

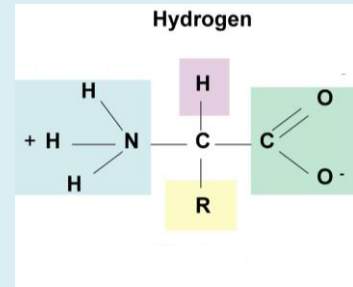
Proteins



ADAM.

Amino Acid Structure

What functional groups make up the structure of amino acids?



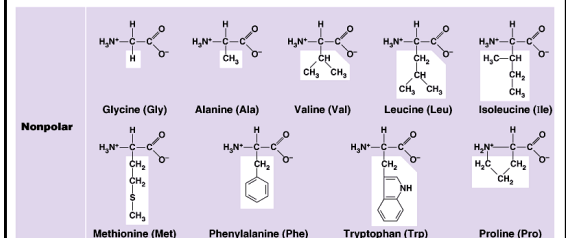
Amino Acid Structure

4 Parts:

1. Carboxyl end – acts like an acid, can release the hydrogen
2. Amine end – acts like a base, accepting a 3rd hydrogen
3. Alpha Carbon – central Carbon
4. R group – variant, determines the properties of the amino acid

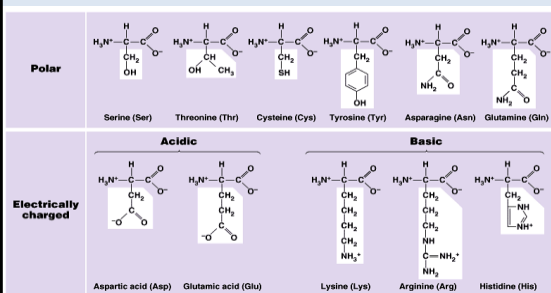
R Groups

- side chains that determine the properties of the amino acid, each one is different
- some are nonpolar



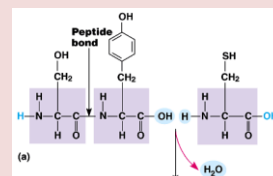
R Groups

- some are polar

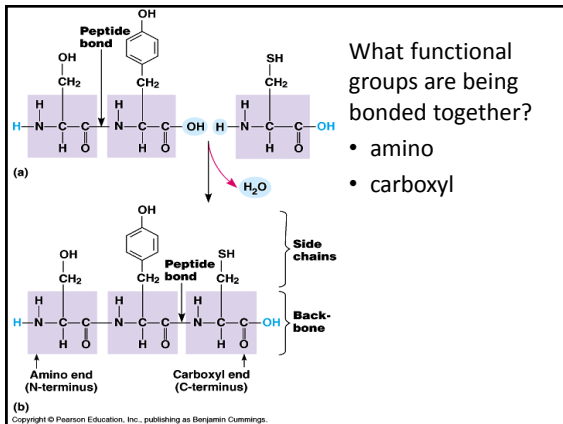


Making of a Protein...

- individual amino acids (monomers) can covalently bond – bond is called a peptide bond
- many amino acids bonded together make a protein, also known as a polypeptide

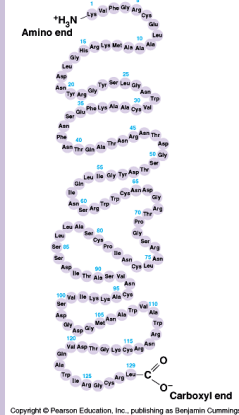


CFU – what reaction allows this to happen?



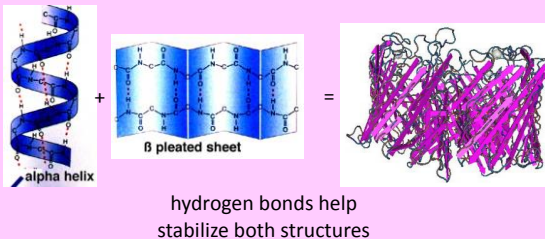
Polypeptide chains look like this...

Primary Structure



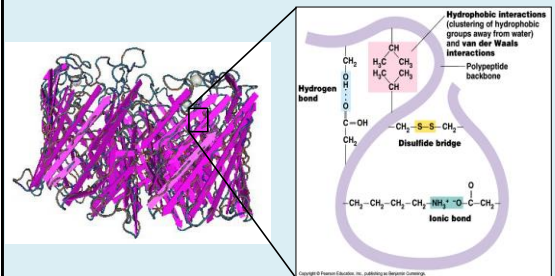
Secondary Structure - α Helix & β folds

- fold and coil the primary structure



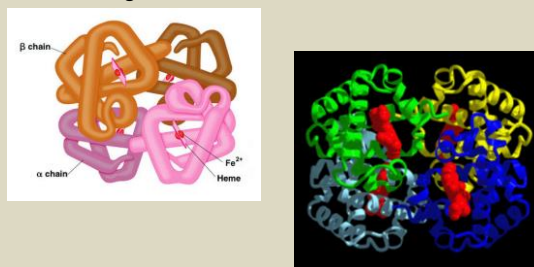
Tertiary Structure

- secondary coils and folds are bonded together
- disulfide bridge (bond) stabilizes the protein



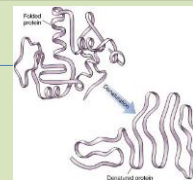
Quaternary Structure

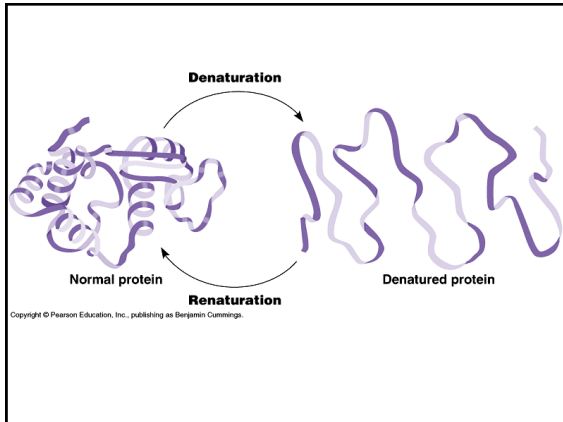
- 2+ polypeptides are bonded together
- hemoglobin



Denaturation

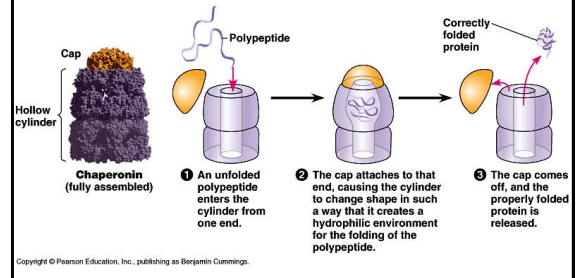
- unraveling of the protein
- cannot function
- caused by changes in
 1. pH – lower pH causes amino acid to lose e^-
 2. temp – disrupts hydrogen bonds
 3. salt concentration – can cause attraction between R groups





Chaperonins

Conditions not ideal for folding of protein? The chaperonin will “chaperone” the job!



Proteomics

- large-scale study of protein structure & function
- genome & environment will cause changes of the proteome

