Chp 11 Proteins: Structure + Function

Read: Sickle-Cell

11.1 Amino Acids

(12) (7) (2) (6) (12)
45, 47, 49, 51, 54

* 20 amino acids
  - $-NH_2$ + $-COOH$ α-carbon
  - R group

(2) (2)
58, 59

* Amino Acid Equilibria and pH
  - zwitterion
    buffer - shift with pH change

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* Amino Acid side chains
  - side groups Polar, nonpolar
* Essential Amino Acids
  10 amino Acids
  - animal / vegetable
  - RDA requirement

11.2 Chirality and Amino Acids

(10) (4) (16)
60, 61, 62

- nonsuperposable
- chiral
- achiral

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* Enantiomers
  - stereoisomers
  - prefixes R, S, D, L
* Fischer Projections
  - +
* Properties of Enantiomers
  - racemic mixture

11.3 Peptides

(3) (12) (6) (9)
64, 65, 67, 69

- di, tri, poly protein

* the Peptide Bond
  - bonding

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* small peptide
  - N-terminus + C-terminus
  - naming tripeptides

11.4 Protein Architecture

(2) (2) (4) (6) (8) (4)
73, 74, 75, 76, 77, 78

* 3-D shapes of Proteins
  - native conformation
  - residues

(5) (4) (3) (2) (3) (8)
79, 80, 81, 82, 83, 84

* Primary structure

(4) (4) (2) (4)
85, 86, 87, 89

* Secondary Structure
  - α-helix
  - ribbon drawings
  - β-Pleated sheets

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* Tertiary Structure
  - prosthetic groups
  - disulfide Bridges, salt Bridges, H-Bonding, Dispersion Forces
  - cofactor or coenzyme

* Quaternary Structure
  - subunit
  - denaturation of a protein
  - types of proteins

Fibrous
- Keratins
- Elastins
- Collagens

- Globular
- membrane

11.5 Enzymes

(2) (3) (4) (3) (1)
90, 91, 92, 93, 94

- How do they work?
  - substrate

(2) (2) (3) (4) (4)
95, 97, 98, 99, 100

Enzyme-substrate complex
- active/binding site

(3)
101

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lock + key model

Cofactors / Coenzymes

- pH + Temperature dependence of Enzymes

- Enzyme Inhibitors
  - nonspecific / specific
  - competive
  - noncompetive
  - feed back inhibition

Chem in Med - ACE Inhibitors

(3) (2) (2) (2)
102, 103, 104, 105

(2) (3) (3) (2)
106, 107, 108, 109

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