

GENETICS

- Genetic Material History
 - Must carry information, replicate accurately and be capable of change for evolution.
 - Originally thought to be proteins
 - 1866 Haeckel proposed nucleus contained the factors necessary for heredity.
 - 1930's genetic elements in nucleus. In chromosomes which contain both DNA and protein.
 - 1860's Miescher studies pus cells. To characterise protein substances. Discovered deoxyribonucleic acid in nuclei, thought it was a reservoir of phosphorous for cell energy needs. Though protein must be hereditary material
- 1928 Fred Griffith experiment
 - Studying streptococcus pneumonia in mice.
 - Two strains S which was virulent and smooth; killed people. R wasn't virulent, was rough and could easily be destroyed by immune system.
 - Several variants of each strain. S strain could mutate to become same variation of R strain but not a different variation of S strain.
 - Injected R strain into mice, mice survived, injected S strain into mice, mice died. Injected heat killed S strain mice survived

Strain	Result
Live R	Mice lived
Live S	Mice died
Heat killed S	Mice lived
Live R and heat killed S	Mice died

- Some heat stable component present in 3S transformed 2R into 2S. transmission was also inherited in new cells propagated on fresh plates.
- This is transforming principle
- 1944 Avery, MacLeod & McCarty experiment 2
 - Repeated Griffith experiment but fractionated the transforming principle in order to identify it. Heat killed S cells then treated them chemically to purify substance that transformed R cells to S cells.

Treatment	Cause	Addition	Result
N/A	N/A	Live R cells	Live S cells
RNase	RNA destroyed	Live R cells	Live S cells
Proteinase	Protein destroyed	Live R cells	Live S cells
DNase	DNA destroyed	Live R cells	Live R cells, no transformation.