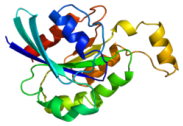
Chem 331 Biochemistry

Amino Acids & Peptides

Learning Objectives, Study Guides and Practice Questions



Chapter 4 & 5

Learning Objectives

- Be able to draw the basic structure of the amino acid and peptide bond – Do Not draw the side groups
- Memorize the three letter and single letter abbreviation for each amino acid
- Interpret, Analyze and Predict the chemical properties of amino acid side group
- Know the grouping based on these chemical properties
- Know the amino and carboxyl terminal pKa but only be familiar with side group general pKa
- Predict the impact of local chemical environment on pKa of amino acid side group
- Determine the charge state of an amino acid at indicated pH; including the pH at which the amino acid is a zwitterion and calculate the isoelectic point of a peptide
- Understand the importance and reactions of cysteine-cysteine bonds
- Explain the reactions of amino acids and their impact on proteins
- Know the chemical nature of the peptide bond and evaluate the nature of the peptide bond on folding
- Understand the biologic activities of peptides
- Relate the sizes of proteins as described by the book

Study Notes from Dr P: *Understanding the chemistry of the side groups of amino acids is going to impact how you learn proteins, enzymes and other biochemical functions of the cell. But don't just memorize things. That is a waste of time. Instead look and interpret the side group's chemistry. Of course, you WILL need to memorize the three-letter abbreviation that is like a second language. You will need to know some of the chemical reactions like phosphorylation, reduction/oxidation, covalent modification as they will show up several times. Commit yourself to drawing a peptide with "R" for the side group. You should be able to look at an amino acid, its name or its three-letter abbreviation and describe all the biochemical features of the amino acid as a second language. We will see this knowledge coming up again and again this semester. This is a pretty straightforward chapter. We will NOT cover protein sequencing. This is done using mass spec nowadays and the degradation reactions are pretty much out of date.*

Pages: 76-84, 87-90, 116-121(not covered in lecture but you are responsible for the information), 129-130

Chapter Questions (not assigned for homework but to help you practice, don't turn in. BUT some may or will show up on the exam).

- 5, 7, 8, 11, 12, 13, 14, 24, 25