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Impact of DNA technology on molecular biology

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DESCRIPTION

The analysis of the physical and chemical structure of natural polymers is known as molecular biology. In 1945, physicist William Asbury created the term biology. According to recent developments in the field of molecular biology, complex structures and beneficial techniques are simple to interpret by bacteria and bacteriophages, which provide knowledge on basic physiological systems more easily then animal cells.

In 1953, two young men called Francis Crick and James Watson, operating at the Medical Research Council unit at Cavendish Laboratory in Cambridge, created a double helix model of DNA, that also completely changed research scenario through suggesting DNA structures based on previous work by Rosalind Franklin and Maurice Wilkins, and then going to lead to the discovery of DNA material in other microorganisms, plants, and animals. The field of molecular biology has a significant influence on life science research. Over the last four decades, major advancements in biology have supported bioscience research and progress. This factor comprises the development of increasingly advanced molecular biology laboratory techniques with broad interdisciplinary application. The scientific community's on-going flow of information about innovation and scientific achievements. Development of specialized software and up-to-date databases for analyzing and storing data on genotype, gene expression levels, cytogenetic profiles, and other molecular characteristics.

This has altered the reasoning and method to science investigation, permitting for breakthroughs not only in biology, but also in biochemistry, biophysics, biotechnology, cell biology, and genetics. Molecular biology is particularly essential to understanding the structures, functions, and internal controls of individual cells, which can help researchers, find new medications, diagnose disorders, and better understand in cell physiology. Gene therapy covers some clinical research and medical therapies generated from genetics, whereas molecular healthcare refers to use of biology or genetic cell biology in healthcare. Biology is a branch of science that combines biochemistry and genetics. As these scientific fields developed over the twentieth century, it became evident that they were both attempting to understand the molecular mechanisms that underpin critical biological functions. Advances in biology are inextricably linked to the emergence of cutting-edge technology and their optimization. Many scientists have contributed to the understanding of molecular biology, and the sector's history is dependent on an understanding of those scientists and their experiments.

It all starts with the process of bacterial transformation in 1928, when Frederick Griffith noticed a phenomenon of transformation from one bacterium to another; he couldn't explain it at the time. Oswald Avery, Collin Maclyn, and Maclyn McCarty, three scientists demonstrated the full phenomena of bacterial transformation in late 1944. Molecular biology was established as a recognized branch of science two years after 1930. However, it was not until 1938 that Warren Weaver, the director of science at the Rockefeller Foundation, invented the term "molecular biology." The four nucleotides adenine, guanine, thymine, and cytosine are recognized to make up DNA's basic structure. Based on Maurice Wilkins' and Rosalind's chemical composition and X-ray crystallography it all starts with the phenomena of bacterial transformation in 1928, when Frederick Griffith noticed a phenomenon of change from one bacterium to another. Erwin Chargaff, an Austrian-born chemist, proposed the idea rule in 1950, stating that the numbers of adenine and thymine, as well as guanine and cytosine, were identical.

However, due to the limitations of chemical synthesis of DNA, the design of overlapping DNA fragments to form big molecules is time-consuming and requires verification of numerous criteria to assure that fragment synthesis is possible. OVERFRAG is a web-based tool that creates overlapping DNA fragments for Gap Repair and In-Fusion

assembly in yeast cells. The resulting fragments can be used for chemical synthesis and molecular assembly. Cloning DNA, designing transgenic antibodies, and synthetic biology applications.