

Problem Set 23: Proteins

- Given that the side group of alanine is $-\text{CH}_3$ and the side group of glycine is $-\text{H}$, write out a reaction to show these two amino acids forming the dipeptide alanylglycine, and then complete a-c below.
 - Label the N-terminus and the C-terminus of the dipeptide.
 - Label the peptide bond.
 - If the two amino acids were switched to make glycylalanine would the new dipeptide be identical to the one you have drawn above? Explain.
- Which of the following side groups would be expected to participate in hydrophobic interactions? Circle ALL that apply.
 - $-\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3$
 - $-\text{CH}(\text{CH}_3)_2$
 - $-\text{CH}_2\text{OH}$
 - $-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{NH}_3^+$
- The two separate protein chains of insulin are held together by disulfide bonds. This is a specific example of the _____ structure of the overall protein.
 - Primary
 - Secondary
 - Tertiary
 - Quaternary
- Which of the following amino acids would you expect to find on the outside and which would you expect to find on the inside of a globular protein?
 - Leucine
 - Glutamic acid
 - Aspartic acid
 - Valine
- What level(s) of protein structure can be affected by denaturation?
- What level of protein structure is determined by:
 - peptide bonding between amino acids
 - noncovalent interactions and covalent disulfide bonds involving amino acid side groups
 - hydrogen bonding between the oxygen off of the carbonyl of the peptide backbone chain to hydrogen atoms off of nitrogen atoms in the peptide backbone chain