



AP BIOLOGY SUMMER ASSIGNMENT



Adapted from "Summer of Biology" by Ms. Foglia

This summer assignment has been designed for 5 purposes:

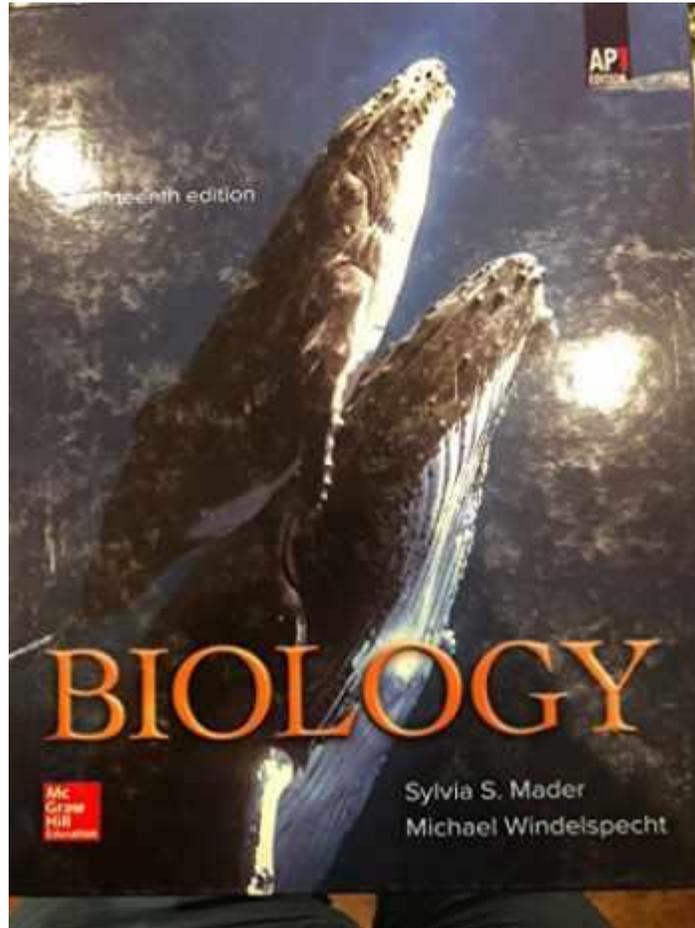
- ❖ to get you to think during the summer months and to keep your mind sharp, because I will expect a lot out of you during the upcoming school year!
- ❖ to expand your vocabulary by familiarizing you with terms that we will be using in class.
- ❖ to introduce you to major concepts from AP Biology through non-classroom methods of learning.
- ❖ to have you achieve some early success in this class and to help you begin your first quarter with confidence.
- ❖ to decrease the amount of new material that you will have to learn during the school year.

Overview of Summer Assignments

1. Attend AP Biology Meeting—Stop by room 129 after school, May 20th or 21st, 2021
2. Letter of Introduction—due by MONDAY, June 4th, 2021
3. BioJournal Photo Scrapbook—due 1st FULL day of school
4. Annotated Textbook Notes, Chapters 43 – 47—due 1st FULL day of school.
5. Ecology Review Article—due 1st FULL day of school
6. Zebra Mussels Article— due 1st FULL day of school

Assignment 1

All AP Biology students must attend orientation meeting **in room 129 after school**. At the meeting an overview of the course and expectations will be given out. Summer assignment packets will be given about and reviewed. Textbook information will also be discussed.



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ASSIGNMENT 2



LETTER OF INTRODUCTION

Welcome to AP Biology!

We are going to spend a lot of time together during the upcoming year, so it's best if I get a head start on learning a bit more about you. Some of you I may have had in class before but that was a long time ago. We will use the internet a lot in this class to complete projects and assignments, so let's get you used to communicating with me via e-mail.

Your first digital assignment is to successfully send me an e-mail. **Due date: FRIDAY, June 4th, 2021**

Draft an e-mail to me following these rules:

- Use clearly written, **full sentences**. Do not abbreviate words like when you are texting with a friend. Use **spell check!** This is a professional communication like you would have with a college professor, so let's practice for your rapidly nearing future!
- Address it to me at: mmorrisette@jca-online.org
- Make the **Subject**: "AP Bio: Introduction to <Insert Your Name Here>" (Do not include the quote marks or the brackets, just the words)
- Begin the e-mail with a **formal salutation**, like "Mr. Morrisette," or "Dear Mr. Morrisette," (please spell my name correctly!)
- 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.)? Not just at JCA, but at home too.
 - Do you have a job? What would you like to do for a career? Where do you see yourself in 5 years, 10 years, 20 years?
 - Tell me a little bit about your family (Mom? Dad? Guardian? Siblings? Pets?) What do your parents do for a living?
 - Was there anything that you liked about your earlier biology class? Please be honest, do not just tell me what I want to hear.
 - Do you know where you want to go to college? What would you major in?
 - What are you looking forward to the most in AP Biology?
 - What are you most anxious or nervous about in AP Biology?
- ✚ End the e-mail with a **formal closing**: "Cordially", "Sincerely", "Warm regards", etc. and add your name as if you signed a letter.

ASSIGNMENT 3



Biology Collection

For this part of your summer assignment, you will be familiarizing yourself with science terms that we will be using at different points throughout the year. The list of terms is on the next page.

1. Select 50 terms – Due the First FULL Day of School.

- ✚ Define 20 of these terms in a WORD file & then attach the terms in an email to me. (mmorrisette@jca-online.org)

The Subject of the email must be “**Biology Collection: <Insert Your Name Here>**” (Do not include the quote marks or the brackets, just the words)

Remember, all emails to me must be in the formal, professional style with a formal salutation, formal closing, and include your name at the end as if you signed a letter.

- ✚ “Collect” 30 other items from the list of terms.

When I say “collect”, I mean you should collect that item by finding it and taking a **photograph** (digital or paper) of it. You will put your pictures in a scrapbook with the date “collected” and with a corresponding explanation. You do not need to “find” the exact item on the list, say for example, if it is an internal part to the organism, but you must apply the term to the specimen you find and explain in your scrapbook how this specimen represents the term selected.

2. Example

- ✚ If you choose the term “phloem”, you could submit a photograph you have taken of a plant leaf or a plant stem and then explain what phloem is and specifically where the phloem is in your specimen.

3. Original Photos Only

- ✚ You cannot use an image from any publication or the internet. You must have taken the photograph yourself. To prove this, you will need to place a “marker” in all of your photographs, like a name tag, ID, or a coin or key chain, etc.

4. Natural Items Only

- ✚ Some specimens may not be used for more than one item, and all must be from something that you have found in nature. Take a walk around your yard, neighborhood, or town. **DO NOT SPEND ANY MONEY! Research** what the terms means and in what organism it can be found.....and go out and find it.

5. Teamwork

- ✚ You may work with other students in the class to complete this project, but each student must turn in his or her own project with a unique set of terms chosen. There can be no duplicate photos. There are 110 choices.... probability says that there is a very small chance that any two students will have a majority of the same 50 terms.

BIOLOGY COLLECTION TERMS

1. adaptation of an animal
2. adaptation of a plant
3. abscisic acid
4. actin
5. amniotic egg
6. amylase
7. angiosperm
8. animal that has a segmented body
9. annelid
10. anther & filament of stamen
11. arthropod
12. archaeobacteria
13. autotroph
14. auxin producing area of a plant
15. basidiomycete
16. Batesian mimicry
17. biological magnification
18. bryophyte
19. C 4 plant
20. Calvin cycle
21. carbohydrate – fibrous
22. cambium
23. cellulose
24. chitin
25. chlorophyta
26. cnidarian
27. coelomate
28. conifer leaf
29. commensalism
30. connective tissue
31. cuticle layer of a plant
32. deciduous leaf
33. deuterostome
34. dicot plant with flower & leaf
35. diploid chromosome number
36. echinoderm
37. ectotherm
38. endosperm
39. endotherm
40. enzyme
41. epithelial tissue
42. ethylene
43. eubacteria
44. eukaryote
45. exoskeleton
46. fermentation
47. flower ovary
48. frond
49. fruit – dry with seed
50. fruit – fleshy with seed
51. gametophyte
52. gastropod
53. genetically modified organism
54. gibberellins
55. glycogen
56. gymnosperm cone
57. haploid chromosome number
58. heartwood
59. hermaphrodite
60. insect
61. K-strategist
62. keratin
63. leaf – gymnosperm
64. lepidoptera
65. lichen
66. lignin
67. lipid used for energy storage
68. littoral zone organism
69. long-day plant
70. meristem
71. modified leaf of a plant
72. modified root of a plant
73. modified stem of a plant
74. monocot plant with flower & leaf
75. muscle fiber – striated
76. mutualism
77. mycelium
78. mycorrhizae
79. myosin
80. nematode
81. niche
82. nymph stage of an insect
83. parasite
84. parenchyma cells
85. phloem
86. pinecone – female
87. Platyhelminthes
88. pollen
89. pollinator
90. porifera
91. prokaryote
92. protein – fibrous
93. protein – globular
94. protostome
95. pteridophyte
96. r-strategist
97. radial symmetry
98. rhizome
99. scale from animal with two-chambered heart
100. spore
101. sporophyte
102. stem – herbaceous
103. stem – woody
104. stigma & style of carpel
105. tendril of a plant
106. thorn of a plant
107. unicellular organism
108. vascular plant tissue
109. xerophyte
110. xylem

ECTOTHERM



Adam Walburger Photography (c) 2009

Ectotherm—An organism that regulates its body temperature largely by exchanging heat with its surroundings; a poikilotherm. Commonly known as “cold-blooded”.

This bullfrog living in my parents' pond is an ectotherm.

Date Collected: June 12, 2021

*****NOTE-** In this example I didn't follow the instructions. I used a picture taken by someone else. There is no “item” showing in the picture to prove that it is mine either. You **MUST** follow the instructions ☺!!!

ASSIGNMENT 4



“The Ecology Chapters”

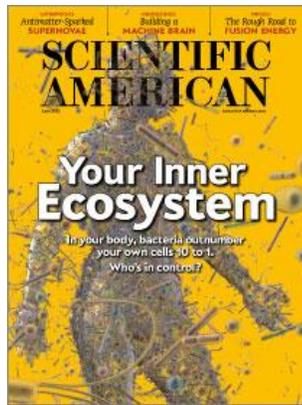
- Chapter 43: Behavior Ecology
- Chapter 44: Population Ecology
- Chapter 45: Community and Ecosystem Ecology
- Chapter 46: Major Ecosystems of the Biosphere
- Chapter 47: Conservation of Biodiversity

❖ READ CHAPTERS 43–47

You will need to make detailed, handwritten, or typed notes of each chapter. The purpose of these notes is to understand the text and to identify areas of interest or concern. You do not need to have notes for every page but be thorough and complete, focusing on the terms and main ideas of the chapter. In these notes, you should include simple definitions of terms (put into your own words, not just a book definition), ideas, events, examples, or even questions you have about the material.

❖ **These notes will be checked on the first FULL day of school.**

ASSIGNMENT 5



Ecology Article Assignment

How to Write a Magazine Article Summary

The advances in all fields of science seem to come at an incredibly rapid rate. What we study today may be modified or amended tomorrow just as much of today's knowledge is rooted in the past. An educated person reads throughout an entire lifetime. Article should be two or more pages in length from a respectable source such as: **Scientific American, Discover, Science News, Natural History, Smithsonian, Bioscience, etc.** The article should focus on some issue related to ecology or environmental science. Try to find one that actually interests you. Once you have selected the article you are required to do the following:

1. Copy or print the article. I will not accept the magazine. Date published should be able to be seen.
2. Summarize the article in your own words! The summary must be typed. The summary should contain the following elements:
 - **Introduction** (4 points). Introduce the article by describing or defining the major ideas covered in the article. Explain why this subject is important, and how it relates to our unit of study.
 - **Content Summary** (6 points). The key word here is *summary*. Do not copy the content of the entire article. What was the article all about? What were the main concepts and ideas that were discussed? What was the question(s) the author was investigating? What methods did he/she use? What evidence was uncovered to support the main body of the article.
 - **Evaluation** (6 points). Re-state the main areas of importance in the magazine article. With your perspective as an AP Biology student, discuss the quality of the article regarding its relevance, importance, readability, interest level, and scientific content. Explain why you would or would not recommend it to the other members of your class.
 - **Writing style** (2 point). This is a college level course, and you are expected to write using appropriate grammar, sentence structure and formatting. You are also expected to use your own words when summarizing, do not plagiarize!
 - **Relevance** (2 points). Article relates to the unit of study.

All articles should be taken from journals that have been published within the past two years.

All summaries should NOT exceed 1 page in length.

You will lose points if you fail to attach a copy of the article to your summary.

Assignment 6



Are zebra mussels really invading?

In the mid-1980s a new species found its way to North America. The zebra mussel (*Dreissena polymorpha*), a small, clam-like mollusk that grows to about 25 cm as an adult, was introduced into the waters of the Great Lakes, probably carried in the bilge of a Russian freighter. The zebra mussel can reproduce in less than a year, and a single female can release 1 million eggs each year. In the absence of their natural pathogens, parasites, and predators, the zebra mussel populations in the Great Lakes has grown enormously and are now invading eight major river systems, including the St. Lawrence, Hudson, Mississippi, Ohio, Illinois, Tennessee, Susquehanna, and Arkansas rivers. The mussels are spread from one body of water to another by natural flow, carried on the feathers or feet of migrating waterfowl, or by human transport in bait buckets or on trailered boats. Most of the freshwater systems in North America are now threatened by invasion of the zebra mussel.

The zebra mussels grow in massive colonies, where nearly a half million individuals may grow on each square meter of substrate. These colonies encrust the hulls and rudders of ships, the hinges of lock gates, and block the drains and intake ducts used by industries and power stations. In 1990, for example, Detroit Edison spent over \$500,000 to remove zebra mussels from the intake pipes of its power plants.

The zebra mussels also have severe negative effects on the local ecosystem. As filter-feeders, they take in water and filter out algae as food, excreting their waste as sediment. A single individual can filter 1 liter of water each day, and a colony covering 1 square meter of substrate can filter 180 million liters of water per year. Enormous colonies of zebra mussels can reduce the algal populations of lakes and rivers, thus removing a significant portion of the base of the food chain and resulting in a decline in the fish populations. Thus, these mussels are a threat to the local biodiversity.

The tremendous filtering capacity of these organisms may have some positive consequences. Zebra mussels have been a major factor in cleaning Lake Erie after a century of pollution from fertilizers and sewage. After the first 10 years of zebra mussel existence in Lake Erie, light penetration in the water has increased from only a few centimeters to nearly 10 meters. If these organisms could be controlled, they may become a useful tool in the treatment of sewage and pollution. (*Adapted from: Bush, Mark B. 1997. Ecology of a Changing Planet. Prentice Hall, Upper Saddle River, N.J.*)

Name: _____

Date: _____

Period: _____

Assignment 6: Zebra Mussels

AP Biology

1. Which of the following best summarizes the author's main point?
 - a. Zebra mussels are harmful to the great lakes
 - b. Zebra mussels are harmful to all lakes
 - c. The importation of zebra mussels should be regulated
 - d. Many lakes and river systems are polluted
2. Zebra mussels can move from one lake to another by which method?
 - a. on the feet of birds
 - b. carried by the wind
 - c. moving overland for short periods
 - d. swimming up canal systems
3. Massive colonies of zebra mussels cause problems because:
 - a. they destroy the engines of boats
 - b. they block the flow of water through ducts
 - c. they produce waste that pollutes the water
 - d. they eat large amounts of fish
4. Which of the following is a consequence of the zebra mussel population in the great lakes
 - a. cleaner water
 - b. decline in algae populations
 - c. decline in fish populations
 - d. all of these
5. Why are zebra mussels a problem in the Great Lakes but not in the lake systems where they came from?
 - a. the other lakes are too cold for them to reproduce in large amounts
 - b. they have natural predators in the other lakes
 - c. they cannot leave these lakes
 - d. they cannot grow into colonies
6. How might zebra mussels be used to improve lake systems?
 - a. they can be grown as food for humans
 - b. they can be used to strengthen dams and levies
 - c. they clean the water of pollutants
 - d. they remove algae from the water
7. What do zebra mussels eat?
 - a. algae
 - b. fish
 - c. insects
 - d. water plants