

## Triple Helix

Best example of a triple  
Helix is found in collagen.  
Composed of 1/3 glycine, 1/4 proline and  
hydroxy proline  
Main sequence is Gly-x-Pro or Gly-x-OH Pro  
Results in a three chain parallel helix

## Triple Helix

Residues between the glycine and proline form  
good hydrogen bonds with neighboring chains.  
These triple helices are often wound around  
one another to form super helices that are  
extremely strong and that do not stretch

## Triple Helix

Every third alpha carbon in a given chain is  
two close to the other two amino acids to  
contain any R group but glycine.  
The resulting helix has large spaces two amino  
acid residues above each glycine that can  
contain a proline or hydroxy proline without  
loss of hydrogen bonding

## Collagen



## Tertiary Structure

Folding through the primary and structure  
of a protein to yield its final three-  
dimensional structure.  
Maybe highly specific for many proteins.  
Results in a further decrease in free  
energy due to secondary interactions.

## Tertiary Structure

Final three-dimensional structure of a protein  
is determined by the primary sequence which  
in turn, determines the secondary structure.  
The final structure depends on the molecule's  
environment.  
Structure is stabilized by a number of  
secondary bonds.

## Secondary Bonds

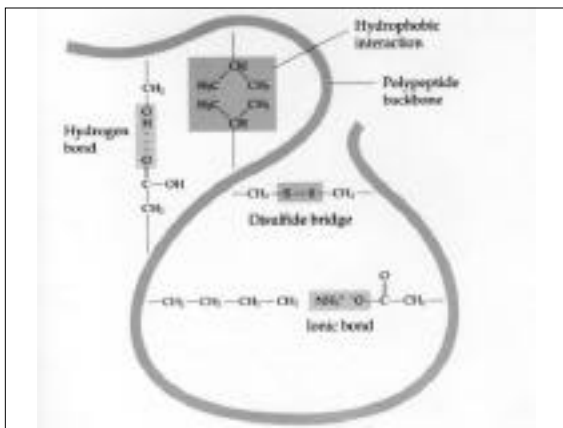
Secondary bonds and forces include

- Ionic
- Hydrogen
- Dipole-Dipole
- Hydrophobic
- Disulfide

## Solvent

All secondary bonds are greatly affected by solvent

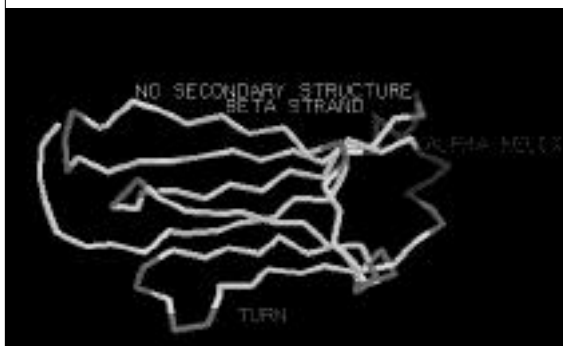
- Kind of solvent
- Amount of solvent
- Other solutes



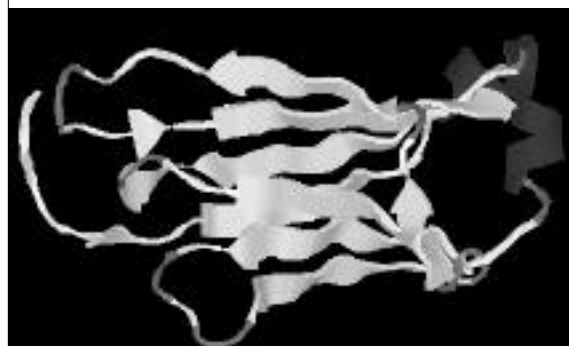
## B-LG First 100 AA

Leu-Ile-Val-Thr-Gln-Thr-Met-Lys-Gly-Leu-Asp-Ile-Gln-Lys-Val-Ala-Gly-Thr-Thr-Trp-Ser-Leu-Ala-Met-Ala-Ala-Ser-Asp-Ile-Ser-Leu-Leu-Asp-Ala-Gln-Ser-Ala-Pro-Leu-Arg-Val-Tyr-Val-Glu-Glu-Leu-Lys-Pro-Glu-Gly-Asp-Leu-Glu-Ile-Leu-Leu-Gln-Lys-Asp-Glu-Ala-Asp-Glu-Cys-Ala-Gln-Lys-Lys-Ile-Ile-Ala-Glu-Lys-Thr-Lys-Ile-Pro-Ala-Val-Phe-Lys-Ile-Asp-Ala-Leu-Asn-Glu-Asn-Lys-Val-Leu-Val-Leu-Asp-Thr-Asp-Tyr-Lys-

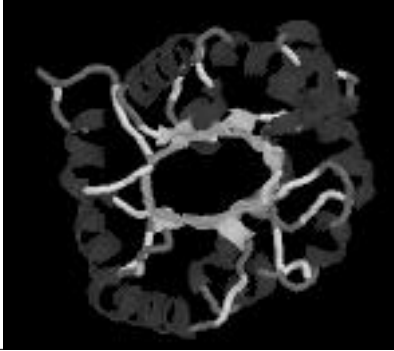
## Backbone



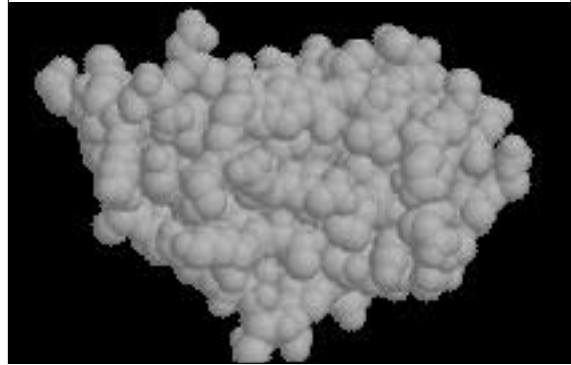
## Cartoon



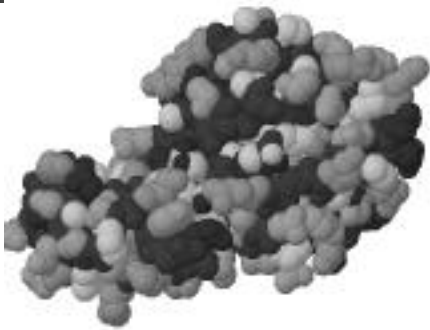
**Secondary Structure**



**Antibody**



**Lysozyme + Substrate**



**Lysozyme**



**Myoglobin**

