SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
COIMBATORE-35
Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

UNIT I: INTRODUCTION TO LIFE

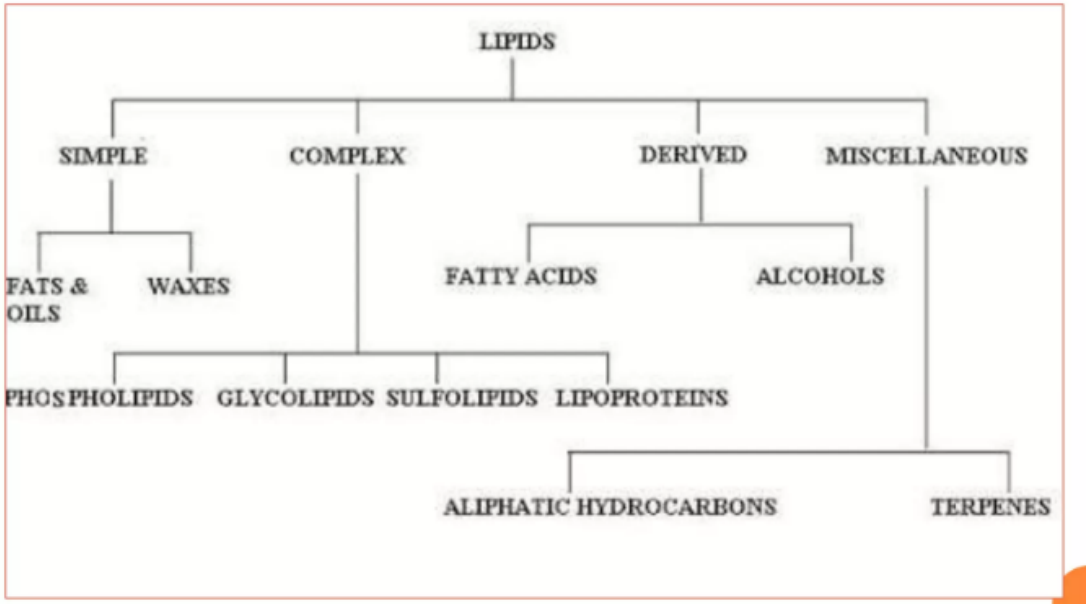
TOPIC: **Lipids-proteins-nucleic acids vitamins**

- Lipids may be regarded as organic substances relatively insoluble in water, soluble in organic solvents (alcohol, ether etc.), actually or potentially related to fatty acids and utilized by living cells.
- Lipids are heterogeneous group of compounds

FUNCTIONS OF LIPIDS

1. They are the concentrated fuel reserve of the body (triacylglycerols).
2. Lipids are the constituents of membrane structure and regulate the membrane permeability (phospholipids and cholesterol).
3. They serve as a source of fat soluble vitamins(A, D, E & K).
4. Lipids are important cellular metabolic regulators (steroid hormones and prostaglandins).
5. Lipids protect the internal organs, serve as insulating materials and give shape and smooth appearance of the body

CLASSIFICATION AND CHEMICAL NATURE OF LIPIDS



CLASSIFICATION OF LIPIDS

- Classified into

1. Simple lipids
2. Complex lipids
3. Derived lipids
4. Miscellaneous lipids

Simple lipids:

- Esters of fatty acids with alcohol.
- Fatty acids(carboxylic acid with hydrocarbon side chain) are the simplest form of lipids.
- Both saturated (do not contain double bonds) and unsaturated fatty acids (contain one or more double bonds) almost equally occur in the natural lipids.
- The fatty acids that cannot be synthesized by the body and hence supplied through diet are essential fatty acids (EFA) eg: arachidonic acid.

Proteins:

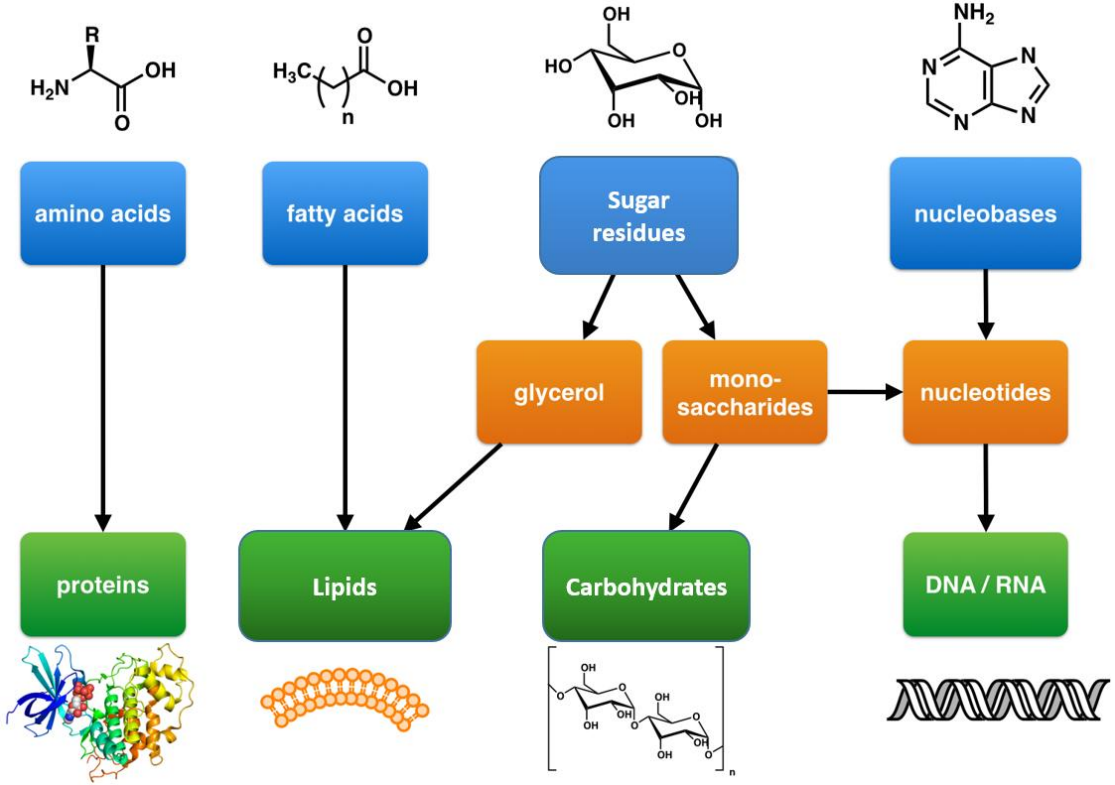
- These are complex nitrogenous compounds of carbon, hydrogen, oxygen and nitrogen.
- Sometimes they may also contain other elements like sulphur, phosphorus, iron, etc.
- They have high molecular weight and on hydrolysis i.e. on decomposition of reaction with water, they form amino acids.

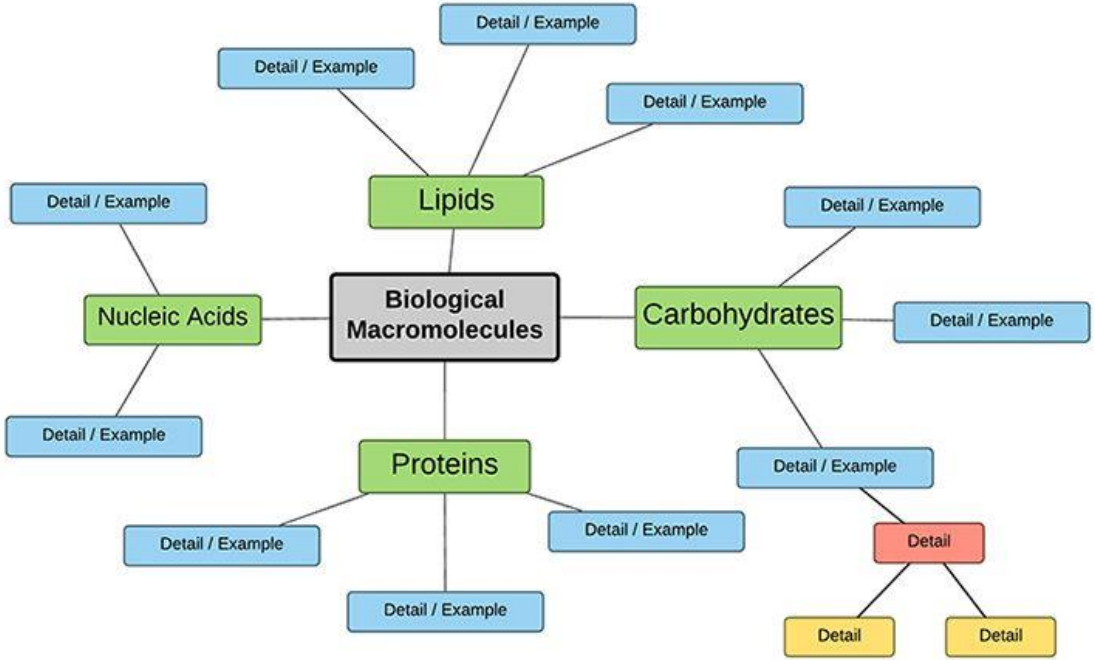
Nucleic acids:

- These are the largest and the most fascinating molecules found in living matter.
- These are the carriers and mediators of genetic information from one generation to another and exert primary control over basic life processes in all organisms.
- Like proteins, nucleic acids are also polymers.

A. ~~Carbohydrate:~~ (Classification)

Sr. No.	Carbon atoms (No)	Aldoses : Examples	Ketoses : Examples
1.	Trioses (3)	Glyceraldehydes or glycerose	Dihydroxyacetone
2.	Tetroses (4)	Erythrose	Erythrulose
3.	Pentoses (5)	Ribose, xylose, arabinose	Ribulose, xylulose
4.	Hexoses (6)	Glucose, galactose, mannose	Fructose
5.	Heptoses (7)	Glucoheptose, galactoheptose	Sedoheptulose


amino acids
fatty acids
Sugar residues
nucleobases
glycerol
mono-saccharides
nucleotides
proteins
Lipids
Carbohydrates
DNA / RNA


Biological Macromolecules
Lipids
Detail / Example
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Nucleic Acids
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Carbohydrates
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Proteins
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RECAP….

…THANK YOU