**Questions about the 10 lessons**

**GLYCOLYSIS**

1) Why is there an “energy investment phase” and an “energy pay-off phase?”

2) What are the net products of glycolysis?

3) Glycolysis generates ATP via substrate-level phosphorylation (vs. oxidative

phosphorylation, which generates 90% of the ATP in cellular respiration). Describe substrate-level phosphorylation.

4) What types of molecules are kinases? What do they do?

5) Where does glycolysis occur?

**KREBS CYCLE**

1) What is the main function of the Krebs Cycle?

2) Explain how the Krebs Cycle starts with a two-carbon fragment and progresses to the next step which is a six-carbon molecule called citrate.

3) Citrate is eventually converted to a four-carbon Oxaloacetate. Account for the loss of two carbons.

4) What are NADH and FADH2? Why are they important for respiration?

5) Where does the Krebs cycle occur?

**FERMENTATION: LACTIC ACID AND ALCOHOL**

1) What is the main function of these processes?

2) How many molecules of ATP are generated by this process?

3) Why is yeast used in brewing and wine making?

4) How are muscle fatigue and soreness related to anaerobic respiration?

5) What purpose is served by the generation of alcohol and lactic acid?

6) What kinds of cells carry out these processes? Where in the cell does this occur?

**ELECTRON TRANSPORT CHAIN/OXIDATIVE PHOSPHORYLATION**

1) What is the main function of this stage?

2) How many molecules of ATP are generated in this phase?

3) Why are the electron transport chain and oxidative phosphorylation grouped together?

4) Why is oxygen necessary for this stage?

5) Where does this stage occur?

6) What is the relationship between the structure of the mitochondrion and the reactions that occur there?

**FEEDBACK CONTROL OF CELLULAR RESPIRATION**

1) What is feedback control? Why is it necessary?

2) In which stage of the process is the first level of control of cellular respiration?

3) Describe the enzyme and its role in the pathway.

4) Describe two ways this enzyme is controlled by a feedback mechanism.

**LIGHT REACTION OF PHOTOSYNTHESIS**

1) Why is the main function of the light reaction?

2) What part of the electromagnetic spectrum contributes energy to this process?

3) Where does this process take place?

4) What substrates are necessary for this reaction?

5) What are the products of this reaction?

**DARK REACTION OF PHOTOSYNTHESIS (CALVIN CYCLE)**

1) Why is the main function of the dark reaction? Describe carbon fixation.

2) How is the dark reaction dependent on the light reaction?

3) Where does this process take place?

4) What substrates are necessary for this reaction?