

Activity 45: Nucleic Acids

Learning Objectives

Gain familiarity with the structure of DNA

Identify the 5' and 3' end of a nucleic acid and represent it with the one-letter base designation

Provide a complementary base sequence for a single strand of DNA

Estimated Completion Time 45 Minutes

Instructor Information

Introduces students to nucleic acid structure and base-pair complementarity.

ANSWERS TO QUESTIONS

- 5'CAT3'
 - DNA. It contains deoxyribose and the base thymine.
 - 3'GTA5'
- 3'TTAAGGCGATTGC5'
- Answers will vary. Most students will know that it is the genetic (hereditary) material in a cell. They will likely mention the structural characteristics in the table: It is an antiparallel, double-stranded, helical shape with hydrogen bonding between the bases in the area between the strands.

Activity 45: Skill Development

- A purine hydrogen bonds to a pyrimidine, making the distance between the complementary nucleic acid strands the same distance. Hydrogen bonding between the base pairs holds the strands together.
- 3'AAATTAGG5'
 - 3'CGGGCTA5'
 - 3'CCCCGGGG5'
 - 3'GCGCTATAT5'
- DNA has a net negative charge due to the negative charges on the phosphate groups.