High-energy phosphate bonds can be stored in

Why are phosphate bonds called high energy bonds?
The bonds between the phosphates in ATP are known as high-energy bonds because their hydrolysis is accompanied by a relatively large decrease in free energy. There is nothing special about the chemical bonds themselves; they are called high-energy bonds only because a large amount of free energy is released when they are hydrolyzed within the cell.

Why is ADP a high energy phosphate?
ADP (Adenosine Diphosphate) also contains high energy bondslocated between each phosphate group. It has the same structure as ATP,with one less phosphate group. The same three reasons that ATP bonds are high energy apply to ADP's bonds.

Why is gamma phosphate a high energy molecule?
The bond between the beta and gamma phosphate is considered "high-energy" because when the bond breaks, the products [adenosine diphosphate (ADP) and one inorganic phosphate group (P i)] have a lower free energy than the reactants (ATP and a water molecule).

Why is ATP a store of free energy?
ATP as a store of free energy. The bonds between the phosphate groups of ATP are called high-energy bonds because their hydrolysis results in a large decrease in free energy. ATP can be hydrolyzed either to ADP plus a phosphate group (HPO 42-) or to AMP (more...) Alternatively,ATP can be hydrolyzed to AMP plus pyrophosphate (PP i).

Why is ATP a good energy storage molecule?
ATP is an excellent energy storage molecule to use as "currency" due to the phosphate groups that link through phosphodiester bonds. These bonds are high energy because of the associated electronegative charges exerting a repelling force between the phosphate groups.

Why do ATP bonds have a high energy structure?
It has the same structure as ATP, with one less phosphate group. The same three reasons that ATP bonds are high energy apply to ADP's bonds. NAD + (Nicotinamide adenine dinucleotide (oxidized form)) is the major electron acceptor for catabolic reactions.

Study with Quizlet and memorize flashcards containing terms like a space station orbiting Earth (kinetic energy is energy of motion), energy cannot be created or destroyed but can be converted from one form to another, potential (chemical energy is a form of stored energy) and more.

High energy phosphate bonds are present in which of the following molecules? i. Glucose ii. ATP iii. Water

High-energy phosphate bonds can be stored in

A) ... lysosomes degrade macromolecules to release the stored energy C) anabolic pathways D) biosynthesis E) rearrangement of the atoms that constitute the food molecules. B) cytoplasm.

ATP as a store of free energy. The bonds between the phosphate groups of ATP are called high-energy bonds because their hydrolysis results in a large decrease in free energy. ATP can be hydrolyzed either to ADP plus a phosphate group ...

The process that allows the energy contained in the high-energy e- of activated carriers to be stored in the high-energy phosphate bonds of ATP. E- are released to the ETC to power the transport of protons into the intermembrane space and creates a gradient. The energy created by ATP synthase allowing protons to flow back into the matrix is ...

Study with Quizlet and memorize flashcards containing terms like What coenzyme is frequently used in catabolism to temporarily accept electrons for cells until they can be donated to a final acceptor? Name 2 other coenzymes that accept electrons., During catabolism, free energy that is released from redox reactions during the breaking of bonds is conserved/stored in what ...

The energy released from the breakdown of the chemical bonds within nutrients can be stored either through the reduction of electron carriers or in the bonds of adenosine triphosphate (ATP). In living systems, a small class of compounds functions as mobile electron carriers, molecules that bind to and shuttle high-energy electrons between ...

ATP is an excellent energy storage molecule to use as "currency" due to the phosphate groups that link through phosphodiester bonds. These bonds are high energy because of the associated electronegative ...

The concept of the "high energy phosphate bond" has recently been strongly criticised by Banks & Vernon. The criticisms were: (i) energy cannot be stored in molecules; let alone in bonds; (ii) a muscle is an open system, so that the free energy of hydrolysis of ATP is irrelevant; (iii) biological reactions cannot be at equilibrium, therefore they must be inefficient.

ATP as a store of free energy. The bonds between the phosphate groups of ATP are called high-energy bonds because their hydrolysis results in a large decrease in free energy. ATP can be hydrolyzed either to ADP plus a phosphate group (HPO 4 2-) or to AMP

Study with Quizlet and memorize flashcards containing terms like For brief high intensity expertise such as sprinting, muscles rely on --------- and ---------- energy systems, After 2 mins of exercise, aerobic metabolism represents about ------- of energy used, During exercise --------- peaks at about 2 seconds of activity and remains an important energy system for the duration ...

Creatine phosphate also includes a high-energy phosphate bond. CP stores energy that can be used to

synthesize ATP as it is decomposed by giving the phosphate. ... cells cannot store enough CP/ATP. As a result, the muscle fibers in an active muscle soon use cellular respiration of glucose to synthesis ATP -- typically a muscle stores glucose in ...

Rephosphorylation of ATP from ADP is an _____ reaction, it requires energy which is stored in the phosphate bonds. ... high-energy phosphate, organic compound that stores potential energy in its phosphate bonds. This energy can be released when phosphate bond is broken, and inorganic phosphate is released. ...

Such rearrangements can occur when cells dissimilate nutrients. The phosphate group involved in the high-energy phosphate bond then can be transferred directly to ADP, forming ATP, which now contains the high-energy phosphate bond. ... Fats are an ideal molecule for storage of energy (each gram of lipid yeilds approximately 9.4 kilocalories of ...

Adenosine 5?-triphosphate (ATP) plays a central role in this process by acting as a store of free energy within the cell (Figure 2.31). The bonds between the phosphates in ATP are known as high-energy bonds because their hydrolysis ...

a nucleotide containing three high-energy phosphate bonds that can provide energy to do work. pyruvate. the end product of the anaerobic breakdown of glucose, a 3 carbon unit. glycolysis. a series of enzymatic rxns occuring in the cytosol of the cell that begins the breakdown of glucose.

The inorganic phosphate groups are used to make high energy bonds with many of the intermediates of metabolism. These bonds can then be broken to yield energy, thus driving the metabolic processes of life. ... ATP (Adenosine Triphosphate) contains high energy bonds located between each phosphate group. These bonds are known as phosphoric ...

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