**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**

1. a. 5'CAT3'

b. DNA. It contains deoxyribose and the base thymine.

c. 3'GTA5'

2. 3'TTAAGGCGATTGC5'

3. 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**

1. 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.

2. a. 3'AAATTAGG5' b. 3'CGGGCTA5'

c. 3'CCCCGGGG5' d. 3'GCGCTATAT5'

3. DNA has a net negative charge due to the negative charges on the phosphate groups.