

Isolating the Material of Heredity (Page 568 - 572)

The discovery of the molecular structure of DNA in 1953 by James Watson and Francis Crick was the end result of research done by a number of people....

Friedrich Meischer - 1869

Isolated a substance from the nuclei of WBC, he called “nuclein”...a “nucleic acid” because of an acidic molecular part. **Phoebus Levene** did further work on nucleic acids...

1. Isolated 2 types...

- have different sugars as part of their structures

One has a five carbon sugar molecule in it (ribose), Levene called it ribonucleic acid, or RNA. (1909)

One has the same five carbon sugar, with one less oxygen atom attached to it (deoxyribose), Levene called it deoxyribonucleic acid, or DNA. (1929)

2. Discovered they are chains of smaller individual parts (nucleotides) linked together

One nucleotide is made up of...

A five carbon sugar

A phosphate group (PO_4)

A nitrogen containing basic part (nitrogenous base)

The only such bases discovered are....

Adenine (A)

Guanine (G)

Cytosine (C)

Thymine (T)

Uracil (U) (found only in RNA)

Fred Griffith - 1928

*English medical officer...killed in WWII before completing the following famous work...
Oswald Avery, Colin MacLeod, Maclyn McCarty finished it*

Google image search..... griffith experiment,
describe....identify conclusions..

Streptococcal bacteria injected into
mice....the “transforming principle”.

Points to nucleic acids as the material of change and heredity, despite what Levene mistakenly concluded !

Hershey / Chase - 1952

Google image search..... Hershey / Chase experiment, describe...identify conclusions..

Radioactively labelled viruses...radioactive phosphorus tags showed up in the infected bacterial cells...proved nucleic acids were indeed the material of heredity.