ATP in a Molecule

- What is the name of this molecule?
- How is energy released from and stored in this molecule?
- How do cells tap into the energy stored in this molecule?

Produce energy from the environment in which they live

All living organisms must be able to use energy in a controlled manner

Store energy for future use

There is a molecule in your cells that is a quick source of energy for any organelle in the cell that needs it.

This energy is stored in the chemical bonds of the molecule and can be used quickly and easily by the cell.
ATP in a Molecule

Adenosine-triphosphate (ATP) - energy-storing molecule in cells composed of an adenine molecule, a ribose sugar, and 3 phosphate groups; energy is stored in the molecule's chemical bonds and can be used quickly and easily by cells.

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How do cells tap into the energy stored in this molecule?

produce energy from the environment in which they live.

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ATP in a Molecule

- All living organisms must be able to produce energy from the environment in which they live.
- Use energy in a controlled manner to store energy for future use.
- There is a molecule in your cells that is a quick source of energy for any organelle in the cell that needs it.

This energy is stored in the chemical bonds of the molecule and can be used quickly and easily by the cell.

Renewable Cycle of ATP Formation & Breakdown:
- The energy of ATP becomes available when the molecule is broken down. The chemical bond between a phosphate group in ATP is broken, energy is released, and ADP or adenosine diphosphate forms.
- ADP can reform ATP by bonding with another phosphate group.

How do cells tap into the energy stored in this molecule?
ATP in a Molecule

Title: LEARNING TARGETS

produce energy from the environment in which they live

all living organisms must be able to

use energy in a controlled manner

store energy for future use

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cellular proteins have a specific site where ATP can bind. When the phosphate bond is broken, energy is released and used (like batteries snapped into the battery compartment of a radio - instant access to stored energy).

What is the name of this molecule?

How is energy released?
bioluminescence - light from chem. rxn
powered by ATP

nerve cells transmit impulses by using ATP

making new molecules ex) enzymes, molecules that build cell membranes + cell organelles

organisms w/ cilia or flagella use energy from ATP to move

a few examples of uses of energy at cellular level

maintain homeostasis (organism's regulation of its internal environment to maintain conditions suitable for survival)
examples: maintain correct amt. of water + minerals in cells, internal temp., etc.)