

# 2017-2018 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 6 tasks you will complete prior to the start of the course. 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 second day of school (Tuesday August 15<sup>th</sup>), covering only the content included in the summer assignment.** The total point value for the summer assignment is **60 pts. NO LATE WORK will be accepted.**

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](mailto:dcharnes@pasco.k12.fl.us)
- **Ms. Diepholz-** [jdiephol@pasco.k12.fl.us](mailto:jdiephol@pasco.k12.fl.us)

## Task 1- Informational Email (10 pts.)

- By **July 5<sup>th</sup> at 2pm** you will email Mr. Charneske **AND** Ms. Diepholz a message that includes the following....
  1. Your name
  2. Why you are taking the AP Biology course
  3. What you are most excited about for AP Biology ☺
  4. Your AP course history (What have you taken? Did you enjoy them?)
  5. Your college or career aspirations (Where do you want to go? What do you want to major in?)
  6. Your favorite way to learn (Is it from lectures, textbooks, hands on activities, informational videos, artsy foldables, or anything else?)
  7. Your favorite thing about summer (Did you do/are going to do anything fun and exciting? Do you just like to relax on the couch? Are you a Netflix binger? If so, what do you watch? Etc...)
- The purpose of this task is to make sure that you are on task and adhere to deadlines and more importantly we want to learn a little about you before the course starts ☺.

## Task 2- Bozeman Videos (10 pts.)

- Visit the website: <http://www.bozemanscience.com/ap-biology>
- Watch the video **42 (Biological Molecules)** and video **48 (Enzymes)** and complete the supplementary questions for each. The questions can be found 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.*

## Task 3- I Love Biology PowerPoint (12pts.)

- 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 vital to understanding future topics in the course. As you are reading through the PowerPoint, answer the following questions. *Your answers should be written legibly or typed.*

### 4.A.1- Biomolecules Questions

1. Describe the difference between a monomer and a polymer.
2. Describe the difference between a dehydration reaction and a hydrolysis reaction.
  - **Note:** You might want to include a diagram of both as well.
3. Which reaction from #2 connects nucleic acids?
4. What is the main function of nucleic acids?
5. Describe the importance of the R group on amino acids.
6. Describe the difference between primary, secondary, tertiary, and quaternary structures of proteins.
  - **Note:** Pictures and diagrams would help here as well.
7. Which structure of proteins determines the shape, and thus function, of the protein?
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. What are lipids used for? Why are they necessary in biology?
  - **Note:** You can give various examples of how lipids are necessary in biology. They are used for many different things.
11. Describe the difference between saturated and unsaturated fats.
12. State the most you can about the molecule glucose. It is a very important molecule in AP Biology and you will **NEED** to know as much about it as possible.
  - **Note:** How is glucose used? How is glucose made? What is the formula for glucose? What is the chemical structure for glucose? What type of biomolecule is glucose?

#### Task 4- ATP Analogy (10 pts.)

- 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. *Your analogy should be written legibly or typed.*
  - 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 5- Water Model (12 pts.)

- Water is an essential molecule for life. You must create an accurate model of water molecules and how they interact with each other. You have permission to use any material you would like for this, get creative! Your model must have **at least 3 H<sub>2</sub>O molecules present**. **Below is the rubric that will be used to score this task.**

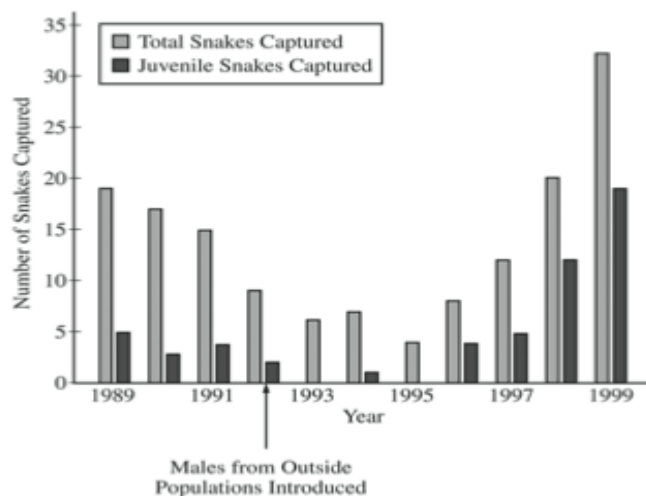
Appropriate size of atoms → 3 pts.	
Accurate bonds <b>within</b> molecule → 3 pts.	
Accurate bonds <b>between</b> molecules → 3 pts.	
Accurate polarity labeled → 3 pts.	
<b>Total Points → 12 pts.</b>	

#### Task 6- FRQ Practice (6 pts.)

- The AP biology exam contains 8 Free Response Questions (FRQs) and consists of 50% of your AP exam score. Therefore, it is important that Mr. Charneske and Ms. Diepholz establish a baseline of your writing and analytical skills upon entering the course. This way we can help 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. *Your answers should be written legibly or typed.* **You will not be graded on accuracy for this task but your full effort and academic integrity is expected.** Each part is worth 2 pts. for a total of 6 pts.

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.



- Describe ONE characteristic of the original population that may have led to the population's decline in size between 1989 and 1993.
- Propose ONE reason that the introduction of the outside males rescued the snake population from decline.
- Describe how the data support the statement that there are abundant resources in the environment.