8.1 Identifying DNA as the Genetic Material

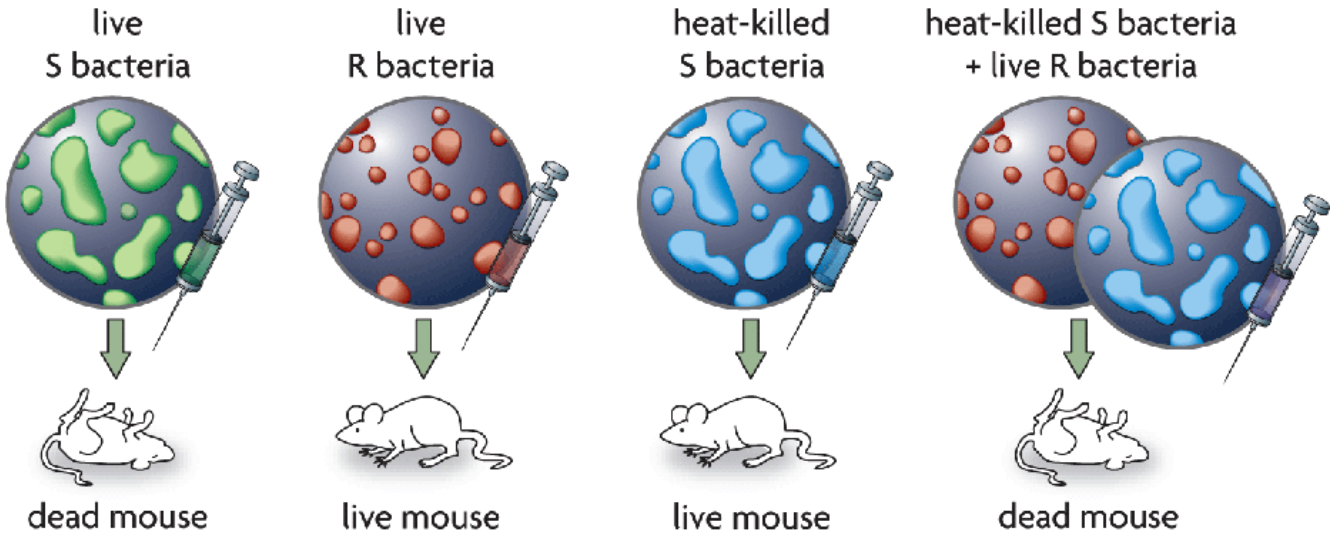
KEY CONCEPT

DNA was identified as the genetic material through a series of experiments.

8.1 Identifying DNA as the Genetic Material

Griffith finds a 'transforming principle.'

- Griffith experimented with the bacteria that cause pneumonia.
- He used two forms: the S form (deadly) and the R form (not deadly).
- A transforming material passed from dead S bacteria to live R bacteria, making them deadly.



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Avery identified DNA as the transforming principle.

- Avery isolated and purified Griffith's transforming principle.
- Avery performed three tests on the transforming principle.
  - Qualitative tests showed DNA was present.
  - Chemical tests showed the chemical makeup matched that of DNA.
  - Enzyme tests showed only DNA-degrading enzymes stopped transformation.

CHEMICAL ANALYSIS OF TRANSFORMING PRINCIPLE

	% Nitrogen (N)	% Phosphorus (P)	Ratio of N to P
Sample A	14.21	8.57	1.66
Sample B	15.93	9.09	1.75
Sample C	15.36	9.04	1.69
Sample D	13.40	8.45	1.58
Known value for DNA	15.32	9.05	1.69

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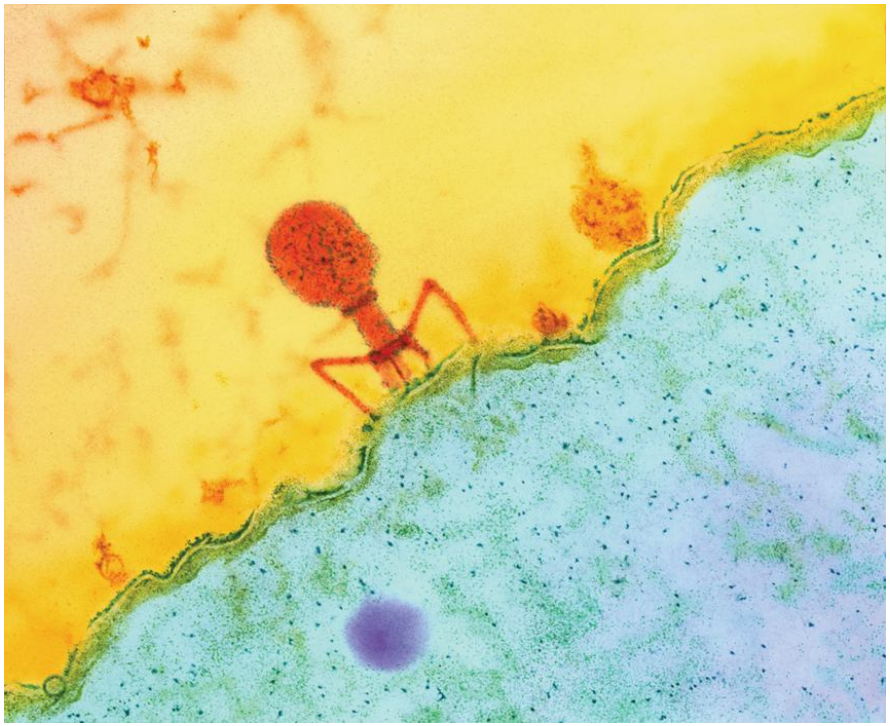
- **Hershey and Chase confirm that DNA is the genetic material.**
  - Hershey and Chase studied viruses that infect bacteria, or bacteriophages.
    - They tagged viral DNA with radioactive phosphorus.
    - They tagged viral proteins with radioactive sulfur.



  - Tagged DNA was found inside the bacteria; tagged proteins were not.