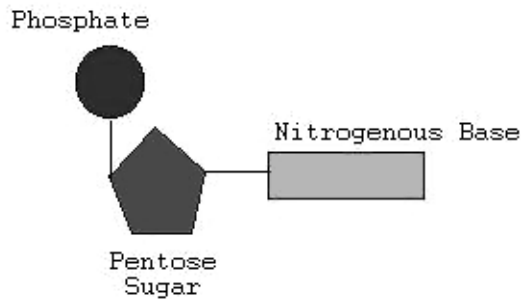


Nucleic Acids

* organic molecules

*serve as the blueprint for proteins and, through the action of proteins, for all cellular activity.

- Two types of nucleic acids.
 - *Deoxyribonucleic acid (DNA)*
 - *Ribonucleic acid (RNA)*
- Both DNA and RNA are composed of small units called *nucleotides*. The nucleotides that compose nucleic acids have three parts:
 - A *nitrogenous base*
 - ◆ Cytosine (C)
 - ◆ Guanine (G)
 - ◆ Adenine (A)
 - ◆ Thymine (T) (DNA only)
 - ◆ Uracil (U) (RNA only)
 - A simple (pentose) *sugar*
 - ◆ Deoxyribose (DNA only)
 - ◆ Ribose (RNA only)
 - A *phosphate group*



The basic structure of the DNA and RNA is different.

- DNA
 - *two single chains which spiral around an imaginary axis to form a double helix
 - *nitrogenous bases from each strand of DNA chemically bonded through the axis of the helix.
 - *each nitrogenous base can bond to only one type of base. Bases that bond are called *complementary bases*.
 - * Guanine (G) will only bond with Cytosine (C).
 - *Thymine (T) will only bond with Adenine (A).
 - When the nitrogenous bases of RNA chemically bond to a strand of DNA, each RNA base can bond with only one type of DNA base. Bases that bond are called *complementary bases*.
 - ◆ Guanine (G) will only bond with Cytosine (C).
 - ◆ Uracil (U) will only bond with Adenine (A).
- RNA
 - *a single chain of nucleotides with nitrogenous bases **exposed** along the side.

Comparing DNA & RNA

	DNA	RNA
Type of base composing nucleotides	Cytosine (C) Adenine (A) Guanine	Cytosine(C) Adenine (A) Guanine (G)

	(G) Thymine(T)	Uracil (U)
Type of sugar composing nucleotides	deoxyribose	ribose
Molecule structure and shape	Double helix	Single chain