CONCEPT: DISCOVERING THE STRUCTURE OF DNA

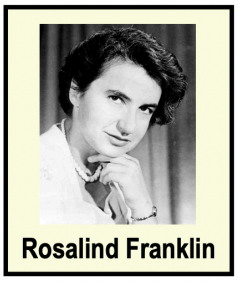
●In the early 1950's, *Rosalind Franklin* used _____-Ray diffraction on DNA to capture an important photo (Photo 51).

●In 1953, *James Watson* & *Francis Crick* used Franklin's photo to help them describe the structure of _____.

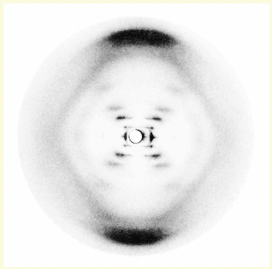
□ They described DNA as a _____*-helix* with _____ *anti-parallel* strands of nucleotides.

□ **Watson & Crick *Base-Pairing***: nucleotides on opposite strands *pair* via _____ *bonds* (A–T, C–G).

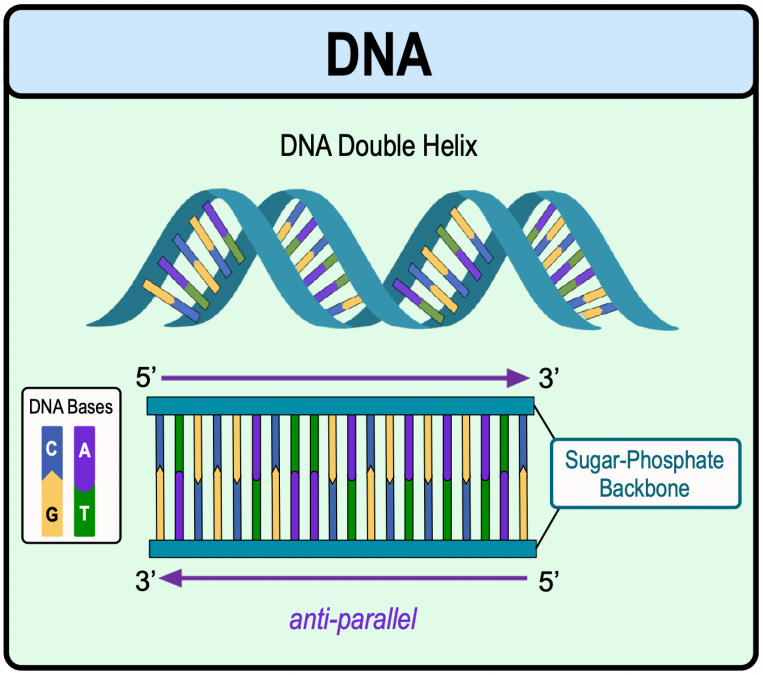
EXAMPLE: X-Ray Diffraction of DNA and Watson & Crick's DNA Structure.



Rosalind Franklin



Franklin's Photo 51
Showing X-ray diffraction pattern of DNA



James Watson

Francis Crick

PRACTICE: The scientist/s that was/were given credit for first determining the structure of DNA is/are:

a) Hershey and Chase.
b) Watson and Crick.
c) Chargaff.
d) Griffith.
e) Hershey and Crick.
f) Watson and Chase.

PRACTICE: The scientist/s that used x-ray diffraction to help reveal the structure of DNA is/are:

a) Watson and Crick.
b) Hershey and Chase.
c) Avery and Macleod.
d) Chargaff.
e) Franklin.

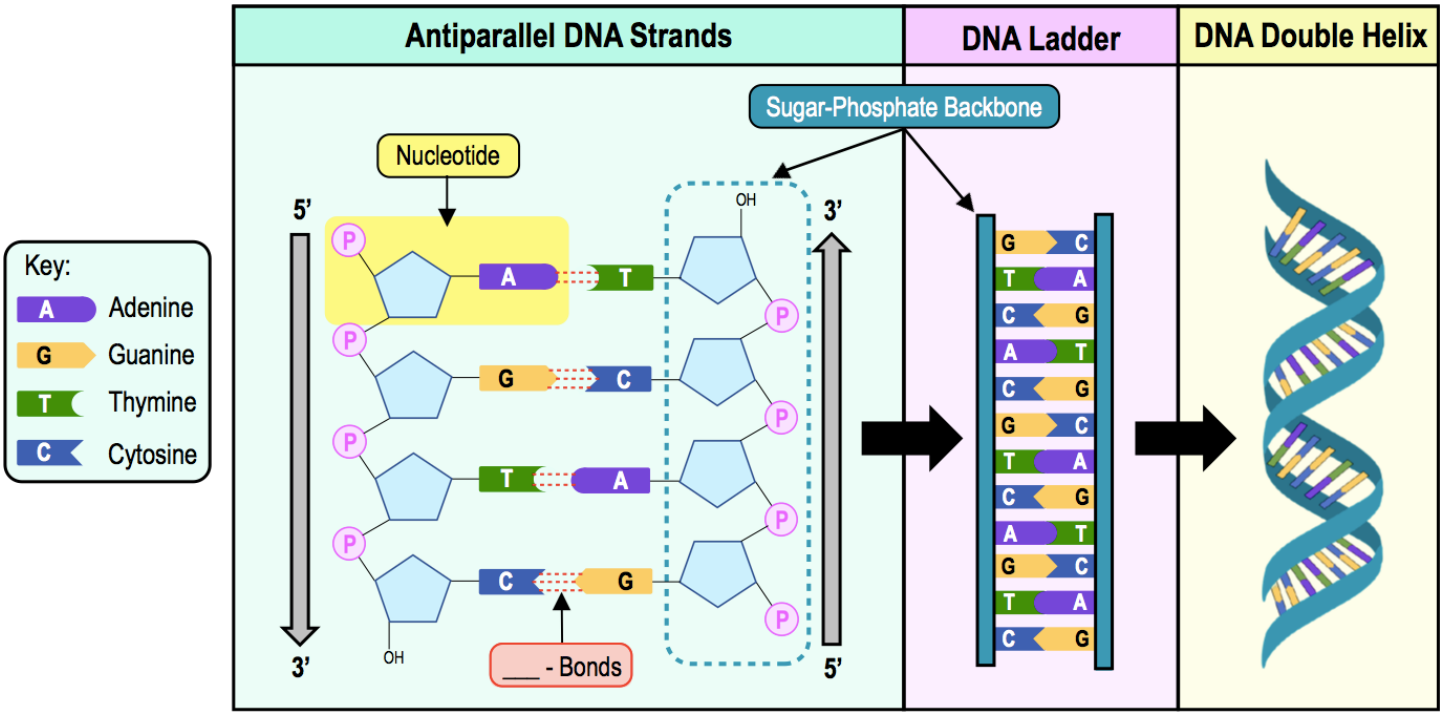
CONCEPT: DISCOVERING THE STRUCTURE OF DNA

Detailed DNA Structure

●Recall: DNA consists of two strands of nucleotide monomers repetitively linked together.

□ At the _____' end of each strand is a free _____ group.

□ At the _____' end of each strand is a free _____ group (-OH).



PRACTICE: In the polymerization of DNA, a phosphodiester bond is formed between a phosphate group of the nucleotide being added and which of the following atoms or molecules of the last nucleotide in the DNA strand?

a) The 5' phosphate group.
b) C6.
c) The 3' OH.
d) A nitrogen from the nitrogen-containing base.

PRACTICE: Within a double-stranded DNA molecule, adenine (A) forms hydrogen bonds with thymine (T), and cytosine (C) forms hydrogen bonds with guanine (G). What is the significance of the structural arrangement?

a) It allows variable width of the DNA double helix.
b) It permits complementary base pairing.
c) It determines the tertiary structure of the DNA molecule.
d) It determines the type of protein produced from the DNA.