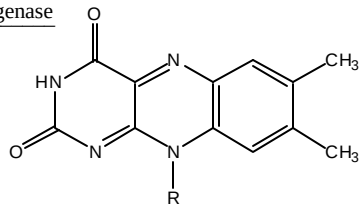
BIOSCI 1820
Quiz #2
Feb 2002

KEY

1. Name the enzyme within the TCA cycle that requires the following co-factor?

Answer: Succinate Dehydrogenase

FAD



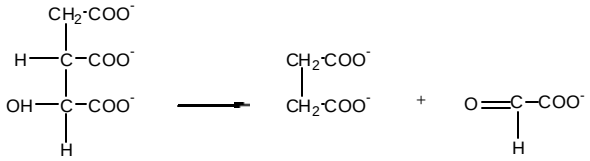
2. Indicate whether the activity of pyruvate degydrogenase would (A) INCREASE or (B) DECREASE under the following conditions:

__A__ There is an increase in mitochondrial Mg^{2+}

__B__ The activity of the regulatory kinase increased

3. Name the enzyme that catalyzes the following reaction:

Answer: Isocitrate Lyase



4. Name the 2 most important products that arise from the oxidative phase of the Pentose Phosphate pathway:

a. NADPH

b. Ribulose-5-phosphate

5. What is the name of the enzyme in the Pyruvate Dehydrogenase complex that contains a long swinging arm composed of a co-factor conjugated onto a lysine residue?

Answer: Dihydrolipoamide acetyltransferase

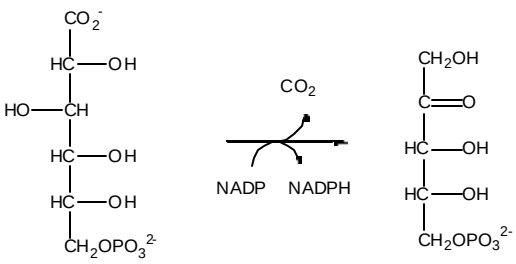
6. If 1 mole of Citrate were fed into the TCA cycle in the presence of malonate, how many moles of ATP could be generated? Assume that co-factors are not limiting and that all of the enzymes within the cycle are functional. Show your work...

Malonate inhibits Succinate dehydrogenase:

Citrate — Isocitrate — αK-G (NADH) — Succinyl-CoA (NADH) — Succinate (GTP) — X

2 NADH * 3 = 6 ATP
1 GTP = 1 ATP
7 ATP

7. Draw the structure of the product of the following reaction:



8. Draw the complete structures of the reactants and products of 3 out of 4 (your choice!) of the red-ox reactions that take place within the TCA cycle. You do not have to draw the structures of any co-factors, only indicate their presence in the reactions with the standard abbreviation.