

Study Guide 8.2: Structure of DNA

KEY CONCEPT

DNA structure is the same in all organisms.

VOCABULARY

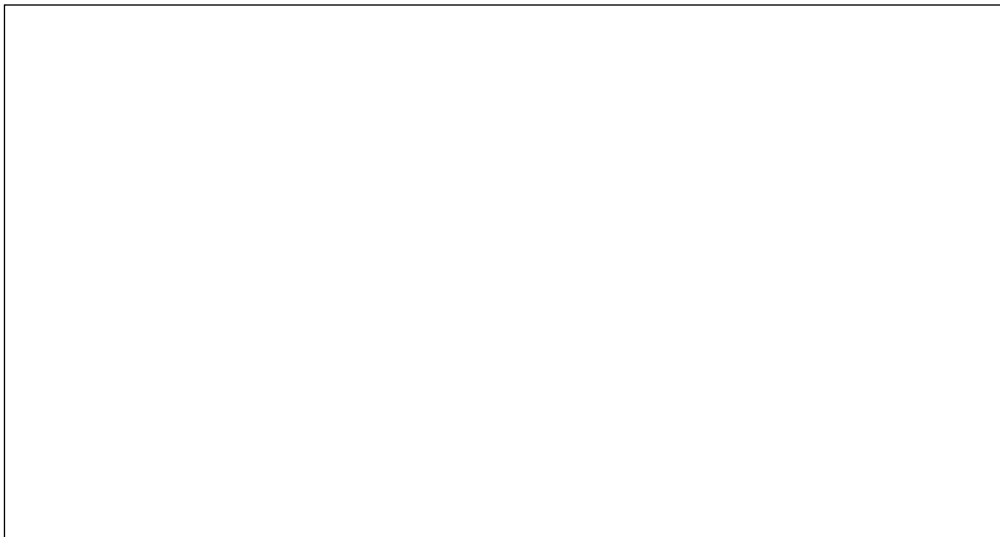
nucleotide

base pairing rules

double helix

MAIN IDEA: DNA is composed of four types of nucleotides.

In the space below, draw a nucleotide and label its three parts using words and arrows.



1. How many types of nucleotides are present in DNA?

2. Which parts are the same in all nucleotides? Which part is different?

MAIN IDEA: Watson and Crick developed an accurate model of DNA's three-dimensional structure.

3. What did Franklin's data reveal about the structure of DNA?

4. How did Watson and Crick determine the three-dimensional shape of DNA?

5. How does DNA base pairing result in a molecule that has a uniform width?

MAIN IDEA: Nucleotides always pair in the same way.

6. What nucleotide pairs with T? with C?

In the space below, draw a DNA double helix. Label the sugar-phosphate backbone, the nitrogen-containing bases, and the hydrogen bonds.



Vocabulary Check

7. Explain how the DNA double helix is similar to a spiral staircase.

8. How do the base pairing rules relate to Chargaff's rules?

SECTION QUIZ 8.2: Structure of DNA

Choose the letter of the best answer.

- _____ 1. The four types of nucleotides that make up DNA are named for their
- hydrogen bonds.
 - nitrogen-containing bases.
 - phosphate groups.
 - ring-shaped sugars.
- _____ 2. After examining the DNA of different organisms, which of the following did Erwin Chargaff conclude about the four bases?
- $A = T$ and $C = G$.
 - $A = C = G = T$.
 - $A = C$ and $G = T$.
 - $A + T = C + G$.
- _____ 3. Which of the following DNA sequences is complementary to the base sequence ACCGTAT?
- GTTACGC.
 - UCCGTAT.
 - TGGCATA.
 - CAATGCG.
- _____ 4. Combining the work of other scientists with their own research, Watson and Crick discovered that two strands of DNA join together to form a(n)
- nucleotide.
 - X in a circle.
 - double helix.
 - covalent bond.
- _____ 5. What holds base pairs together?
- hydrogen bonds.
 - sugar-phosphate backbones.
 - pairs of double-ringed nucleotides.
 - nitrogen-carbon bonds