

Mrs. Kemp
AP Biology Summer Assignment
Wyomissing High School 2023-2024

Hello AP BIO students,

Welcome to Advanced Placement Biology! I am excited that you have made the commitment to studying Biology at a higher level.

AP Biology is designed to move at an accelerated pace involving material and skills comparable to that of a first year college level Biology course. This course will require dedication and self-motivation. Independent work is not only required but expected and will play a key role in your success in this class.

To help you prepare and put forth your best efforts from day one, there are two required summer assignments.

#1 Is due the first day of class: Introduction letter. See instructions attached below

#2 Is due the second day of class: Recall & Review Packet. See instructions attached below.

** For this assignment please pace yourself throughout the summer so it is not overwhelming all at once at the end of the summer. Also keep in mind this will be the first time I will see the quality of your work, so put forth your best efforts.*

If you have any questions at all, you can reach out to me at: mkemp@wyoarea.org

I hope that your experiences in this course will be both challenging and rewarding. I look forward to meeting and working with all of you!

Mrs. Kemp

AP BIOLOGY Summer Assignment #1: Letter of Introduction

DUE: First day of class

ASSIGNMENT INFORMATION: Productive and proper communication is essential to clearly conveying information and directions in both the science classroom and lab. Good communication can lead to understanding information, facilitating coordination and increasing efficiency, success, and positive outcomes. Poor communication skills can lead to misunderstandings, conflict, missed opportunities, and lack of success.

DIRECTIONS: READ INSTRUCTIONS CAREFULLY. This is graded on both completion and correction. Any errors found in any of the following instructions may result in a point deduction. Check both the instructions and your work thoroughly. This is your first grade for quarter 1. Get off to a good start.

For this assignment you will compose an email to me using the following communication skills:

- Write in full sentences. Each paragraph should be at the very least 5- 7 sentences
- Do not use any abbreviations(i.e. “don’t”), “text” style wording, slang or Emojis
- Use appropriate, scholarly and knowledgeable vocabulary
- Proofread your work to make sure you have answered all questions, provided all information requested, fixed spelling errors and have checked your grammar.
- Send your Letter of Introduction to: mkemp@

And you must also bring a hard copy to first class

- Make the subject title; AP BIO Student Introduction : <insert your first and last name>
- Begin the email with a formal salutation such as Mrs. Kemp, or Hello Mrs. Kemp, Then introduce yourself by including the following information

- **Paragraph 1:** Introduce yourself with your full name, year of high school (junior/senior), how many years you have attended Wyomissing High School, what school activities you have been involved in past years and what school activities you hope to or will be involved in this year.

- **Paragraph 2:** Discuss what you like to do outside of school (do you have any hobbies or other interests)? - Do you have a job? If so, where do you work and how much do you work during the week or is your job seasonal? In paragraph 2 also be sure to share one other piece of information you think is particularly interesting about yourself or your family. For example, have you traveled somewhere exotic or accomplished an unusual feat like scaling a mountain? Do you have a large extended family or a small close knit one? Do you have any pets to share about? Do you have an unusual talent or interesting/rare collection of items?

- **Paragraph 3:** Answer the following questions...Why are you taking AP Biology and what do you hope to gain from this course? What are your plans for post-high school? Have you decided on what colleges or universities you are considering applying to and what do you think your major will be?

- End the email with a formal closing such as “Sincerely”, “Your Truly”, or “Cordially”. Skip one line-space and type your full name with your title/school and contact underneath. Your title is: AP Biology Student

Example:

Sincerely,
Mrs. Kemp

AP Biology Instructor
Wyomissing High School

BIO AP Summer Assignment #2: RECALL & REVIEW PACKET

DUE: Second day of class

ASSIGNMENT INFORMATION: I think that this biology review playlist will serve as a prelude resource. Although you may find it elementary, the Amoebas Sisters provide fundamental biological content in a straightforward and fun manner. Sit back and relax and enjoy this biology video review playlist. During this video please take advantage of the “pause” button to complete the attached video questions list. Some answers will be obvious throughout the video and others you may have to recall from past biology classes or research on your own. This is graded on both completion and correction.

DIRECTIONS: You are creating a **RECALL & REVIEW PACKET**. This will get you off to a great start and we will rely on this packet throughout the year. All of your answers to the following questions must be on hardcopy paper, either handwritten or typed, and then inserted into the 3 ring binder you will be using for the rest of the school year. I recommend at least a 2 or 3 inch binder.

Create a title page: **RECALL & REVIEW PACKET** and then attach the following review questions and answers. Some of these questions will be written (or typed) and some will require drawing, diagramming and/or graphing.

You can be creative, colorful and fun with your drawings but please make sure your written responses are appropriate, thorough and use scientific vocabulary.

DIRECTIONS:

Watch the Amoebas Sisters: Stroll through the Playlist (a Biology Review...on YouTube) and complete the attached question (105 of them) on a separate paper and insert into your three ring binder. This is a simplified review of your past biology courses but this review will serve you well throughout this AP BIO course. Most answers will come directly from the video, but there will be just a few that require additional research. Some questions will ask you to be creative and design a chart, a list, or a diagram. I am looking for your own personal creativity on these requests so please feel free to be as creative, “colorful” and “animated” and “fun” as you like! I look forward to seeing your work.

Again...any questions at all, please do not hesitate to contact me at: mkemp@wyoarea.org

QUESTIONS:

1. List the characteristics of life scientists use to determine if something is alive or not
2. List the three major components of cell theory?
3. Be creative and design your own pyramid that identifies the biological organization of life
4. Define abiotic and biotic factors. Give an example of each
5. Biomolecules are part of organisms. Be creative and design a chart or diagram that: names the four major macromolecules, identifies their monomers (building blocks), defines what elements they each contain and lastly state each of their functions
6. List your answers to the following questions: A. What is an enzyme? B. What is a substrate? C. What is the active site of an enzyme? D. What factors may affect enzyme activity? E. What terminology do we use to describe an enzyme that cannot function within its ideal environment?
7. List the main differences between prokaryotic and eukaryotic cells
8. List what Domain of organisms fall under the description of Prokaryotes. List what Domain of organisms fall under the description of Eukaryotes.
9. Create a list of cell organelles common to both prokaryotic and eukaryotic cells. Be sure to give your list the appropriate title at top
10. Create a list of cell organelles that are found exclusively in eukaryotic animal cells. Be sure to give your list the appropriate title at top
11. In addition to the above, research and create a list of organelles that can also be found in eukaryotic plant cells. Give your list an appropriate title at top.
12. Provide a brief explanation as to the importance of the cell membrane, also called the plasma membrane.
13. Research a cell membrane and then draw and label as many parts as you can of the cell membrane
14. Define Passive Transport and provide examples
15. Define Active Transport and provide examples
16. Define osmosis
17. How is hypertonic solution defined?
18. Find images or drawings online of cells in hypertonic, hypotonic and isotonic solutions. Make a drawing of your own of a cell in each type of solution and label appropriately.
19. What is the main goal of cellular respiration? What organelle does cellular respiration take place in? Write out the chemical equation for cellular respiration. Make sure it is balanced.
20. Why do we define cellular respiration as aerobic respiration?
21. What type of respiration is performed without oxygen? What organisms perform this type of respiration?
22. What organelle does photosynthesis take place in? Provide the chemical equation for photosynthesis. Make sure it is balanced
23. How would you explain the relationship between the reactants and products of cellular respiration and the reactants and products of photosynthesis?
24. What is the source of energy that allows plants to perform photosynthesis?
25. Identify the organelle that houses DNA?
26. What type of biomolecule is DNA?
27. Define gene regulation?
28. Draw an image of a nucleotide and label its three parts
29. What is the base of a nucleotide determining?
30. Identify the four bases of DNA and also state how they are appropriately paired to each other.
31. Define chromosomes?
32. How many chromosomes are there in a human?
33. How many chromosomes are received from the biological male parent and how many are received from the biological female parent?

34. Briefly explain what it means for DNA to exist in two antiparallel strands. Make a drawing to represent your explanation. .
35. What is the importance of DNA Replication?
36. Make a list of the four enzymes that play a key role in DNA replication and define their specific functions
37. List the phases of a cell cycle
38. From your list above, which phases of the cell cycle are considered to be part of Interphase? Provide a brief description of what is happening during these phases of interphase
39. What phase(s) allows for cell division
40. What allows for a cell to continue through the cell cycle?
41. Define Apoptosis?
42. What three proteins help to control and regulate the cell cycle?
43. What type of cells do not respond to cell cycle checkpoints? State three problems discussed in video that occur with this type of unchecked cell.
44. Which type of cell division is for growth and repair?
45. Name and provide a brief explanation for the phases of Mitosis
46. Define Cytokinesis
47. What type of cell division produces gametes? What is the main function of gametes?
48. State the difference between haploid and diploid cells?
49. List the phases of meiosis
50. What is crossing over and when does it happen?
51. Define the difference between a gene and an allele
52. What type of letter do we use to indicate a dominant allele?
53. What type of letter do we use to indicate a recessive allele?
54. In Mendelian Inheritance recessive alleles can only express themselves when....?
55. Provide an example of how you would write a homozygous dominant genotype.
56. Provide an example of how you would write a homozygous recessive genotype.
57. Provide an example of how would write a heterozygous genotype
58. What is the difference between genotype and phenotype?
59. Construct the punnett squares for Hh x Hh
60. Construct the punnett square for HhSs x HhSs
61. State the difference between incomplete dominance and codominance?
62. What are Pedigrees used for? What does a circle represent? What does a square represent? What does a shaded shape represent?
63. DNA codes for _____
64. Name four functional traits that proteins are involved with.
65. Name and briefly describe the two major steps of protein synthesis
66. To be fully functional, what do proteins sometimes require?
67. What is a codon and where is a codon found?
68. What is an anticodon and where is the anit-codon found?
69. Besides an anticodon, what is located on tRNA?
70. List the three types of gene mutations?
71. What is a frameshift mutation and which type of gene mutation is most likely to be involved in a frameshift mutation?
72. Name types of chromosomal mutations?
73. Mutations are not always harmful. What two other types of mutations exist?
74. Because mutations are not purposefully caused by an organism, we say that they are _____
75. In the biological sense, fitness refers to...
76. How does natural selection compare to genetic drift?

77. Research the following; Founder Effect and Bottleneck Effect and write a brief explanation of each
78. Define autotroph. Give an example
79. Define heterotroph. Give an example
80. Name four helpful roles of bacteria
81. Name one we use to treat harmful bacteria?
82. Design a chart or diagram to show the similarities and differences between bacteria and virus
83. How do bacteria reproduce? What do viruses require in order to reproduce?
84. List the three domains of life
85. From least specific to most specific list the taxonomy levels that come after DOMAIN
86. State the difference in how nonvascular and vascular plants get water
87. What is the role of the stomata? What type of cells control the opening and closing of stomata?
88. What are examples of when the stomata might need to remain closed?
89. Look up the difference between asexual and sexual reproduction. State the difference.
90. What type of reproduction is performed by angiosperms?
91. Name the male parts within a flower structure. All together called _____
92. Name the female parts within a flower structure. All together called _____
93. Define a Food Web. The arrows of a food web show the direction of what?
94. Which level of an energy pyramid represents the most energy?
95. Research and answer; What is the ten percent rule when referring to an energy pyramid? How is this energy lost?
96. Define Biodiversity
97. Define primary succession and give an example of what may cause primary succession
98. Define secondary succession and give an example of what may cause secondary succession
99. Research and answer; What is the name given to the species that colonizes an area first? Give an example
100. In regards to the carbon cycle, where is carbon found?
101. In regards to the nitrogen cycle, what do nitrogen fixing bacteria convert nitrogen from the atmosphere into?
102. Provide a brief explanation of what a predator vs. prey relationship is. Give an example.
103. Research and answer; Is a predator versus prey relationship a negative feedback cycle or a positive feedback cycle. Explain.
104. Define the symbiotic relationships; parasitism, mutualism, commensalism. Provide an example of each
105. Research and answer; Define Keystone species. Give an example

You are done!