AP BIOLOGY

SUMMER WORK 2017 (Parts 1-4)

Welcome to AP Biology! AP Biology is a rigorous course designed to be equivalent to a first year biology course at a university. This summer work was designed to get you started on the content material prior to starting the course in the fall. All work is due at the beginning of the second week of class and <u>will be worth 10% of your quarter 1 grade</u>.

Due Dates: Blue days (1,3,5,7) Tuesday August 21, 2018

Gold days (2,4,6,8) Monday August 20, 2018

Part 1: Introduction Letter

Draft an e-mail to your AP teacher following these rules:

a. Use clearly written, **full sentences**. Use **spell check**! This is a professional communication like you would have with a college professor.

My email: weekssa@pcsb.org

b. Make the **Subject**: **AP Bio: Introduction to <Insert Your Name Here>**

(Do not include the quote marks or the brackets, just the words)

c. Begin the e-mail with a **formal salutation**.

d. Now introduce yourself (your name) and tell me a little bit about yourself, like:

- What do you like to do (hobbies, sports, music, interests, etc.)?
- Do you have a job?
- Tell me a little bit about what is important to you- friends, family, pets, etc.,
- What do your parents do for a living?
- Was there anything that you liked about your earlier biology class?
- What previous science classes have you taken?
- What was the last book you read for fun?
- How do you learn (hands on, visual, verbal)?
- What are you looking forward to the most in AP Biology?
- What are you most anxious about in AP Biology?
- What do you want to do or study after high school?

You do not have to address all of these questions, just giving you some ideas.

Part 2: Macromolecules Review

You will create a display that will illustrate and explain the four groups of macromolecules: carbohydrates, proteins, lipids, and nucleic acids. This display can be a poster, brochure, handout or multiple or some other model of your choice.

Use the following as a checklist to insure that you have included all the necessary information for each category of macromolecule. Each section of the poster board needs to include the following items…

Carbohydrates

_____Provide an example of a carbohydrate monomer and basic structure
_____Provide an example of a carbohydrate polymer
_____Explain the function of carbohydrates
____What foods supply carbohydrates? Provide visuals.

Proteins

_____Provide an example of a protein monomer and basic structure
_____Provide an example of a protein polymer
_____Explain the function of proteins
_____What foods supply protein? Provide visuals.

Lipids

_____Provide an example of a lipid monomer and basic structure
_____Provide an example of a lipid polymer
_____Explain the function of lipids
_____What foods supply lipids? Provide visuals.

Nucleic Acids

_____Provide an example of a nucleic acid monomer and basic structure
_____Provide an example of a nucleic acid polymer
_____Explain the function of nucleic acids

Part 3-Cell Analogy

Introduction:

Cells need to carry on the same basic functions as we do to sustain life; the difference is cells do this with much smaller parts. A cell is the inner workings of structures called organelles-tiny organs.

Your Task:

You will come up with an analogy for the cell of your choice (plant or animal) and its organelles. Your analogy will be represented in the form of a **model or poster** that represents a cell and its organelles. You should compare the roles of 10 organelles to a part of the analogy.

Ex. Cell City (YOU MAY NOT USE THIS EXAMPLE)

The nucleus is the main control center of the cell. Therefore it is like the city hall where information, policy and governing are done to run the city.

The mitochondria of a cell are where energy is created. This would be the power plant for the city.

The model or poster

You should have a well-drawn or constructed model of your cell analogy (i.e. if you were doing the city analogy you would have a picture of a city and each of the parts of your analogy) and short 2-3 sentence descriptions of each organelle function and analogy.

Organelles:

Plasma membrane Nucleus Lysosome Ribosome Cell Wall

Rough Endoplasmic Reticulum Smooth Endoplasmic Reticulum Cytoplasm

Golgi Apparatus Mitochondria Chloroplast Vacuole

Part 4- Extended Vocabulary Review

Extended Vocabulary Review- For each of the terms listed below you will provide an extended definition. Definitions need to be provided in complete sentences, 3 sentence minimum to explain each term. These definitions/explanations must be hand written (please ensure your writing is legible). You may group some terms together to make explanations and definitions more concise and to help connection concepts. For example: theory, law, and hypothesis could be explained together as you discover and explain the differences between the terms. Please HIGHLIGHT all terms.

1. Theory
2. Law
3. Hypothesis
4. Independent variable
5. Dependent variable
6. Control group
7. Experimental Constants
8. Qualitative Data
9. Quantitative Data
10. pH/Buffer
11. Antibody
12. Antigen
13. Neuron
14. Hormone
15. Prokaryote
16. Eukaryote
17. Virus
18. Autotroph
19. Heterotroph
20. Catalyst
21. DNA Replication
22. Transcription (Gene Expression)
23. Translation (Gene Expression)
24. Gene Regulation
25. Enzyme
26. Homeostasis
27. Fermentation
28. Active Transport
29. Passive Transport
30. Osmosis
31. Diffusion
32. Covalent Bond
33. Ionic Bond
34. Hydrogen Bond
35. Natural Selection
36. Artificial Selection
37. Mitosis
38. Meiosis
39. Photosynthesis
40. Cellular Respiration
41. Redox Reaction (Oxidation Reduction)
42. Law of Independent Assortment (genetics)
43. Law of Segregation (genetics)
44. Protein Synthesis