



# SNS COLLEGE OF TECHNOLOGY



(An Autonomous Institution)

COIMBATORE-35

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## UNIT III: GENETICS AND IMMUNE SYSTEM

TOPIC: **Nucleic acids as a genetic material**





# TOPIC OUTLINE





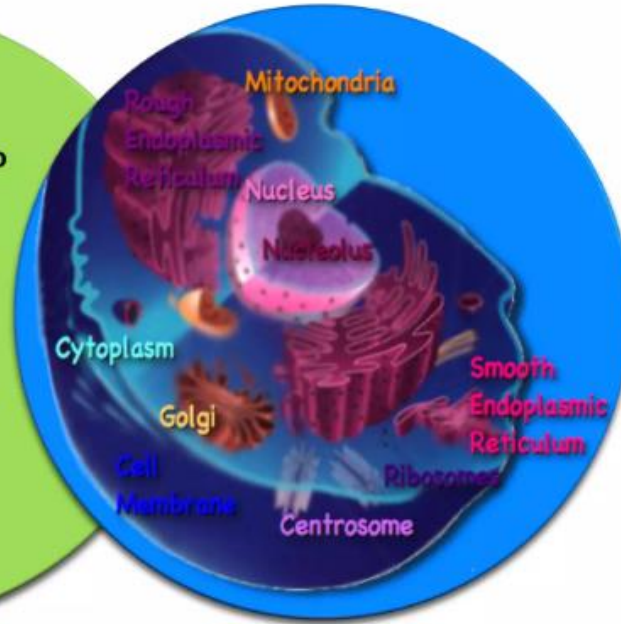
- The progeny of organism develops characters similar to that organism
- The resemblance of offspring to their parents depends on the precise transmission of principle component from one generation to the next
- That component is-

## The Genetic Material



# What is genetic material?

The genetic material of a cell or an organism refers to those materials found in the nucleus, mitochondria and cytoplasm, which play a fundamental role in determining the structure and nature of cell substances, and capable of self-propagating and variation.



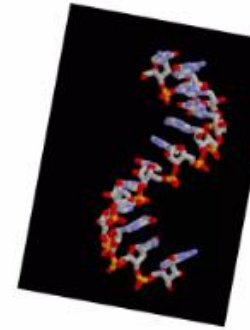


# What is genetic material?

**Protein, RNA** and **DNA** were thought as genetic material. But many experiments suggest DNA as genetic material rather than protein and RNA



**Protein**



**RNA**



**DNA**



# Four requirements for a genetic material

- Must **carry information**  
– Cracking the genetic code

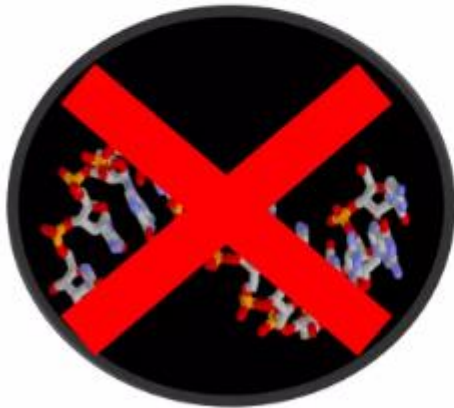
- Must self **replicate**  
– DNA replication

- Must allow for information to **change**  
– Mutation

- Must govern the **expression** of the phenotype  
– Gene function



# Identification of genetic material:



RNA



DNA



PROTEIN



# Identification of genetic material:

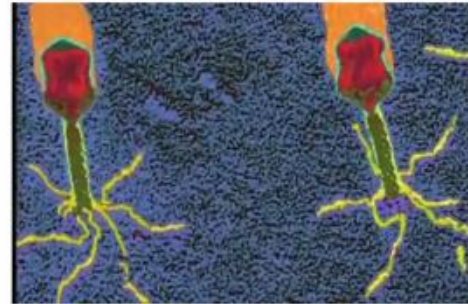
- The process of identification of genetic material began in **1928 with experiments of Griffith** and concluded in **1952 with the studies of Hershey and Chase.**
- Between these two experiments other three scientists, **Avery, Macloed and McCarty** were did an experiment to identify the genetic material.





# The Hershey-Chase Experiments

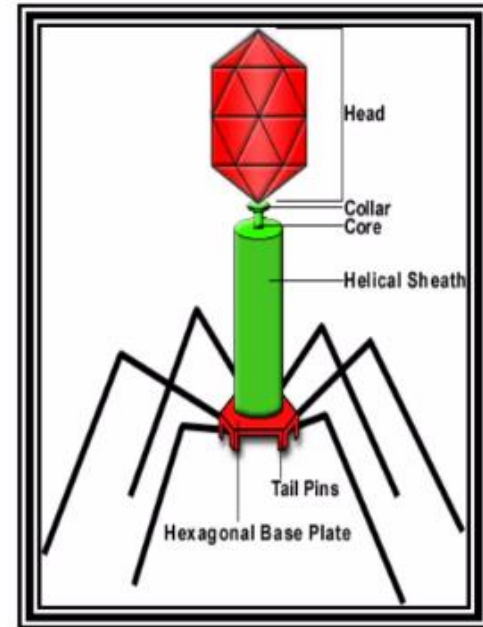
- 1952 **Alfred Hershey** and **Martha Chase**
- **New York** scientists
- Performed an experiment that settled the controversy
- **Proved that DNA carries the genetic material**





# The Hershey-Chase Experiments

- **Bacteriophage:** a virus that infects bacteria.
- When Bacteriophages infect bacterial cells they **produce more viruses**.
- The viruses are **released** when the bacterial cells rupture.





# RECAP....



# ...THANK YOU