

<Q>In nitrogen fixation, the chemical change is

<S>Y

<C>NH₄⁺ to NO₂⁻

<C>NO₃⁻ to NH₄⁺

<C+>N₂ to NH₄⁺

<C>NO₂⁻ to N₂

<Q>The production of one ammonia molecule (NH₃) from molecular nitrogen requires:

<S>Y

<C>2 ATP.

<C>4 ATP.

<C+>8 ATP.

<C>16 ATP.

<Q>Dinitrogenase contains:

<S>Y

<C+>an iron-molybdenum protein

<C>a biotin

<C>a pyridoxal phosphate

<C>a thiamine pyrophosphate

<Q>In the urea cycle, the molecule that is synthesized in the mitochondria and transported to the cytosol for subsequent reaction is

<S>Y

<C+>citrulline

<C>ornithine

<C>argininosuccinate

<C>aspartate

<Q>Glucogenic amino acids include all of the following, except:

<S>Y

<C>Glycine.

<C>Alanine.

<C>Aspartic Acid.

<C+>Leucine.

<Q>A metabolic intermediate that is not a precursor of an amino acid family is

<S>Y

<C>Alpha-ketoglutarate

<C>pyruvate

<C+>glyceraldehyde-3-phosphate

<C>oxaloacetate

<Q>In animals, the synthesis of cysteine involves all of the following, except:

<S>Y

<C+>Addition of a carbon unit from SAM (S-adenosylmethionine).

<C>Transfer of the sulfur group from methionine.

<C>An intermediate of homocysteine.

<C>Participation of ATP.

<Q>Which of the following is not an intermediate in the urea cycle?

<S>Y

<C>arginine

<C>citrulline

<C>ornithine

<C+>carnitine

<Q>The production of ammonia from molecular nitrogen via the nitrogenase enzyme complex requires:

<S>Y

<C>2 ATP.

<C>4 ATP.

<C>8 ATP.

<C+>16 ATP.

<Q>The nitrogenase enzyme complex uses which of the following cofactors?

<S>Y

<C+>molybdenum-iron-sulfur complex

<C>biotin

<C>pyridoxal phosphate

<C>thiamine pyrophosphate

<Q>A coenzyme frequently encountered in transamination reactions is:

<S>Y

<C>tetrahydrofolate

<C+>pyridoxal phosphate

<C>thiamine pyrophosphate

<C>biotin

<Q>The serine family includes all of the following members, except:

<S>Y

<C>3-Phosphoglycerate.

<C>Glycine.

<C>Cysteine.

<C+>Methionine

<Q>In the urea cycle, the molecule that is synthesized in the cytosol and transported to the mitochondrial matrix for subsequent reaction is

<S>Y

<C>citrulline

<C+>ornithine

<C>argininosuccinate

<C>aspartate

<Q>The urea cycle is linked to the citric acid cycle by:

<S>Y

<C>arginine

<C>citrulline

<C+>fumarate

<C>ornithine

<Q>During the synthesis of glycine from serine, the methylene group is received by

<S>Y

<C>S-adenosylmethionine

<C+>tetrahydrofolate

<C>carbamoyl phosphate

<C>3-phospho-5-adenylyl sulfate

<Q>In mammals the sulfur atom for the synthesis of cysteine is derived from:

<S>Y

<C>inorganic sulfide

<C>sulfite

<C+>methionine

<C>coenzyme A

<Q>Enzymes that incorporate free ammonia into forms useful for the central pathways of amino acid metabolism include:

<S>Y

<C>aspartate transaminase and alanine transaminase

<C>carbamoyl phosphate synthase II and adenosine deaminase

<C>alpha-ketoglutarate aminotransferase and phosphoserine transaminase

<C+>glutamine synthetase and glutamate dehydrogenase

<Q>The primary function of the urea cycle is:

<S>Y

<C+>to convert toxic ammonia to urea which can be excreted

<C>the production of the citric acid cycle intermediate fumarate

<C>the synthesis of ornithine

<C>the synthesis of aspartate

<Q>Which of the following is considered a non-essential amino acid?

<S>Y

<C>Methionine

<C+>Alanine

<C>Tryptophan

<C>Lysine

<Q>Which of the following amino acids is not a member of the aspartate family ?

<S>Y

<C>Asparagine

<C+>Tryptophan

<C>Methionine

<C>Threonine

<Q>The conversion of serine to glycine involves the transfer of a one-carbon unit from serine to an acceptor which is ?

<S>Y

<C>Biotin.

<C+>Tetrahydrofolate.

<C>S-Adenosylmethionine.

<C>Lipoic acid.

<Q>What is the fate of nitrogen that result from amino acid breakdown in fish?

<S>Y

<C+>Ammonia

<C>Urea

<C>Uric acid

<C>free nitrogen molecules (N₂)

<Q>Which of the following amino acids is NOT glucogenic?

<S>Y

<C>Glutamate

<C>Arginine

<C>Proline

<C+>Lysine

<Q>Which of the following reactions is catalyzed by glutamate dehydrogenase?

<S>Y

<C+>alpha-ketoglutarate + ammonia --> L-glutamate

<C>alpha-ketoglutarate + 2 ammonia --> L-glutamine

<C>L-glutamate + ammonia --> L-glutamate

<C>L-glutamine --> L-glutamate

<Q>Ribose-5-phosphate is a precursor of:

<S>Y

<C>Tyrosine

<C>Tryptophan

<C>Phenylalanine

<C+>Histidine

<Q>The enzyme that contains Fe-Mo in nitrogenase complex is:

<S>Y

<C>Ferredoxin

<C>Dinitrogenase reductase

<C+>Dinitrogenase

<C>Ferridoxin

<Q>The process by which glutamate is formed from alpha-ketoglutarate and ammonium ion is called:

<S>Y

<C+>reductive amination

<C>transamination

<C>amidation

<C>oxidative amination

<Q>Which of the following amino acids does not belong to the glutamate family based on biosynthetic pathway?

<S>Y

<C>Glutamine

<C>Proline

<C+>Asparagine

<C>Arginine

<Q>Transamination reactions in amino acid biosynthesis consumes how many ATP molecules?

<S>Y

<C>1

<C+>0

<C>2

<C>4

<Q>Which of the following statements is NOT CORRECT regarding production of glycine from serine?

<S>Y

<C+>It is an example of transamination reaction

<C>It reQuires pyridoxal phosphate

<C>It reQuires tetrahydrofolate

<C>It is catalyzed by serine hydroxymethylase

<Q>Which of the following is an essential amino acid?

<S>Y

<C+>Valine

<C>Alanine

<C>Asparagine

<C>Serine

<Q>Which of the following statements is NOT CORRECT about Urea Cycle?

<S>Y

<C>Is used to excrete excess nitrogen

<C+>The pathway is confined to the kidney

<C>Arginine is the immediate precursor to urea

<C>The major control point is carbamoyl phosphate synthetase I

<Q>Which of the following amino acids is ketogenic?

<S>Y

<C>Glutamate

<C>Arginine

<C>Proline

<C+>Leucine

<Q>The precursor of aspartic acid biosynthesis comes from

<S>Y

<C>glycolysis

<C>pentose-P-pathway

<C>beta oxidation

<C+>citric acid cycle

<Q>The serine family of amino acids includes

<S>Y

<C>glycine and proline

<C>lysine and histidine

<C>leucine and cysteine

<C+>cysteine and glycine

<Q>From the common substrates between Krebs' and urea cycles are

<S>Y

<C>fumarate and malate

<C>citrate and aspartate

<C+>fumarate and aspartate

<C>citrulline and arginine

<Q>The immediate donor of nitrogen incorporated into urea are

<S>Y

<C>carbamoyl phosphate and glutamic acid

<C>carbamoyl phosphate and glutamine

<C+>carbamoyl phosphate and aspartic acid

<C>carbamoyl phosphate and asparagine

<Q>The reaction : $\text{glutamate} + \text{NH}_4^+ + \text{ATP} \rightarrow \text{glutamine} + \text{H}_2\text{O} + \text{ADP} + \text{P}_i$ is catalyzed by the enzyme

<S>Y

<C>glutamic dehydrogenase

<C+>glutamine synthetase

<C>glutaminase

<C>glutamate semialdehyde dehydrogenase

<Q>Ketogenic amino acids are those which on degradation produce

<S>Y

<C>pyruvate

<C+>acetyl-CoA

<C>oxaloacetate

<C>alpha-ketoglutarate

<Q>Which of the following pathways are energy requiring processes?

<S>Y

<C+>gluconeogenesis and urea cycle

<C>glycolysis and gluconeogenesis

<C>citric acid cycle and electron transport

<C>urea cycle and electron transport

<Q>Transamination reactions require the coenzyme:

<S>Y

<C>Biotin

<C+>Pyridoxal phosphate

<C>Folic Acid

<C>Lipoic acid

<Q>All of the followings are essential amino acids EXCEPT

<S>Y

<C>valine

<C+>proline

<C>cysteine

<C>glycine

<Q>The final degradation products of protein nitrogen in birds and humans, respectively, are

<S>Y

<C>ammonia and uric acid

<C>urea in both

<C+>uric acid and urea

<C>ammonia and urea

<Q>The precursor of alanine biosynthesis comes from

<S>Y

<C+>glycolysis

<C>pentose phosphate pathway

<C>beta-oxidation

<C>citric acid cycle

<Q>The first amino acid formed after nitrogen fixation in some plants is

<S>Y

<C>Histidine

<C>Cystein

<C+>Glutamic acid

<C>Glutamine

<Q>Which of the following amino acids is/are derived from 3-phosphoglycerate?

<S>N

<C> serine

<C> glycine

<C> cysteine

<C+>All of the above

<Q>alpha-ketoglutarate is a precursor of each of the following, except

<S>Y

<C> glutamine.

<C> arginine.

<C> proline.

<C+>glycine.

<Q>The degradation of which amino acid requires the coenzyme tetrahydrofolate?

<S>Y

<C+>histidine

<C> serine

<C> leucine

<C> alanine