

Organelles & Compartmentalization

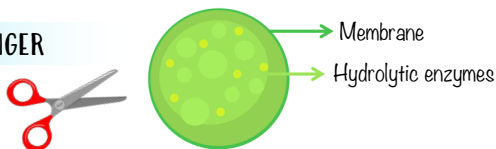
COMPARTMENTALIZATION

Refers to the division of cells into different regions with one or two membranes causing separation.

Why?

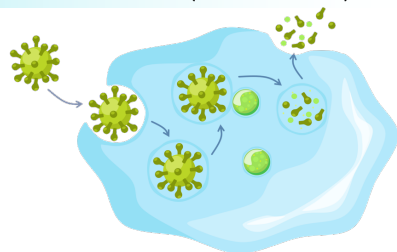
What is the purpose of compartmentalization?

DANGER



Lysosomes contain destructive enzymes used to breakdown proteins, lipids, carbohydrates and nucleic acids. Compartmentalization prevents destructive enzymes to contact vital structures within the cell.

VESICLE FORMATION (ENDOCYTOSIS)

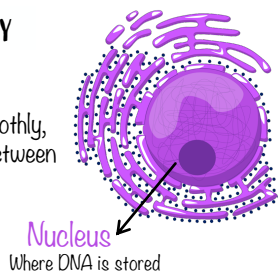


Pathogens can be taken in via endocytosis and kept in a vesicle until lysosomes can fuse with the vesicle thereby releasing its destructive enzymes to destroy the pathogen.

ENHANCES CELL EFFICIENCY

When processes are concentrated in a particular area, they can run more smoothly, be more controlled, and interference between different processes can be avoided.

For example transcription and translation occur in the nucleus where DNA is stored.

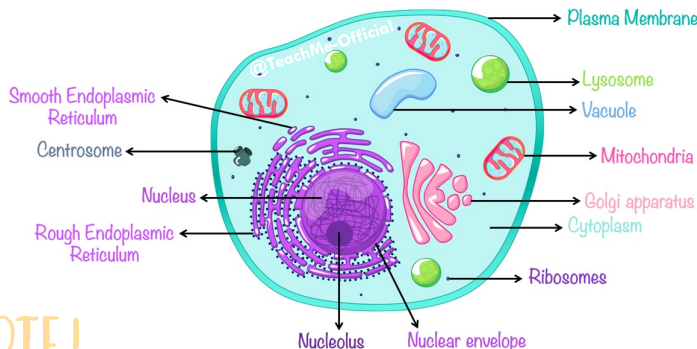


ORGANELLES

A (membrane bound) sub-cellular structure that carries out specific functions.

Structure of eukaryotic cell

Remember the different structures found in eukaryotic cells in section A2.2



NOTE!

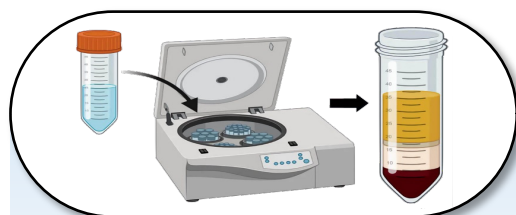
Contents of table can appear as MCQ question

CELL COMPONENT	ORGANELLE
Cytoplasm	No
Cytoskeleton	No
Cell Wall (Plants)	No
Rough endoplasmic reticulum (rER)	Yes
Smooth endoplasmic reticulum (sER)	Yes
Nucleus	Yes
Lysosome	Yes
Ribosomes	Yes
Golgi apparatus	Yes
Plasma Membrane	Yes
Mitochondria	Yes
Chloroplast (Plants)	Yes
Vesicles	Yes
Flagella & cilia	Yes



MICROSCOPES

Tool used to magnify objects to see small things better. Can be light microscopy or electronic.



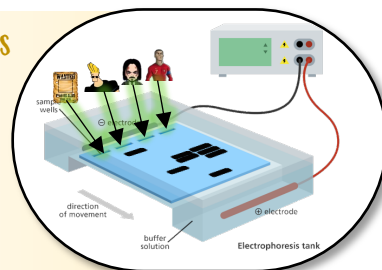
CENTRIFUGATION

Method used to isolate (separate) substances. Sample is spun at high speeds, resulting in larger and heavier substances sinking to the bottom, and the lighter, and smaller will remain on top.

TOOLS FOR RESEARCH

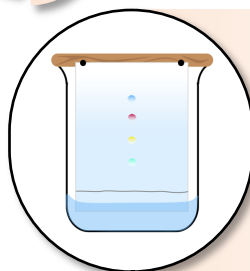
GEL ELECTROPHORESIS

Tool used to isolate (separate) substances of different types by passing them through a gel using an electrical charge. The molecule separate based on size and charge. Commonly used with nucleic acids.



CHROMATOGRAPHY

Tool used to isolate (separate) substances such as amino acids, proteins, carbohydrates, and more from a mixture. The molecules separate depending on their size and speed. There are several types of chromatography



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