

## **Introduction to biochemistry**

Biochemistry is the application of chemistry to the study of biological processes at the cellular and molecular level. It emerged as a distinct discipline around the beginning of the 20<sup>th</sup> century when scientists combined chemistry, physiology and biology to investigate the chemistry of living systems by studying the structure and behavior of the complex molecules found in biological material and the ways these molecules interact to form cells, tissues and whole organism. Biochemistry has become the foundation for understanding all biological processes. It has provided explanations for the causes of many diseases in humans, animals and plants.

Biochemistry is the subdivision of biology and chemistry that can further be divided into three segments, namely, metabolism, structural biology and enzymology.

Metabolism is total sum of the chemical reaction happening in a living organism, in particular:

- Biosynthesis or anabolism of compounds that cells need.
- Degradation or catabolism of fuel molecules and the production of energy for cellular function.

Thus biochemistry helps in understanding the chemical basis that gives rise to the process through biological molecules that are occurring in the living cells and within the cells. This, in turn, relates to the understanding of tissues and organs as well as the structure of the organisms and their functions. Therefore, Biochemistry can alternatively be defined as the study of molecular biology that relates to the molecular mechanisms of biological phenomena.

Biochemistry is the study of structures and the interactions of biological macromolecules. These macromolecules include protein, nucleic acids, lipids, and carbohydrates present in your body.

As a result, Biochemistry is being used in research related to botany, medicine, and gene enhancement. Biochemistry is now working on finding the secret of life and how biological molecules boost the processes that occur within the living cells.

1<sup>st</sup> Chapter : Chemical bonds

2<sup>nd</sup> Chapter Structure and physicochemical properties of carbohydrates

3<sup>rd</sup> Chapter Structure and physicochemical properties of lipids

4<sup>th</sup> Chapter Structure and physicochemical properties of proteins

5<sup>th</sup> Chapter Enzymology concepts

6<sup>th</sup> Chapter bioenergetics Concepts

7<sup>th</sup> Chapter Carbohydrates metabolism

8<sup>th</sup> Chapter lipids metabolism

9<sup>th</sup> Chapter proteins metabolism

10<sup>th</sup> Chapter Structure and metabolism of other compounds of biological interest