

MRS GREN

Living things have seven life processes in common

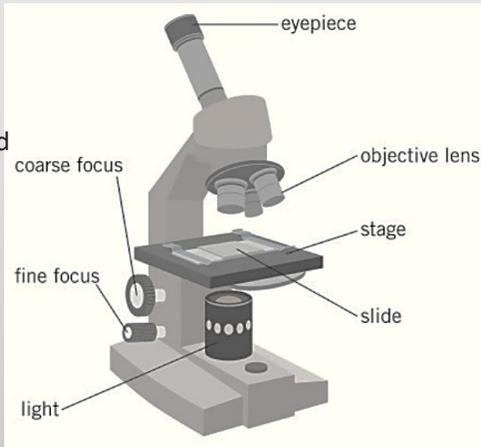
- Movement** - all living things move, even plants
- Respiration** - getting energy from food
- Sensitivity** - detecting changes in the surroundings
- Growth** - all living things grow
- Reproduction** - making more living things of the same type
- Excretion** - getting rid of waste
- Nutrition** - taking in and using food

Microscopes

Cells are the basic building blocks of all animals and plants. They are so small, you need to use a **light microscope** to see them.

A light microscope uses a series of lenses to produce a magnified image of an object:

1. The object is placed on a rectangular glass slide
2. The slide is placed on a stage with a light source below
3. Light shines through the object and into the objective lens
4. The light passes through the eyepiece lens and from there into your eye.



You can focus the image using one or more focusing knobs.

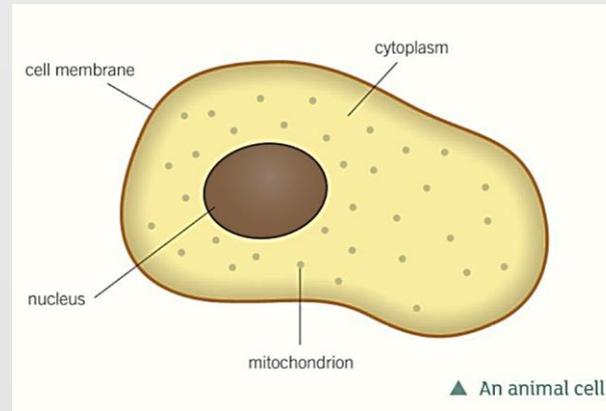
Total magnification:

= eyepiece lens magnification × objective lens magnification

Onion cells: use Iodine

Cheek cells: use methylene blue

Plant and Animal Cells



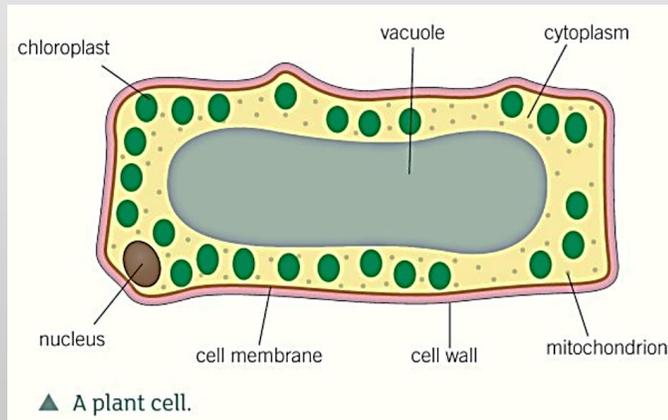
▲ An animal cell.

Cell Membrane: Controls the movement of substances in and out of the cell.

Cytoplasm: Jelly-like substance where chemical reactions take place.

Nucleus: Carries genetic information and controls the cell.

Mitochondria: Where respirations takes place (energy).



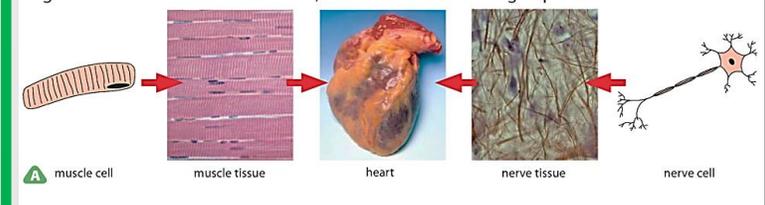
▲ A plant cell.

Cell Wall: Made of cellulose, provides support to the cell.

Vacuole: Contains cell sap, which keeps the cell firm.

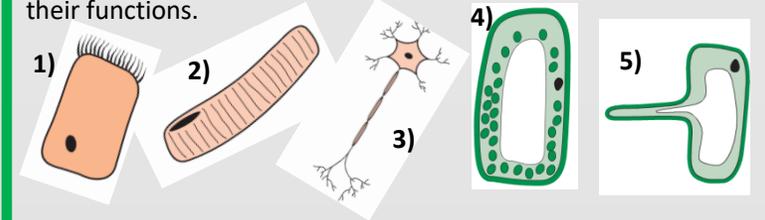
Chloroplasts: Contains the green pigment chlorophyll, the site of photosynthesis.

Organ Systems & Donors – Organs are made from different tissues, and tissues are made from groups of the same cells.



A set of organs working together is called an **Organ System**.

Specialised Cells: Many cells have special shapes to help with their functions.



- 1) Epithelial cell, strands at the top (cilia) wave about and move things
- 2) Muscle cell, able to change length.
- 3) Nerve cell, Can be very long, send signals round the body quickly.
- 4) Palisade cell, packed with chloroplasts for photosynthesis
- 5) Root hair cell, large surface area to take water out of the ground quickly.

Skeletal and Muscular Systems

The bones of your skeleton have the following functions: support, protection, movement (using muscles) and making Red blood cells. Muscles move bones at joints by getting shorter and fatter when they stop contracting they **relax**. Muscles can only pull and cannot push, they have to work in **antagonistic pairs**.

