TD N°1

Exercise 1 : Complete the following sentences

A- Lipid molecules are grouped in biological membranes in a continuous double layer known as ……

B- The three major types of lipids found in the cell membrane are……...

C- All lipids found in cell membranes are said to be…….because they have a ……end and a ……..…..end.

D- ……, lipids containing oligosaccharides, are found only on the outer face of the double layer with their sugar groups exposed on the cell surface.

E- Proteins that span the lipid bilayer and are exposed to aqueous environments on either side of the membrane are called ……..……...

F- The carbohydrate-rich area on the surface of most eukaryotic cells is called ……..……

Exercise 2 : Indicate whether the following information is true or false. Give an explanation if a statement is untrue.

A- Maintenance of the lipid bilayer in the plasma membrane requires specific enzymes and ATP hydrolysis.

B- The lipid bilayer determines the fundamental structure of cellular membranes, but the presence of proteins is connected to their biological activities.

C- In all cell membranes, the two lipid layers of the same bilayer have the same chemical composition, which is specific to the organelle.

D- Transmembrane proteins are proteins deeply and securely embedded in the lipid bilayer.

Exercise 3 : Answer this series of questions by putting a cross in front of the correct answer(s).

1- The prokaryotic cell contains:

a) Ribosomes

b) A Golgi apparatus

c) An endoplasmic reticulum

d) A nucleus

e) Lysosomes

2- The plant cell contains:

a) Ribosomes

b) Mitochondria

c) Chloroplasts

d) A nucleus

e) A vacuole

3- The animal cell contains:

a) Ribosomes

b) Mitochondria

c) Chloroplasts

d) A nucleus

e) A cell wall

4- Is compartmentalization important?

a) No, it is not

b) It plays a minor role

c) It allows the creation of a microenvironment

d) It allows an organelle to have a specific function to ensure optimal functioning

5- The plasma membrane is:

a) A boundary between the inside and the outside

b) A connection between cells

c) An exchange between the cytosol and the interstitial fluid

6- Among the following molecules, check those that are not normal components of eukaryotic cell membranes:

a) Proteins

b) Glycogen

c) Phospholipids

d) Cholesterol

e) Transfer RNA

7- The plasma membrane consists of:

a) Two identical faces (identical molecular composition)

b) Cholesterol molecules

c) More carbohydrates than proteins

d) DNA

e) Phospholipids; partly polar and partly apolar structures

8- Among the following properties, check those that you think correspond to those of the plasma membrane (proteins and lipids):

a) Barrier for most physiological solutes

b) Attachment to the extracellular matrix

c) Lipid biosynthesis

d) Non-fluid

e) Responsive to the external environment

9- Membrane proteins:

a) Are always transmembrane

b) May be transmembrane multiple times

c) May be attached to the membrane by a lipid anchor (intrinsic membrane protein)

d) Are highly glycosylated on the intracellular side

e) Ensure selective transport across the membrane

10- Membrane proteins:

a) Are sometimes transmembrane

b) Are sometimes bound to the membrane, on the cytoplasmic side, by covalent bonding to a fatty acid or isoprenoid

c) Are all glycosylated

d) Are necessarily highly hydrophobic

e) Are located only at the plasma membrane (not at the organelles)

11- In eukaryotes, the plasma membrane consists of:

a) Two lipid layers of symmetrical molecular composition.

b) Transporters and ion channels.

c) Proteins that are solely transmembrane.

d) A set of oligosaccharides on the cytoplasmic side.

e) Cholesterol molecules that influence membrane fluidity.

12- Among the following different organelles, check those that are delimited by double membranes:

a) Endoplasmic reticulum

b) Nucleus

c) Golgi apparatus

d) Mitochondrion

e) Lysosome