ATP: The Energy Molecule
Where does our energy come from?

- ____________ enter the bloodstream through our digestive system.
- ________, ________, and ________ have energy stored in their ________ potentially available for our body to use.
How does our body get the energy?

• The energy from the chemical bonds of the biomolecules is not released all at once.
  – That would be like...

• Instead the energy is stored in a more ___________ ___________ called ________, (Adenosine Triphosphate).

• Analogy: $100 bill vs. _________________________.

• One glucose molecule has enough energy to be stored in about _______ ATP molecules.
What is ATP?

- The Source of Energy for _________________

- Draw and label an ATP molecule below.
How does ATP Store Energy?

• Energy is stored in the last ____________________________ (it can store more energy than other types of bonds).

• Cells store energy by bonding a phosphate to _______ (Adenosine ________________)

• When a ________________ to ________________ bond is formed, energy is ____________ within that bond.
How does ATP Store Energy?

• _____ + _____ + ____ → _____

Adenine

Ribose

P

P

+ Energy + P

Adenine

Ribose

P

P

P
How does ATP Release Energy?

- In ATP, the last Phosphate Bond is _______ and energy is released.

- _______ and a _______ are left over

- ATP $\rightarrow$ _______ + _______ + _______
Reviewing the Concepts

1. Where is the energy stored in our food?

2. Why doesn’t our body release all of the energy stored in our food at once?

3. Write a chemical equation for the process of ADP storing energy and becoming ATP.

4. Where is the energy stored in an ATP molecule?
ATP Review

• There is too much energy in our biomolecules (like glucose) to ___________________________.

• Cells store the energy in smaller amounts by trapping it in the ______________ of ______ (between the last two phosphates).

• To use the energy, the last high energy bond is ___________ and the energy is ___________. ATP is changed to _______ + phosphate.

• If more energy is available, the reaction is reversible: _______ + ___________ + energy → ___________