

Discovering DNA Structure

DNA, *DeoxyriboNucleic Acid*, contains the information for carrying out the activities of the cell. How this information is coded or passed from cell to cell was at one time unknown. To break the code, today you will do a paper lab to determine the structure of DNA and show how the genetic code is carried. Each member of your group has a molecule called a NUCLEOTIDE. DNA is made up of repeating units of nucleotides.

1. Color your nucleotide. Sugar =blue; Phosphate = red; Adenine = yellow; Thymine = orange; Guanine = purple; Cytosine = green
2. Cut out your nucleotide.
3. Look at your nucleotide and the nucleotides of the other members of your group. What are the THREE common parts of a nucleotide?
 - a.
 - b.
 - c.
4. What is the ONE part of a nucleotide that differs among the four DIFFERENT nucleotides in your group?
5. List the four different kinds of nitrogen bases.
 - a.
 - b.
 - c.
 - d.
6. A real DNA molecule consists of THOUSANDS of nucleotides paired together. What is the pairing arrangement of nitrogen bases? Look to see which bases fit together.

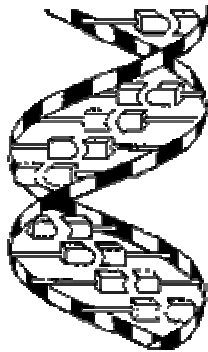
_____ pairs with _____ and _____ pairs with _____
7. Put your nucleotides together to form a double sided DNA strand. They fit together like a puzzle. Use tape to hold them together.
8. In the space below, explain WHERE one nucleotide molecules connect to the next nucleotide molecule.
9. Are there always going to be an EQUAL number of adenine and thymine nucleotides in a molecule? Why?
10. Are there always going to be an EQUAL number of guanine and cytosine molecules in a molecule of DNA? Why?

Name _____ Period _____ Due Date _____

11. Scientists abbreviate the nitrogen bases by using the first letter of each base. So,
A always binds to ____
G always binds to ____

12. In the space below, use the letters to show the sequence (order) of the bases in the DNA molecule that your group constructed. Begin at the top left side of your molecule. (Use P = phosphate, S = sugar, A = adenine, C = cytosine, G = guanine, T = thymine)

13. The structure of DNA is actually in a DOUBLE HELIX arrangement. DOUBLE HELIX means that the two long chains of nucleotides are arranged in a spiral like a twisted ladder.



14. The sides (or "uprights") of the ladder are made up of alternating _____
and _____ molecules.

15. The steps (or "rungs") of the ladder are made of _____ held together
by HYDROGEN BONDS.

16. Bring your molecule to the front of the room and join it to the molecules of the
other groups. We now have one large DNA molecule.

17. Write the complete class sequence for both sides of the DNA ladder.