

AP Biology Summer Assignment

The summer assignment for AP Biology is composed of reviewing certain topics from Biology I and researching evolutionary concepts. If you have difficulty with these concepts, you can reference any credible online biology book. You can also use sources such as Khan Academy and Bozeman Science. If you are still having trouble, you may want to reconsider your course selection. Again, these concepts are review and you are expected to know them, so we can build upon them in AP Biology.

I have included guiding questions on the topics for the summer assignment. The responses to these questions are due on the first day of class. There will be a quiz on these topics the second day of class. While they are not the only topics from Biology I we will be building upon, they are some of the ones we cover during the first half of the course. (questions on page 2)

The second part of the summer assignment is to research evolutionary concepts and write an essay based upon these concepts. (see directions below)

This is a challenging and fast paced course. However; if you put the time into studying and reading you will be successful. At the end of the course, you will have completed the equivalent to college Biology for majors. I look forward to seeing you all at the beginning of the school year. If you have questions over the summer; you can reach me at the email below.

Mrs. Coyne

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Guiding Questions for Reviewing Biology I- Test on Second Day of Class

These questions cover the following topics from biology I- Evolution, Water, Cells, Photosynthesis, Respiration, Mitosis/Meiosis and Macromolecules. These are topics we will building upon during the first half of the course. You are expected to know this information so that we can build from there. You also need to be able to read data table and graphs.

1. What is survival of the fittest?
2. How does genetic variation and mutation play a role in natural selection?
3. What factors must be met for Hardy Weinberg?
4. What is genetic drift?
5. What are different kinds of evidence we can use to support evolution?
6. What are homologous, vestigial and analogous structures?
7. What is the best way of comparing species?
8. Know how to read a phylogenetic tree. (no written response necessary)
9. How was primitive earth conducive to inorganic precursors synthesizing organic molecules?
10. What was the Miller Urey experiment?
11. What is the electron acceptor in photosynthesis? Respiration?
12. What enzyme is needed in the production of ATP?
13. What is the purpose of glycolysis? Where does it occur? What is its product?
14. What are the four macromolecules? What are their building blocks? What are examples of functions in the human body?
15. How do each of the following properties relate to water? Cohesion, adhesion, high specific heat, universal solvent, heat of vaporization, surface tension, bonding, polarity
16. How is surface area to volume related to the cell?
17. What does selectively permeable mean?
18. What is the fluid mosaic model?
19. What is the structure of the plasma membrane and properties of it?
20. Contrast active and passive transport.
21. What is the difference between hypertonic, hypotonic and isotonic?
22. What are facilitated diffusion, diffusion and osmosis?
23. Compare and contrast prokaryotes and eukaryotes. Compare and contrast plant and animal cells.
24. What are the organelles found in eukaryotic cells and what are their functions?
25. What are the stages of mitosis and meiosis? What occurs during these stages? Be able to compare and contrast the two cycles.

Sources to review these topics

Khan academy

Bozeman science videos

Evolutionary Essay

Use prior knowledge and research on the topics of evolution to complete the following assignment.

- I. Write 3-5 sentences summarizing the contributions made to the theory of evolution by each of the following men.

Plato, Aristotle, Charles Lyell, Jean Baptiste Lamarck, Ernst Mayr, Theodosius Dobzhansky, George Cuvier, James Hutton, Thomas Malthus, Gregor Mendel, Godfrey Hardy, Wilhelm Weinberg, Carolus Linnaeus and Stephen J. Gould

- II. You and your family have just sat down to dinner with your good friend Charles Darwin. All of a sudden there's a knock on your door. Plato, Aristotle, Charles Lyell, Jean Baptiste Lamarck, Ernst Mayr, Theodosius Dobzhansky, George Cuvier, James Hutton, Thomas Malthus, Gregor Mendel, Godfrey Hardy, Wilhelm Weinberg, Carolus Linnaeus and Stephen J. Gould are standing at your door. You have limited seating, so you choose SIX guests to join you for dinner. The rest you invite to come back next week.

While enjoying a delicious meal, a heated debate about evolution ensues. Due to your recent research on the theory of evolution, you are able to interact and add to the conversation.

In your paper, introduce the cast of characters at your dinner table. Be sure to include yourself and family members who were present. Write an account of the dinner in which you describe the conversations around the table. Be sure to include what each guest as well as your family members contributed to the conversation. Feel free to add humor. Be creative, but do not change the ideas and thoughts of the guests. This can be written in a play format or traditional essay.

Towards the end of dinner, there's a knock on the door. You answer and in barges in an uninvited guest. (This person can be from any time in history, including the present) Who is this guest? What thoughts, ideas etc...does he/she add to the dinner conversation?

Length: 3-6 pages typed

Format: 12 font, times new roman, 1 inch margin

Due: Second day of class; on canvas; through turn it in