GENERAL BOTANY Lecture 12 - Metabolism - Putting It All Together

- **I. Overview of metabolism**
  - **A. Photosynthesis**
    - **1. Non-cyclic photophosphorylation**
    - **2. Calvin cycle**
  - **B. Respiration**
    - **1. Glycolysis**
    - **2. Krebs cycle**
    - **3. Oxidative phosphorylation**
- **II. How do all these reactions occur?**
  - **A. What we're up against - Thermodynamics**
    - **1. First law - conservation**
    - **2. Second law - entropy**
  - **B. We need something to drive metabolic reactions - CATALYSTS!!**
    - **1. Enzymes**
      - **a) Function as catalysts**
      - **b) Neither created nor destroyed in the reaction**
      - **c) Lower activation energy**
- **III. Where do the enzymes come from?**
  - **A. Enzymes are proteins**
  - **B. Protein synthesis - DNA makes RNA makes protein**
  - **C. Genetic code: AT & GC (Note: in RNA, U=T)**
  - **D. Triplets - AUG = Methionine or start ; UUU = Phenylalanine ; UAA = stop**
  - **E. Many, many triplets make a protein....i.e., an enzyme**
- **IV. Metabolism**
  - **A. DNA makes RNA makes protein....enzymes**
  - **B. Enzymes regulate metabolism**
  - **C. Metabolism**
    - **1. Photosynthesis**
    - **2. Respiration**
    - **3. Secondary**