

# BIOCHEMISTRY

(1)

Bios → Greek = Life

→ The term introduced by  
a German Scientist  
Carl Neuberg → 1903

It is also known as → Biological Chemistry or Chemical Biology.

Actually, it is originated as an off-shoot of Human Physiology

i.e. Chemical Physiology concerned with analysis of Urine, Blood, & other body fluids.

- Physiology includes Biochemistry as one of its sections
- Physiology is concerned to the study of normal Functions and phenomena of living ones
- Biochemistry is related to particularly with the chemical aspects of these functions.
- Biochemistry is the science concerned with the various molecules that occur in living cells and organisms and their chemical reactions.
- In short The Science concerned with the chemical basis of life.
- The functional definition is →  
The science concerned with the chemical constituents of living cells with the reactions and processes that they undergo.

Biochemistry

Descriptive Biochemistry

- 1. Qualitative and Quantitative characterization of various cell components.
- 2. Concerned to Organic Chemistry

Dynamic Biochemistry

Concerned to -  
Elucidation of nature and mechanism of the reactions involving these cell components

Biochemistry includes a large area i.e.

- Cell Biology
- Molecular Biology
- Molecular Genetics.
- Enzymology
- Endocrinology
- Clinical Biochemistry



Chronology =

1. Philippus Aureolus Paracelsus (1493-1541) → of Sweden  
Physician and alchemist Chemotherapy is a method of treating diseases.  
 He established → as life processes are chemical processes.

2. Jan Baptist Van Helmont (1577-1644)  
 Amalgamated chemistry with Medicine and bio.  
 Medical Chemistry also known as Iatrochemistry

3. Karl Wilhelm Scheele (1742-1786) →  
 Discovered chemical compositions of various drugs, animals and plant products →  
 Citric Acid from Lime (सोडाशुद्धी)  
 Lactic Acid from Sour Milk (दुग्धशुद्धी)  
 Malic Acid from Apple (सेब)  
 Uric Acid from Urine (पेशाब, मूत्र).  
 He laid foundations of descriptive Biochemistry

Unluckiest  
 He discovered many elements  
 Barium, Chlorine, Manganese  
 and many others but did not  
 get undisputed credit for anyone.

4. Antoine Lavoisier : (1743-1794) Developed concept of  
 Oxidation → <sup>Nature of</sup> Animal Respiration - Like combustion  
 though differs from that of Charcoal  
 → Regarded as "Father of Modern Biochemistry"

5. Friedrich Wohler (1800-1882), German  
 Synthesized Urea.  
 Made untenable the vitalistic theory of organic material  
 (Doctrine of Vitalism)  
 See

6. Adolf Kolbe 1844 → Synthesized Acetic Acid

7. Marcellin Berthelot 1850s → Synthesized several organic compounds.

8. Justus Von Liebig 1803-1873 German → Also known as  
Father of Agricultural Chemistry.

He came to conclusion that -

Nutritive material of green plants are inorganic ones.  
He wrote many books → Organic Chemistry in its application to physiology & Pathology.

9. Michel Chevreul (1786-1889) → Studied Saponification  
Fats were composed of Fatty acids & Glycerols

10. H. Emil Fischer → 1852 - 1919 → Conducted excellent researches  
Structures of Carbohydrates  
Amino acids & Fats.

11. Friedrich Miescher (1844 - 1895) →  
He discovered ~~the~~ nucleic acid from nuclei of pus cells, obtained from discarded surgical bandages.  
→ Properties and distribution of Nucleic Acids.

12. V. Mayer and Ludwing von Helmholtz (1821-94).



Laws of Thermodynamics.

Essential to understand the relation of energy

in a Biological System.   
Respiration 1st Phenomenon  
Then Digestion which attracted Bio Chemists

13. Van Helmont, Abbe Lazzaro Spallanzani (1729-1799)  
Rene Antoine de Reaumur, William Beaumont &  
Claude Bernard (1813 - 1878) → Worked on digestion.