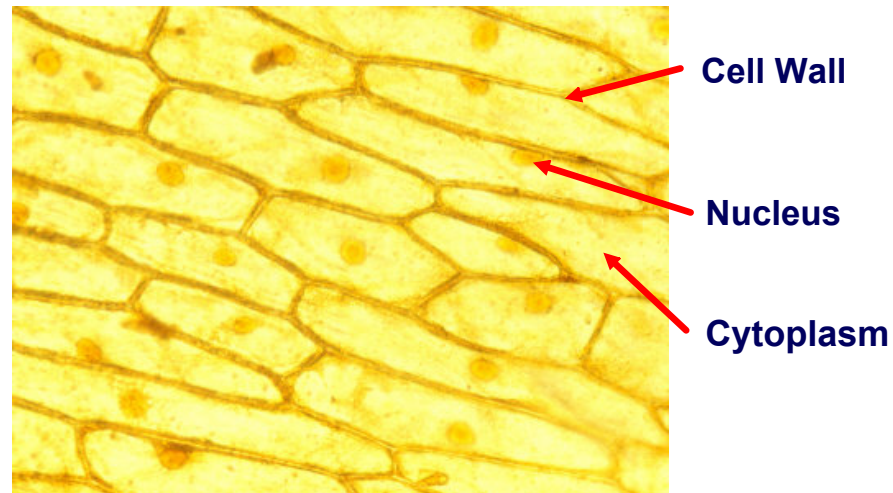
They have a large central **vacuole** and have green Chloroplasts.

**Chloroplasts** are small factories that make food.

They catch sunlight and mix it with carbon dioxide and water to turn it into sugar.

**Chlorophyll** is the green pigment (chemical) in the chloroplast that catches sunlight.

An example of a plant cell is the onion cell (with **iodine** stain).



# The Microscope

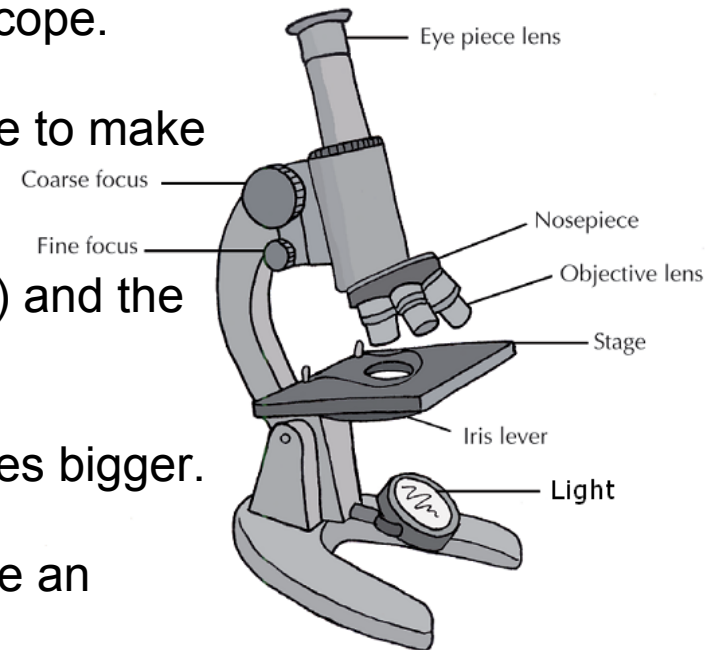
To see cells up close we have to use a Microscope.

The microscope uses 2**lenses** at the same time to make things look bigger.

The **eyepiece** lens magnifies by 10 times (x10) and the **objective** lenses can magnify x4, x10 or x40.

This means we can make things look x400 times bigger.

To see things smaller than cells we need to use an **Electron Microscope**

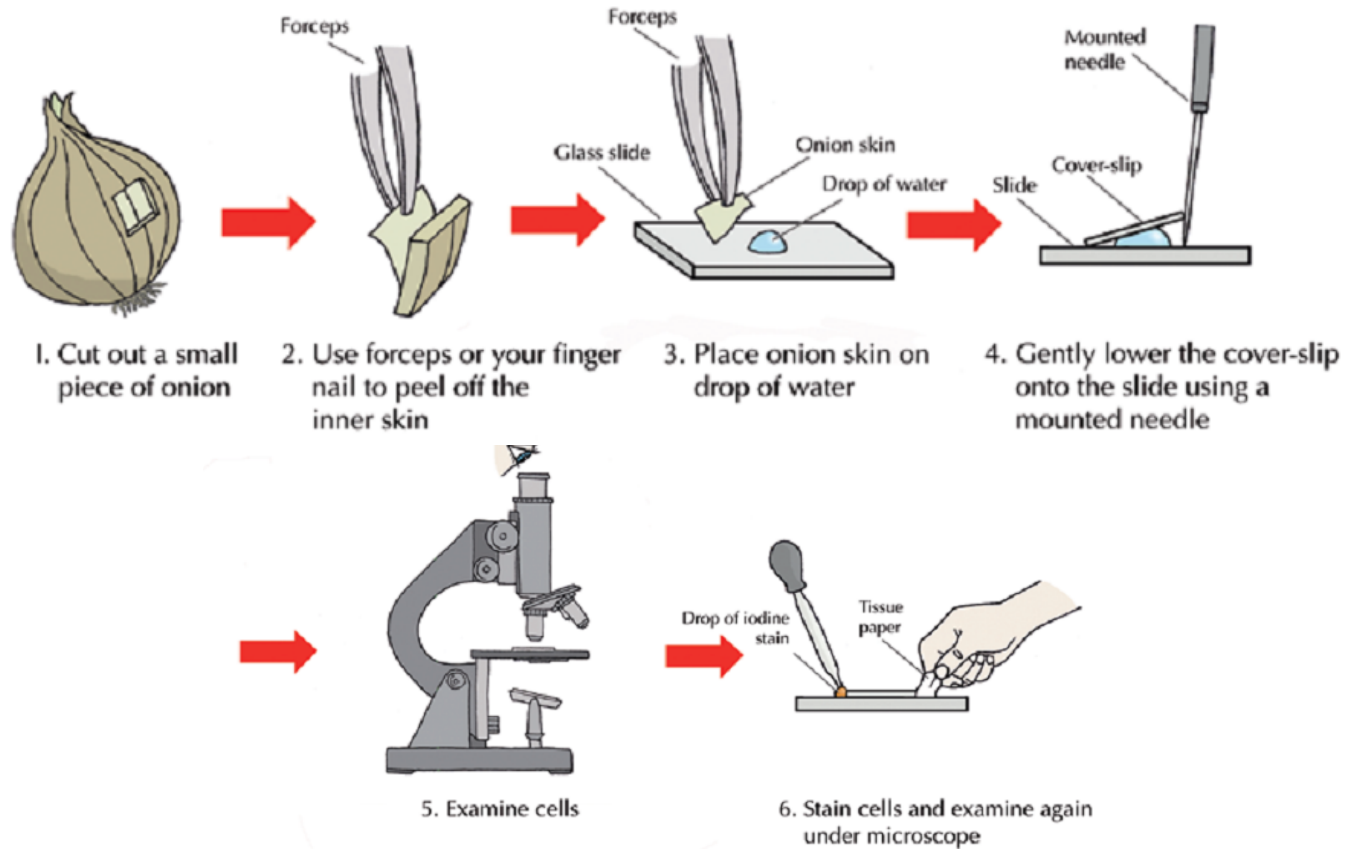


## Parts of the Microscope

| PART               | FUNCTION                          |
|--------------------|-----------------------------------|
| Eyepiece           | Magnifies by 10                   |
| Nosepiece          | Holds the objective lens          |
| Objective Lens     | Magnifies the object x4, x10, x40 |
| Coarse Focus Wheel | Brings object into Rough focus    |
| Fine Focus Wheel   | Brings object into 'Fine' focus   |
| Stage              | Holds the slide (clips)           |
| Light or Mirror    | Source of light                   |

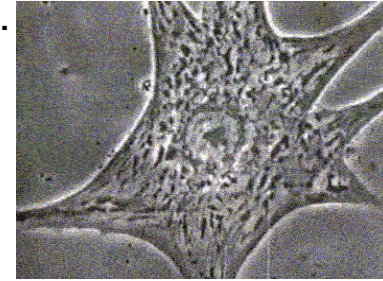
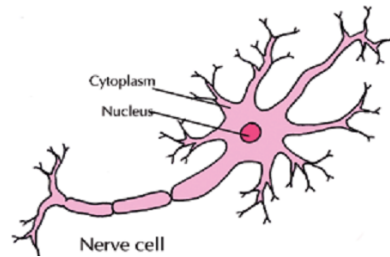
## Mandatory Experiment

To prepare a slide from plant tissue and sketch the cells



## Cells, Tissues, Organs and Systems

**Cells** have different shapes because they have different jobs to do. A nerve cell is very different from a blood cell for example.



A **tissue** is a group of similar cells with the same function. e.g. muscle tissue.

An **organ** is a group of different tissues working together, e.g. the heart.

A **system** is a group of organs working together, e.g. the circulatory system.

Cells → **Tissues** → **Organs** → **System** → **Organism**