**L2: Module 4: Biomolecule**

**Tertiary Structure**

During the third stage, the protein chain folds hundreds of times to form a small ball. Hydrogen bonding is a key component to this stage.

As the proteins fold on themselves, the elements move much closer together which results in very strong bonds.

 

**Quaternary structure**

Some proteins are made up of multiple polypeptide chains, sometimes with an inorganic component (*for example, a haem group in haemoglogin*) called a **Prosthetic Group**. These proteins will only be able to function if all subunits are present.

**Quaternary Structure** formed when two or more polypeptide chains join together, sometimes with an inorganic component, to form a protein.



**Proteins with a 3D structure fall into two main types:**

* **Globular** - These tend to form ball-like structures where hydrophobic parts are towards the centre and hydrophilic are towards the edges, which makes them water soluble. They usually have metabolic roles, *for example: enzymes in all organisms, plasma proteins and antibodies in mammals.*
* **Fibrous** - They proteins form long fibres and mostly consist of repeated sequences of amino acids which are insoluble in water. They usually have structural roles, *such as: Collagen in bone and cartilage, Keratin in fingernails and hair.*

**Denaturation of Protein**

**Denaturation** is a process in which proteins lose the quaternary structure, tertiary structure, and secondary structure which is present in their native state, by application of some external stress or compound such as a strong acid or base, a concentrated inorganic salt, an organic solvent (e.g., alcohol or chloroform), radiation or heat. If proteins in a living cell are denatured, this results in disruption of cell activity and possibly cell death.



**Function of Protein**

