Nucleic acids: a polymer (polynucleotide) consisting of many nucleotide monomers

Deoxyribonucleic acid (DNA): polymer containing nucleotide monomers with deoxyribose sugar and nitrogenous base: Adenine (A), Cytosine (C), Guanine (G), Thymine (T)

Ribonucleic acid (RNA): polymer containing nucleotide monomers with ribose sugar and nitrogenous base: Adenine (A), Cytosine (C), Guanine (G), Uracil (U)

Nucleoside: sugar + nitrogenous base

Nucleotide: sugar + nitrogenous base + phosphates

Pyrimidine: 6-membered ring (Cytosine, Thymine, Uracil)

Purine: 5-membered ring + 6-membered ring (Adenine, Guanine)

Features of Nucleic acids

- Sugar-Phosphate Backbone
    - Phosphodiester linkages
- Directionality (5' – 3')
- Order dictates amino acids incorporated during protein synthesis (and where the protein starts and stops)

Double helix

- The form of native DNA
- Two adjacent antiparallel polynucleotide strands wound around an imaginary axis in a spiral shape
- A forms 2 hydrogen bonds with T (or U in RNA)
- C forms 3 hydrogen bonds with G
- Complementary strands

Human Genome Project (1990 – 2003): ambitious project to sequence the entire human genome (3,000,000,000 bases)

Bioinformatics: use of computer software and other computational tools that can handle and analyze large sets of data

Genomics: analyzing large sets of genes or comparing whole genomes

Proteomics: analysis of large sets of proteins and their sequences