

Molecular Basis of Inheritance

Scientist	Contribution	Year
1) Friedrich Meischer	• extract substance from nucleus of owl cell → Responsible for heredity He called that substance → NUCLEIN	1869
2) Allman	• studied chemical nature of 'NUCLEIN' → Acidic ↳ Renamed → NUCLEIC ACID	
3) Chargaff	• perform chemical analysis of DNA. $A+G = T+C$ purine = pyrimidine $G \equiv C$ - via H-bond sugar = phosphate	
4) Wilkins & Franklin Maurice Rosalind	• Give X-ray diffraction data → DNA forms Helix	
5) James Watson & Francis Crick	• Proposed DNA Double Helical structure from X-ray data. # HALLMARK → base pairing position b/w 2 strands of poly nucleotide.	1953
6) Francis Crick	• Give central dogma → genetic information flow: — Genetically — DNA → RNA → Protein • In some viruses — • Reverse transcription → RNA to DNA	
7) Frederick Griffith	• He experiment on <i>Streptococcus bacteria</i> & mice. • He found that something is transferred from S strain to R strain. and he called this transforming principle .	1928
8) Oswald Avery, Macleod & McCarty	• After 5 years they experiment R & S strains with DNA, protein & RNA. • And called this transforming principle — DNA . • He also concluded DNA is hereditary material.	1933-1944
9) Alfred Hershey & Martha Chase	• After 8 years he gave unequivocal proof that DNA is a genetic material. work on bacteriophage & bacteria.	1952
10) Watson & Crick	• also gave DNA replication immediately after their model.	
11) Matthew Meselson & Franklin Stahl	• He proved that DNA replication is semi-conservative in nature. • Use prokaryote (<i>E. coli</i>) & non-radioactive heavy N15. • Proved on molecular level.	
12) Taylor & colleagues	• similar experiment (<i>Chlorella thymidide</i>). • Work on eukaryote (<i>GABA</i> pens). • DNA chromosomes replicate semi-conservatively	1958
13) George Gamow	• A physicist He suggested nucleotide in codon. 1 codon → 3 nucleotide codon is triplet.	
14) Har Gobind Khorana	• He use homopolymer & copolymer. CUC = leucine UCU → leucine . • Got Nobel Prize	
15) Nirenberg & Matthaei	• He use Homopolymer and form mRNA without DNA template. • He use serine ochra enzyme (DNA independent RNA pol) UUU → phenylalanine . • Got Nobel Prize	
16) Kimbaling	• Gave 3D structure (swivel L-shape) of T-RNA.	
17) Holley	• Gave 2D structure of T-RNA (cloverleaf structure)	
18) Francis Crick	• Gave mechanism to read code & link to amino acid.	
19) Francois Jacob (Geneticist) Jacques Monod (Biochemist)	• Gave first transcriptionally regulated system. • lac operon. • In prokaryotes.	1961
20) Human genome project (Work together all Scientist from world).	• Mega project. Cost $\begin{cases} 3 \times 10^9 \text{ bp} \\ \$3 \text{ per bp} \end{cases}$ } 9 billion . • Storage → 1 book → 1000 letter ↳ 1000 page ↳ Total book = 3300 book . • Total 13 years	1990 - 2003.
	• chromosome 1 disappear in May	2006.
21) Alec Jeffreys — UK.	• Father of DNA finger printing.	
22) Kashyap & Lalji — Hyderabad	• Gave DNA finger printing in India	