

## WORKSHOP, Final Review

*Metabolism / Review of Reactions*

Glycolysis is the process that takes glucose to pyruvate and then to acetyl CoA. In ten more reactions (the Krebs Cycle), acetyl CoA is taken to carbon dioxide.

1. Examine the ten reactions of the Krebs Cycle and characterize each reaction in terms of the following aspects:

- a) Write a balanced reaction and describe the reaction with as much specificity as you can (e.g., oxidation of a secondary alcohol to a ketone).
- b) Indicate whenever a cofactor is needed to accomplish an oxidation or a reduction. Use  $\text{NADH/NAD}^+$  to interconvert alcohols and carbonyl groups and use  $\text{FADH}_2/\text{FAD}$  for hydrocarbons and alkenes.
- c) Indicate any stereochemistry possibilities in the reactants or products.

2. Consider the ten reactions of the Krebs Cycle all together in terms of the following aspects:

- a) Write a balanced reaction for the entire cycle, in particular adding up the cofactors that are used and generated.
- b) Using other reaction sequences, each equivalent of  $\text{NAD}^+$  ultimately can create 3 equivalents of ATP and each equivalent of FAD can ultimately create 2 equivalents of ATP. How much ATP can be created from one acetyl CoA? How many from one glucose?

## The Krebs Cycle

