

<Q>The aspartate transcarbamoylase (ATCase) reaction is controlled by CTP acting as a

<C+>feedback inhibitor

<C>allosteric substrate

<C>heterotropic activator

<C>homotropic activator

<Q>In the normal state of an allosteric enzyme, it can be described according to the concerted model as:

<C>It exists in one conformational form.

<C+>It exists in two conformational forms at equilibrium.

<C>It exists in two conformational forms at fixed ratio.

<C>The T form is active.

<Q>The first step in the zymogen activation of chymotrypsinogen is

<C+>cleavage by trypsin

<C>binding of trypsinogen activator

<C>folding into the native structure

<C>self-digestion by the pi-chymotrypsin

<Q>Which of the following statements about the mechanism of chymotrypsin action is incorrect ?

<C>It is well studied and, in many respects, typical in many enzyme.

<C>The critical amino acid residues, serine 195 and histidine 57, are involved in it

<C>The histidine behaves as a base in abstracting the proton from serine in the first phase.

<C+>In the second phase, the water is hydrogen-bonded to the serine.

<Q>Which of the following statements is false about the concerted model for allosteric behavior of proteins?

<C>The protein has two conformations, R and T.

<C>The conformations of all subunits change simultaneously.

<C+>The equilibrium ratio of the T/R is assumed to be low.

<C>The ratio of K_R / K_T is called c .

<Q>Which of the following is true about ATCase?

<C>It is made up of three different types of subunits.

<C+>It catalyzes the condensation of aspartate and carbamoyl phosphate to form carbamoyl aspartate

<C>It is an example of a V system.

<C>It belongs to the Michaelis-Menten model.

<Q> Zymogens are particularly important in which of these processes?

<C> Blood clotting

<C> Activation of digestive enzymes

<C> Activation of proteins which are hormones

<C+>all of these processes

<Q> In the concerted model for allosteric enzymes

<C+> the relative affinities of substrate for the T and R conformations plays an important role in the cooperativity of the reaction

<C> the equilibrium between the T and R conformations plays a minor role

<C> the enzymatic activity of the T conformation is considerably higher than that of the R form

<C> it is possible to describe the reactions of all allosteric enzymes accurately

<Q> According to the concerted model of allosteric behavior, an allosteric activator

<C> favors the taut (tight) form of the enzyme

<C+> favors the relaxed form of the enzyme.

<C> can only bind to the enzyme if the substrate is already bound

<C> can only bind to the enzyme if the substrate has not already bound.

<Q>The functional group in coenzyme A is:

<C>the phosphate group at 3_' carbon atom

<C+>the –SH group of cysteine

<C>the amino group of beta-alanine

<C>the phosphate group at 5_' carbon atom

<Q> which of the following can regulate the Enzyme activity:

<C> Activation of zymogens

<C> Addition or removal of phosphate groups from of the enzyme

<C> Presence of activators

<C+>All of the above regulate enzyme activity

<Q> The saturation curve for aspartyl transcarbamylase has a similar shape to the curve for:

<C> Myoglobin

<C+> Hemoglobin

<C> Chymotrypsin

<C> Both hemoglobin and chymotrypsin

<Q>Which of the following is true about the mechanism of chymotrypsin action?

<C>The two amino acid residues Ser195, and His57,are involved.

<C>The oxygen atom of Ser195 acts as a nucleophile.

<C>Water acts as a nucleophile.

<C+>All of these are correct

<Q>Which coenzyme is involved in decarboxylation reactions?

<C+>TPP

<C>biotin

<C>coenzyme A

<C>FMN

<Q>Allosteric effectors:

<C>induce a conformational change in the protein to alter its activity <C>convert the enzyme either to the R or the T state

<C>can be very different in structure than the substrates of the enzyme <C+>All of the these are correct

<Q>Allosteric enzymes have all the following properties EXCEPT :

<C+>their $K_{0.5}$ is low

<C>in the V system V_{max} is changed in the presence of inhibitors

<C>they show the homotropic effect

<C>they show the heterotropic effect

<Q>Which of the following statements is false about effects of binding inhibitors with the concerted model for allosteric enzymes behavior?

<C>There is an increase in the number of T-conformers.

<C>An inhibitor inhibits association of S and A with R.

<C+>An inhibitor decreases cooperativity of substrate saturation curve.

<C>An inhibitor raises the apparent value of L.

<Q>The first step in the zymogen activation of chymotrypsinogen is:

<C+>cleavage by trypsin

<C>binding of trypsinogen activator

<C>folding into the native structure

<C>self-digestion by the pi-chymotrypsin

<Q>Vitamin K is important in the _____.

<C>synthesis of collagen .

<C>absorption of calcium ions.

<C+>coagulation of blood (clotting).

<C>removal of oxygen and free radicals.

<Q>The saturation curve for aspartyl transcarbamylase (ATCase) has a similar shape to the curve for:

<C>Myoglobin

<C+>Hemoglobin

<C>Chymotrypsin

<C>Both hemoglobin and chymotrypsin.

<Q>Enzyme activity can be regulated by all of the following, except:

<C>Feedback inhibition by product.

<C>Addition or removal of phosphate groups from of the enzyme. <C>Presence of activators.

<C+>All of these regulate enzyme activity.

<Q>The concerted model for allosteric enzymes was proposed by:

<C>Koshland

<C>Monod

<C>Wyman and Changeux

<C+>Monod, Wyman and Changeux

<Q>Phosphorylation of enzymes

<C>has no effect on their catalytic activity

<C>does not require ATP

<C+>takes place on serine, threonine, and tyrosine residues at enzyme's active sites

<C>is not easily characterized

<Q>Nicotinamide adenine dinucleotide (NAD +)is:

<C>an enzyme inhibitor used in smoking cessation programs

<C>an inhibitor of ATP production

<C>a coenzyme in reactions that transfer acyl groups

<C+>a coenzyme in oxidation-reduction reactions

<Q>Biotin is involved in:

<C+>Carboxylation reactions

<C>Decarboxylation reactions

<C>Redox reactions

<C>Acyl transfer reactions

<Q>Which coenzyme is involved in aldehyde transfer reactions?

<C+>TPP

<C>biotin

<C>coenzyme A

<C>FMN

<Q>The protein opsin produces rhodopsin on binding with vitamin

<C+>A

<C>E

<C>D

<C>K

<Q>Which of the following vitamins can scavenge oxidized substances and free radicals?

<C>A

<C+>E

<C>D

<C>K

<Q>Isozymes are enzymes

<C+>from one species that catalyze the same reaction under different conditions

<C>that are allosterically regulated

<C>that have isomers as substrates.

<C>their products are isomers.

<Q>The reactive part of coenzyme A is

<C>ADP.

<C>pantothenate.

<C>β-alanine.

<C+>2-mercaptoethylamine.

<Q>Which of the following has an antioxidant activity?

<C>vitamin K1

<C+>α- tocopherol

<C>cholecalciferol

<C>leukotriene C

<Q>Which of the groups bind to the vision protein opsin?

<C>retinol

<C+>retinal

<C>retinoic acid

<C>β-carotene

<Q>Which of the following is true about the mechanism of chymotrypsin action?

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<C>The oxygen atom of Ser195 acts as a nucleophile.

<C>Water acts as a nucleophile.

<C+>All of these are correct

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<C>biotin

<C>coenzyme A

<C>FMN

<Q>Which of the following statements is TRUE for glycogen phosphorylase?

<C+>its activity can be affected by allosteric regulation

<C>the phosphorylated form of the T state is more active than the phosphorylated form of the R state

<C>glucose-6-phosphate is an activator of the enzyme

<C>its phosphorylation requires the enzyme phosphoprotein phosphatase 1

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<C>absorption of calcium ions.

<C+>coagulation of blood (clotting).

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<Q>The reactive center of coenzyme A is

<C>ADP.

<C>pantothenate.

<C>β-alanine.

<C+>2-mercaptoethylamine.

<Q>Allosteric enzymes have all the following properties EXCEPT

<C>can be affected by feedback inhibition

<C>can be activated and inhibited by effectors

<C+>can be described by Michaelis-Menten kinetics

<C>their kinetics follow a sigmoidal curve

<Q>Which of the following is true about the mechanism of chymotrypsin action?

<C>The two amino acid residues Ser195, and His57, are involved.

<C>The oxygen atom of Ser195 acts as a nucleophile.

<C>Water acts as a nucleophile.

<C+>All of these are correct

<Q>Which of the following statements is NOT CORRECT for glycogen phosphorylase?

<C+>the phosphorylated form of the T state is more active than the phosphorylated form of the R state

<C>its activity can be affected by allosteric regulation

<C>glucose-6-phosphate is an inhibitor of the enzyme

<C>its phosphorylation requires the enzyme phosphoprylas kinase

<Q>What is the prosthetic group of the vision protein rhodopsin?

<C>retinol

<C+>retinal

<C>retinoic acid

<C>β-carotene

<Q>Another name for alpha-tocopherol is vitamin

_____.

<C>A

<C+>E

<C>C

<C>D

<Q> In the concerted model for allosteric enzymes

<C+> the relative affinities of substrate for the T and R conformations plays an important role in the cooperativity of the reaction

<C> the equilibrium between the T and R conformations plays a minor role

<C> the enzymatic activity of the T conformation is considerably higher than that of the R form

<C> it is possible to describe the reactions of all allosteric enzymes accurately

<Q> Proteins that catalyze phosphorylation reactions are called

<C> dehydrogenases

<C> transferases

<C+>kinases

<C>proteases

<Q> Zymogens are particularly important in which of these processes?

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<C> can only bind to the enzyme if the substrate has not already bound.

<Q>ATP can be used to activate a substrate by

<C>phosphorylation.

<C>adding a nucleotidyl group.

<C>producing inorganic phosphate.

<C+>phosphorylation and adding a nucleotidyl group.