2016-2017 AP Biology Summer Assignment

There is a lot of material to cover and fun to be had before the AP exam next May. In order to jump-start our course and help you stay focused over the long summer break there are 5 tasks you will complete prior to the start of the course (because we are all shooting for a 5 on the exam!). These tasks are required and will be included as the first grades of the school year. There will be a summer assignment exam on the first day of school covering only the content included in the assignment. NO LATE WORK will be accepted- you're in AP biology now, the best of the best! Time to start acting like it!

You can reach out to either AP teacher throughout the summer with questions or concerns you have. (Response times may vary- we will do our best to respond within 72hrs.)

- Mr. Charneske- dcharnes@pasco.k12.fl.us
- Ms. Diepholz- jdiephol@pasco.k12.fl.us

Task 1- Bozeman Videos

- Visit the website: http://www.bozemanscience.com/ap-biology
- Watch the following 2 videos and complete the supplementary questions for each. The questions can be found on the summer assignment website, or at the bottom of the video pages (you are doing the questions submitted by Winnie Litten for both videos). Your answers should be written legibly or typed.
  - 42- Biological Molecules
  - 48- Enzymes

Task 2- I Love Biology PowerPoint

- Visit the website: http://ilovebiology.net/new-ap-biology-powerpoints.html and find the PowerPoint 4.A.1-Biomolecules. This will help you preview some of the first topics we will discuss in AP biology and will be fundamental to understanding future topics in the course.
  - As you are reading answer the following questions- your answers should be written legibly or typed.

4.A.1- Biomolecules

1. Describe the difference between a monomer and a polymer.
2. Describe the difference between a dehydration reaction and a hydrolysis reaction.
3. Which type of reaction connects nucleic acids?
4. What is the main function of nucleic acids?
5. What determines the shape, and thus function, of a protein?
6. Describe the importance of the R group on amino acids.
7. Describe the difference between primary, secondary, tertiary, and quaternary structures of proteins.
8. What types of conditions could cause a protein to denature? What does denaturing mean?
9. Provide 3 examples of proteins denaturing in our bodies and give a reason why that would occur? Are there any times where denaturing a protein would be beneficial?
10. Why are lipids so important in biology?
11. Describe the difference between saturated and unsaturated fats.
12. Give me the most information you can on glucose- its so important!

Task 3- ATP Analogy

ATP is one of the most important biological molecules we will talk about this year, so a thorough understanding of this molecule will directly link to your success in this class. For this task you will create an analogy that accurately reflects the function of ATP in cells. Your analogy should be synonymous with every aspect of ATP including but not limited to: ATP turning into ADP and vice versa, energy being released/absorbed, the molecule not being 'used up' in this process. You may need to do some additional research on these molecules depending on how much you remember from biology.

Sample: A charged cell phone is ATP, but as it is 'used' the battery energy goes down becoming ADP (a lower energy molecule). Even though the battery is dead the phone is not destroyed, one must only 'add' energy to it in order for it to become ATP and work again.

Task 4- Create a model of a water molecule.

Water is an essential molecule for life (if you didn't already know this you might be in the wrong class). Using any materials you would like, you must create an accurate model of water molecules and how they interact with each other. Your model must have at least 3 H_2O molecules present. Below is the rubric that will be used to score this task.

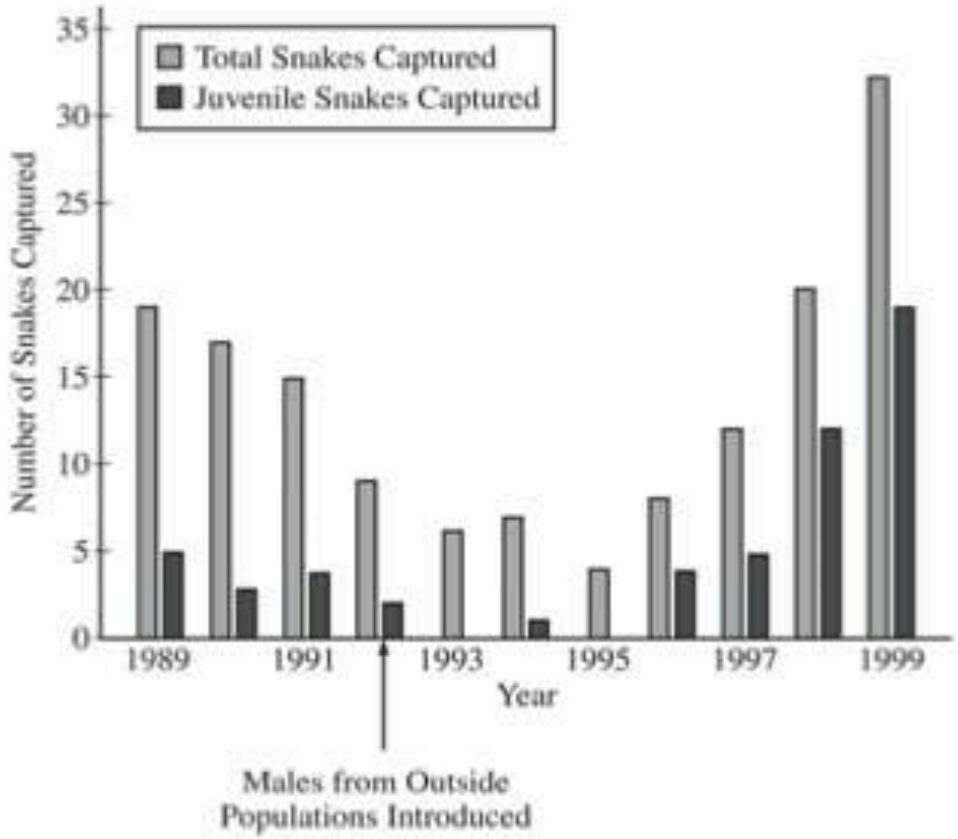
Appropriate size of atoms- 3 pts.	
Accurate bonds within molecule- 3 pts.	
Accurate bonds between molecules- 3 pts.	
Accurate polarity labeled- 3 pts.	
Total Points- 12 pts.	

Task 5- FRQ Practice

The AP biology exam contains 8 Free Response Questions (FRQs) and is 50% of your exam score. Therefore, it is important that we establish a baseline of your writing and analytical skills upon entering the course so that you can better improve weak areas and build upon the already solid areas. Below is a sample FRQ, please answer the question fully and to the best of your ability- you will not be graded on accuracy for this task but your full effort and academic integrity is expected.

In an attempt to rescue a small isolated population of snakes from decline, a few male snakes from several larger populations of the same species were introduced into the population in 1992. The snakes reproduce sexually, and there are abundant resources in the environment.

The figure below shows the results of a study of the snake population both before and after the introduction of the outside males. In the study, the numbers of captured snakes indicate the overall population size.



(a) **Describe** ONE characteristic of the original population that may have led to the population's decline in size between 1989 and 1993.

(b) **Propose** ONE reason that the introduction of the outside males rescued the snake population from decline.

(c) **Describe** how the data support the statement that there are abundant resources in the environment.