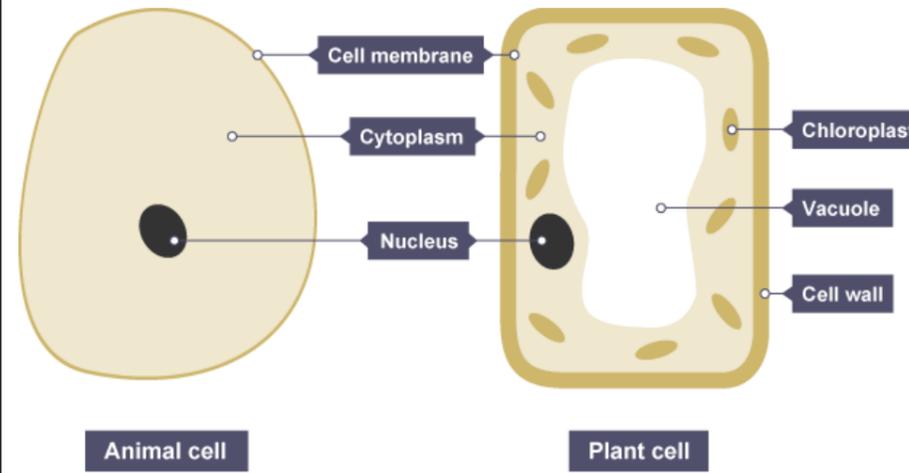


Knowledge Organiser: Year 7: - Cells

Section 1: Key Words

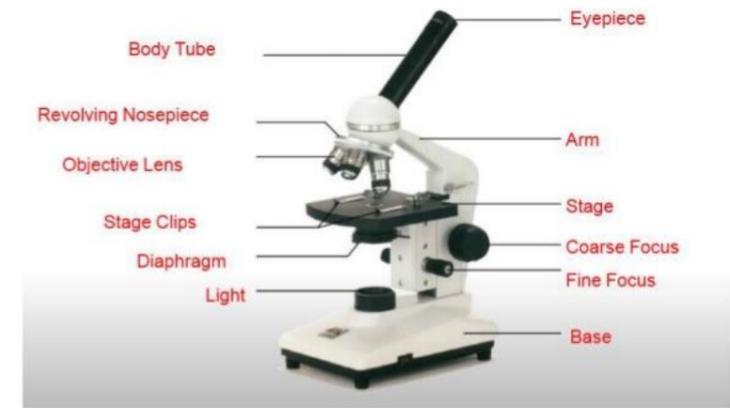
Key Word	Definition
Cell	the smallest structural and functional unit of an organism
Tissue	a group of specialised cells that have a similar structure and function
Organ	part of an organism made up of tissues that has a specific vital function
Microscope	an instrument used for viewing very small objects
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

Section 2: Plant and Animal cell



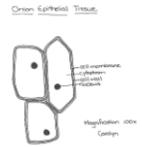
Organelle	Animal	Plant
Nucleus	Yes	Yes
Cytoplasm	Yes	Yes
Cell membrane	Yes	Yes
Cell wall	No	Yes
Chloroplast	No	Yes
Vacuole	No	Yes
Mitochondria	Yes	Yes
ribosome	yes	Yes

Section 3: The Microscope



Part	Role
Eye piece	The part that you
Objective lens	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

Section 3: 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 and draw **three or four** cells in your book and label.

Section 4: Specialised cells

Specialised Cell	Location	Role	Adaption
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 - testes	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 Contains 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. In the fallopian tube they move the egg	Has a thin layer of tiny moving '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 chloroplast
Root hair cell	Plant - roots	To absorb water and minerals	Long finger like protrusion to provide large surface area

Section 5: Unicellular and Multicellular

Unicellular	Multicellular
Simple organisms	Complex organisms
Small	Large
One type of cell	Lots of different types of cell
Rely on diffusion to exchange substances	Organ systems to allow: Communication between cells Nutrient supply to cells Exchange of substances with the environment

Section 7: Problems with Cells

Disease	Effect on cell	Problem to body
Sickle cell anaemia	Misshapen/ sickle shape: loss of surface area	Not enough oxygen - tiredness
Cancer	Cells divide/multiple uncontrollably	Tumours develop
Multiple Sclerosis (MS)	Damage to nerves cells	Muscle weakness & spasms, numbness of legs/feet

Section 6: 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 to perform a role
Organ	A group of similar tissues working together to perform a job
Organ system	A group of different organs that work together to do a particular job
organism	A living thing that performs the seven life processes