



High School Science Virtual Learning

Applied Biological Science

DNA Structure

April 7, 2020



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Lesson: April 7, 2020

Objective/Learning Target:

Students will accurately be able to identify and understand the structure of DNA (deoxyribonucleic acid)

Let's Get Started:

1. What is the purpose of DNA inside a cell?
2. What kinds of information does a DNA molecule store?





Let's Get Started: **Answers**

1. Bell ringer 1 Answer: DNA provides the template to make proteins, DNA is the “instructions” on how a cell will function
2. Bell ringer 2 Answer: DNA holds the sequence of bases that tell the cell how to make proteins



Lesson Activity:

Directions: Watch the following video, DNA Crash Course (only need the first 6 minutes) and read the linked website article. After, answer the following questions to check your understanding of the structure of DNA.

Link(s): [DNA Crash Course Video](#)
[What is DNA Article](#)



Practice

You will use the information from the activities on slide 5 to answer the following questions.



Practice Questions

1. What 2 locations is DNA found in a cell?
2. What shape does a DNA molecule have?
3. What makes up the backbone of this structure?
4. What are the 4 bases that make up a DNA molecule?
5. What 3 structures make up a nucleotide?
6. Why is the order of the bases important?
7. Explain the base pair rules.
8. If one strand of DNA has a sequence of 5' ATG CAG TCT GAT CAT 3', what would its complementary strand be?
9. If a double stranded molecule of DNA was found to be 20% Adenine, what would be the percent composition of the other 3 bases? (hint:use base pair rules, total is 100%)



Answer Key

1. What 2 locations is DNA found in a cell? **Nucleus and Mitochondria**
2. What shape does a DNA molecule have? **Double Helix**
3. What makes up the backbone of this structure? **Alternating sugar and phosphate molecules**
4. What are the 4 bases that make up a DNA molecule? **Adenine, Guanine, Cytosine, Thymine**
5. What 3 structures make up a nucleotide? **Sugar, phosphate, base**
6. Why is the order of the bases important? **Sequence provides template for RNA and therefore protein structure to be made.**
7. Explain the base pair rules. **Adenine pairs with Thymine, Guanine Pairs with Cytosine**
8. If one strand of DNA has a sequence of 5' ATG CAG TCT GAT CAT 3', what would its complementary strand be?

3' TAG GTC AGA CTA GTA 5'

9. If a double stranded molecule of DNA was found to be 20% Adenine, what would be the percent composition of the other 3 bases? (hint:use base pair rules, total is 100%)

Adenine 20%, Thymine 20%, Guanine 30%, Cytosine 30%



More Practice

There are several more links that contain practice questions and videos on the next slide.



More Practice Questions

1. The following link contains more practice questions. You can choose your best answers, click “check your answers” and the website will tell you which questions you got correct or incorrect.

[Practice Questions](#)

This link contains [additional videos](#) about the structure of DNA, at the end of the videos there are more practice questions to try.



Additional Practice

[DNA Structure Worksheet](#)



Additional Practice Answer Key

1. Deoxyribonucleic Acid
2. Watson and Crick (and Rosalind Franklin)
3. Nucleotides
4. Sugar and Phosphate
5. Adenine, Guanine, Thymine, Cytosine
6. Double, Single
7. Adenine and Guanine
8. Cytosine and Thymine (and Uracil)
9. Adenine = Thymine, Guanine = Cytosine
10. Adenine = Thymine, Guanine = Cytosine
11. Hydrogen Bonds
12. X-ray Crystallography, Double Helix
13. Drawing should contain Pentose (5 sided) sugar, 1 phosphate group, and one base
14. TTAAGC GGC CAT AAT CTG CAA

Additional Practice Answer Key (continued)

15. Use the image at the right to complete the follow:

Circle a nucleotide.

Label the sugar and phosphate.

Label the bases that are not already labeled

