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R E P L I C A T I O N :

Literally, replication means the process of duplication. In molecular biology, DNA replication is the primary stage of inheritance. Central dogma explains how the DNA makes its own copies through DNA replication which then codes for the RNA in transcription and further, RNA codes for the proteins by translation.

Let's go through Meselson and Stahl Experiment and DNA replication.

Meselson and Stahl Experiment

Meselson and Stahl Experiment was an experimental proof for semiconservative DNA replication. In 1958, Matthew Meselson and Franklin Stahl conducted an experiment on *E.coli* which divides in 20 minutes, to study the replication of DNA.

Draw the diagram of Semiconservative DNA Replication through Meselson and Stahl's Experiment

Experiment

^{15}N (heavy) and ^{14}N (normal) are two isotopes of nitrogen which can be distinguished based on their densities by centrifugation in cesium chloride (**CsCl**). Meselson and Stahl cultured E.coli in a medium constituting $^{15}NH_4Cl$ over many generations.

As a result, ^{15}N was integrated into the bacterial DNA. Later, they revised the $^{15}NH_4Cl$ medium to normal $^{14}NH_4Cl$. At a regular interval of time, they took the sample and checked for the density of DNA.

Observation

Sample no. 1 (after 20 minutes): The sample had bacterial DNA with an intermediate density. Sample no. 2 (after 40 minutes): The sample contained DNA with both intermediate and light densities in the same proportion.

Conclusion

Based on observations and experimental results, Meselson and Stahl concluded that DNA molecules can replicate semi-conservatively.

Investigation of semiconservative nature of replication of DNA or the copying of the cells DNA didn't end there. Followed by Meselson and Stahl experiment, Taylor and colleagues conducted another experiment on *Vicia faba* (fava beans) which again proved that replication of DNA is semiconservative.