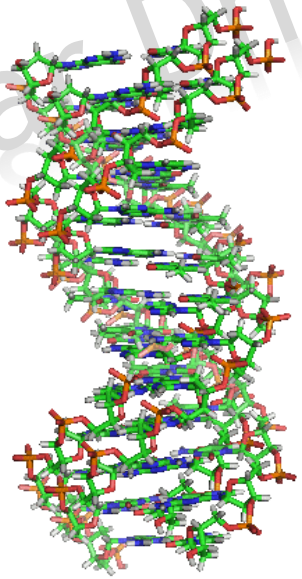
DEPARTMENT OF VETERINARY BIOCHEMISTRY

Course Title: General Veterinary Biochemistry (Scope and Importance of biochemistry)



VETERINARY BIOCHEMISTRY

father of modern biochemistry :- ***CARL ALEXANDER NEUBERG***

Born 29 July 1877
Hanover, Germany Died 30 May 1956 (aged 78)
New York City, United States
Nationality German-American

The term Biochemistry was introduced by Carl Neuberg in 1903

- What is Biochemistry:- Biochemistry is a branch of biology which deals with the study of chemical components and the chemical processes in living organisms.

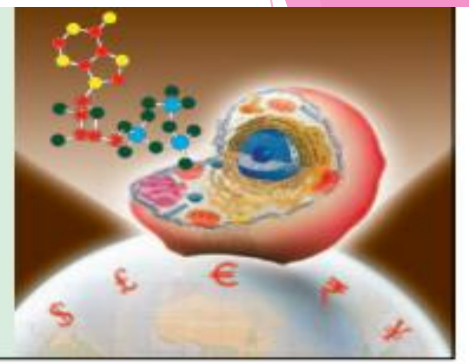
- Biochemistry is the science dealing with various molecules that are present in living cells and organisms and their chemical reactions.

- Life depends on biochemical reactions. The chemical processes that occur in living organisms are called as metabolism.
- Metabolism consists of two subdivisions called catabolism and anabolism.

- Catabolism refers to conversion of larger molecules into smaller molecules. Some of these reactions produce chemical energy that is captured as ATP.

- Anabolism refers to the conversion of small molecules into large ones during the process of biosynthesis. This process utilizes the ATP.

Scope of Biochemistry



The term *Biochemistry* was introduced by *Carl Neuberg* in 1903. Biochemistry broadly deals with the chemistry of life and living processes. There is no exaggeration in the statement, '*The scope of biochemistry is as vast as life itself !*' Every aspect of life-birth, growth, reproduction, aging and death, involves biochemistry. For that matter, every movement of life is packed with hundreds of biochemical reactions. Biochemistry is the most rapidly developing and most innovative subject in medicine. This becomes evident from the fact that over the years, the major share of Nobel Prizes earmarked for Medicine and Physiology has gone to researchers engaged in biochemistry.

The discipline of biochemistry serves as a torch light to trace the intricate complexicities of biology, besides unravelling the chemical mysteries of life. Biochemical research has amply demonstrated that all living things are closely related at the molecular level. Thus biochemistry is the subject of unity in the diversified living kingdom.

Advances in biochemistry have tremendous impact on human welfare, and have largely benefited mankind and their living styles. These include the application of biochemistry in the laboratory for the diagnosis of diseases, the products (insulin, interferon, growth hormone etc.) obtained from genetic engineering, and the possible use of gene therapy in the near future.

Scope of Biochemistry

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Medical Sciences

Thorough knowledge in biochemistry is essential in understanding different aspects of medical sciences like **drug development, immunology, pharmacy, vaccine development**.

The most important use of medical biochemistry, however, is biochemical tests done in the clinical laboratory. In a diagnostic center, one can get jobs as **pathologists** related to **diagnostics**, **monitoring**, and **screening** of patients.

Genetic Engineering or Recombinant DNA Technology.

Academics and Research

Agriculture

• Knowledge of biochemistry is very important for understanding the biochemistry of crops and medicinal plants. Plant biochemistry studies can help students to become **agricultural scientists** in the future. Agricultural scientists work on developing high yielding crops, disease-resistant crops, isolating medicinal compounds from plants.

•Gaining knowledge in plant tissue culture techniques students can set up their own farms and nurseries.

Food Industry

•**Biochemists** can help nutritionists, as they can describe different aspects of health-related to food consumption; **the nutrients**value of food material can also be determined by biochemical tests. Proper measurement of carbohydrates, proteins, and fats can be done by

•**Food Analyst** jobs are now available in different private sectors. They can find out adulterants mixed in diverse types of food items.

•**A food security officer** is a very important job prospect for present biochemistry students.

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- Biochemistry helps understand the chemical aspects of different biological processes such as digestion, respiration, reproduction, excretion, the behavior of hormones, contraction, and relaxation of muscles, and many more.
- The field generally studies different body substances like enzymes, amino acids, carbohydrates, proteins, fats, DNA, RNA, Pigments, hormones.