

Nucleic Acids

Biomolecule of *heredity* proteom - whole protein in all living things

Nitrogenous Base
Sugar Moiety
Phosphate

STRUCTURES

Nitrogenous Base Sugar Moiety

Pyrimidine 2-Deoxyribose

Cytosine Ribose

Uracil

Thymine

Purine

Adenine

Guanine

FORMS OF DNA

B-DNA A-DNA Z-DNA

10 bp 11 bp 12 bp

Right handed Right handed Left handed

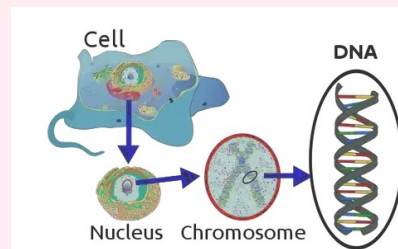
major & minor groove alternating G-C sequence in alcohol or high salt solution

Anti parallel

Chargaff's rule

-for double stranded, %A = %T and %G = %C

DNA Location



Structure of DNA

DNA is long polymer of nucleotides

Phosphodiester linkage between 3' and 5'

Hbond of nitrogenous base

Anti-Parallel

DNA ORGANIZATION

Nucleosome -Fundamental Unit
-(+) Histone and (-) DNA

Histone -present in quantities that their total mass in chromatin
-high proportion of positively charged AA

NUCLEOSOMES : BEADS ON A STRING

Arrangement

Nucleosome -basic structural unit of chromatin

Chromatin Fiber -coiled and condensed to form chromosomes

Loops -chromatin fiber folded into loops

Chromosome -H2A, H2B, H3,H4

BASE PAIRING

A= T Apple in Tree

C = G Car in Garage

A- Adenine
T- Thymine
C- Cytosine
G- Guanine

Bases of DNA and RNA

DNA RNA

Adenine , Thymine Adenine , Uracil

Cytosine , Guanine Guanine , Cytosine

This is **Complementary Bases**

A-T has 2 Hbonds

C-G has 3 Hbonds

TYPES OF RNA

mRNA -*messenger RNA*
-premature, code for proteins
-blueprint

rRNA -*ribosomal RNA*
-most abundant , basic structure of ribosome

tRNA -*transfer RNAs*
-adaptor between mRNA and AA

snRNA -*small nuclear RNA*
-splicing of pre-mRNA

snoRNA -*small nucleolar RNA*
-modify rRNA

other noncoding RNA -e.g. telomere synthesis
-X chromosome inactivation
-transport of proteins into ER