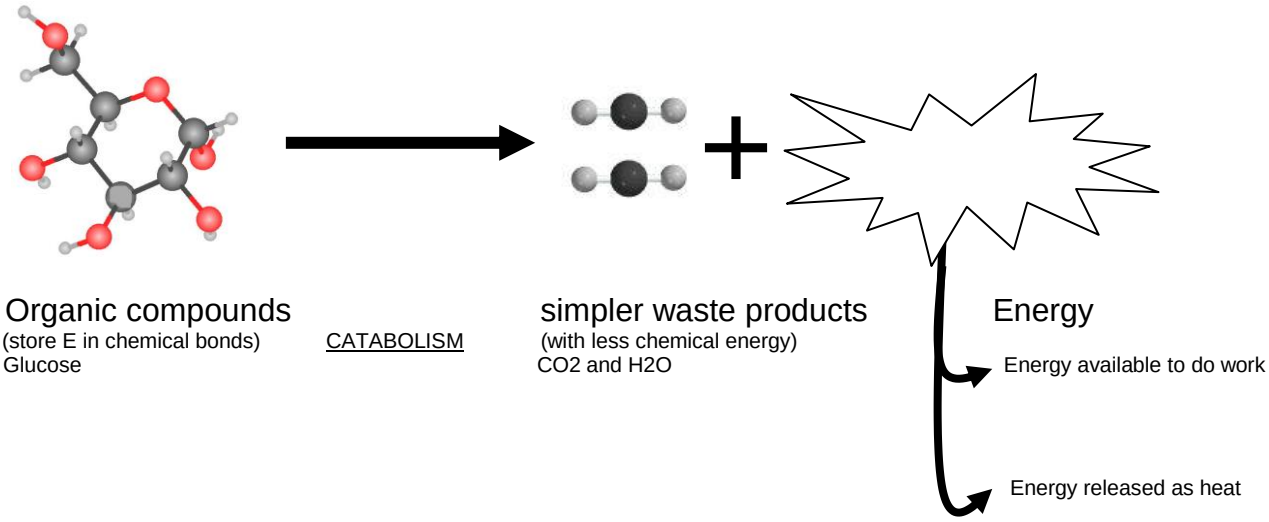
Notes: ***introduction to cellular respiration*** Name: _____

It takes energy to:

- Grow and reproduce
- Move or change shape
- Maintain complex structure
- Organize small molecules into polymers (i.e. amino acids → proteins, nucleotide → DNA)

LIVING TAKES WORK

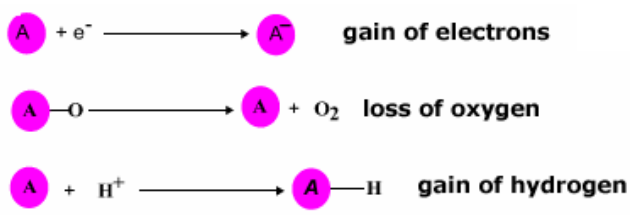
Energy for cellular work is released in catabolic reactions:



"Redox" Reactions

Reduction

Often associated with the gain of energy

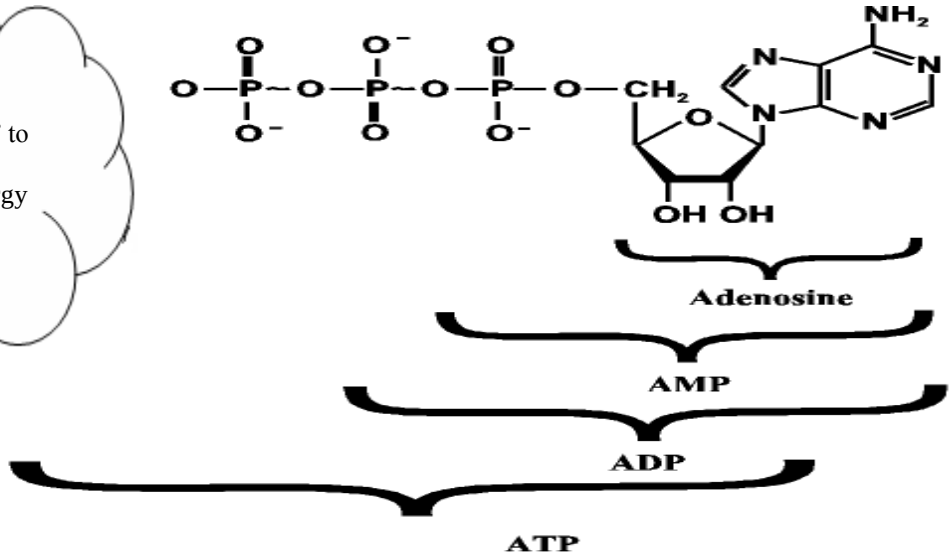


Oxidation

Often associated with the release of energy

Adenosine-5'-triphosphate (ATP) is the prime energy carrier for all cells:

The three negative phosphates "want" to repel, like a spring with potential energy



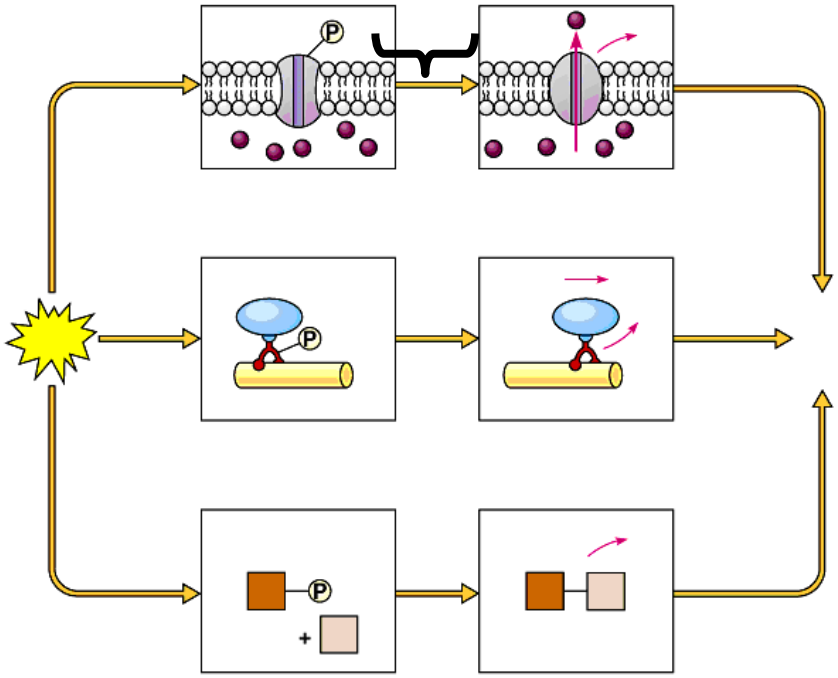
How ATP does work:

1. A **kinase** enzyme transfers a phosphate group from ATP to another molecule (a "substrate"). The process is referred to as *phosphorylation*.

2. The phosphylated substrate molecule looses it Pi.

    a. An enzyme that removes phosphate groups is known as a phosphatase.

    b. When the substrate looses its Pi, it can use the energy released to do cellular work



3. The Pi can be "recycled" and added to an ADP to create a new ATP → this is what cellular respiration is all about!!!