Amino acids are the monomer units which combine to make up a polymer called a **polypeptide**.

Peptide Bonds:

The carboxyl group of one amino acid reacts with the amino group of the other amino acid = a water molecule is

Lour reaction The reverse hydrolysis would be the dipeptide into it or finder

The order in which one amino acid follows another in the polypeptide chain is unique to each protein. This unique sequence dictates: Structure /Chemical properties /Function

Proteins roles depend on their molecular shape: Fibrous Proteins= structural functions (collagen) **Globular Proteins= metabolic functions (enzymes/haemoglobin)**

Biuret Test:

Sample in test tube —> add equal volume of sodium hydroxide solution \rightarrow add dilute copper sulfate solution and mix gently \rightarrow purple colour indicates peptide bonds.

> The fact that the same 20 amino acids occur in all living organisms provides indirect evidence for evolution.

Amino Acid Structure

п

20 different amino acids.

Proteins are large molecules

н

Amino

Group

Primary Structure:

The sequence of amino acids in a polypeptide chain forms the primary structure.

This structure allows: hydrogen bonds to form between amino acids along the chain / interactions between R groups along the chain.

S condary Structure:

Arises because of the hydrogen bonding between the Oxygen of the -C=O group of one amino acid and hydrogen of the -- NH group. If this occurs in one polypep-

tide, the chain coils into an alpha helix (a-helix). If it occurs between different, parallel polypeptide chains, it folds into a beta pleated sheet (bpleated sheet).

Tertiary Structure:

Carboxyl

Group

When a helices and b pleated sheets fold and coil; into shape = held in place by strong covalent bonds between different groups in the chain (Disulfide bonds S-S/Cysteine) and weak bonds, (hydrogen / Ionic interactions / Van Der Waals)

Weak bonds make it flexible (can change in response to changes in pH/temp)

Quaternary Structure:

When a protein consists of more than one polypeptide chain like haemoglobin.

