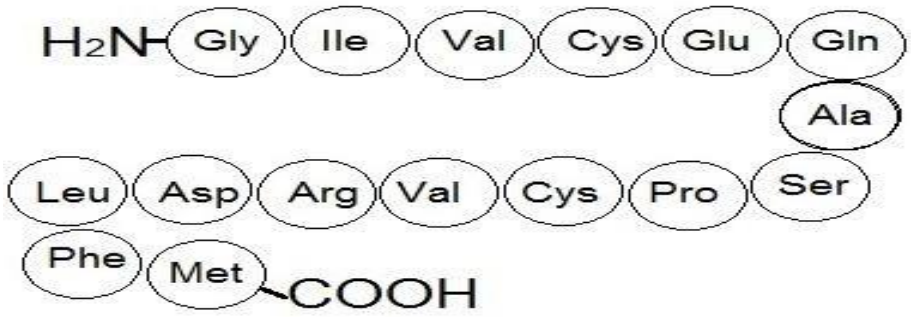
Structure and Properties of Proteins

Structural organization of Proteins

a. Primary Structure
b. Secondary Structure
c. Teritary structure
d. Quaternary structure

Primary structure

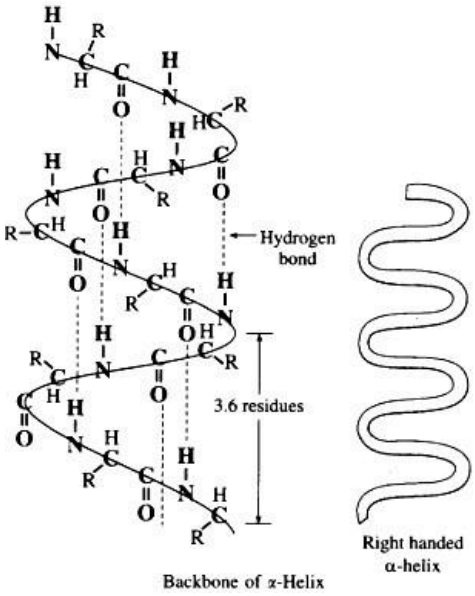
- The primary structure is the amino acid sequence in its polypeptide chain.
- These chains have amino acids arranged in a particular sequence which is characteristic of the specific protein. Any change in the sequence changes the entire protein.
- The peptide chain starts with N – terminal of amino acids and ends with C – terminal oflast amino acid.
- Chain is connected by disulphide linkage.

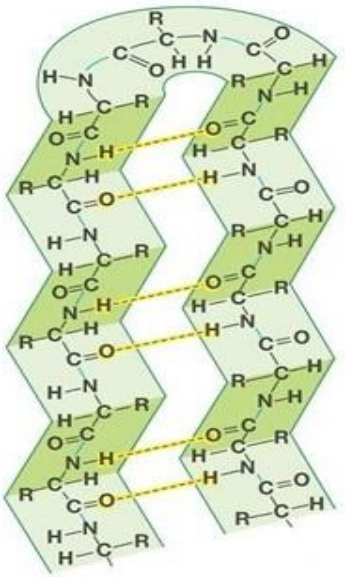


Example: Insulin

Secondary structure

- It consist of α – Helix and β – pleated sheet structure.
- Hydrophophic in nature (water reples).
- **O** in C=O bond and **H** in NH froms hydrogen bond to form Helix structure.
- β – pleated sheet is formed by hydrogen bonding between two sheets.

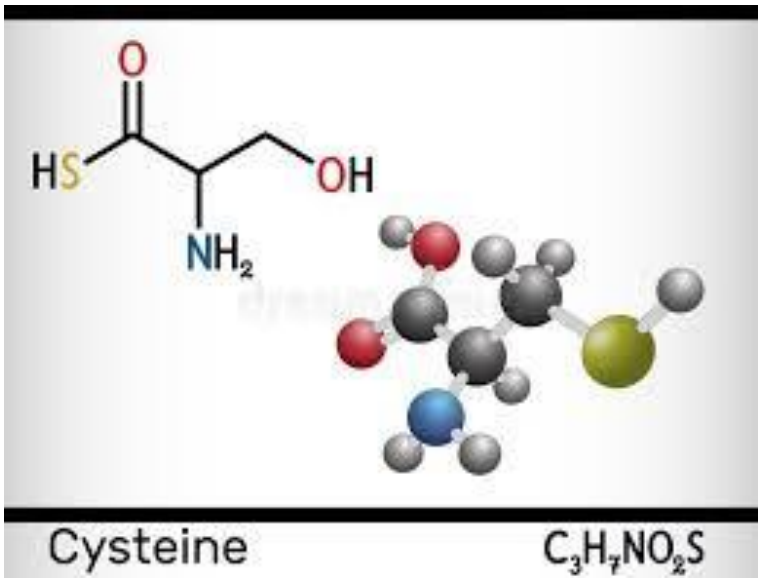




Teritary structure

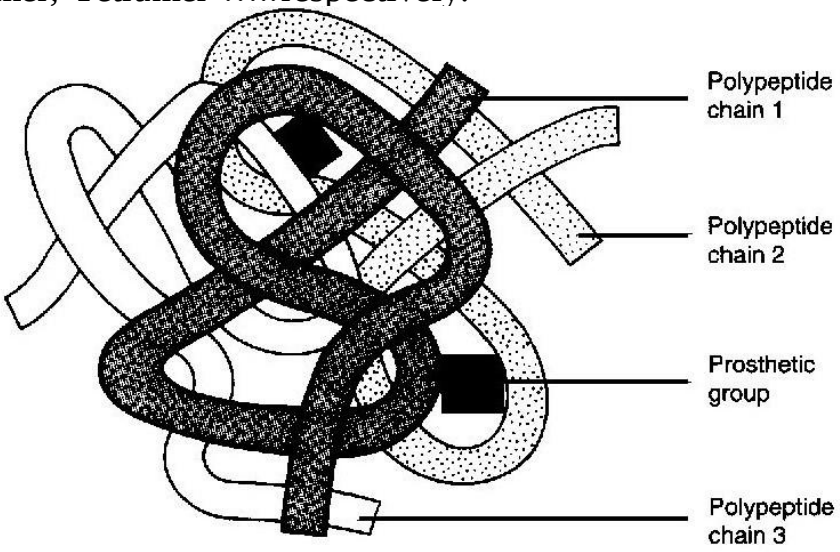
- It consists of 3D folding structure.
- H-bonds, electrostatic forces, disulphide linkages, and Vander Waals forces stabilize thisstructure.
- Sequence of bonding: 1 primary protein – 1 α helix protein – 1 β sheet protein– 1 α helixprotein.

Example : Cysteine



Quaternary structure

- The arrangements of multiple polypeptide chains.
- Large number of tertiary combine to form this.
- Many proteins, most of which are enzymes have quaternary structure.
- Made by 2, 3, 4 …..n number of teritary proteins are called Dimer, Trimer, Tetramer …..respectively.



Example : Haemoglobin