



## One Notable Technique which has Revolutionized Field is the Polymerase Chain Reaction (Pcr), which was Developed in 1983

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### Description

Molecular biology is the branch of biology that seeks to understand the molecular basis of biological activity in and between cells, including molecular synthesis, modification, mechanisms, and interactions. The study of chemical and physical structure of biological macromolecules is known as molecular biology. Molecular biology was first described as an approach focused on the underpinnings of biological phenomena - uncovering the structures of biological molecules as well as their interactions, and how these interactions explain observations of classical biology. 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 has enabled scientists to learn about molecular processes PCR is a reaction which amplifies small quantities of DNA, and it is used in many applications across scientific disciplines, as will be discussed later. The central dogma of molecular biology describes the process in which DNA is transcribed into RNA, which is then translated into protein. Molecular biology also plays a critical role in the understanding of structures, functions, and internal controls within individual cells, all of which can be used to efficiently target new drugs, diagnose disease, and better understand cell physiology. Some clinical research and medical therapies arising from molecular biology are covered under gene therapy whereas the use of molecular biology or molecular cell biology in medicine is now referred to as molecular medicine.

### Modern molecular biology

Molecular biology sits at the intersection of biochemistry and genetics; as these scientific disciplines emerged and evolved in the 20th century, it became clear that they both sought to determine the molecular mechanisms which underlie vital cellular functions.

Advances in molecular biology have been closely related to the development of new technologies and their optimization. Molecular biology has been elucidated by the work of many scientists, and thus the history of the field depends on an understanding of these scientists and their experiments.

### History of Molecular Biology

It all begins with the phenomenon of transformation in the bacteria, in 1928, Frederick Griffith, observed a phenomenon of transformation from one bacterium to other [now known as genetic transformation]. At that time, he couldn't explain the phenomenon of transformation. Later in 1944, three scientists Oswald Avery, Colin Macleod and Maclyn McCarty, demonstrated the whole phenomenon of transformation in the bacteria. After, two years in 1930, molecular biology was established as an official branch of science. But the term "Molecular Biology" wasn't coined until 1938 and that was done by the scientist Warren Weaver, who was working as the director of Natural sciences at Rockefeller Foundation. "Chargaff's rule stated that DNA from any species of any organism should have a 1:1 stoichiometric ratio of purine and pyrimidines (i.e., A+G=T+C) and, more specifically, that the amount of guanine should be equal to cytosine and the amount of adenine should be equal to thymine. This pattern is found in both strands of the DNA". The field of genetics arose as an attempt to understand the molecular mechanisms of genetic inheritance and the structure of a gene. Gregor Mendel pioneered this work in 1866, when he first wrote the laws of genetic inheritance based on his studies of mating crosses in pea plants. One such law of genetic inheritance is the law of segregation, which states that diploid individuals with two alleles for a particular gene will pass one of these alleles to their offspring. Because of his critical work, the study of genetic inheritance is commonly referred to as Mendelian genetics.

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