

Year 10 Trilogy Biology 1: Cell Biology Knowledge Organiser



1. Cell Structure		
1. Eukaryotic	A complex cell with a nucleus (e.g. animal or plant cells).	
2. Prokaryotic	A smaller cell without a nucleus (e.g. bacterial cell).	
3. Nucleus	Contains genetic material.	
4. Cytoplasm	Where a cells chemical reactions happen.	
5. Cell mem- brane	Controls what goes into and out of a cell.	
6. Ribosome	Part of a cell where proteins are made.	
7. Mitochon- dria	Where aerobic respiration takes place.	
8. Cell wall	Only found in plant cells. Made of cellulose and supports the cell.	
9. Vacuole	Only found in plant cells. Contains cell sap.	
10. Chloro- plasts	Only found in plant cells. Where photosynthesis takes place.	
11. Plasmid	Only found in bacterial cells. A small loop of DNA.	
12. Genetic material	Long strands of genes not tightly pack in a nucleus.	

Animal cell Plant cell		9	 .0001
Cytoplasm Nucleus Ribosome Micchondrion Cell membrane Chiloroplast Vacuolo Cell wall	Cytoplasm Nucleus Ribosome Micohondrion Coll membrane		Cell wall Cell membrane Nucleoid region containing circular DNA chromosome

2. Comparing types of microscope			
Type of micro- scope	Advantages	Disadvantages	
Light micro- scope	1.Cheaper 2.Can see colours 3.Can see live specimen	1.Lower magnifica- tion	
Electron micro- scope	1.Expensive 2.Higher magnification (x1000 more)	1.Can only see dead specimen 2.No col- our	

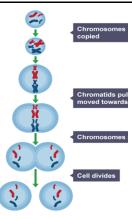
	X 10	00 X 1	000
): I	(mm)	(μm)	(nm)
2mm	2	2000 (2 x 10 ³)	2000000 (2 x 10°)
130μm	0.13	130	130000 (1.3 x 10 ⁵)
0.032m	32	32000 (3.2 x 10 ⁴)	32000000 (3.2 x 10 ⁷)
7.25µm	0.00725	7.25	7250 (7.25 x 10 ³)

	size of image
magnification =	actual size of object
actual size of obj	size of image
actual size of obj	magnification

4. Transport in cells		
Diffusion	Movement of a substance from an areas of high concentration to an area of low concentration	•Oxygen and car- bon dioxide in the lungs •Perfume in a room
Osmosis	Movement of water molecules across a partially permeable membrane from a less concentrated solution to a more concentrated solution.	•Water uptake in plants •Water ab- sorption in the intes- tine
Active transport	Movement of a substance from a lower concentration to a higher concentration, against the concentration gradient. Uses energy.	•Mineral absorption by roots •Glucose absorption by the intestine
Surface area to volume ratio	The surface area divided by the volume expressed as a ratio	All high •Unicellular organisms •Alveoli in the lungs •Villi in the intestines

5. Cell division	
Cell cycle	The process the cell goes through to divide
Mitosis	A type of cell division that creates 2 identical daughter cells
Therapeutic cloning	Using an embryo create to have the same genes as the patient. Controversial

6.	6. Mitosis		
1	The cell grows and copies all its DNA, mitochondria and ribosomes		
2	The nucleus dissolves and the copied chromosomes pair up		
3	The chromosomes are pulled to opposite sides of the cell		
4	The cytoplasm and cell mem- brane divides making two identical cells		



7. Specialised cells		
Differentia- tion	A stem cell turning into a specialised cell	
Stem cell	A special type of cell which can turn into other specialised cells	
Adult stem cells	Can only produce certain types of cell -found in bone marrow	
Embryonic stem cells	Can produce all types of cells -controversial	
Meristems	Where plant stem cells are found	