The Meselson-Stahl Experiment

Note: Use "Copy screenshot" in the "Centrifugation results" area. Insert the exported screenshot in the marked space.

In the 1950s, scientists knew that DNA carries genetic information, but how it is copied was unclear. Three models were discussed: conservative, semiconservative and dispersive.

Meselson and Stahl labelled bacterial DNA with heavy nitrogen (15N) and then transferred the cells to light nitrogen (14N). Density-gradient centrifugation showed the positions of the DNA bands, allowing conclusions about the replication model.

Task 1: Replication models

For each model, briefly note how old and new DNA components are distributed after one replication.

Model	Characteristics of replication
conservative	
semiconservative	
dispersive	

Task 2: Run the simulation

Carry out the steps in order:

1. Drag the bacteria into the 15N medium.

2. Incubate for 20 minutes so the DNA becomes heavily labelled.

3. Transfer the sample to the centrifuge and observe the initial situation.

4. Transfer the sample to the 14N medium and repeat until you have four samples.

Insert screenshot of the centrifugation results here

Sample / generation	Position of the band(s)	Observation	Interpretation
Initial sample in 15N			
Gen 1 after transfer to 14N			
Gen 2 in 14N			
Gen 3 in 14N			

Task 3: Justify the model

Use your observations to justify which replication model is supported.