

Nucleic Acids Web Assignment

Part A: Review of DNA Structure

Follow this hyperlink <http://science.halleyhosting.com/sci/index.htm> and select "IB Biology." Then, click on "4. Nucleic Acids." Under notes, select "Nucleic Acids." This will take you to a set of notes on DNA. Answer the following questions as you view the site. STOP at Slide 11.

1. *What are the functions of nucleic acids?*
2. *What is a nucleotide?*
3. *What are the three parts of a nucleotide?*
4. *Draw the structure of a nucleotide.*
5. *Contrast the structure of pyrimidines with that of purines.*
6. *Which nitrogenous bases are purines? Which are pyrimidines?*
7. *The nitrogen bases join together via which bond? Why?*
8. *Which bases are able to bond to each other?*
9. *What is the spiral staircase shape of DNA called? Why is this shape optimal?*

Part B: DNA from the Beginning

Follow this <http://www.dnafb.org/15/> and select "Animation." Go through the animation, clicking the arrows at the bottom right of the animation to continue. Answer the following questions:

1. *What did Miescher contribute to the discovery of DNA? When was this discovery made?*
2. *Draw a deoxyribose sugar, numbering the carbon atoms.*
3. *What do 5' and 3' mean?*

On the right hand side of the page, click for page 19: the DNA molecule is shaped like a twisted ladder. Click the link at the top of the page for the animation. Go through it once, and then repeat, this time answering the following questions. DO NOT RUSH THROUGH THIS PART!! It is COMPLEX, but important.

1. *What type of bonds are there between the nucleotide bases?*
2. *What type of bond is there between the nucleotide backbone? Why is this different from the bonds between bases?*
3. *How was the width of DNA (known from the x-ray picture) such a clue to its structure?*
4. *What did constant diameter of the helix imply?*
5. *What does "antiparallel" mean?*
6. *What does complementary base pairing mean?*