

LOCKIN EDUCATION @ BUGIS



H2 Biology



Summary Notes Revision Package

“To study Biology is to study life itself — and to understand it is to think with precision.”

Prepared by: Wayne, Bio Tutor

Cell Structure

For each of the statements below, indicate if it is true or false by putting a ✓ in the corresponding box.

	Questions	True	False
1.	A cell without DNA cannot be considered a eukaryotic cell, and is known as a membrane-bound organelle.		
2.	One of the similarities between a prokaryotic and eukaryotic cell is that they share the same nature of DNA.		
3.	The phospholipid bilayer makes up the cell surface membrane in both prokaryotic and eukaryotic cells.		
4.	Prokaryotic and eukaryotic cells both undergo mitosis, but only eukaryotic cells undergo meiosis.		
5.	The nuclear envelope is made up of a double membrane, in which the outer membrane is continuous with the endoplasmic reticulum.		
6.	The nucleolus is the site of mRNA and tRNA synthesis.		
7.	Free ribosomes and ribosomes attached to the rough endoplasmic reticulum both synthesize proteins to be secreted out of the cell.		
8.	Without the Golgi Apparatus, glycosylation of protein cannot happen within the cell.		
9.	The vesicles budding off the RER and Golgi Apparatus are the same, but are named transport vesicles and secretory vesicles respectively.		
10.	Lysosomes are responsible for digestion of both foreign bodies and unwanted/dead cellular organelles.		
11.	The absence of nucleus in cells means that they do not contain any genetic material.		
12.	Mitochondria is the site of cellular respiration during which glucose is metabolised resulting in the synthesis of adenosine triphosphate (ATP) via a series of biochemical reactions.		
13.	Centrioles are spread throughout the cell when the cell is not dividing.		
14.	The phospholipid bilayer is amphipathic, meaning it contains both hydrophilic and hydrophobic parts.		
15.	The fluid mosaic model describes that the phospholipid bilayer is constantly in motion, and how fluid the membrane is depends on its constituents.		

Identification of Keywords

- Underline the keywords in each of the following:

Function of Glycoproteins/lipids in the phospholipid bilayer

The main function of glycoproteins and glycolipids is for cell-cell recognition where cells are able to recognise and bind to one another. An example is the recognition of bacteria by white blood cells.

Another function is for cell-cell adhesion, where carbohydrate chains of two adjacent cells bind with each other, causing adhesion between cells. This enables cells to form a tissue.

They also act as receptor sites for signal molecules to bind which allows for cell signalling.

Function of Cholesterol

Cholesterol helps to regulate fluidity of cell membranes in animal cells. It maintains the mechanical stability of the membrane and prevents leakage of small polar molecules.

At high temperatures, cholesterol prevents phospholipids from moving too far apart by forming hydrophobic interactions with the fatty acid tails.

At low temperatures, cholesterol prevents phospholipids from packing too close together, preventing cell freeze.

DRAW IT!

- Draw & label the structure of a Micelle
- Draw & label the structure of a Liposome
- Compare the two structures and explain their interaction with an aqueous environment

Cell Drawing:



Functions:

