**AP Biology Winter Break Assignment 2015**

**Objectives**

1. Create an environmental context in which you are thinking about the adaptations of organisms and the effects that changing world conditions might have on their population distribution and size.
   1. Within that context you need to consider shifts in phenotypes and shifts in species richness and diversity.
2. Autotrophs are the foundation of all food webs. Here, we will consider plants. You task is to consider how plants obtain and move water and nutrients and how they respond to the environment. Plants provide us, not just with energy in the form of sugars, but are also the basic building blocks of life including vitamins, minerals, and other nutrients.
3. You will produce a well-organized packet of information that will service as a resource to you for the rest of the school year. This counts as two lab grades. Some of the requirements can be found online and printed feel free to share those resources with your colleagues – for instance a good biome table or a good water cycle. You may also produce your own product or sketch or trace diagrams from your textbook. ALL written work must be your own – not a copy of someone else’s.
4. Your knowledge and understanding of this work will be assessed in quizzes and tests. All work should be turned on the first day of class.
5. Biomes
   * Produce a table that shows the major characteristics of biomes. There are several good ones on line. I have uploaded a simple chart to my webpage and you may use that if you would like.
   * Find a biome distribution map and copy or print it. It is useful to associate latitude to the biomes
   * Your table must include Grassland / Savannah, Tropical Rain Forest, Desert, Deciduous Forest, Taiga (Northern Coniferous Forest), and Tundra
   * Climate factors to be included: annual rainfall, temperature, basic soil characteristics like acidity or depth, dominant plant species and dominant animal species.
   * Be sure to think about the adaptations the each of these animals and plants have to their
   * Mastering Biology: Chapter 52.
   * Resource: Text, chapter 52, pp. 1165-1172
6. Biogeochemical Cycles – nutrient cycling is important and plants synthesize organic molecules from minerals and gases in their environment.
   * Make a colorful detailed biogeochemical cycle for each of the following: water, carbon, nitrogen, sulfur and phosphorus (yep, CHNOPS at its best)
   * If you can find detailed cycles online you may download and print. You can also copy or trace the cycles on pages 1242-1246. You are responsible for understanding each step of each cycle. Don’t forget the role of decomposition of dead organisms to returning nutrients to the soil or atmosphere.
   * Mastering Biology: Chapter 55
7. Energy flow and Photosynthesis
   * Read chapter 8, answer the concept check, skills questions and figure questions and check your answers in the back of the book. Yes you will turn these in so write them up.
   * Mastering Biology: Chapter 8
   * Read chapter 10, answer the concept check, skills questions and figure questions and check your answers in the back of the book. Yes you will turn these in so write them up.
   * Mastering Biology chapter 10.