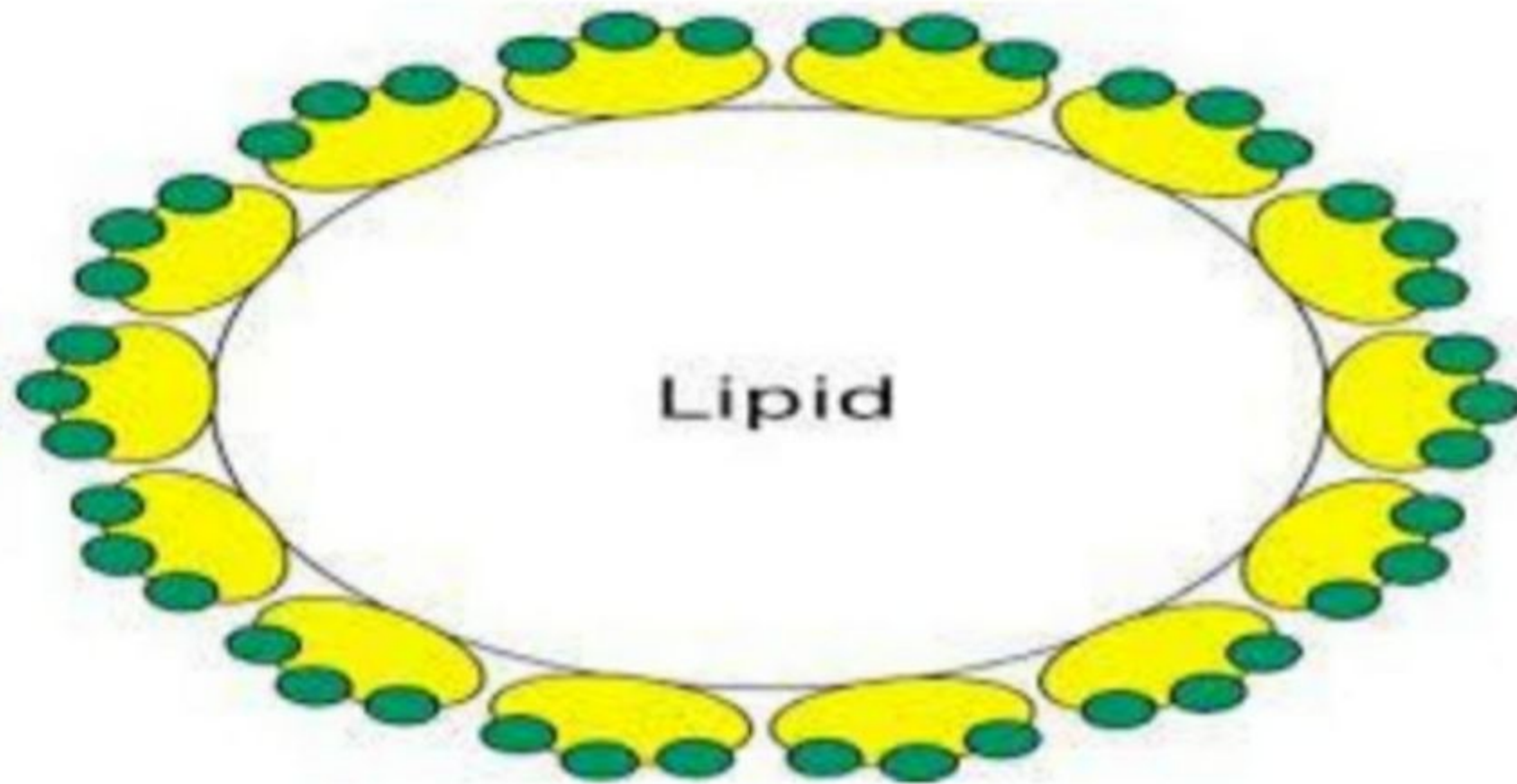


Biochemistry

Lipids



Department of optical tech.

First Class

M.S.C Issa Farhan

Lipids

Definition

Lipids are organic compounds that are found in living organisms. They have variety of structures and functions, and soluble in organic solvents due to their hydrocarbon component.

These organic compounds are insoluble in water but soluble in organic solvents like chloroform, ether and benzene.

Lipid Properties

- Lipids are oily or greasy nonpolar molecules, stored in the adipose tissue of the body.
- Lipids are energy-rich organic molecules, which provide energy for different life processes.
- Lipids are a class of compounds characterized by their solubility in nonpolar solvents and insolubility in water.
- Lipids are significant in biological systems as they form a mechanical barrier dividing a cell from the external environment known as the cell membrane.
- Lipids are the waxy, greasy, or oily compounds found in plants and animals.
 - wax coating that protects plants
 - structural components (cell membranes)
 - insulation against cold

Classification of Lipids

Lipids are divided into:

Saponifiable lipids : contain esters, which can undergo saponification (hydrolysis under basic conditions) (waxes, triglycerides, phosphoglycerides, sphingolipids)

Nonsaponifiable lipids: do not contain ester groups, and cannot be saponified (steroids, prostaglandins, Isoprenoids)

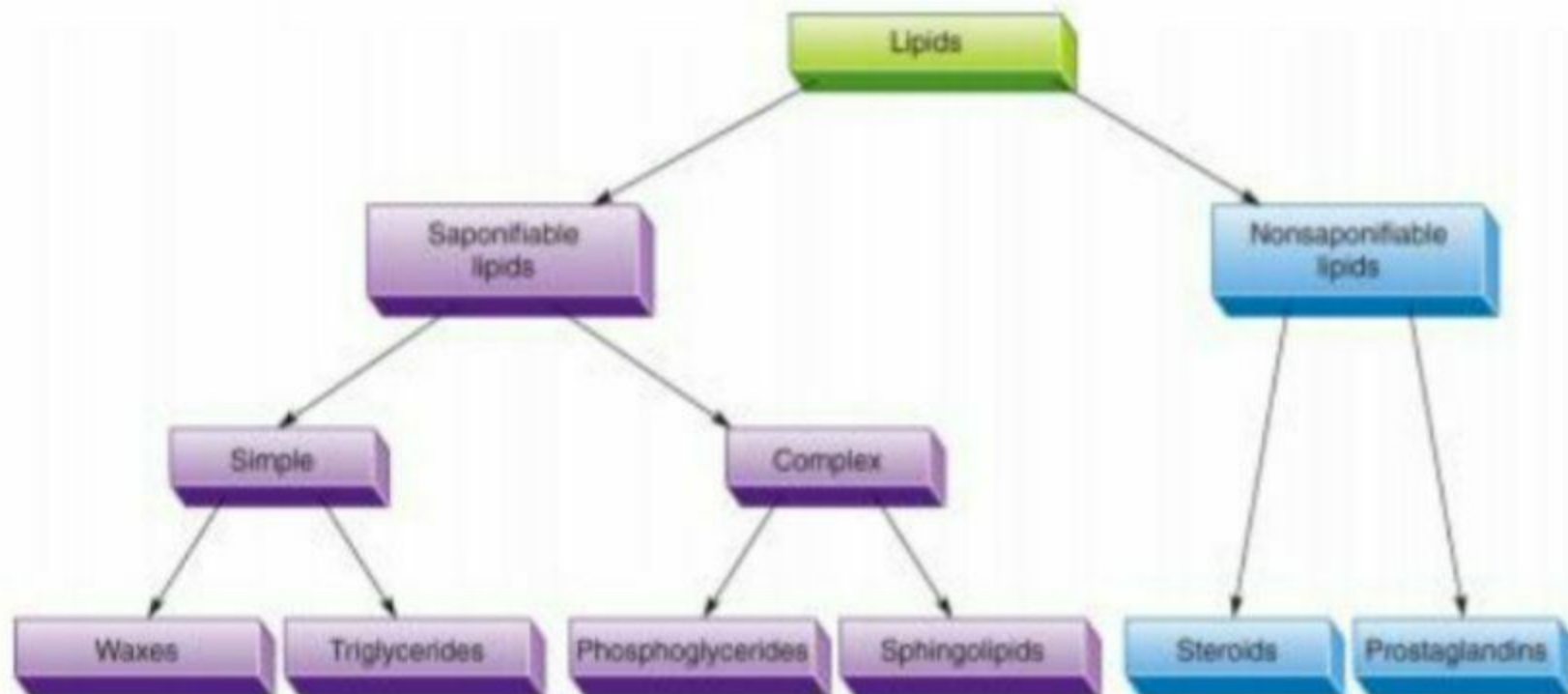
Saponification: the process in which esters are hydrolyzed under basic conditions (NaOH, KOH).

Saponifiable Lipids

Saponifiable lipids can also be divided into groups:

Simple lipids (fatty acid+ alcohol) and includes waxes and triglyceride.

Complex lipids (fatty acid + alcohol + other compounds) and includes phosphoglycerides and sphingolipids.



Fatty Acids

Definition: Fatty acids are long chain carboxylic acid and The fundamental building blocks of many lipids

Properties of fatty acids:

- The long nonpolar tail of F.A. that are responsible for most of the fatty or oily characteristics of fats
- Carboxylic group, polar head of F.A is very hydrophilic under conditions of physiological pH and it exists as the carboxylate anion COO^- .

