DNA Structure Puzzle

Deoxyribonucleic acid or DNA is one of two nucleic acids composed of up to 1 billion nucleotides joined together. One nucleotide consists of a sugar (deoxyribose), a phosphate group (PO4), and a nitrogenous base. There are four different nitrogenous bases: adenine, cytosine, guanine, and thymine. A double helix is much like a spiral staircase. If it were to be flattened out, DNA would look like a ladder.

How, exactly, are DNA’s nucleotides put together? To solve this puzzle, cut out all of the puzzle pieces and solve the riddle given the clues below.

1. nitrogenous bases are in the middle
2. adenine binds only to thymine
3. bases always bind to sugars
4. each sugar attaches to two phosphates
5. phosphates only bind to sugars on the 5’ and 3’ ends
6. phosphates are negatively charged so they repel each other
7. guanine never binds to another guanine
8. the first base on the left is cytosine
9. adenine is the third base on the right
10. adenine is located below a cytosine
11. two bonds are needed to join adenine to thymine
12. three bonds are needed to join the other bases

Once you have created your model:

1. Label the 5’ and 3’ end of both strands
2. Label 1 phosphodiester bond
3. Label 1 set of hydrogen bonds
4. Label 1 nucleotide

Deoxyribose

Deoxyribose

Deoxyribose

Deoxyribose

Deoxyribose

Deoxyribose

Cytosine

Adenine

Guanine

Cytosine

Thymine

Guanine