## Chapter 8 Section 1 Student Notes

How Organisms Obtain Energy

Transformation of Energy

Energy is the ability to do work.

Thermodynamics is the study of the flow and transformation of energy in the universe.

Laws of Thermodynamics

* First law—energy can be converted from one form to another, but it cannot be created nor destroyed.
* Second law—energy cannot be converted without the loss of usable energy.

Autotrophs and Heterotrophs

* Autotrophs are organisms that make their own food.
* Heterotrophs are organisms that need to ingest food to obtain energy.

Metabolism

* All of the chemical reactions in a cell
* Photosynthesis—light energy from the Sun is converted to chemical energy for use by the cell
* Cellular respiration—organic molecules are broken down to release energy for use by the cell

ATP: The Unit of Cellular Energy

* ATP releases energy when the bond between the second and third phosphate groups is broken, forming a molecule called adenosine diphosphate (ADP) and a free phosphate group