<Q>Which enzymes of the citric acid cycle catalyze oxidative decarboxylation reactions?

<S>Y

<C+>isocitrate dehydrogenase and the alpha-ketoglutarate dehydrogenase complex

<C>aconitase and succinate dehydrogenase

<C>the alpha-ketoglutarate dehydrogenase complex and succinate thiokinase

<C>fumarase and succinate dehydrogenase

<Q>Lipoic acid can serve as

<S>N

<C>an oxidation-reduction agent

<C>an acyl-group transfer agent

<C+>both of the above

<C>none of the above

<Q>The following reactions all occur during oxidative decarboxylation of pyruvate, except:

<S>Y

<C>Removal of CO2.

<C+>Oxidation of an acetate group.

<C>Addition of Coenzyme A to a 2-carbon fragment.

<C>Reduction of NAD+

<Q>The reactions in which isocitrate is converted to succinyl-CoA are, in order

<S>Y

<C>an oxidation, a dehydration, and an oxidation

<C>three successive oxidation reactions

<C+>two successive oxidative decarboxylation reactions.

<C>a condensation, a dehydration, and an oxidative decarboxylation

<Q>Most of the citric acid cycle enzymes (except one) are found in this part of the mitochondrion:

<S>Y

<C>The outer membrane.

<C>The inner membrane.

<C+>The mitochondrial matrix.

<C>The intermembrane space.

<Q>The only membrane-bound enzyme in the citric acid cycle is

<S>Y

<C>aconitase

<C>the alpha-ketoglutarate dehydrogenase complex

<C>malate dehydrogenase

<C+>succinate dehydrogenase

<Q>Which coenzyme listed below is not associated with the alpha-ketoglutarate dehydrogenase complex?

<S>Y

<C>thiamine pyrophosphate

<C>lipoic acid

<C+>biotin

<C>NAD+

<Q>The coenzyme FAD is covalently linked to an enzyme that is an integral protein in the inner mitochondrial membrane. This enzyme is

<S>Y

<C>isocitrate dehydrogenase

<C+>succinate dehydrogenase

<C>the alpha-ketoglutarate dehydrogenase complex

<C>malate dehydrogenase

<Q>Which of the reactions of the citric acid cycle requires FAD as a coenzyme?

<S>Y

<C>the conversion of isocitrate to ?-ketoglutarate

<C>the conversion of alpha-ketoglutarate to succinyl-CoA

<C+>the conversion of succinate to fumarate

<C>the conversion of malate to oxaloacetate

<Q>Which of the following enzymes is allosterically inhibited by ATP?

<S>Y

<C+>pyruvate dehydrogenase complex

<C>succinyl-CoA synthetase

<C>succinate dehydrogenase

<C>fumarase

<Q>The glyoxylate cycle occurs in

<S>Y

<C>plants and animals

<C>bacteria and animals

<C+>plants and bacteria

<C>plants, animals, and bacteria

<Q>In the glyoxylate cycle, acetyl-CoA reacts with glyoxylate to produce

<S>Y

<C>succinyl-CoA

<C>succinate

<C>fumarate

<C+>malate

<Q>Control of the TCA cycle is exercised by each of the following enzymes, except for:

<S>Y

<C>citrate synthase

<C>isocitrate dehydrogenase

<C+>aconitase

<C>the Alpha-ketoglutarate dehydrogenase complex

<Q>Which of the following cannot cross the inner mitochondrial membrane?

<S>Y

<C>malate

<C>phosphoenolpyruvate

<C>succinyl-CoA

<C+>oxaloacetate

<Q>All of the following reactions of the citric acid cycle are control points except:

<S>Y

<C>acetyl-CoA + oxaloacetate --> citrate.

<C+>fumarate --> L-malate

<C>isocitrate --> alpha-ketoglutarate.

<C>alpha-ketoglutarate --> succinyl CoA.

<Q>When we describe citric acid cycle as amphibolic, we mean that:

<S>Y

<C>It produces and consumes GTP

<C+>It plays a role in both catabolism and anabolism

<C>It produces both NADH and FADH2

<C>It links glycolysis pathway with oxidative phosphorylation pathway

<Q>All reactions of Citric acid cycle take place in mitochondrial matrix EXCEPT

<S>Y

<C>Citrate to isocitrate

<C>Isocitrate to alpha-ketoglutarate

<C>Succenyl-CoA to succinate

<C+>Succinate to fumarate

<Q>Formation of oxaloacetate from malate in the citric acid cycle is followed by

<S>Y

<C>Formation of isocitrate from citrate

<C+>formation of citrate from oxaloacetate and acetyl-CoA

<C>Formation of succinate from succinyl-CoA

<C>Formation of fumarate from succinate

<Q>In citric acid cycle the conversion of fumrate to malate

<S>Y

<C+>is a hydration reaction, not a reduction reaction

<C>Produces NADH

<C>catalyzed by fumrate oxidase

<C>is the last reaction in citric acid cycle

<Q>A reaction that forms GTP directly by “substrate level phosphorylation” in the citric acid cycle is catalyzed by:

<S>Y

<C>Succinate dehydrogenase.

<C>Malate dehydrogenase.

<C>alpha-ketoglutarate dehydrogenase.

<C+>Succinyl-CoA synthetase

<Q>The formation of citrate from oxaloacetate and acetyl-CoA is inhibited by all of the following EXCEPT:

<S>Y

<C>ATP

<C>NADH

<C>Citrate

<C+>Acetyl CoA

<Q>In plants,the glyoxylate cycle is important for production of glucose from:

<S>Y

<C+>acetyl-CoA

<C>amylase

<C>amylopectin

<C>cellulose

<Q>In the reaction succinate + FAD --> fumarate + FADH2 , which of the following substances is the electron acceptor?

<S>Y

<C>succinate

<C>fumarate

<C+>FAD

<C>FADH2

<Q>Which of the following biochemical pathways function under aerobic conditions?

<S>Y

<C>glycolysis

<C>gluconeogenesis

<C+>citric acid cycle

<C>pentose phosphate

<Q>Conversion of one mole of malate to oxaloacetate in the citric acid cycle followed by electron transport and oxidative phosphorylation is associated with the production of

<S>Y

<C>one ATP

<C>1.5 ATPs

<C+>2.5 ATPs

<C>two GTPs

<Q>The enzyme fumarase catalyzes the reaction

<S>Y

<C>succinate --> fumarate

<C>fumarate --> succinate

<C>argininosuccinate --> fumarate + arginine

<C+>fumarate --> L-malate

<Q>The reaction: isocitrate ---> succinate + product is catalyzed by the enzyme isocitrate lyase in:

<S>Y

<C+>glyoxylate cycle

<C>synthesis of fatty acids

<C>β-oxidation of fatty acids

<C>tricarboxylic acid cycle

<Q>In the glyoxylate cycle oxaloacetate is formed from

<S>Y

<C>fumarate

<C>citrate

<C>one acetyl-CoA and succinate

<C+>two acetyl-CoA

<Q>After passing through the citric acid cycle, one mole of acetyl-CoA will result in the formation of

_____ moles of FADH2 and _____ mole(s) of GTP.

<S>Y

<C>1; 2

<C>2; 1

<C+>1; 1

<C>3; 1

<Q>Which of the following allosterically activates mammalian isocitrate dehydrogenase?

<S>Y

<C+>ADP

<C>NADH

<C>Magnesium

<C>ATP

<Q>Which of the following enzymes is allosterically inhibited by ATP?

<S>Y

<C+>alpha-ketoglutarate dehydrogenase

<C>succinyl-CoA synthetase

<C>succinate dehydrogenase

<C>fumarase

<Q>Which of the following substances is the direct precursor of oxaloacetate in the Krebs' cycle?

<S>Y

<C+>malate

<C>succinate

<C> α-ketoglutarate

<C>citrate

<Q>In Krebs' cycle there are control points, which of the following statements is not TRUE?

<S>Y

<C>there are three control points

<C>high level of ATP causes inhibition at these points

<C+>low level of ATP causes inhibition at these points

<C>high level of NADH causes inhibition at these points

<Q>In a eukaryotic cell, most of the enzymes of the citric acid cycle are located in the

<S>Y

<C+> mitochondrial matrix.

<C> inner mitochondrial membrane.

<C> intermembrane space.

<C> outer mitochondrial membrane.

<Q> Which of the following reactions is not a control point in the citric acid cycle?

<S>Y

<C> Citrate synthase

<C> Isocitrate dehydrogenase

<C> α-Ketoglutarate dehydrogenase

<C+>Malate dehydrogenase

<Q>The only complex in electron transport chain which actually uses molecular oxygen is:

<S>Y

<C> complex I.

<C> complex II.

<C> complex III.

<C+>complex IV.

<Q>The reactions of the electron transport chain take place in the mitochondria occur in:

<S>Y

<C> the outer membrane.

<C+>the inner membrane.

<C> the mitochondrial matrix.

<C> the intermembrane space.

<Q> The order of prosthetic groups as they act in the three proteins of the PDH(pyruvate

dehydrogenase) complex is:

<S>Y

<C> FAD ---> thiamine pyrophosphate ---> NAD+

<C> FAD --->thiamine pyrophosphate ---> dihydrolipoamide

<C+>Thiamine pyrophosphate---> dihydrolipoamide --->FAD

<C> NAD+ ---> FAD ---> dihydrolipoamide

<Q> Which is not a component of the pyruvate dehydrogenase complex?

<S>Y

<C> dihydrolipoamide dehydrogenase

<C+>isocitrate dehydrogenase

<C> pyruvate dehydrogenase

<C> dihydrolipoamide acetyltransferase

<Q> What type of reaction is the conversion of fumarate to malate?

<S>Y

<C> oxidative decarboxylation

<C+>hydration

<C> dehydrogenation

<C> condensation

<Q> Which step in the citric acid cycle is a rearrangement reaction?

<S>Y

<C> succinyl CoA to succinate

<C> fumarate to L-malate

<C+>citrate to isocitrate

<C> glucose 1,6-bisphosphate to fructose 1,6-bisphosphate

<Q> Which is not produced by the citric acid cycle?

<S>Y

<C> NADH

<C+>FMN

<C> CO2

<C> QH2

<Q> Which enzyme does not catalyze a reaction that releases carbon dioxide?

<S>Y

<C> alpha-ketoglutarate dehydrogenase

<C> pyruvate dehydrogenase

<C+>malate dehydrogenase

<C> isocitrate dehydrogenase

<Q> True statements about the glyoxylate cycle include

<S>Y

<C> four carbon atoms of the acetyl group of acetyl CoA are released as carbon dioxide during

operation of the glyoxylate cycle.

<C+> the net formation of a four carbon molecule from two acetyl CoA molecules supplies a

precursor that can be converted to glucose.

<C> the reaction catalyzed by malate synthase is the first bypass enzyme of the glyoxylate

cycle.

<C> it is inactive in oily seed plants.