LIPIDS

Classification
Fatty Acids
  Saturated
  Unsaturated/configuration
  Chain length
  Nomenclature
  Melting Point
Triacylglycerols (Triglycerides)
  Structure
  Components
  Properties
  Function
Polar lipids
  Components
    Fatty Acids
    Glycerol
    Phosphate
    Alcohols
    Sphingosine
    Sugars
  Phospholipid Structure
    Glycerol phosphate
    Sphingosine phosphate
  Properties
  Function
Lipid bilayer structure
ENZYME KINETICS

**Velocity vs. reactant (substrate) plot**
- Uncatalyzed 1st order reaction
- Enzyme catalyzed reaction

**Dependence of \( V_{\text{max}} \) on enzyme concentration**
- Kinetic scheme for enzyme catalyzed reaction
- Derivation of Michaelis-Menten equation
  - Steady-state approximation
    - \( K_M \)
    - \( V_{\text{max}} \)

**Relation of \( K_M \) to \( K_S \) and substrate affinity**
- Determination of \( K_M, V_{\text{max}} \) from Lineweaver-Burke plot

**Competitive inhibition**
- \( V \) vs. \([S]\) plot
- Kinetic scheme
- Equation for \( V \)
- Determination of \( K_I \)
- Relation of \( K_I \) values to structure and substrate binding site

**Noncompetitive inhibition**
- \( V \) vs. \([S]\) plot
- Kinetic scheme
- Equation for \( V \)
- Determination of \( K_I \)
- Site on enzyme associated with non-competitive inhibition

**Enzyme catalysis**
- Catalytic triad in chymotrypsin
  - Role of His, Ser, Asp
- Thiol proteases
  - Role of cys mercapto group

**Enzyme regulation**
- Allosteric control by small molecules
  - Sigmoidal dependence of \( v \) on substrate
  - Changes in quaternary structure
- Control by proteins
- Covalent Modification
- Proteolytic activation