CHAPTER 18

1. Do homework 5-10. Know what **anabolism**, **catabolism**, and **metabolism** mean (571-2). Understand modes of enzyme organization (Fig 18.5, 573) and the three stages of catabolism (first proposed by Sir Hans Krebs) in Fig 18.6, 575.

2. This chapter contains a survey of cofactors -- all cofactors help with enzymic reactions, but what they do is very diverse. The most commonly encountered cofactors are the redox cofactors, "**NAD** and **FAD**." You should be able to draw the various forms -- **NAD**⁺, **NADH**, **NADP**⁺, **NADPH** (see Fig. 18.19, p. 589) and **FAD**, **FADH**₂, **FMN**, **FMNH**₂ (p. 591-2). Learn to draw these as stick and P figures, and to be able to recognize the complete structures. Understand the difference in usage between **NAD**⁺ and **NADH** (577-8). Another very common cofactor is **Coenzyme A** (Fig 18.23 p. 593). You should be able to draw a stick and P figure and know what CoA does in the cell.

3. Thiamine Pyrophosphate or **TPP** is involved in a variety of reactions, but all share bond breakage adjacent to a keto group. You should know the 5-membered ring structure of TPP, and pay very careful attention to the reaction in Fig. 18.18, p. 588. Pyridoxal Phosphate (**PLP** or **B6**) is involved in an amazing variety of reactions (p. 595). You should be able to draw the basic structure (pyridine's six membered ring plus aldehyde) and understand the reaction as described in class -- **Schiff Base** formation followed by rearrangement of double bonds which move electrons to (or from) the pyridine nitrogen. Remember that PLP can react with an amino acid to cause loss of carboxyl (decarboxylation), alpha-hydrogen (part of transamination), or even the R group (as in Serine Aldolase). The "Electron Sinks" handout should help with understanding of TPP and PLP reactions. Other cofactors will be discussed in context when they show up in pathways being taught. Know that Vitamin C (ascorbate) and Vitamin E are important antioxidant vitamins. Oxidation appears to be related to cellular aging and perhaps even to cancer.