CHM 333 – Spring 2013
Review Sheet – Exam 4

- Glycolysis
  - Degradative
  - Cytosol
  - Fates of Pyruvate
  - Overall Reaction
  - Structure (Glucose, Pyruvate)
  - Enzymes Types and Names
  - Regulatory Steps
  - ATP Formation, Use
  - Cofactors Used, Generated
  - Investment Vs. Dividend Phase
    - Entry of Other Carbohydrates into Glycolysis
    - Know structures and reactions
    - Recognize reaction types
  - Regulation

- Glycogen Metabolism:
  - Storage & Degradation

- Gluconeogenesis
  - How Different From Glycolysis
  - Regulation
  - Cori Cycle
  - Overall Reaction

- Ethanol Metabolism

- Pyruvate Dehydrogenase Complex
  - Location
  - Translocation
  - All Cofactors Used/Generated
  - Regulation

- TCA Cycle
  - Two Purposes
  - Differences between Glycolysis and TCA cycle
  - Location
  - Cofactors Used/Generated
  - ATP Used/Generated
  - Regulatory Steps
  - Know structures and reactions
    - Enzyme Types and Names
    - Recognize reaction types
    - Overall Reaction

- Lipid Metabolism
  - Localization
  - Translocation
  - Absorption of Dietary Lipids
  - Lipases
  - Chylomicrons
  - Bile salts
  - Micelles
  - Mobilization of stored fat

- Fatty Acid β-Oxidation = DEGRADATION
  - Three Stages
  - Fatty-acyl-CoA
  - Fatty-acyl-CoA Translocation into Mitochondria
  - Role of Carnitine
  - Cofactors Used/Generated (NADH & $FADH_2$)
  - Overall Reaction
  - Number of cycles and number of Acetyl-CoA generated per lipid
  - Counting ATP
  - Ketone Bodies
    - Atkins' Diet
    - Diabetes

- $FAD/FADH_2$ = 1.5 ATP
- NAD^+/NADH = 2.5 ATP

- Electron Transport Chain (ETC) & Oxidative Phosphorylation
  - Complex I, II, III, IV
  - Succinate dehydrogenase = Complex II
  - Cytochrome c
  - Coenzyme Q
  - Role of oxygen

Entry and passage of electrons from NADH through ETC

Entry and passage of electrons from $FADH_2$ through ETC

How many protons pumped per ETC Complex

How to arrive at 2.5 ATP/NADH & 1.5 ATP/$FADH_2$

Generation of proton gradient across the inner mitochondrial membrane

F_0F_1 ATP Synthase

F_0 = proton pore

F_1 = ATP synthesis subunit

How electron transport chain is coupled to ATP synthesis

How uncouplers work

2,4-dinitrophenol

UCP1 and hibernation

Respiratory inhibitors