## ATP

ATP serves as biological source of entrgy in the cell. ATP is required as a source of entrgy in several:

glycolysis,

cholesterol synthesis, protein synthesis,

gluconeogenesis, etc.

 physiologic functions such as muscle contraction, nerve impulse transmission, etc.

## AMP AMP is the component of measy coenzymes such as NAD+, NAPP, FADPedenzyme A, etc. These coenzymes are essential for the metabolism of carbohydrate, lipid and

protein

Synthetic Analogs Of Nucleotides /Antimetabolites

- Chemically synthesized applogues of purines and
   pyrimidines, delt nucleosed and their nucleotides have
   therapeutic applications in medicine.
- An analogue is prepared either by altering the heterocyclic ring or sugar moiety.
- These are used chemotherapeutically to control cancer or infections.

- The hydrophilic deoxyribose and phosphate groups of backbone of each chain are on the outside of the double helix, whereas the hydrophobic full ine and pyrimidine bases of both strands are stacked in the double helix.
- The overall structure resembles a twisted ladder.
- The spatial relationship between the two strands in the helix creates a major (wide) groove and a minor (narrow) groove
- These grooves provide access for the binding of regulatory proteins along the DNA chain.

• The bases of one strand of DNA are paired with bases of

the second strand so that A (Adentifie) is always paired with T (Thypine) and Googuanine) is always paired with C (Cytosine).

- Therefore, one polynucleotide chain of the DNA double helix is always the complement of the other.
- The base pairs are held together by hydrogen bonds.

• In all cellular DNAs, regardless of the species, the number

of adenosine residues is equal to the number of thymidine residues (A = T) and the number of guanosine residues is equalente number of cytidine residues (G = C).

 From these relationships it follows that the sum of the purine residues equals the sum of the pyrimidine residues;

that is, A + G = T + C.

- The nucleosomes are connected by small DNA segments of 50 – 60 base pairs called as linker DNA.





In eukaryotes mRNAs have some unique

charac- teris- tics, e.g. the 5' end of mRNA iscapped" by a 7-methyl-guanosipster phosphate. preview from 53 of 60 preview page 53 of 60

 The cap is involved in the recognition of mRNA in protein biosynthesis and it helps to stabilize the mRNA

by preventing attack of 5'-exonucleases.

## Function of mRNA

- > mRNAs serve as template for coolern biosynthesis and transfer genetic information from DNA to protein synthesizing machinery.
- If the mRNA codes for only one peptide, the mRNA is monocistronic. If it codes for two or more different polypeptides, the mRNA is polycistronic.
- > In eukaryotes most mRNA are monocistronic

- The acceptor arm consists of a base paired stem that terminates in the sequence CCA and the 3' end. This is the attachment site for the amino acid.
  The Niew 62 of 60 for the presence of the base dihydrouridine (D).
- The anticodon arm contains the anticodon that base pairs with the codon on mRNA. Anticodon has nucleo- tide sequence complementary to the codon of mRNA and is responsible for the specificity of the tRNA.