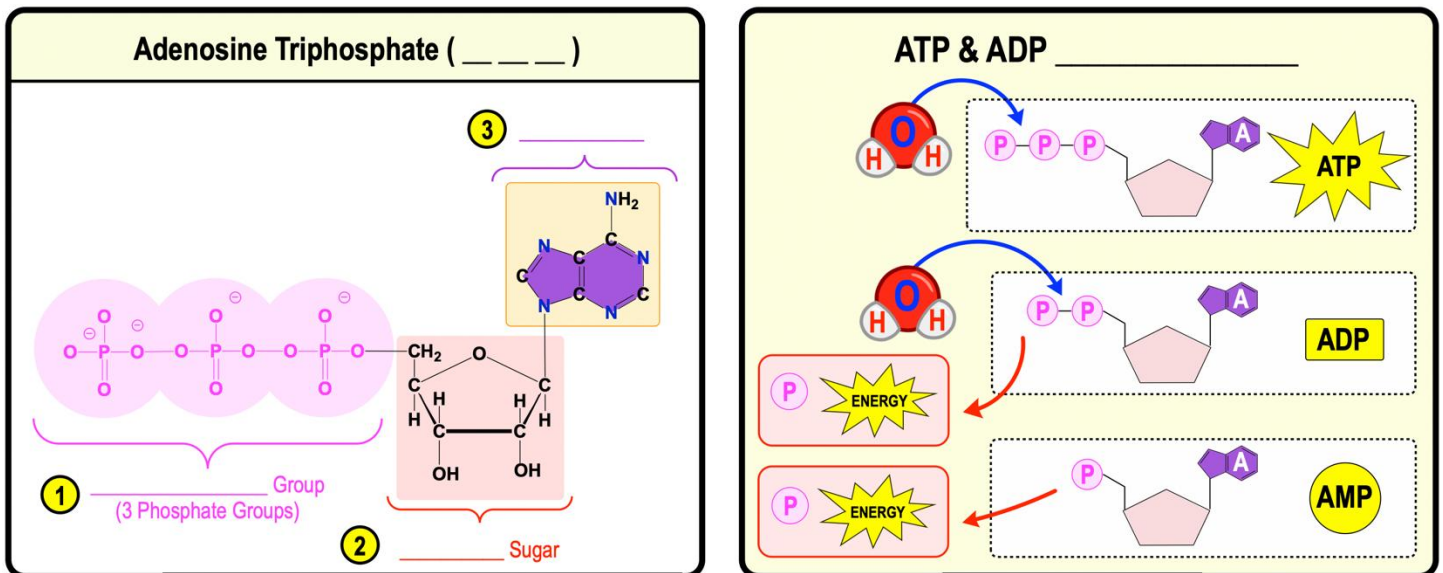


CONCEPT: ATP

- Recall: **Adenosine Triphosphate** (_____): a _____ energy molecule used to “power” cellular activities.
- There are 3 primary components of an ATP molecule:
 - ① Chain of _____ phosphate groups
 - ② _____ sugar
 - ③ _____ nitrogenous base.
- **ATP Hydrolysis:** process of breaking bonds between _____ groups generating *chemical energy* & ADP.
 - Sometimes ADP can be hydrolyzed to form AMP.

EXAMPLE: ATP structure & hydrolysis.

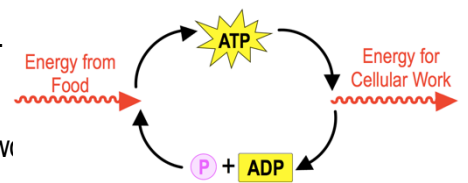


PRACTICE: Which of the following statements is true?

- ADP contains more potential energy than ATP.
- Following hydrolysis, ATP can give off one phosphate group and usable energy, whereas ADP cannot.
- The energy produced by ATP comes from the breaking of the bond between two phosphate groups.
- AMP and ADP contain the same amount of potential energy.

PRACTICE: Which of the following is the most correct interpretation of the figure?

- Energy from food sources can be used directly for performing cellular work.
- ADP + P_i are a set of molecules that store energy.
- ATP is a molecule that acts as an intermediary to store energy for cellular work.
- P_i acts as a shuttle molecule to move energy from ATP to ADP.

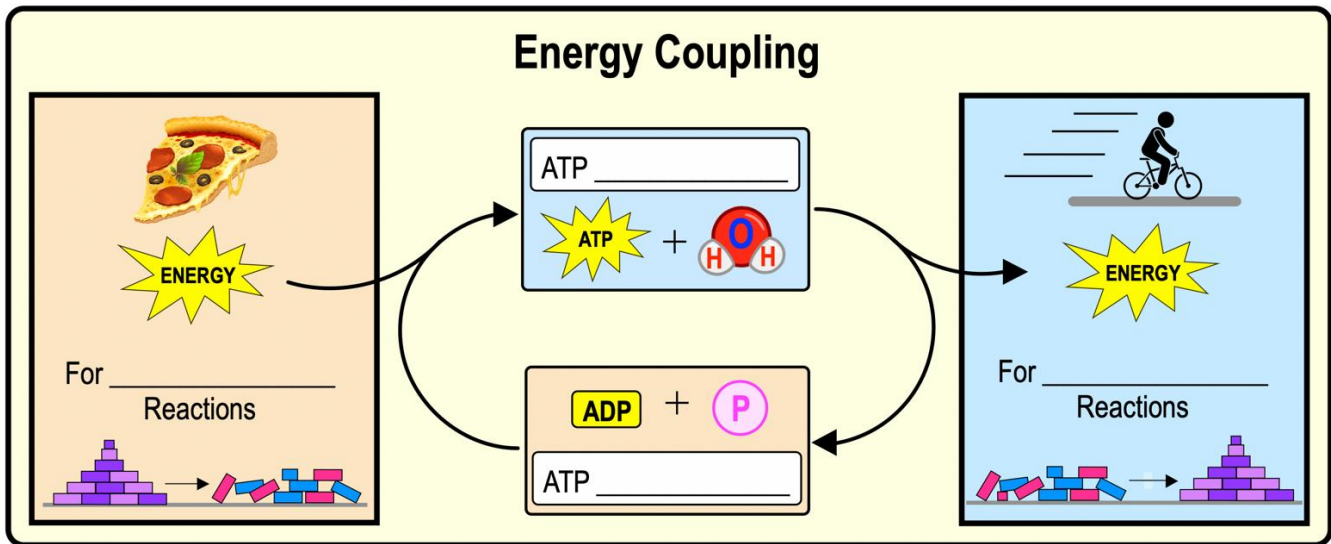


CONCEPT: ATP

Energy Coupling

- When energy released by an _____ reaction is used to power/drive an *endergonic* reaction.
 - ATP _____ is coupled to *endergonic* reactions to provide the energy input they need to proceed.

EXAMPLE: Energy Coupling.



PRACTICE: How does ATP participate in energy-coupling reactions?

- Hydrolysis of ATP fuels endergonic reactions.
- Hydrolysis of ADP fuels endergonic reactions.
- Synthesis of ATP fuels exergonic reactions.
- Synthesis of ADP fuels exergonic reactions.

Phosphorylation

- The transfer of a *phosphate group* from _____ to another molecule to provide *energy*.
- Phosphorylation by ATP hydrolysis can have a wide _____ of effects:

1 _____ a target molecule to react.

2 Changes the _____ of a target protein.

