

A Brief Overview of Molecular Biology

Yao Wang*

Department of Biochemistry, Chinese Academy of Sciences, Shanghai, China

Corresponding author: Yao Wang, Department of Biochemistry, Chinese Academy of Sciences, Shanghai, China, E-mail: ywang@sibs.ac.cn

Received date: January 03, 2022; **Accepted date:** January 17, 2022; **Published date:** January 24, 2022

Citation: Wang Y (2022) A Brief Overview of Molecular biology. J Biomed Sci Appl Vol.5 No 6.26

About the Study

Molecular biology is the study of the molecular foundation of biological activity in and between cells, including molecular production, modification, processes and interactions. Molecular biology is the study of the chemical and physical structure of biological macromolecules. Molecular biology was first defined as a method for discovering the biological events, such as the structures of biological molecules and their interactions, as well as how these interactions explain classical biology findings. Physicist William Astbury coined the phrase molecular biology in 1945. The development of molecular biology came late because it took a long time to realize that a complex system or advantageous method could be explained in a simple fashion by employing bacteria and bacteriophages. In 1953 than two young men named Francis Crick and James Watson working at Medical Research Council unit, Cavendish laboratory, Cambridge, made a double helix model of DNA which changed the whole research scenario they proposed the DNA structure based on previous research done by Rosalind Franklin and Maurice Wilkins then the research lead to finding DNA material in other microorganisms, plants and animals. Molecular biology is not simply the study of biological molecules and their interactions; rather, it is also collection of techniques developed since the field's genesis which have enabled scientists to learn about molecular processes. One notable technique which has revolutionized the field is the Polymerase Chain Reaction (PCR), which was developed in 1983. PCR is a procedure that amplifies small amounts of DNA and is employed in a variety of scientific areas. DNA is transcribed into RNA, which is then translated into protein, according to the basic dogma of molecular biology. Molecular biology is particularly important for understanding the structures, functions, and internal controls of individual cells, which can be used to more effectively target new medications, diagnose disease, and gain a better knowledge of cell physiology. Gene therapy covers some clinical studies and medical interventions resulting from molecular biology, whereas molecular medicine refers to the application of molecular biology or molecular cell biology in medicine.

Molecular biology connection of biochemistry and genetics; as these scientific disciplines developed in the twentieth century, it became evident that they shared a common goal of

determining the molecular mechanisms that focus on critical biological functions. Advances in molecular biology have been strongly linked to the invention and optimization of new technologies. Molecular biology has been elucidated by the effort of many scientists, and hence an understanding of these individuals and their experiments is essential to comprehending the field's history. It all starts with the phenomena of bacterial transformation. In 1928, Frederick Griffith identified a phenomenon of bacterial transformation. He couldn't explain the occurrence of metamorphosis at the time. Three scientists, Oswald Avery, Colin Macleod, and Maclyn McCarty, later demonstrated the entire phenomenon of bacterial metamorphosis in 1944. After two years, molecular biology became an official field of science in 1930. However, it wasn't until 1938 that the phrase "Molecular Biology" was coined, by scientist Warren Weaver, who was serving as the director of Natural Sciences at the Rockefeller Foundation at the time. The following experiment revealed that DNA is the fundamental genetic substance that causes genetic modifications. The basic composition of DNA is known to have four bases: Adenine, guanine, thymine and cysteine. James Watson and Francis Crick postulated the DNA structure based on the chemical composition and X-ray crystallography work of Maurice Wilkins and Rosalind Franklin. But, before Watson and Crick presented the DNA structure, Erwin Chargaff, an Austrian-born scientist, proposed the hypothesis in 1950, which said that the number of Adenine and Thymine, Guanine and Cytosine, and Guanine and Cytosine are in equal proportion. The rule of the Chargaff "Chargaff's rule claimed that DNA from every species of creature should have a 1:1 stoichiometric ratio of purine and pyrimidines, and that the amount of guanine should be equal to cytosine and the amount of adenine should be equal to thymine." This pattern can be present on both DNA strands." Genetics developed from a desire to comprehend the molecular mechanics of genetic inheritance and the structure of a gene. In 1866, Gregor Mendel pioneered this study by writing the principles of genetic inheritance based on his research of pea plant mating crosses. The law of segregation, which stipulates that diploid people with two alleles for a single gene will pass one of these alleles to their offspring, is one such law of genetic inheritance.