
Chapter 16: Amino Acids and Proteins

- Know the general structure of an amino acid and the proper Fisher projection for naturally occurring amino acids
- Know the 20 naturally occurring amino acids found in proteins; be able to group them as in the text
- Be able to draw the proper form of any amino acid at a given pH; know that at neutral pH most exist as a zwitterion
- Know the approximate pK_A value for the carboxylic acid and conjugate pK_A values for the amino groups; know the pK_A for the side chains of glutamic acid, cysteine and tyrosine only
- What is an isoelectric point? How is it calculated for amino acids with no side chains?
- What does the titration curve for an amino acid with no side chains look like?
- What is a peptide bond? What are the definitions of peptide? Di-, tri-, etc. peptides? Oligopeptides? Polypeptides? Proteins?
- What is the primary structure of a peptide consist of? What convention is used for representation of a sequence? Know what N- and C- terminus mean.
- How is sequence analysis carried out for small peptides? Be able to use the results of amino acid analysis, Edman degradation, Trypsin and Chymotrypsin tests to elucidate the sequence of a small peptide.
- What is the geometry of a peptide bond? Why?
- Be able to describe secondary structure. What are the features of an α -helix? A β -sheet?
- What is tertiary structure? Quaternary structure? What role to disulfide bonds play?

Chapter 21: Nucleic Acids

- What are the principle functions of nucleic acids?
- What is the general structure of a nucleic acid? Nucleoside? Nucleotide?
- Know the three pyrimidines and two purine bases. Which are incorporated in DNA? RNA? What is the principle structural difference?
- What is the primary structure of a nucleic acid? How is it sequenced? Through what group is each link connected?
- What is the secondary structure of a nucleic acid? What bases “recognize” or “compliment” one another?
- What are the features of the Watson-Crick double helix? (major and minor grooves, etc.)
- What is the tertiary structure of a nucleic acid?
- What is RNA? What are the major types and functions of each?