

# DNA and Its Role in Heredity

## 1. DNA: The Genetic Material

- A. DNA from one type of bacterium genetically transforms another
- B. The transforming principle is DNA
- C. Viral replication confirms that DNA is the genetic material

## 2. The Structure of DNA

- A. X-ray crystallography provided clues to DNA structure
- B. The chemical composition of DNA was known
- C. Watson and Crick described the double helix
- D. Four key features define DNA structure
- E. The double helical structure of DNA is essential to its function

## 3. DNA Replication

- A. Three models of DNA replication appeared possible
- B. DNA replication is semiconservative

## 4. The Mechanism of DNA Replication

- A. Helicases initiate DNA replication
- B. Most DNA polymerases need a primer
- C. DNA polymerase III extends the new DNA strands
- D. The lagging strand looks like a problem

## 5. DNA Proofreading and Repair

- A. Proofreading, mismatch repair, and excision repair
- B. DNA repair requires energy