

# The Cell

All living things are made of cells.

Cells are made up of 3 main parts,

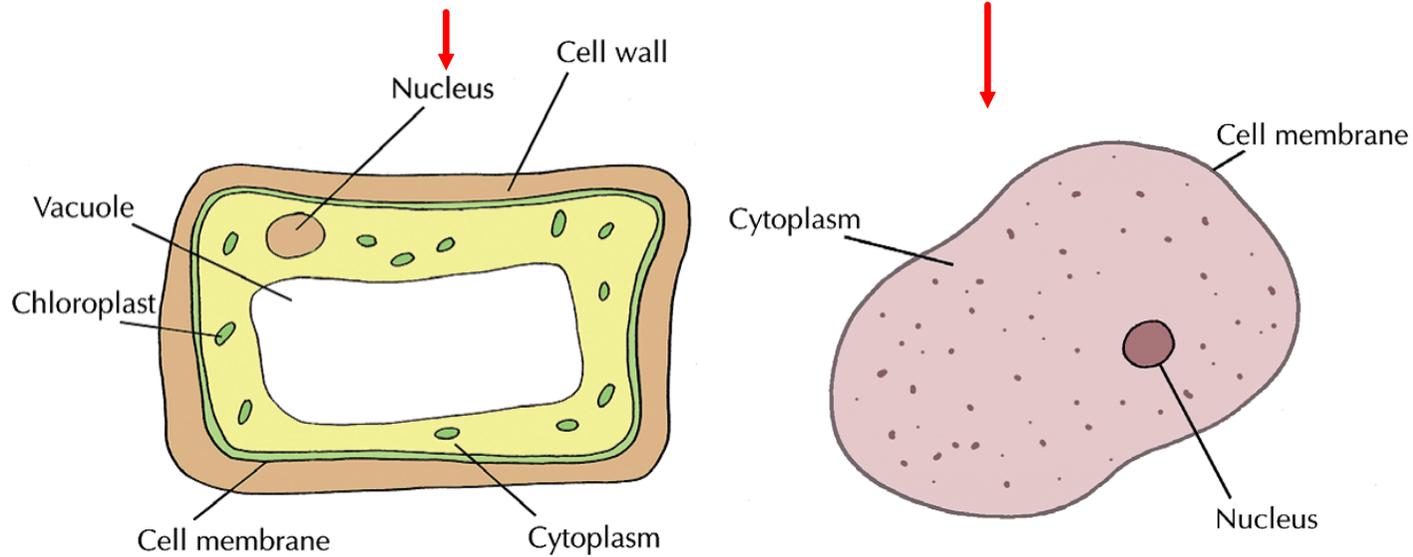
**Cell Membrane** - A skin that controls what enters the cell.

**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.

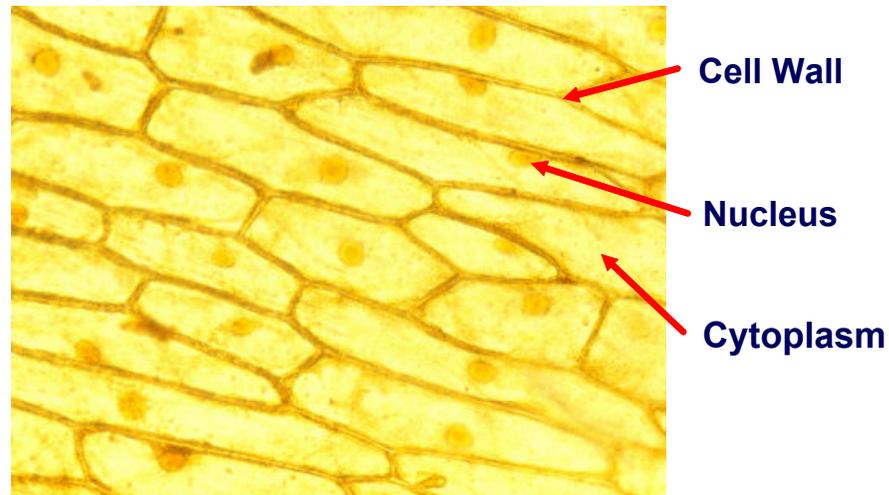
They have a large central **vacuole** and have green Chloroplasts.

**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

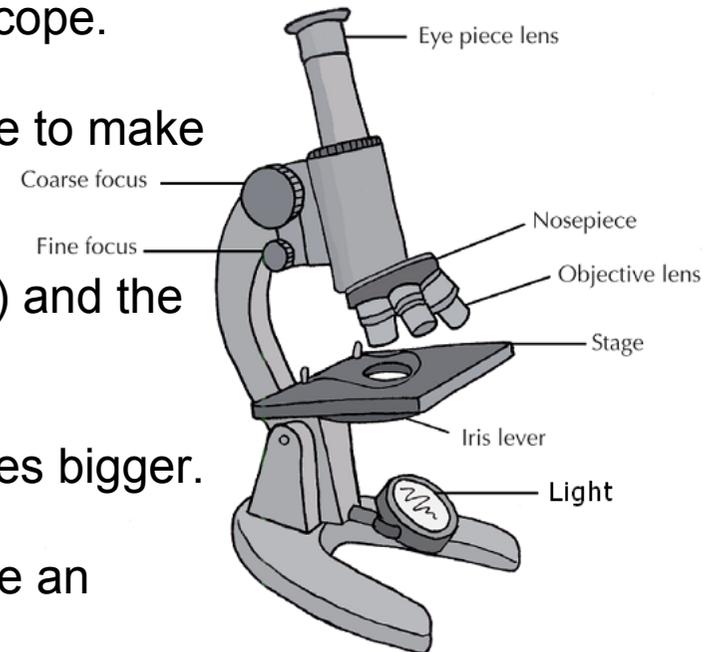
To see cells up close we have to use a Microscope.

The microscope uses **2lenses** 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**

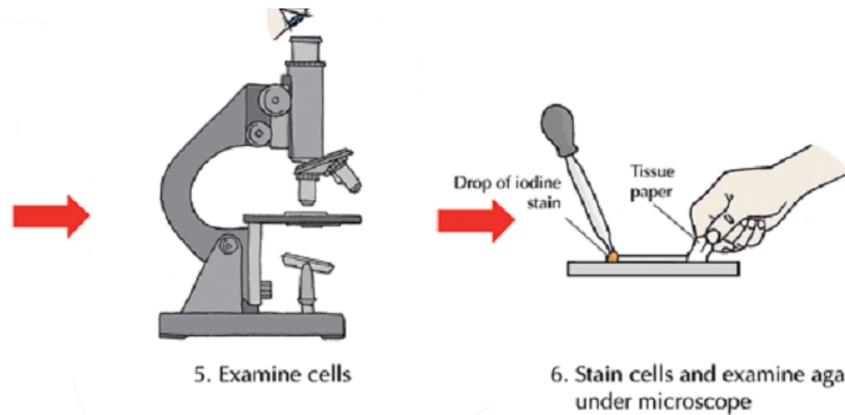
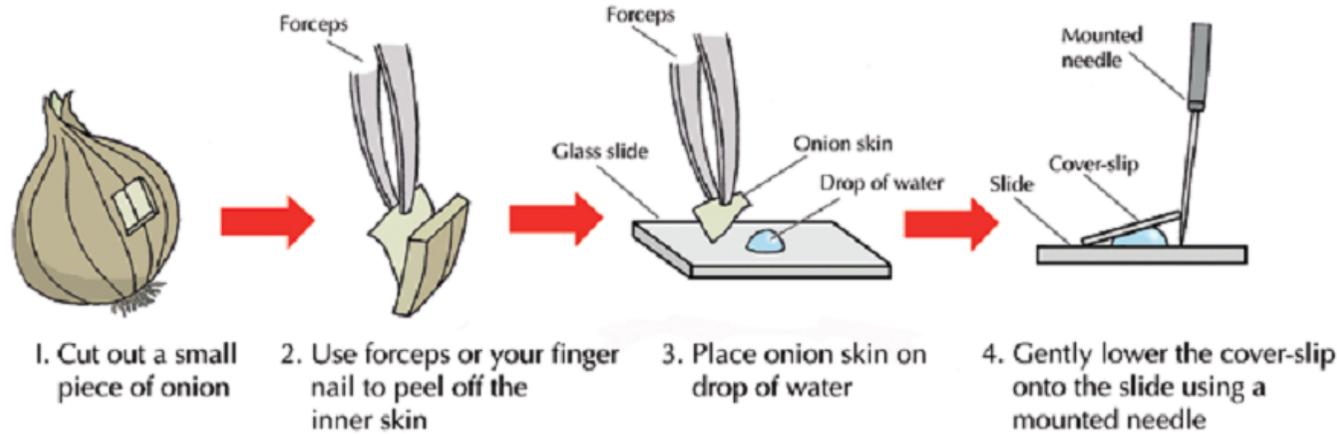


## Parts of the Microscope

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

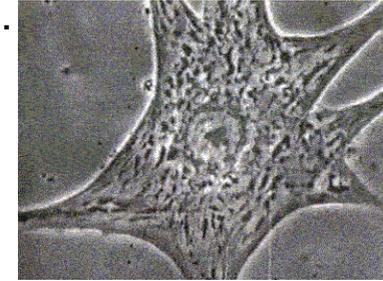
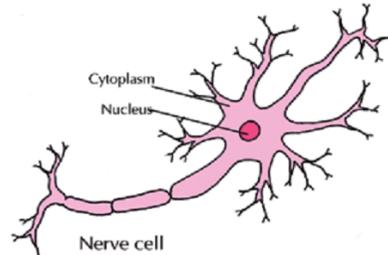
## Mandatory Experiment

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**