

“Molecular Biology and Biotechnology”

B. Sc III Botany Sem VI

Section –II, Unit I

“Genetic Material”

“Griffith's Experiment”

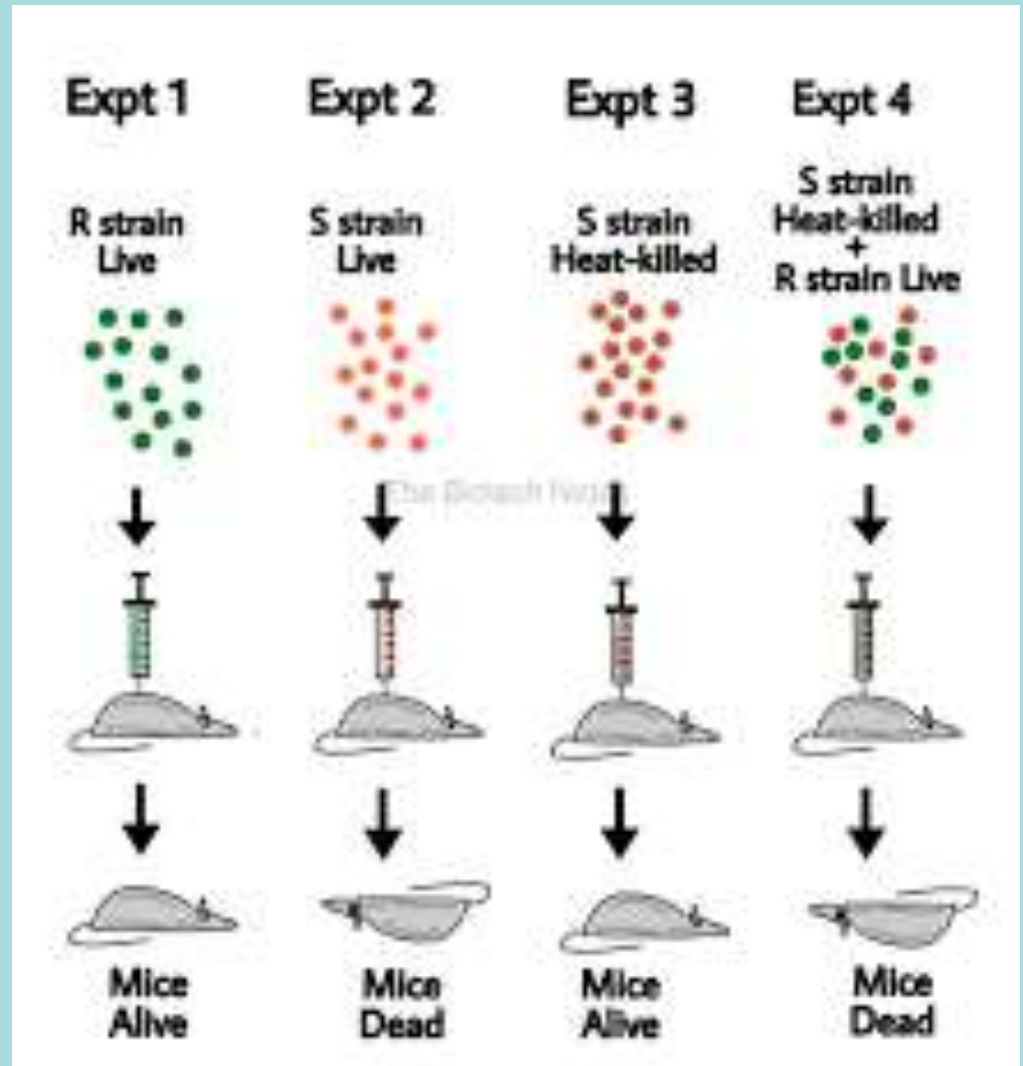
by Dr. A. R. Alvikar

DNA as a Genetic Material

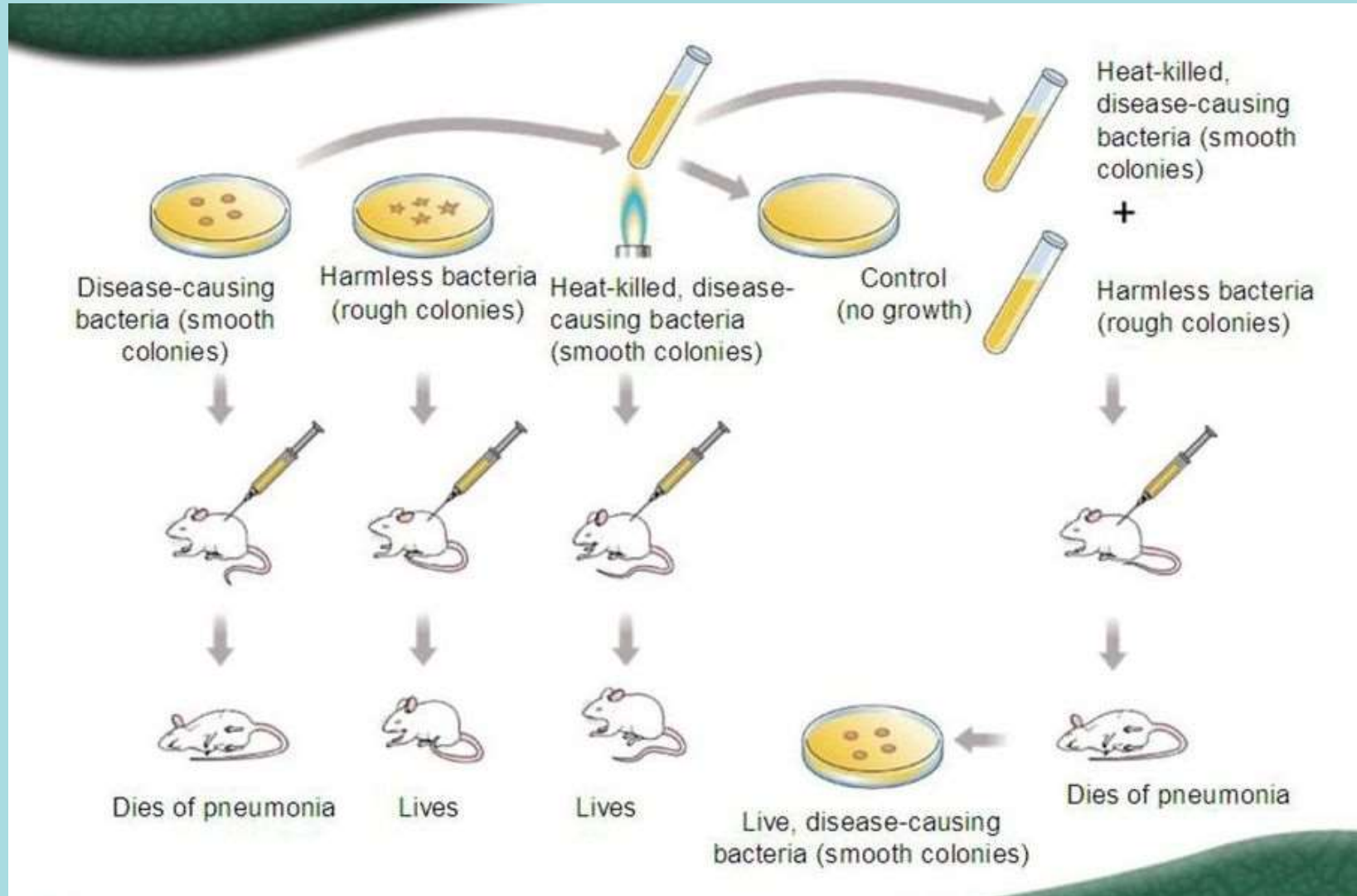
- The first series of experiments were performed by a **British physician Frederick Griffith in 1928.**
- Used bacterium- *Diplococcus pneumoniae* /*Streptococcus pneumoniae* which causes pneumonia in mammals.
- He used two types of strains
 1. 'S' type – Capsulated and Smooth walled
 2. 'R' type – Non-capsulated and Rough walled

Griffith Experiment

1. R type - **avirulent or non-pathogenic** - Mice Live
2. S type - **is virulent or pathogenic** - develop pneumonia and mice died.
3. Heat killed S type of bacteria - **mice remained healthy**.
4. **Mixture of** Heat killed S type of bacteria and living R type bacteria - **mice developed pneumonia and died**.



Griffith Experiment




Griffiths Experiment Conclusion


- Blood sample from dead mice was cultured, he obtained colonies of living S type.
- He concluded that living R type of bacteria picked up something from the surrounding medium that contains heat killed S type and got changed to S type.
- Therefore this change is due to the phenomenon mutation, which is called transformation.
- He proved that the **transforming principle is DNA.**

Oswald Avery, Collin Macleod and Macryn McCarty Experiment


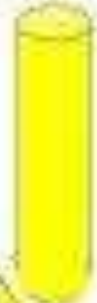













Avery, McCarty, and MacLeod Experiment



What were their conclusion?



Mice were given deadly bacteria with enzymes that destroyed ...

Carbohydrates	Lipids	Proteins	RNA	DNA
				
				
				

To see which ones could transform living R- type to S-type

Avery, Macleod and McCarty Experiment Conclusion

- Only those mixed with DNA were transformed into S bacteria.
- These experiments prove that the **transforming principle is DNA.**
- For this experiments they used a test tube assay instead of mice.