**** Bio-Chemistry #2: Chemical Reactions - Enzymes

*For additional support and information: Read Chapter 2 Lesson 4 in your Biology book*

* **Chemical Reactions:**
  + **Reactants vs Products**: Draw Example
  + **Bond Energy:**
  + Exothermic Vs Endothermic Reactions:
    - **Exothermic:**
      * Chemical reaction that releases \_\_\_\_\_\_\_\_\_\_\_\_\_ energy that it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
      * If the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have a lower bond energy than the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the reaction is exothermic.
        + Exothermic Example:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ releases not only useable energy for your cells but also heat that keeps your body warm.

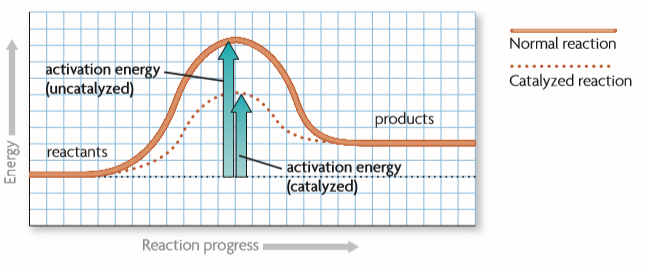
* + - **Endothermic:**
      * Chemical reaction that absorbs \_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy than it\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
      * If products have a higher bond energy than the reactants, the reaction is Endothermic.
        + Endothermic Example:

During Photosynthesis, plants absorb energy from sunlight and use energy to make simple sugars and complex carbohydrates.

Thus……..

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* Enzymes:
  + A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a substance that decreases the activation energy needed to start a chemical reaction. It will also increase the rate of a chemical reaction.
  + Compare the activation energies and the reaction rates in the graph below.



* + Under normal conditions, the reaction requires a certain amount of activation energy and it occurs at a certain rate.
  + When a catalyst is present…