



## Molecular Biology Services Section Home

### History

The foundations of molecular biology were laid in the mid-20th century with the discovery of the structure of DNA by James Watson and Francis Crick in 1953. This pivotal revelation established the foundation for understanding the genetic code and the mechanisms underlying inheritance. The field gained further momentum with the elucidation of the central dogma of molecular biology, which outlined the flow of genetic information from DNA to RNA to protein. This framework paved the way for groundbreaking research in genetics, genomics, and biotechnology.

### James Watson and Francis Crick

Their elucidation of the DNA double helix structure earned them the Nobel Prize and laid the foundation for modern genetics.

2.

### Richard Roberts and Phillip Sharp

Their discovery of split genes and RNA splicing transformed our understanding of gene expression.

4.

### Craig Venter

A driving force behind the Human Genome Project, Venter's work accelerated genomics research.

### Industrial Applications

1.

### Biotechnology

It drives the production of recombinant proteins, enzymes, and pharmaceuticals.

3.

### Gene Therapy

Molecular biology supports the development of treatments for genetic disorders.

5.

### **Cancer Research**

Molecular biology uncovers the genetic basis of cancer and guides targeted therapies.

7.

### **Proteomics**

It examines the roles and interactions of proteins within cellular processes.

9.

### **Vaccine Development**

Molecular biology accelerates the creation of vaccines against infectious diseases.

11.

### **Stem Cell Research**

Molecular techniques enable the study and manipulation of stem cells for regenerative medicine.

13.

### **Drug Discovery**

It identifies drug targets and screens for potential therapeutic compounds.

15.

### **Environmental Monitoring**

Molecular biology assesses microbial communities and pollution impact.

17.

### **Personalized Nutrition**

Molecular approaches tailor dietary recommendations based on genetic profiles.

19.

### **Cellular Signaling**

Molecular biology reveals the intricate signaling pathways governing cellular responses.