

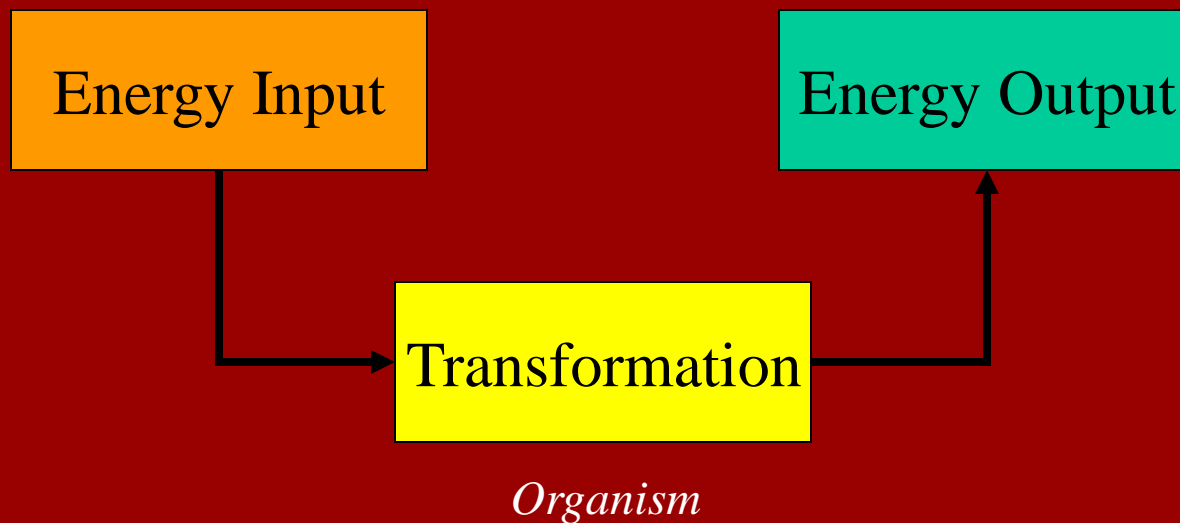
Energy Within the Cell

Why is Cell Energy Important?

- cellular reproduction
- protein synthesis
- cellular repair
- movement
- active transport

Where does it come from?

- Autotrophs vs heterotrophs
 - photosynthesis and respiration



Metabolic Reactions

- Two types
- *exergonic*-energy releasing
 - products have less energy than reactants
 - some “need” activation energy to commence
- *endogonic*-energy absorbing
 - products have more energy than reactants
 - this additional supplied by an external source.
 - Ex photosynthesis

Enzymes and Metabolic Reactions

- reactions occurring in cells **MUST** be low temperature
- enzymes are protein *catalysts* that lower the activation energy (kickstart)
- molecule worked on is the *substrate*
- enzymes end in -ase
 - sucrose =>fructose and glucose via enzyme sucrase

Energy Storage and Transformation

- Adenosine triphosphate- ATP
 - 5carbon sugar, nitrogen base and 3 phosphate groups
 - phosphate bonds are very high energy bonds
 - phosphorylation
 - created when the products of photosynthesis are metabolised during cellular respiration

Electron Transport

- Electrons move from high energy levels to low -- releasing energy at each step
- lithium, calcium and sodium are e- donors
- fluorine, chlorine and oxygen are e- acceptors
- e- loss is oxidation
- e- gain is reduction
- organic *redox* involves the loss/gain of H⁺