## WELCOME TO THIS BLOG!

A biomolecule may appear to be a complex term, but did you know it is merely a molecule found in every living organism? Biomolecules are a crucial part of life as they aid the growth, survival, and reproduction of all living things. For instance, water serves as biomolecules that focus on how water impacts biological processes and what features of the water molecule enable it to do so. The major categories of biomolecules include carbohydrates, lipids, nucleic acids, and proteins accordingly.

## CARBOHYDRATES

One of the most significant categories of biomolecules is carbohydrates. Carbon, hydrogen, and oxygen are the three components that make up these energy-rich organic molecules.

## CLASSIFICATIONS OF CARBOHYDRATES

- Monosaccharides refer to the most basic sugar and the monomers from which all carbohydrates (one sugar molecule) are fabricated, often known as simple sugars. Examples are glucose, fructose, and galactose.
- Disaccharides are insinuated products of two molecules of simple sugars joining together, known as double sugar (e.g., sucrose, lactose, maltose, etc.).
- Oligosaccharides imply simple sugars between three to ten residues linked together and are not found in large quantities in the diet like raffinose and stachyose.
- Polysaccharides are mentioned as the carbohydrates molecules consisting of 10 or more extended monosaccharide chains (the most basic unit of carbohydrates) such as starch, glycogen, and cellulose.

## LIPIDS

Non-polar, water-insoluble biomolecules that are dispersible in organic solvents consisting of fats and oils (triglyceride), waxes, steroids, phospholipids, vitamins that might be taken in via fat, and mono-diglycerides. Moreover, they are in charge of energy storage, cell membranes, thermal blankets and cushions, messengers of chemicals, and hormone precursors. The central classifications of lipids are simple lipids, derived lipids, and complex lipids.

- Simple lipids are explicated as the fatty-acid esters that have glycerol or higher alcohols (e.g., fats and waxes). *Fats* or often known as triglyceride or triacylglycerol consist of glycerols as their name suggests. Consequently, the fats in a liquid state are defined as oils, while *waxes* have fatty acid esters with long chains of monohydric.

- Complex lipids imply esters of fatty acids with groups other than fatty acids, and alcohol and are sub-classified based on the type of phosphate group namely; lipoproteins, phospholipids, and glycolipids.
- Lipoproteins are molecules that are fat-transporting proteins with cholesterol and triglycerides (e.g., chylomicrons, VLDL, LDL, and HDL). Chylomicrons are triglyceride-rich lipoproteins seen in the bloodstream after fat breakdown and absorption. Very low-density lipoproteins (VLDL) are generated in the liver and delivered into the circulation to provide a form of fat to bodily tissues (triglycerides). Low-density lipoproteins (LDL) are the maximum number of our bodies' cholesterol and are labeled "bad" cholesterol. Ultimately, high-density lipoproteins (HDL), also known as "good" cholesterol, absorb cholesterol and return it to the messengers in the liver, then the liver excretes it. High levels of HDL cholesterol, on the other hand, can lower our risk of heart failure.
- Glycolipids are carbohydrate radical-containing lipids (such as a ganglioside or a cerebroside) and do not contain a phosphate group.
- Phospholipids are determined as the phosphoric acid-containing complex or compound lipids that contain fatty acids, nitrogenous bases, and alcohol. It set out as the most abundant membrane lipids and divided into two classes; glycerophospholipid (which contains glycerol as the alcohol), and sphingolipids (which contains sphingosine as alcohol).

- Derived lipids refer to fatty acids that are resulted from the hydrolysis of simple and complex lipids (e.g., fatty acid, glycerol, alcohol, and cholesterol).
- Fatty acids are the fundamental components of fat in our bodies and diets. The body breaks down lipids into fatty acids during digestion, which may be taken in the future into circulation. When three fatty acid molecules are joined together, a triglyceride is created. Furthermore, fatty acids are separated into two types: saturated (no double bond) and unsaturated (double bond) (contains double bond).
- Glycerols are tiny chemical molecules containing three hydroxyl (OH) groups, which makes them a good solvent.
- Alcohol accelerates the conversion of fatty acids into triglycerides, phospholipids, and cholesterol esters, which all end up in the liver.
- Cholesterol belongs to the isoprenoids, a broad group of lipids found throughout nature. The term is derived from the chemical condensation of isoprene, a simple five-carbon molecule.

## NUCLEIC ACIDS

Nucleic acids are huge biomolecules that are essential for all cells and viruses to function. One of the nucleic acids' fundamental tasks is the storage and expression of genetic information. Nucleic acids are divided into three types: deoxyribonucleic acid (DNA), ribonucleic acid (RNA), and messenger RNA (mRNA).

- DNA is a molecule that contains the biological instructions that allow each species to be distinguished. During reproduction, mature organisms convey their DNA along with the instructions it contains to their progeny.
- Ribonucleic acid (RNA) serves as a transporter of genetic information, a gene regulator, and a catalytic enzyme in the cell.
- Messenger RNA (mRNA) is the protein-making machinery that examines the mRNA sequence and converts each three-base codon into an amino acid in a growing protein chain.

## PROTEINS

A protein is a biomolecule made up of amino acids linked by peptide bonds and is an important structural component of cells. Following this, they also operate as transporters, transporting nutrients and other chemicals into and out of cells, as well as enzymes and catalysts for the vast majority of chemical events in living organisms. Proteins have a role in the synthesis of antibodies and hormones, as well as, gene activation. In a further manner, proteins are classified based on their structure (e.g. fibrous protein, globular protein, and intermediate protein), and based on their composition; simple (e.g. albumins, globulins, histones, etc.), and conjugated (e.g. glycoprotein, nucleoprotein, chromoprotein, etc.).

**THANK YOU FOR DROPPING BY!!!**