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1. The following is not a function of triacylglycerol? Answer: **shock absorber**

1b) Fatty acids are **carboxylic acids**

2. Sterol nucleus of steroid is called: **Core ring**

3. Chylomicrons transport **dietary lipids and fat** from the **intestines** to **adipose ,cardiac** and **skeletal muscle tissue.**

4. Write concisely on the functional characteristics of nucleus, mitochondria and endoplasmic reticulum.

ANSWERS

1. **Nucleus** : It is a membrane-bound organelle found in eukaryotic cells. The cell nucleus contains all of the cells genome except for a small fraction of mitochondrial DNA, organized as multiple long linear DNA molecules in a complex with a large variety of proteins, such as histones, to form chromosomes. The main characteristics of the cell nucleus is the command centre of a eukaryotic cell and is commonly the most prominent organelle in a cell.

2. **Mitochondria :** They are known as the **power house of the cell.** They are organelles that act like a digestive system which takes in nutrients, breaks them down and creates energy rich molecules for

the cells. The biochemical processes of the cell are known as CELLULAR RESPIRATION. Mitochondria unlike other cellular organelles in that they have two distinct membranes and a unique genome and reproduce by binary fission; these features indicate that mitochondria share an evolutionary past with prokaryotes (single-celled organisms). The membrane is where the chemical reactions occur and the matrix is where the fluid is held. Mitochondria are a part of eukaryotic cell. The main job of mitochondria is to perform cellular respiration.

3. Endoplasmic reticulum: It is a continuous membrane system that forms a series of flattened sacs within the cytoplasm of eukaryotic cells and serves multiple functions. The endoskeleton is the organelle of the cell which gives structural support to the cell. The endoskeleton of the cell is endoplasmic reticulum. As the name suggests, it is made up of membranous sheets and tubules that begin near the nucleus and extends across the cell. Cell wall forms the boundary of the cell. It plays a major role in the production, processing and transport of proteins and lipids. The ER (endoplasmic reticulum) produces trans-membrane proteins and lipids for its membrane and for many other cell components including lysozomes , Golgi apparatus etc.

5) Explain various classes of glycolipids and draw the structure of one.

ANSWERS

- Glyceroglycolipids: A sub-group of glycolipids characterized

by an acetylated or non-acetylated glycerol with at least one fatty acid as the lipid complex. The sub-categories of Glyceroglycolipids depend on the carbohydrate attached which are:

1. Galactolipids- defined by a galactose sugar attached to a glycerol lipid molecule.
2. Sulfolipds- have a sulfur-containing functional group in the sugar moiety attached to a lipid.

- Glycosphingolipids: A sub-group of glycolipids based on “sphingolipids”. Glycosphingolipids are mostly located in nervous tissue and are responsible for cell signalling . Some of the sub-groups are: cerebrosides, galactocerebrosides, glucocerebrosides. Etc.
- Gangliosides: The most complex animal glycolipids. They contain negatively charged oligosaccharides with one or more sialic acid residues; more than 200 different gangliosides have been identified.