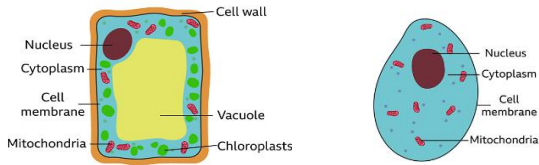


Cells and organisation

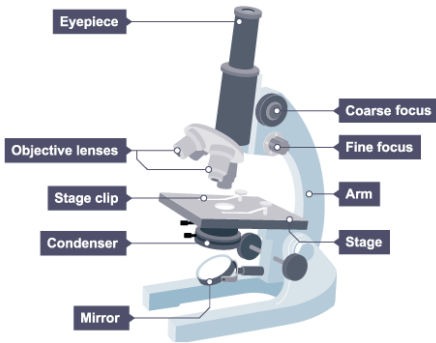
- Cells are the smallest unit of life and the building blocks for all organisms
- Each component of a cell has its own function.
- Animal and plant cells differ and they have similarities.
- Nucleus, cell membrane, cytoplasm and mitochondria are four cell components that are found in both animal and plant cells



Name of part	Function	Found in plant animal or both?
Nucleus	Controls the cell, contains genetic information.	Both
Cell membrane	Controls what enters and exits the cell	Both
Cytoplasm	Jelly like substance where chemical reactions happen	Both
Cell wall	Surrounds the cell and keeps it shape (made of cellulose)	Plant
Chloroplast	Contain Chlorophyll. Trap the suns energy so the plant can make food.	Plant
Vacuole	Contains cell sap which stores excess water	Plant
Mitochondria	The site of respiration (the process which makes energy)	Both

Specialised cells are cells which have changed their structure and shape in order to perform a particular function. There are lots of different types of specialised animal and plant cells.

We use a **light microscope** to see some plant and animal cells

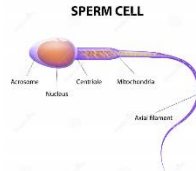
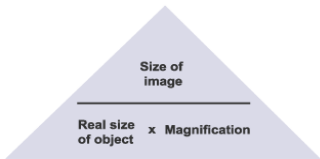


Calculating the magnification of an image

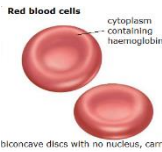
Microscopes use lenses to magnify the image of a biological specimen so that it appears larger.

The formula to calculate magnification is:

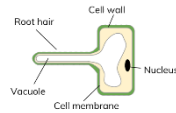
$$\text{magnification} = \frac{\text{size of image}}{\text{real size of image}}$$



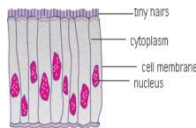
A sperm cell delivers genetic information to the egg cell to create a new organism



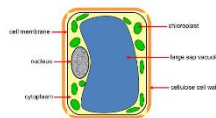
Red blood cells transport oxygen for aerobic respiration.



Root hair cells. The role of the roots is to absorb and dissolve mineral ions from the soil.



Ciliated hair cells sweep mucus, trapped dust and bacteria up to the back of the throat, where it can be swallowed. This prevents the Lungs becoming clogged up.

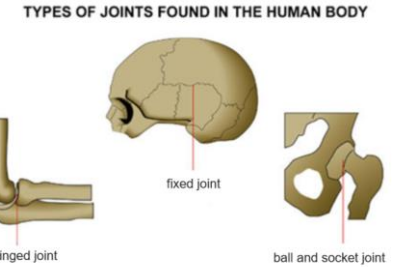


Palisade cells are found in the upper part of the leaf. The function of the Palisade cell is to absorb light so the plants can carry out Photosynthesis (making food).



Skeletons support the body, enable movement, protect organs and produce blood cells (in bone marrow). Skeletons are made up of several bones.

A **joint** is where two or more bones meet. They allow the body to have a **range of movement**.



TYPES OF JOINTS FOUND IN THE HUMAN BODY

Muscles are important to stabilise joints, help maintain body temperature, responsible for all body movements and support body functions (like blood to pump around the body).

Smooth Muscle



The movement of bones and limbs

Skeletal muscle



Heart tissue, the movement of which creates the heartbeat

Cardiac Muscle



Allows the movement of different internal organs

In order of increasing complexity, multicellular organisms consist of:

organelles → cells → tissues → organs → organ systems

Structure	Description
Organelle	Cell structure that is specialised to carry out a particular function or job
Cell	Basic structural and functional unit of a living organism
Tissue	Group of cells with similar structures, working together to perform a shared function
Organ	Structure made up of a group of tissues, working together to perform specific functions
Organ system	Group of organs with related functions, working together to perform body functions

