Lab -1-

Basis of Genetics

1-The molecular basis of genetics is deoxyribonucleic acid (DNA).

2-DNA is composed of deoxyribose (sugar molecule), a phosphate group, and a nitrogenous base (amine group).

3- There are four types of bases: adenine (A), cytosine (C), guanine (G), and thymine (T).

4-The phosphates make phosphodiester bonds with the sugars to make long phosphate-sugar backbones.

5- Bases specifically pair together (T&A, C&G) between two backbones. The bases, phosphates, and sugars together make a nucleotide that connects to make long chains of DNA.

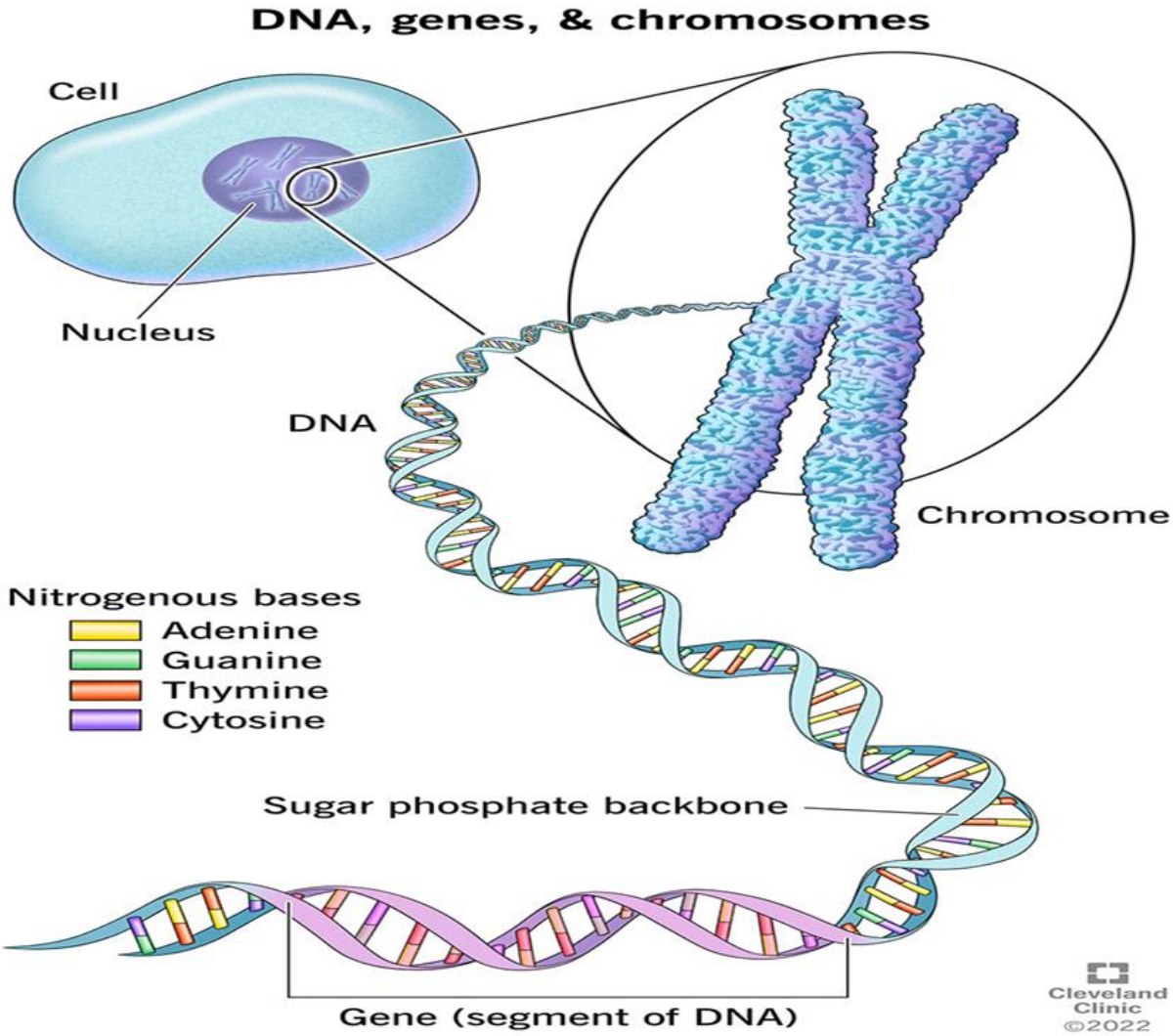
6- These chains coil into a double a-helix structure and wrap around proteins called Histones which provide the structural support.

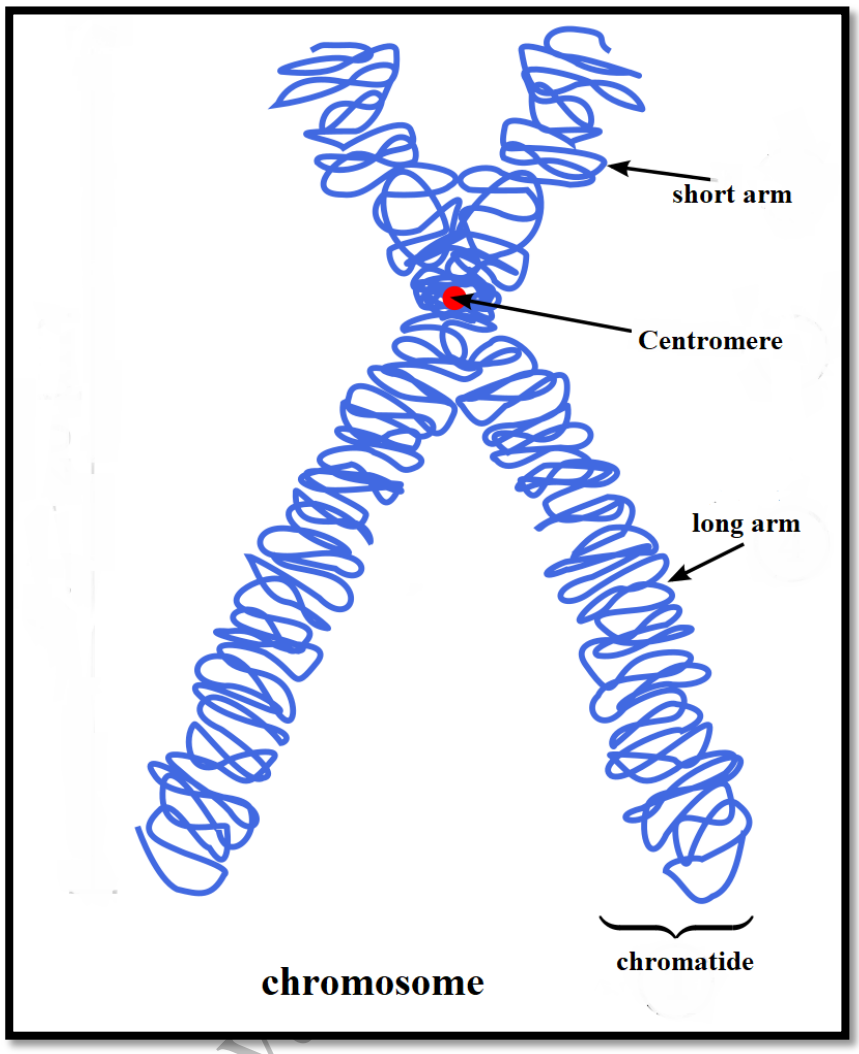
7-DNA wrapped around these histones are called **chromosomes.**

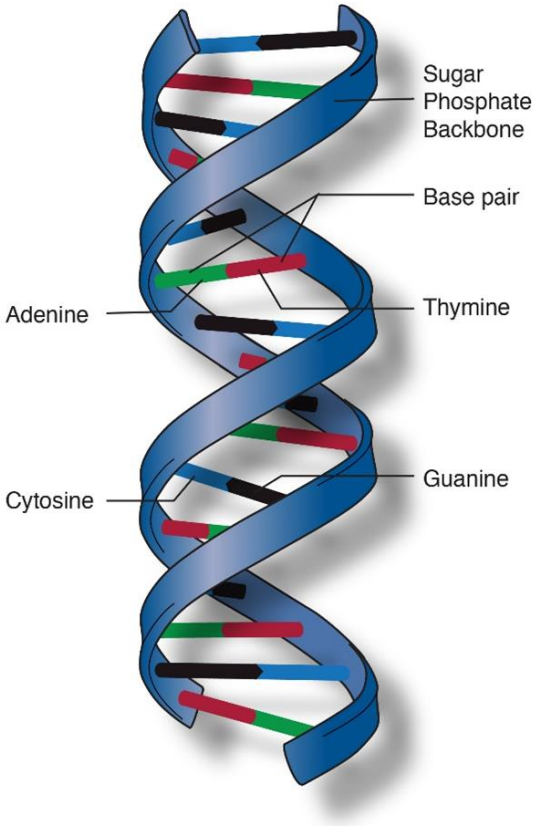
8-Viruses sometimes use the similar molecule RNA instead of DNA as their genetic material.

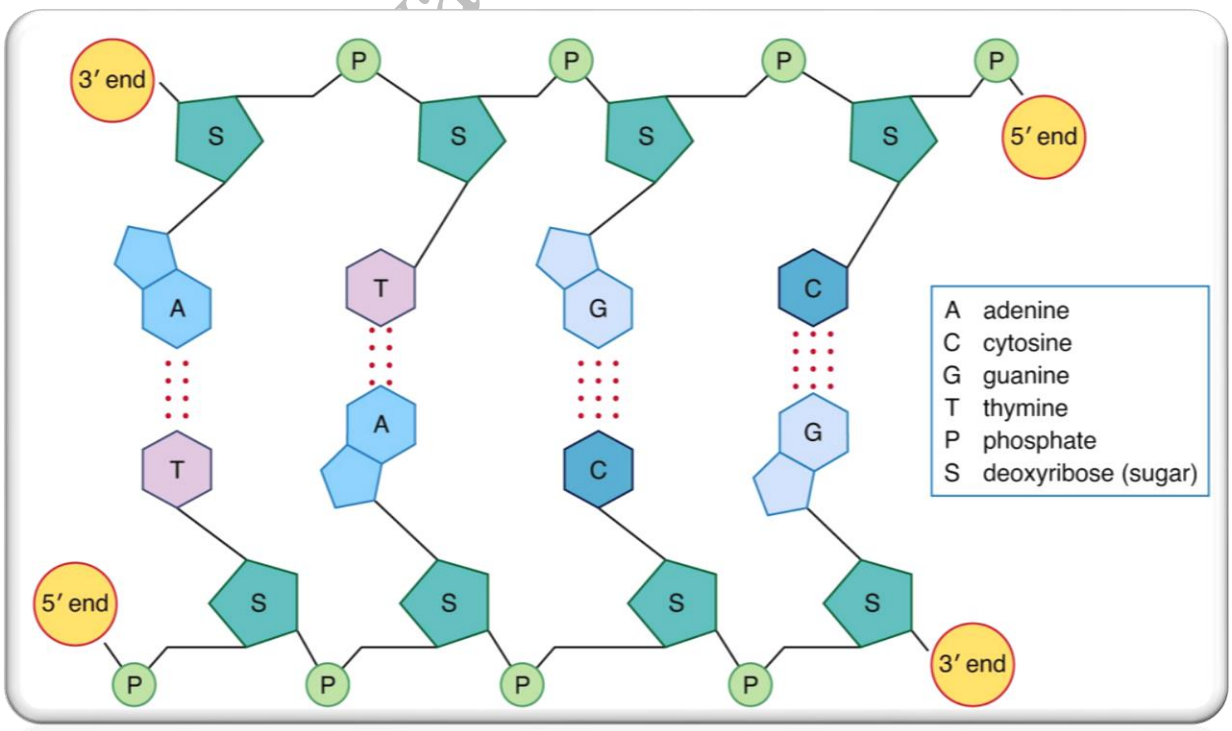
9-in Eukaryotic (plant – animal – fungi) DNA is most often found in the nucleus of cells, but in prokaryotic (bacteria) DNA is found in the cytoplasm .

but of nonchromosomal DNA found outside of the nucleus. In plants, these are often found in the chloroplasts and in other organisms, in the mitochondria.




short arm
Centromere
long arm
chromatide
chromosome


Sugar
Phosphate
Backbone
Base pair
Adenine
Thymine
Cytosine
Guanine


3′ end
5′ end
5′ end
3′ end
P
S
A
T
T
A
G
C
C
G
A adenine
C cytosine
G guanine
T thymine
P phosphate
S deoxyribose (sugar)