

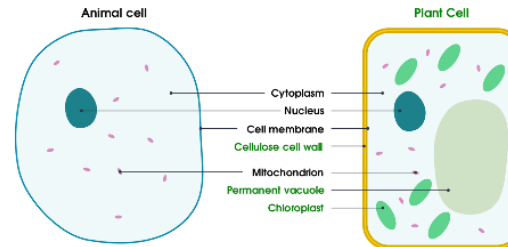
Knowledge Organiser – Year 7 Cells

Key words

Key word	Definition
Cell	the smallest structural and functional unit of an organism
Tissue	a group of specialised cells that have a similar structure and function
Organ	part of an organism made up of tissues that has a specific vital function
Microscope	an instrument used for viewing very small objects
Cell membrane	Controls the movement of substances into and out of the cell
Nucleus	Contains genetic material, which controls the activities of the cell
Vacuole	Filled with cell sap to help keep the cell turgid and supports the cell
Chloroplast	Contain chlorophyll, which absorbs light energy for photosynthesis
Cytoplasm	Most chemical processes take place here, controlled by enzymes Cell wall Strengthens the cell
Diffusion	The movement of particles from a high concentration to a low concentration until they are evenly spread
Uni-cellular	consisting of a single cell e.g. yeast
Multi-cellular	Consisting of lots of cells e.g. humans
Ribosome	Protein synthesis happens here
Mitochondria	Most energy is released by respiration here

Animal and plant cells

Organelle	Animal	Plant
Nucleus	Yes	Yes
Cytoplasm	Yes	Yes
Cell membrane	Yes	Yes
Cell wall	No	Yes
Chloroplast	No	Yes
Vacuole	No	Yes
Mitochondria	Yes	Yes
ribosome	Yes	Yes



Cells to organ systems

Cells → tissue → organ → organ system

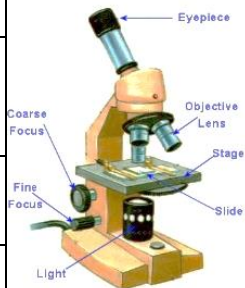
cell	Simplest structural and functional unit of an organism
Tissue	A group of similar cells working together
Organ	A group of similar tissues working together
Organ system	A group of different organs that work together
organism	A living thing that performs the seven life processes

Specialised cells

Specialised cell	Location	diagram	Role	Adaptation
Red blood cell	Animal – blood		Transport oxygen around the body	Biconcave shape and Large surface area to allow oxygen diffusions Haemoglobin to bind with oxygen No nucleus
Sperm cell	Animal – testies		To join with female egg cells in fertilisation.	Long tail for swimming Head containing enzymes to get into egg cell Mitochondria for energy
Egg cell (Ovum)	Animal – ovary		To join with male sperm cell in fertilisation and then provide food for embryo	Large Contain food store
Nerve cell	Animal – body		To carry impulses to different parts of the body	Long Connections are each end Can carry electrical signals
Ciliated Epithelial cell	Animal – respiratory track and fallopian tube		Move mucus from one place to another. In the respiratory tract the move mucus containing microbes and dust out.	Has a thing later of tiny 'hairs' called cilia
White blood cell	Animal – blood		Destroys invading pathogens	Releases antibodies and antitoxins. Engulfs and digests pathogen cells
Palisade cell	Plant - leaves		To absorb sunlight for photosynthesis	Large Surface area Lots of chloroplasts
Root hair cell	Plant – roots		To absorb water and minerals	Long finger like protrusions to provide large surface area

Microscopes and preparing onion slides

Part	Role
Eye piece	The first lens you look through
Objective lens	A second lens that magnifies the sample so you can see it through the eyepiece
Stage	Provides a solid platform to hold sample
Focusing knob	Turns so that the sample can be focused
Light	Provides the light to see the sample clearly



Unicellular

- Simple organisms
- Small
- One type of cell
- Rely on diffusion to exchange substances

Multicellular

- Complex organisms
- Large
- Lots of different types of cell

Preparing an onion slide

METHOD: Cut out a small piece of onion. Peel off the inner surface (membrane). Put the piece of membrane flat on a slide and add two drops of iodine solution. Gently lower the cover slip onto the slide using the forceps. Place the slide onto the microscope. Focus using focusing knobs.

