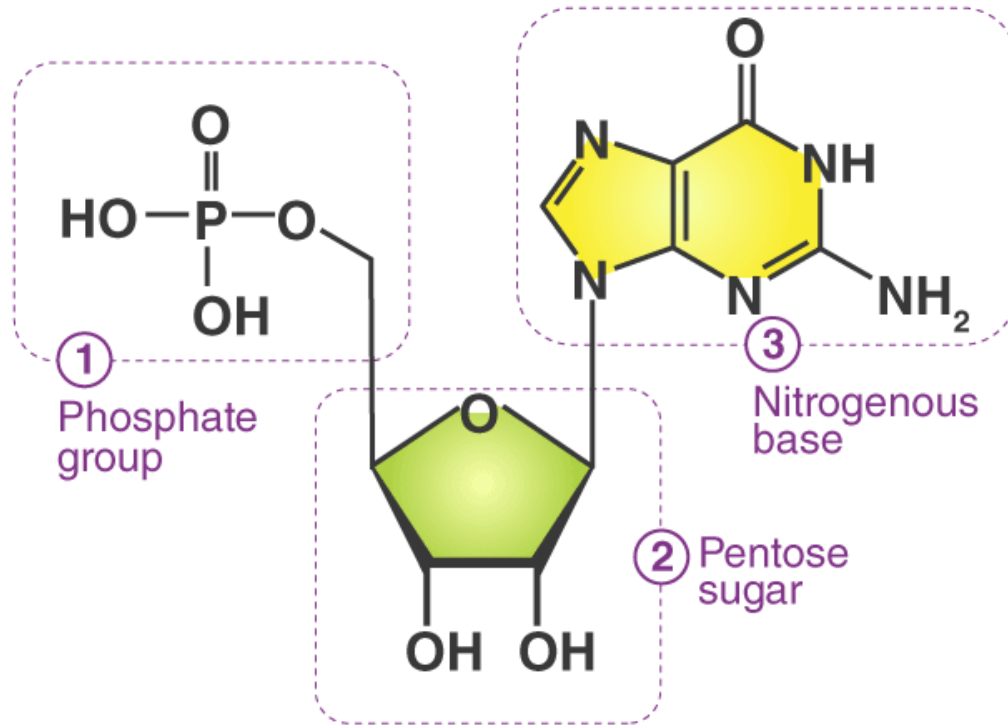
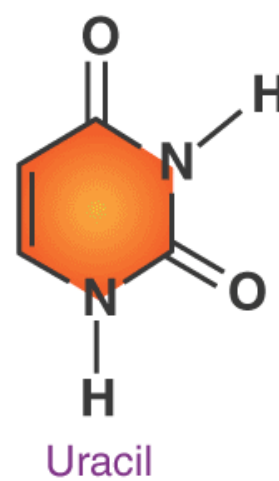
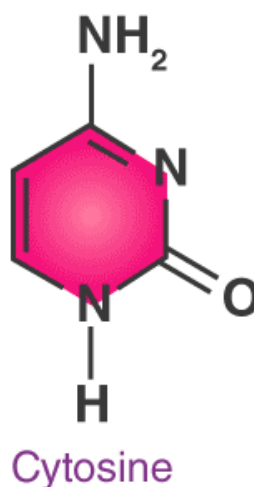
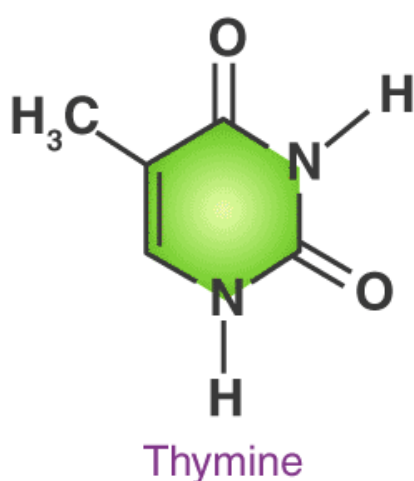
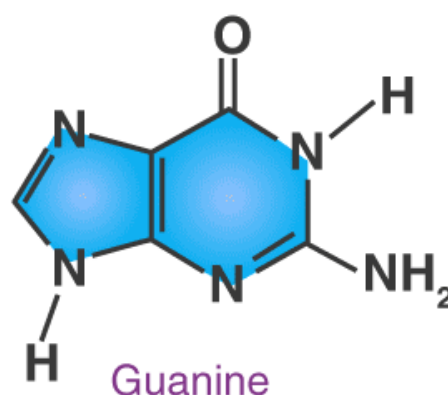
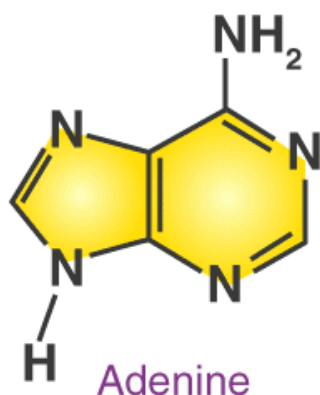


NUCLEOTIDE



NITROGENOUS BASES



1. Nitrogenous Base: They comprise pyrimidine or purine base. DNA contains adenine (A), guanine (G), cytosine (C) and thymine (T) whereas RNA contains adenine, guanine, cytosine and uracil (U).

. **Sugar:** A nucleotide comprises a pentose sugar. DNA (Deoxyribonucleic acid) contains deoxyribose sugar and RNA (Ribonucleic acid) contains a ribose sugar.

A Nitrogenous base attached with the sugar is called “**Nucleoside**”.

3. Phosphate: Phosphate is associated with the sugar of nucleoside by an ester bond with the 5thC hydroxyl group. Nucleotides at least contain one phosphate group.

Phosphate of one nucleotide attaches to the 3rd C-OH group of the sugar of the 2nd nucleotide, thereby forming 5' → 3' linkage.

In DNA (double helix) there are two antiparallel strands of polynucleotides that are linked together by hydrogen bonds between nitrogenous bases. Purine pairs with pyrimidine base, A pairs with T and G pairs with C by two and three hydrogen bonds respectively.

In RNA instead of thymine (T), A pairs with U.

Phosphate group interlinks the sugar molecules of two nucleotides forming a chain. DNA and RNA are polynucleotides. Sugar phosphate chain forms the backbone of a polynucleotide chain.

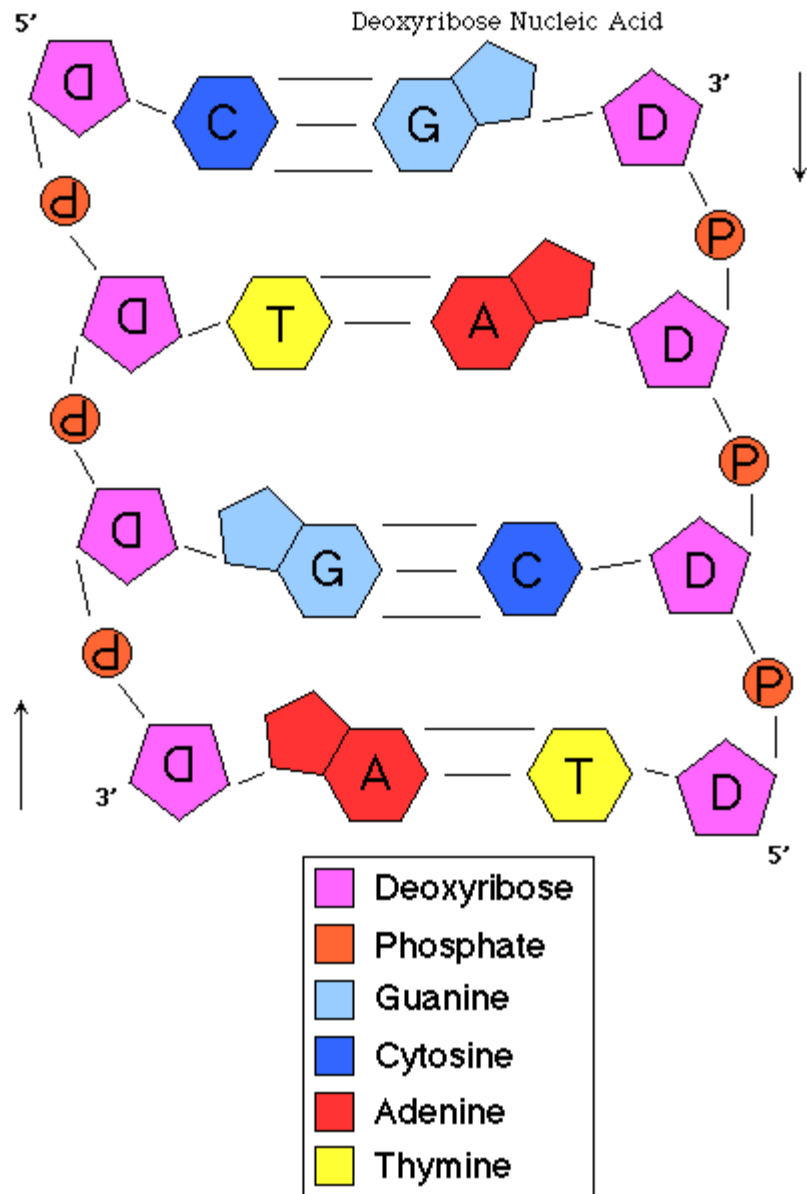
How do nucleotides and nucleosides differ?

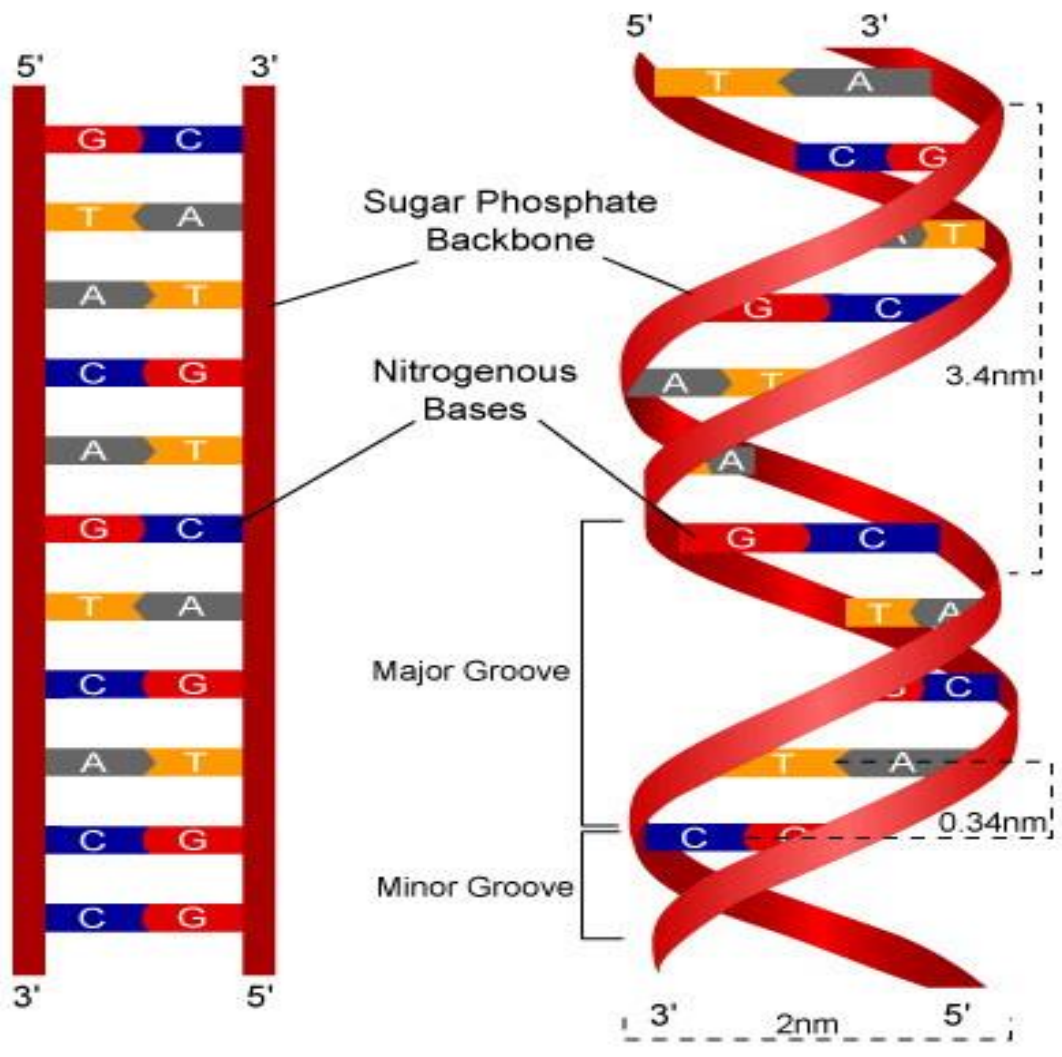
Nucleoside = Nitrogenous base + Sugar

Nucleosides are named as Adenosine, Guanosine, Thymidine, Cytidine, Uridine

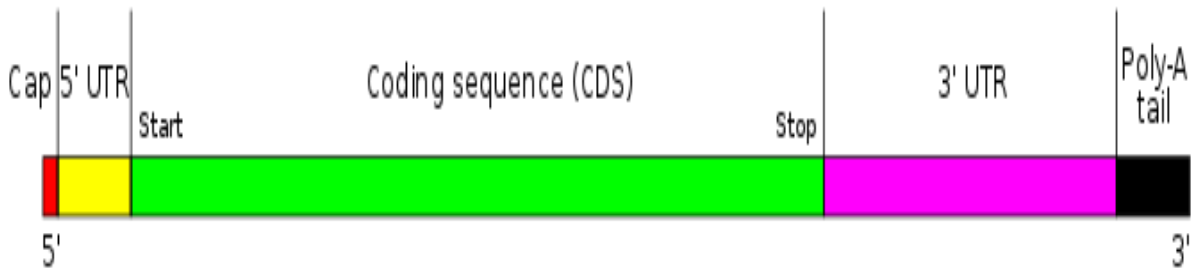
Nucleotide = Nucleoside + Phosphate

DNA Structure





The structure of a typical human protein coding mRNA including the untranslated regions (UTRs)



The structure of a mature eukaryotic mRNA. A fully processed mRNA includes a [5' cap](#), [5' UTR](#), [coding region](#), [3' UTR](#), and poly(A) tail.