Protein Functions

Globular vs. fibrous proteins

Monomer vs. Oligomer

~ amino acid MW and ~ protein MW

Primary structure
  sequencing
  proteases
  trypsin
  chymotrypsin
  Edman degradation (know what it’s for)

Cystic fibrosis

Sickle cell anemia

Secondary structure
  α-helix
  β-sheet
  loops or turns
  motifs
  role of hydrogen bonding

Tertiary structure
  Types of Non-covalent interactions:
  - Hydrogen bonds
  - Electrostatic/ionic interactions
  - Hydrophobic interactions
  - van der Waals forces

Quaternary structure

Anfinsen RNAse Experiment

Enzymes as Catalysts

Activation Energy/Diagrams

Active Site

Transition State

Binding Models
  1. Lock and Key
  2. Induced Fit
  3. Transition State Analog Theory

Enzyme Kinetics

Rate Vs. Velocity

Michaelis-Menten Plot/Equation

$K_m$

$V_{max}$

$k_{cat}$

$k_{cat}/K_m$

Lineweaver-Burk Plot/Equation

Enzyme Inhibition

Reversible vs. Irreversible

Competitive Inhibition

Non-Competitive Inhibition

Un-Competitive Inhibition

Nerve Gas Case Study (VX Gas)

Coenzymes

Regulation Of Enzyme Activity

Induction/Repression

Reversible Covalent Modifications

Irreversible Covalent Modifications

Zymogens