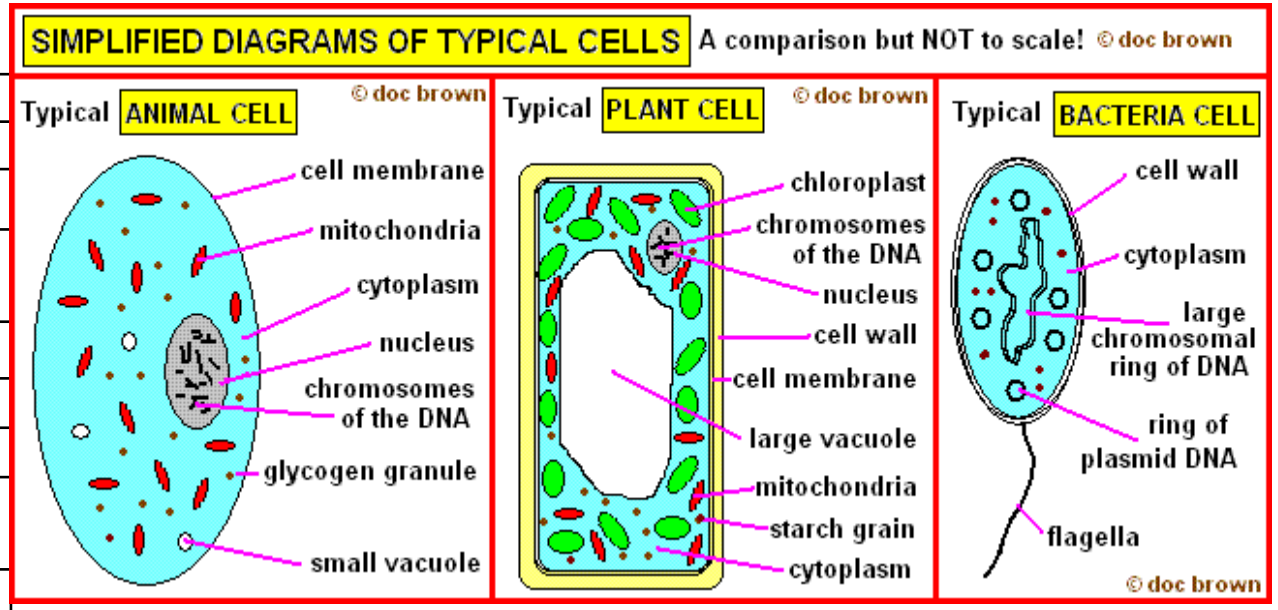
Knowledge Organiser – Cell Structure

Eukaryotic cells	Cells that contain a nucleus
Prokaryotic cells	Bacterial cells that **do not** contain a nucleus
Ribosomes	Make proteins
Diffusion	The net movement of particles form an area of high concentration to an area of lower concentration
Organelle	A part of a cell with a specific job
Mitochondrion	Where respiration occurs
Chloroplast	Where photosynthesis occurs
Cytoplasm	Jelly like substance in cells where chemical reactions occur
Nucleus	A cell organelle found in eukaryotes containing their genetic material
Cell membrane	Structure surrounding the cell that controls what moves in and out of the cell
Vacuole	Found in plant cells, filled with cell sap, keeps the cell turgid
Cell wall	Made from cellulose and provides structural strength in **plant cells**
Electron microscope	A microscope that uses electrons in place of light to give higher magnification
Specialised Cell	A mature cell that has a specific job
Stem cell	An unspecialised, undifferentiated cell
Mitosis	Cell division, producing 2 identical cells



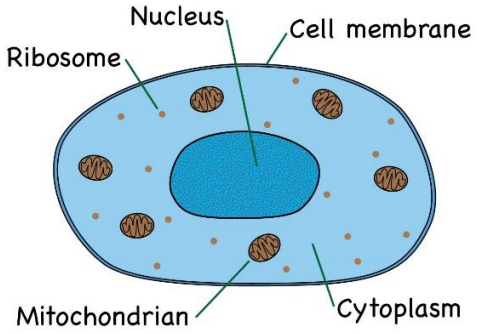
$$\text{Magnification} = \frac{\text{size of image}}{\text{actual size of specimen}}$$

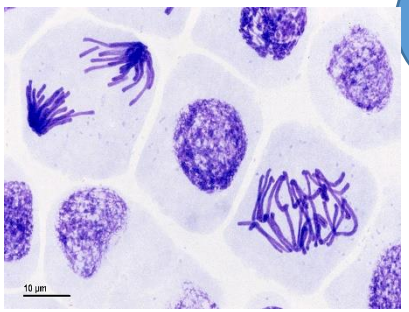
Core Questions

1. Give 3 differences between plant and animal cells
2. What do mitochondria do?
3. What is the job of the nucleus?
4. What do chloroplasts do?
5. What is magnification?
6. Give 2 advantages of using an electron microscope.
7. When do cells divide by mitosis?
8. What is a stem cell?
9. Name 3 different types of stem cells
10. What are prokaryotic cells and how are they different to animal and plant cells?
11. Why are their ethical objections to using embryonic stem cells?

Core Questions	**Answers**
1. Give 3 differences between plant and animal cells	Plant cells have cell walls, vacuoles & chloroplasts but animal cells don't.
2. What do mitochondria do?	Carry out aerobic respiration to release energy.
3. What is the job of the nucleus?	Controls the rest of the cell/holds the genetic information.
4. What do chloroplasts do?	Carry out photosynthesis.
5. What is magnification?	How much bigger a cell is when viewed down a microscope.
6. Give 2 advantages of using an electron microscope.	Higher magnification and higher resolution.
7. When do cells divide by mitosis?	For growth and repair
8. What is a stem cell?	An unspecialised cell that has the potential to become different types of specialised cells
9. Name 3 different types of stem cells	embryonic, adult , plant
10. What are prokaryotic cells and how are they different to animal and plant cells?	Bacterial cells, don't have a nucleus
11. Why are their ethical objections to using embryonic stem cells?	Kill the embryo, a potential life to extract the stem cells

GCSE Cells





What I know from KS3

Plants & animals are made up from cells

Microscopes are used to view cells

Label the nucleus, cell membrane and cytoplasm of animal cells & the vacuole, chloroplasts & cell wall of plant cells.

Cells divide when organisms grow

Plants obtain oxygen and glucose by diffusion which they use in respiration to release energy.

Structure of cells

Compare the structures of plant, animal and bacterial cells.

Label **mitochondria** & **ribosomes** & describe their functions.

Explain how cells are adapted to perform different specialised jobs

Microscopes

Advantages and disadvantages of Electron and light microscopes

RP1: Preparing slides and using light microscopes

Use and rearrange formulae to calculate the size of cells.

Mag= I/A

Processes in cells

Cells divide by **mitosis** for growth & repair.

Describe how **chromosomes** are copied & sorted into new cells.

Cells obtain oxygen and nutrients using **diffusion**.

Factors affecting diffusion

Stem Cells

All cells arise from stem cells, which **differentiate** into specialised cells

Uses of stem cells to treat human diseases

Evaluate use of embryonic and adult stem cells

Organisational hierarchy

Some cells group together to form the **tissues** & organs of animals & plants

Future Learning

Structure of bacterial cells & their role in diseases.

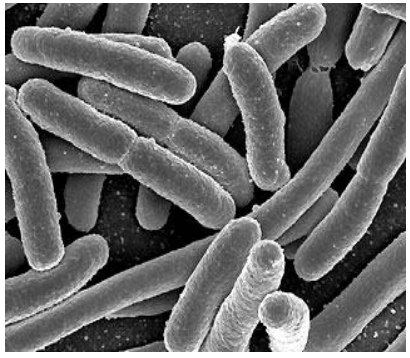
Respiration & Protein synthesis

Composition of blood

Meiosis in production of gametes

Role of muscle tissues in the heart & digestive system

Diffusion in the lungs.



Vocabulary:

Eukaryotic, prokaryotic, ribosome, mitochondria, cellulose, chlorophyll, vacuole, magnification, resolution, micrometre, mitosis, diffusion, chromosome, stem cell, differentiation, tissue