Name _____ Block _____ Date _____

DNAi: History of DNA

Click on "early 50's" to begin your journey. Click on the animated icon to the left of Watson and Crick.

Watson and Crick and the Double Helix: Part 1

What year was the first model of DNA accurately published? _____

Who created the first model of DNA? _____

What is the function of DNA?_____

DNA is made up of building blocks called _____ which are made up of a

_____ linked to a _____.

The Four Nitrogenous Bases:

_____, _____,

_____, _____

Draw 1 nucleotide with a nitrogenous base of your choice.

Skip forward to Erwin Chargaff to complete this next section.

Chargaff's Ratios

Erwin Chargaff isolated DNA from different organisms and measured the levels of each nitrogenous base:

DNA SOURCE	ADENINE	THYMINE	GUANINE	CYTOSINE
Calf Thymus	1.7	1.6	1.2	1.0
Beef Spleen	1.6	1.5	1.3	1.0
Yeast	1.8	1.9	1.0	1.0
Tubercle Bacillus	1.1	1.0	2.6	2.4

What did he notice about the levels of **Adenine** and **Thymine**?

_____

What did he notice about the levels of **Guanine** and **Cytosine**?

_____

This told Watson and Crick that in the DNA molecule, the amount of adenine (A) must equal the amount of _____, and the amount of cytosine (C) must equal the amount of _____.

DNA's X-ray Diffraction Pattern

What is the name of the technique used to observe the DNA molecule? _____

How does it work?

_____

_____

What is the name of the scientist who famously made Photo 51?_____

Franklin concentrated on the X-ray data from this form of DNA and was able to calculate the basic dimensions of the _____ _____. This information was used to eventually solve the 3-dimensional structure of DNA.

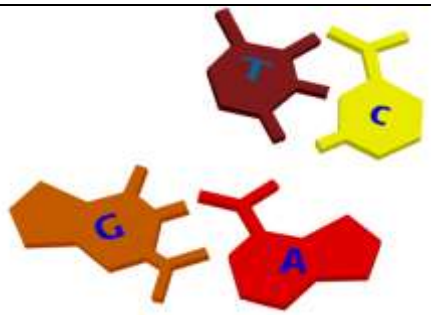
Make a sketch of Photo 51

The X-ray diffraction pattern in Photo 51 showed that DNA should be a _____ helix with the _____ groups on the outside and the _____ on the inside.

Skip the information on Linus Pauling's triple helix model

Nucleotide pairs and form weak bonds called: _____ _____

Regroup the nitrogenous bases to their correct pairs.



DNA is like a twisted ladder where the _____ and _____ are the rails and the _____ _____ are the rungs. The rails run in _____ orientation to each other. The nucleotide rungs are _____ to each other. Wherever there is an **A** on one strand, there is a _____ in the same position on the _____ strand. Similarly, wherever there is a _____ on one strand, there is a **C** in the same _____ on the other strand.

Sketch the DNA molecule. Label the sugar-phosphate rails and the complimentary nitrogenous base rungs.