CONCEPT: NUCLEIC ACIDS

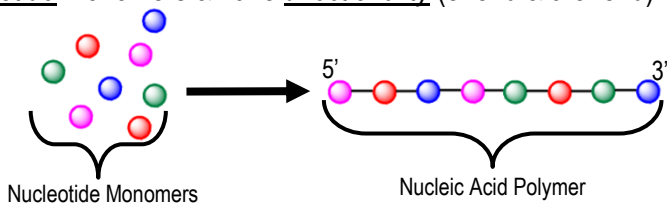
●*Nucleic acids* are one of the four major biological macromolecules that compose all cells.

●One of the major functions of nucleic acids is to *store/encode hereditary* information.

□ _____, _____, & _____ are examples of nucleic acids.

●Nucleic acids are polymers of *nucleotide* monomers & have *directionality* (**5'** end & a **3'** end).

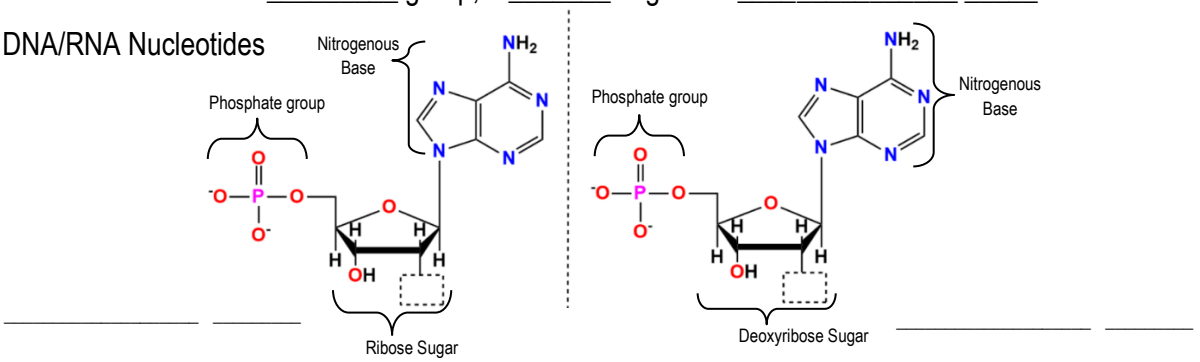
EXAMPLE:



The Nucleotide

●*Nucleotide* monomer consists of at least one _____ group, a _____ sugar & a _____ _____.

EXAMPLE: Comparing DNA/RNA Nucleotides



_____ _____ _____ _____

Nitrogenous Bases & Base-Pairing

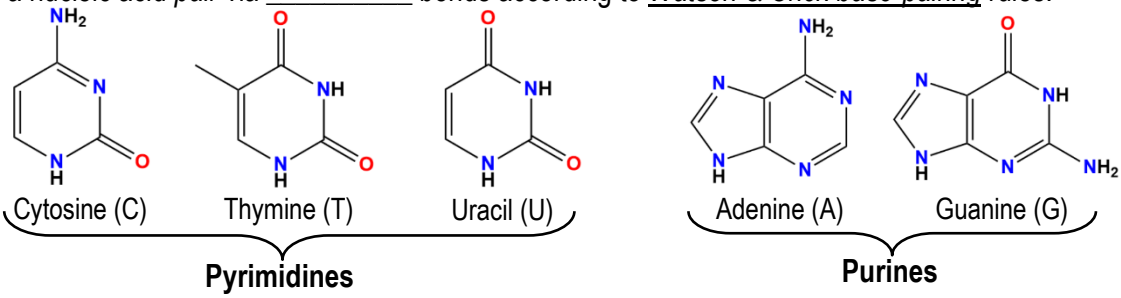
●DNA & RNA differ in several ways, including the nucleotides they consist of.

●_____ different nitrogenous bases are grouped as *pyrimidines* or *purines*.

●The nitrogenous bases of a nucleic acid *pair* via _____ bonds according to *Watson & Crick base-pairing* rules.

EXAMPLE:

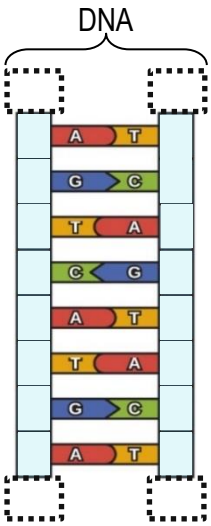
Pie



Base-Pairing

A ····· T

G ····· C



Strands Oriented in Opposite Directions:

_____-_____

Comparing DNA & RNA

	DNA	vs. RNA
Strands	Usually Double-Stranded	Usually _____-Stranded
Usual Structure/Shape	_____-Helix	Varies greatly
Pentose Sugar	_____ (Lacks Oxygen)	Ribose
Nitrogenous Bases	A, T, C, G	A, ___, C, G (Uses U's instead of T's)
Function	-Encode Hereditary Info	-Encode Hereditary Info -Catalytic function: Ribozymes
Directionality of Strand	5' → 3' (_____ -_____ Strands)	
# of Nucleotides in a Typical Molecule	_____ (Depends on Organism)	Hundreds to Thousands

CONCEPT: NUCLEIC ACIDS

PRACTICE: A) What is the assumed directionality of the nucleotide sequence below? Label the ends of the molecule.

A C G T C T A A A C G G C T A

B) Is the sequence above from a DNA or RNA molecule? How do you know?

C) Write the complementary sequence to the strand below (include the directionality).

A C G T C T A A A C G G C T A

PRACTICE: Which of the following nitrogenous bases is a purine?

a) Cytosine
b) Uracil
c) Thymine
d) Guanine