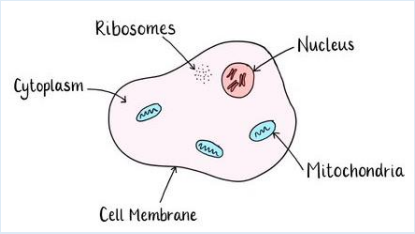
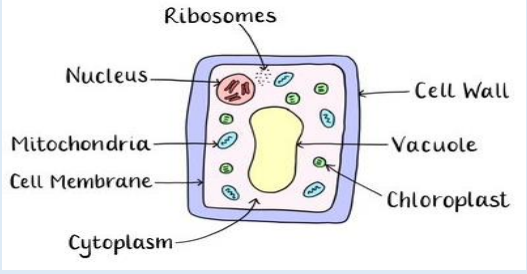
Science	Biology Unit 1	Year 9	Term 1

1: Animal Cells (Eukaryotic)



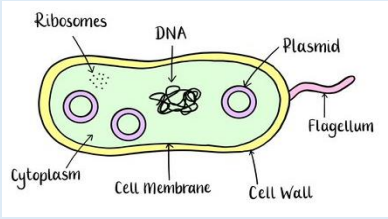
Nucleus	contains genetic material
Mitochondria	site of aerobic respiration
Cytoplasm	where chemical reactions happen in the cell
Cell Membrane	controls what enters and exits the cell
Ribosomes	site of protein synthesis

2: Plant Cells (Eukaryotic)



Chloroplasts	site of photosynthesis
Cell Wall	made of cellulose, provides strength and structure
Vacuole	filled with cell sap, water and waste to keeps the cell turgid

3: Eukaryotic and Prokaryotic Cells



Eukaryotic Cells	contains a nucleus and other membrane bound organelles *e.g. mitochondria*
Prokaryotic Cells	does not contain a nucleus or any other membrane bound organelles *e.g. a bacterium*
Chromosomal DNA	DNA in bacterial cells found loose in the cytoplasm and not contained within a nucleus

4: Microscopes

Light microscope	**Electron microscope**
Low magnification	High magnification
Low resolution	High resolution
Can view living specimens	Cannot view living specimens
2D images	3D images
Colour images	Black and white images

Microscopy Equations

Image size = actual size x magnification

Magnification lens = eye piece lens x objective lens

5: Preparing Slides

Preparing a Microscope Slide (plant tissue)

1. Take a thin layer of plant tissue (so light can pass through)
2. Place onto the microscope slide
3. Add iodine solution (to highlight internal structures)
4. Use a mounting needle to place on cover slide (to avoid air bubbles)
5. Place under the lowest magnification objective lens

6: Observing Slides

Slide	a thin flat piece of glass that the specimen rests on
Iodine Solution	used to stain the specimen to make internal structures more visible
Eyepiece	the part of the microscope that is looked through to see the specimen
Objective Lenses	the parts of the microscope that magnify the specimen
Focusing Knob	used to sharpen the quality of image *(to make it clearer)*
Resolution	the ability to distinguish between two objects

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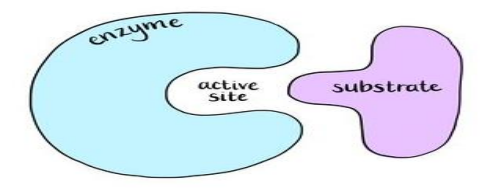
7: DNA

DNA	the genetic information of a cell
Double Helix	the structure of DNA
Nucleotide	monomers of DNA (made up of a sugar, phosphate and base)
Complementary Base Pairs	A – T C – G
Chromosome	long coiled molecule of DNA
Gene	short section of DNA that codes for a protein

8: Enzymes

Enzyme	a biological catalyst made from protein
Active Site	the specific part of an enzyme to which a specific substrate binds to
Substrate	a substance on which enzymes act
Denature	to change the shape of an enzyme's active site *e.g. due to high temperature*
Lock and Key Model	the shape of the active site matches the shape of the substrate molecules



9: Enzyme PAG

Amylase	the enzyme responsible for breaking down starch
Starch	a carbohydrate found commonly in rice and potatoes
Iodine Solution	turns from orange-brown to blue-black in the presence of starch
pH/ Temperature	the independent variable in the experiment
Water Bath	used to keep the temperature constant
Subjective	based on opinion rather than fact

10: Respiration

Respiration	the chemical process that releases energy for life processes
Aerobic	a process that involves oxygen
Anaerobic	a process that does not involve oxygen
Lactic Acid	a waste product that is produced from anaerobic respiration in animals
Response to Exercise	our heart rate, breathing rate and breathing volume all increase to meet the demands of our muscles during exercise

Aerobic Respiration Word Equation

glucose + oxygen → carbon dioxide + water

Anaerobic Respiration (in animals)

glucose → lactic acid

11: Photosynthesis

Photosynthesis	a series of chemical reactions in a plant that produce glucose
Stomata	small openings on the lower surface of a leaf where gas exchange occurs
Chloroplasts	the site of photosynthesis
Limiting Factor	a factor or condition that affects the rate of photosynthesis (*e.g. temperature, light intensity and carbon dioxide concentration*)
Uses of Glucose in Plants	respiration, seeds, storage, cellulose, protein synthesis

Photosynthesis Word Equation

carbon dioxide + water → glucose + oxygen

12: Photosynthesis PAG

Light Intensity	a limiting factor of photosynthesis. The independent variable in the photosynthesis experiment
Carbon Dioxide Concentration/ Temperature	limiting factors of photosynthesis- controlled during the photosynthesis experiment
Inverse Square Law	as the distance *increases*, light intensity *decreases*. The light intensity is inversely proportional to the square of the distance