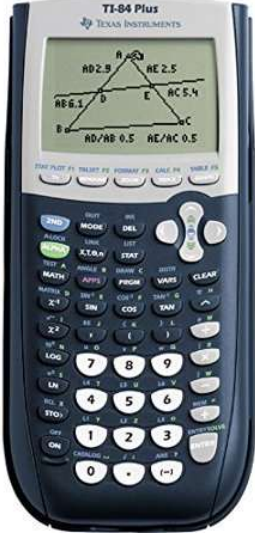


Lesson

ATP / ADP

Energy

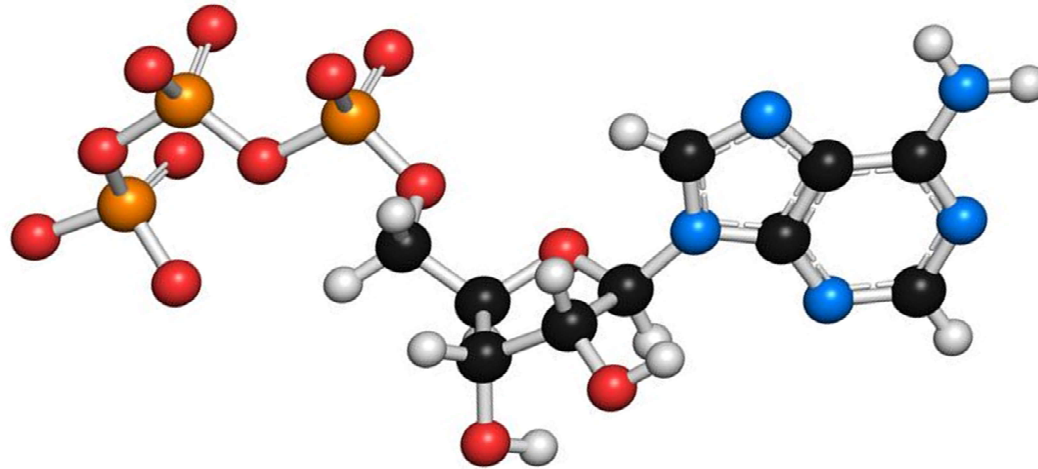
Name some things that rely on batteries to work...



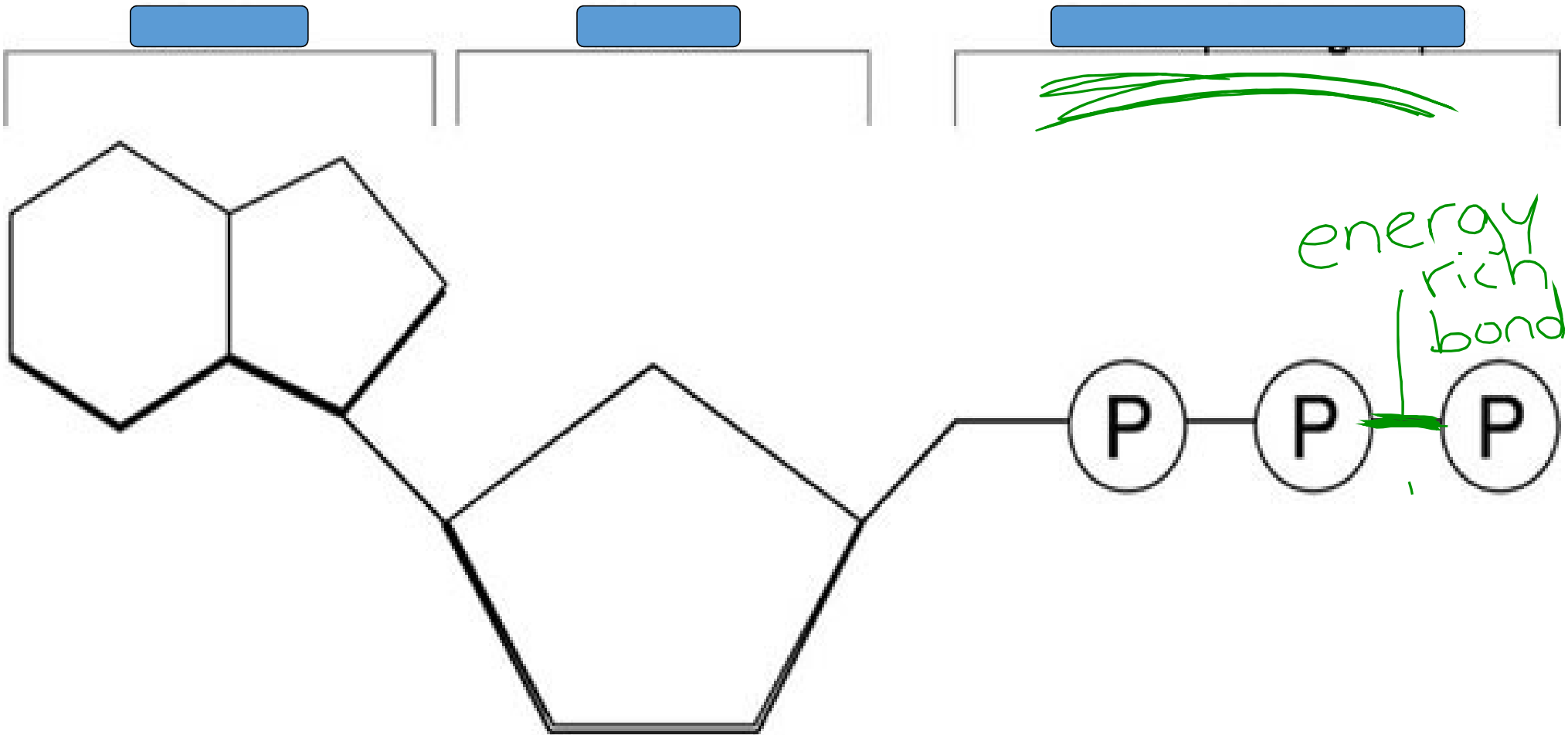
Energy and Cells

ATP

- Adenosine Triphosphate
- stores energy released by cellular respiration in its chemical bonds
- needed in all living cells
- serves as our cells' "rechargeable molecular batteries"



ATP Structure



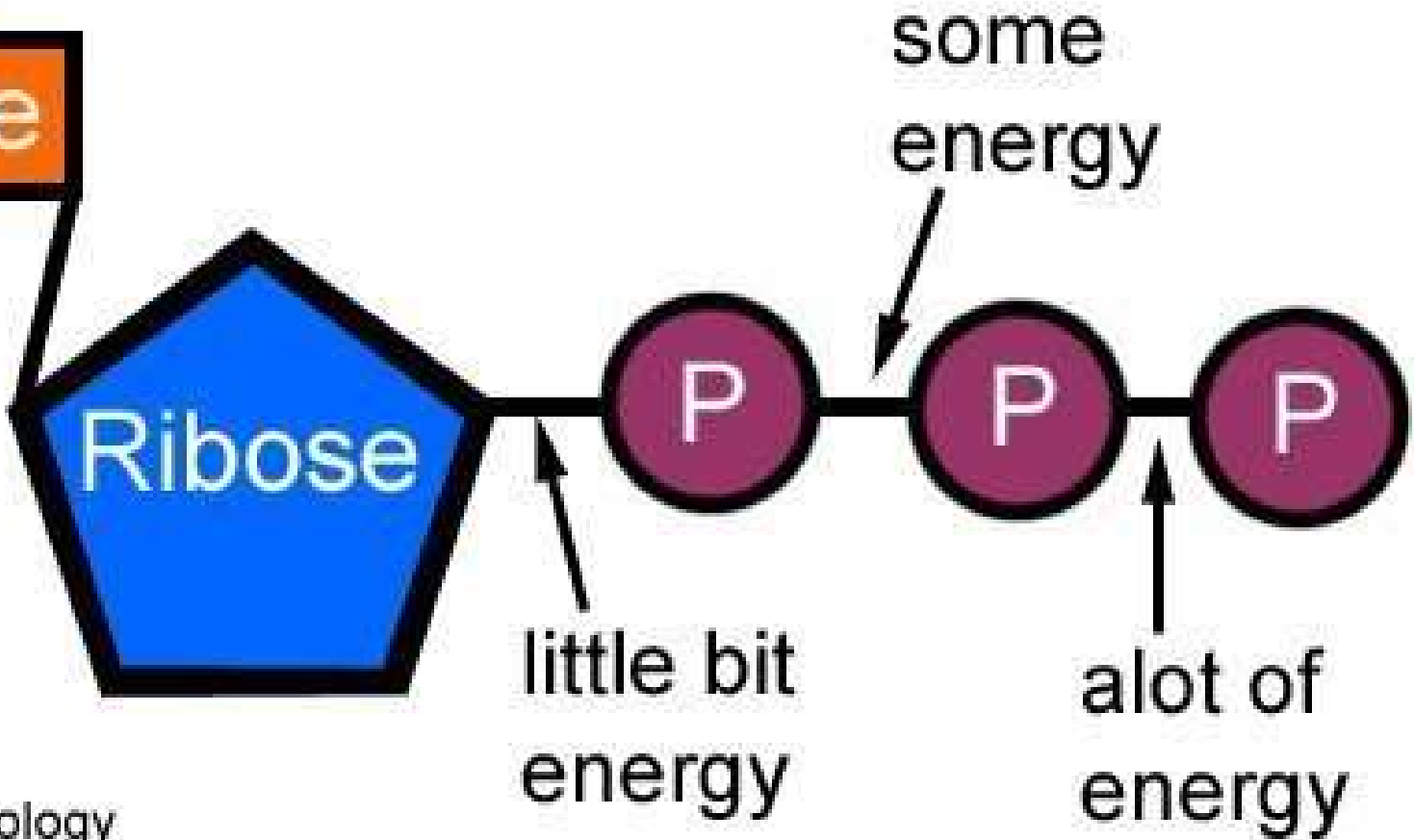
P

P

P

A

Adenosine



Saving for a Rainy Day....

Suppose you earned extra money by having a job. At first, you might be tempted to spend all of the money, but then you decide to open a bank account.

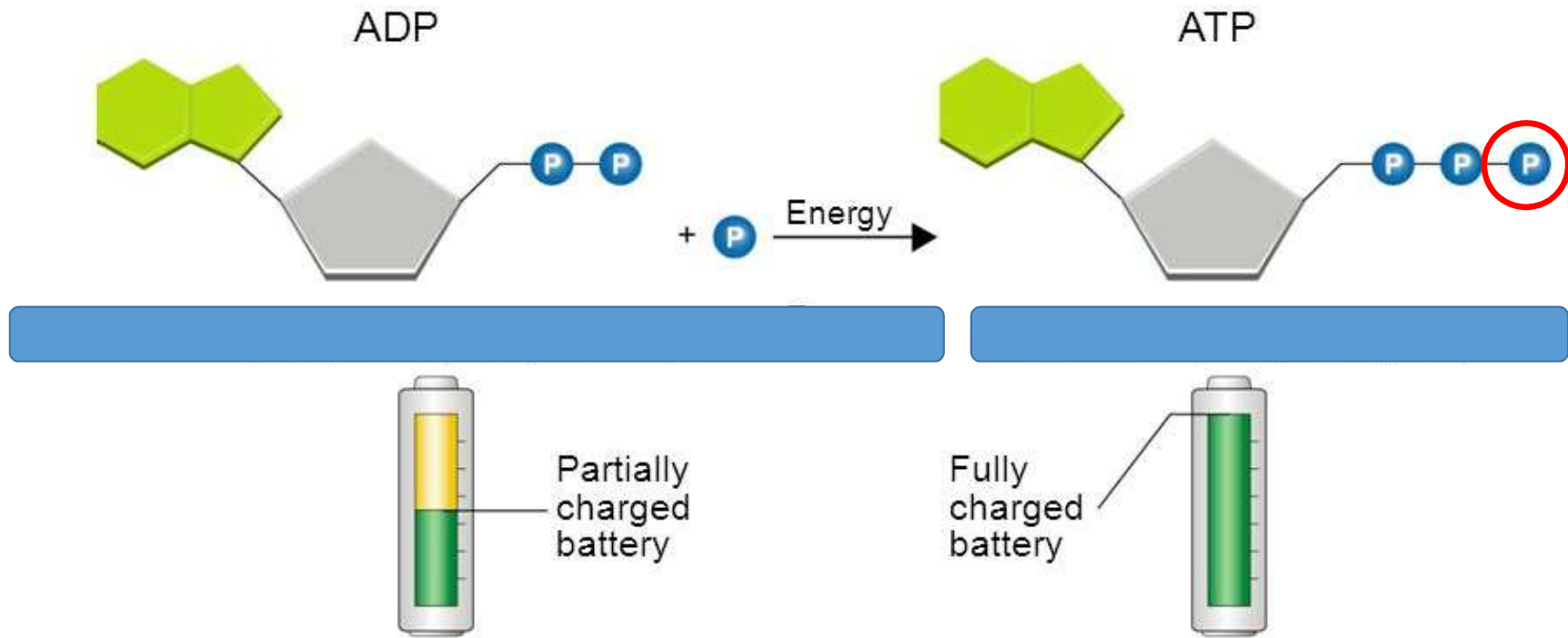


1. What are the benefits of having a bank account?
2. What do you have to do if you need some of this money?
3. What might your body do when it has more energy than it needs?
4. What does your body do when it needs energy?

Battery Comparison

What is different between these 2 molecules?

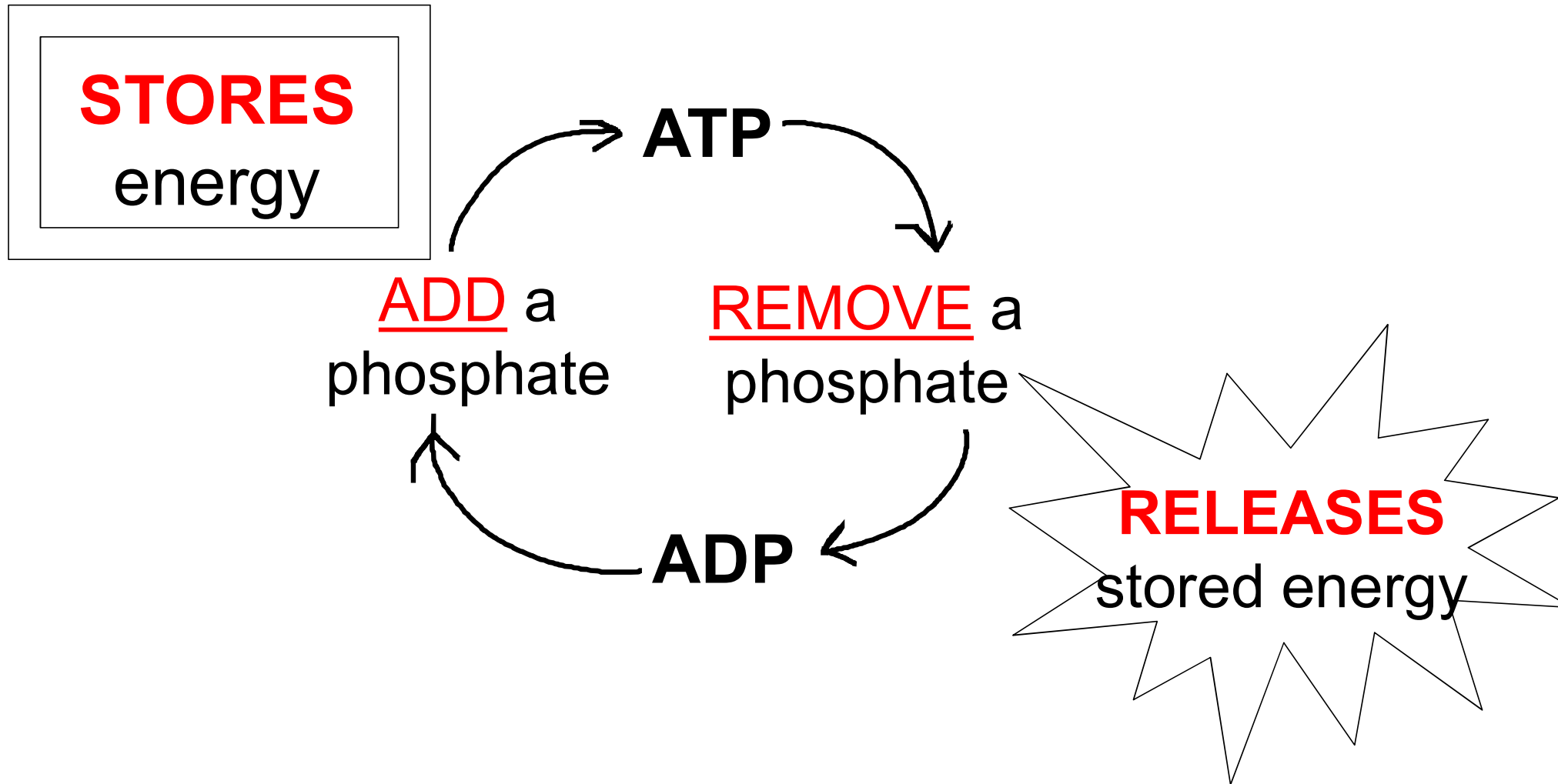
1 extra phosphate on ATP

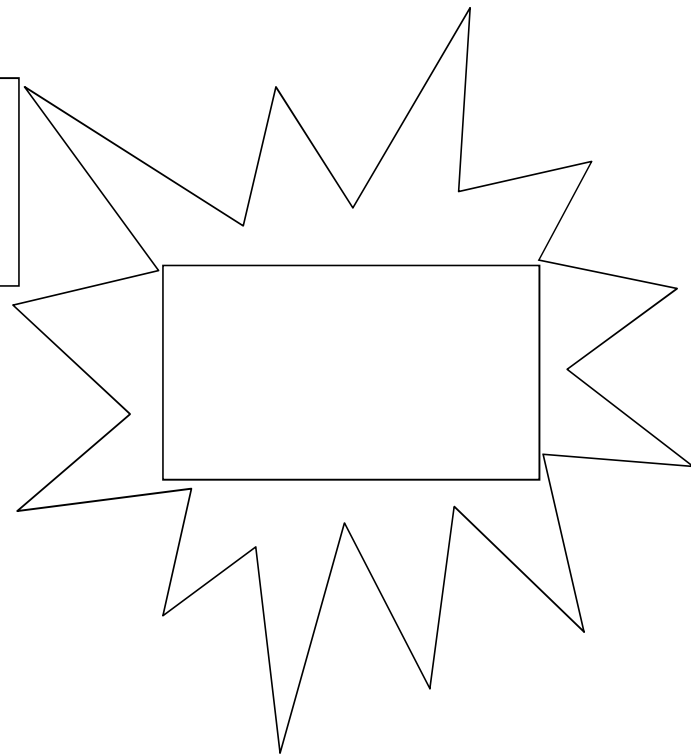
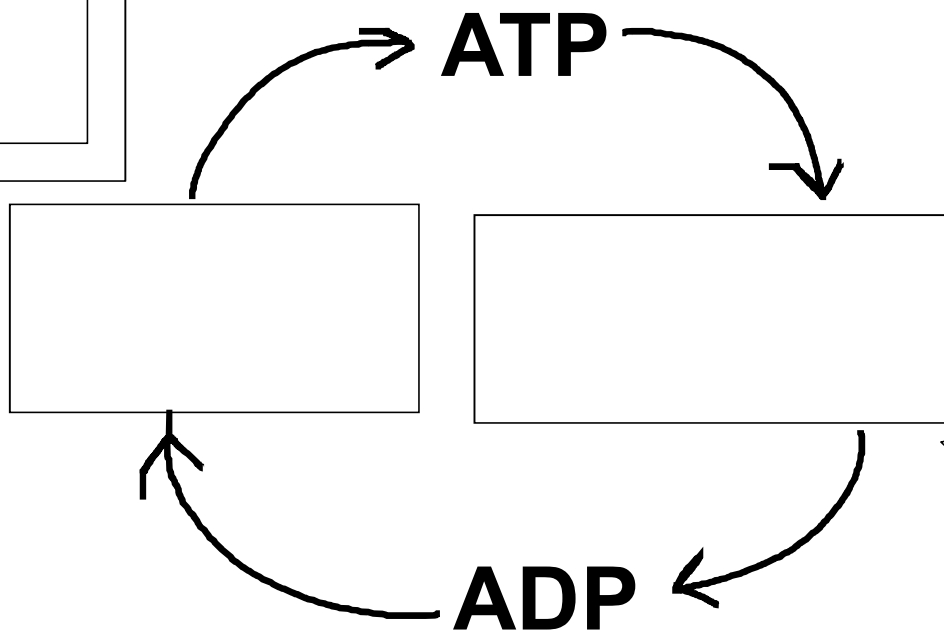
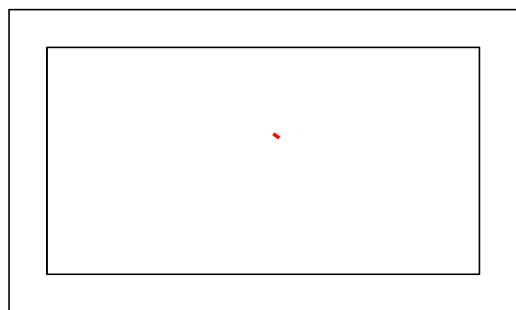


Which molecule has more available energy?

ATP

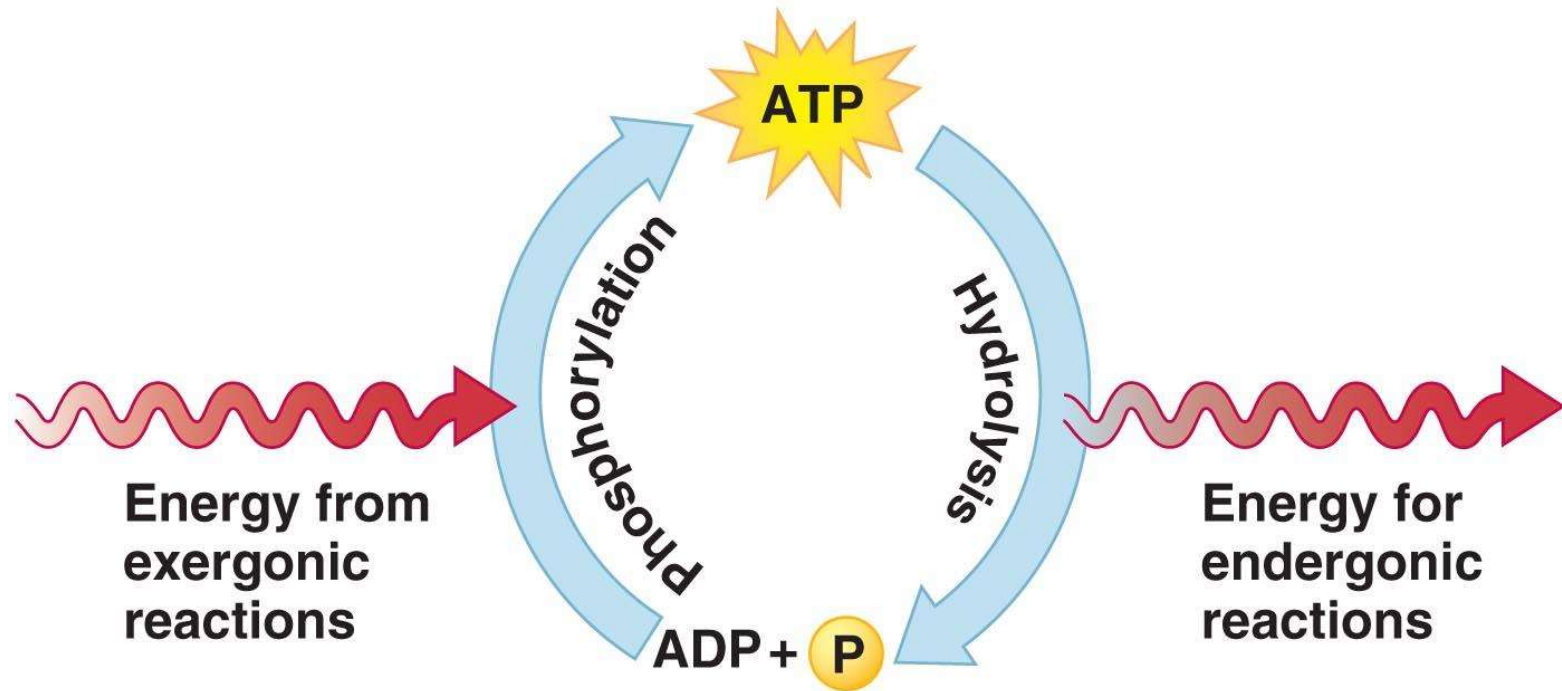
ATP / ADP Cycle





ATP releases energy for life processes by losing one phosphate, forming ADP (Adenosine Diphosphate)

Cells store energy released from food by adding a phosphate to ADP, forming ATP



ATP / ADP Chemical Reactions

Reactants
(start with)

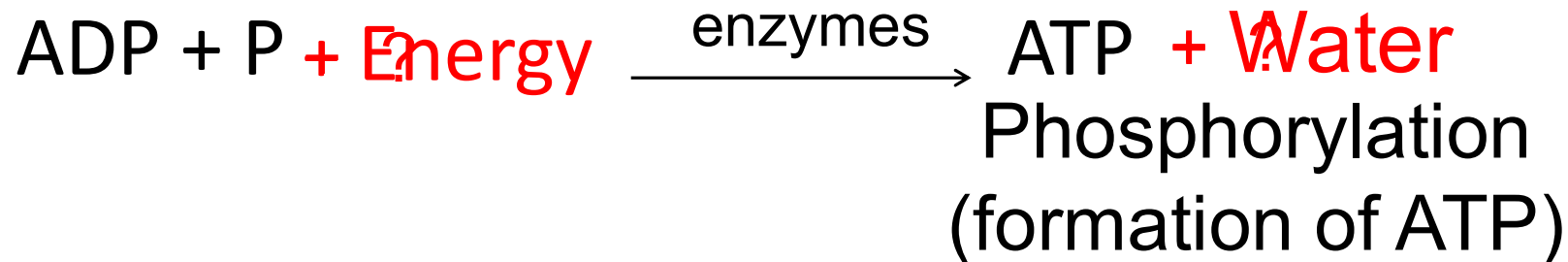


Products
(end with)

Hydrolysis
enzymes



Dehydration
synthesis
enzymes

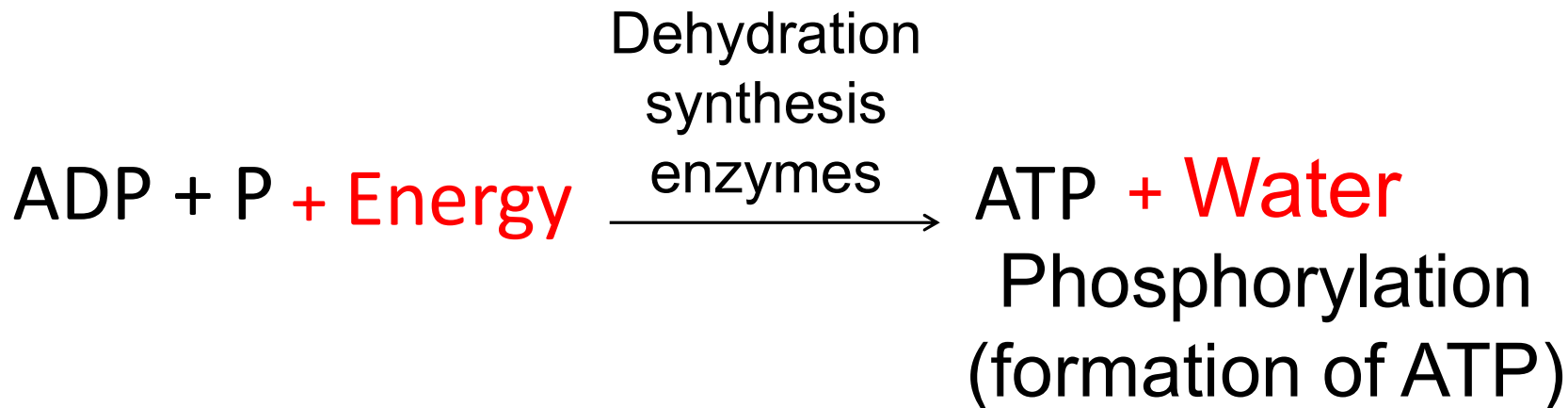
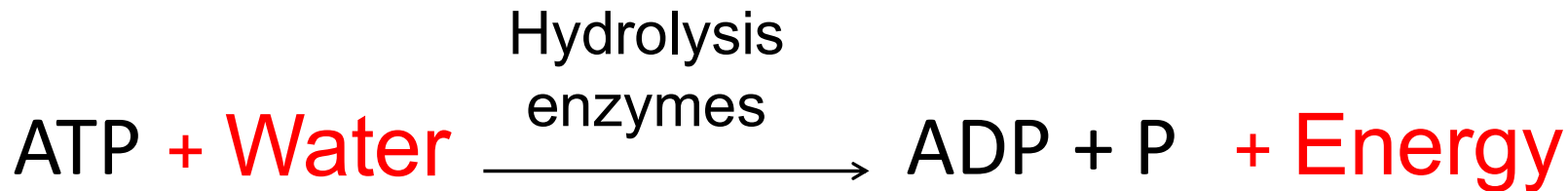


ATP / ADP Chemical Reactions

Reactants
(start with)



Products
(end with)



Types of Energy

Watch the funny video – think about all the sources of energy in the scene. [Video - Porsche push Japp commercial](#)

- [Simulation of Energy Forms and Changes \(needs Java\)](#)
 - search phet simulations (1st link)
 - select chemistry
 - select energy forms and changes

[Funny Japp Energy Bar Commercials \(several\)](#)