

AP Biology Summer Assignment 2024-25

Ms. Broerman

broermr@cpsboe.k12.oh.us

Rm: 4024

513. 363. 8102

Welcome to AP Biology ☺ I am looking forward to a great year with you and I hope you are excited as well!

This course is designed to be the equivalent of a two-semester introductory college level biology course. It will be a rewarding experience, but as with most things that are, it will also be challenging. You will be taking in a great deal of content, researching and writing essays, carrying out experiments and analyzing data, as well as enhancing your critical thinking skills. There is a fair amount of work to be completed on your own time so that we can maximize in-class time. Throughout the course, you will become familiar with four major recurring ideas that persist throughout all the topics and material; these themes are the big ideas you will also see on the AP exam.

The 4 Big Ideas of AP Biology

Big Idea 1: The process of evolution drives the diversity and unity of life.

Big Idea 2: Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis.

Big Idea 3: Living systems store, retrieve, transmit, and respond to information essential to life processes.

Big Idea 4: Biological systems interact, and these systems and their interactions possess complex properties.

The following directions detail my expectations of your summer work. The objective with this summer assignment is to introduce yourself to me and to familiarize yourself with a variety of biological concepts.

Part 1: Google classroom – due July 1, 2024

I will be utilizing Google class to post assignments, resources, and various materials for you to use in and out of class. It is critical that you become proficient with using Google classroom – there are several video tutorials to choose from if you need some guidance.

Join the AP Bio class on Google classroom using the following code: **wft2guw**

Part 2: Introductory letter – due Aug 14, 2024

You will write an introductory letter to me and submit it via google class. Most of you already know me from 9th grade biology, however, I am confident that you have grown and changed in different ways and I want to take this opportunity to get to know you a little better. Although this is an introductory letter, please check for spelling and grammar. Include the following elements:

Title in google docs: **AP Biology 2024-25 and your name** (ex: AP Biology 2024-25: Ms. Broerman)

Body:

1. Introduce yourself and tell me if you prefer something other than what is in Power School.
2. What are your hobbies/interests/passions?
3. What is your major and what do you love about it?
4. Tell me about your family – siblings? Who do you live with? Anything specific details you want me to know?
5. Do you have a job or plan to get one during your senior year? How do you or plan to manage your academic responsibilities with job related duties?

Courses:

6. What science classes have you taken so far? What was your final grade in each of them? What did you like about the courses and what did you find challenging?
7. What classes will you be taking your senior year? (in both academics and arts)
8. What AP classes have you taken before this year? What were your grades and scores on the AP exam?
9. What subject(s) are you most interested in pursuing at the college level?

Learning:

10. What are your personal strengths when it comes to learning new material?
11. What causes you to struggle in a course? How do you address that challenge?
12. What is the most effective way you have found to study for a test?
13. How would you describe yourself as a learner?
14. How would you describe yourself as a team or group member?
15. How would you rate yourself with reading informational text, writing, and math skills (specifically algebra)?

AP Bio:

16. What are you most looking forward to in this course?
17. Do you have any concerns about taking AP Bio?
- 18. Why are you have you chosen to take AP Bio and what do you hope to accomplish/gain from the course?**

Closing: Wrap up with any thoughts I didn't address and please attach a picture of yourself (hopefully doing something you love!)

Part 3: Biological Photo Collection

For this assignment, you will "collect" 25 photographic examples of biological terms/concepts and compile them on one document. Select any 25 of the items from the Biological Collection List to include in your document. This will introduce you not only to the language of biology, but also emphasize that biology is something that's DONE, not just memorized.

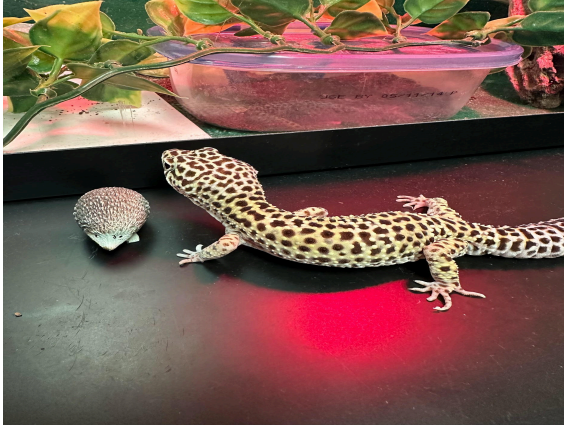
The format of the document created must be typed, organized and easy to follow. The table of contents must be completed and placed at the beginning of the document (use the table of contents template provided to you).

Directions for the Biological Photo Collection:

1. **“Collect” an item by taking a picture of it.** Then **define**, IN YOUR OWN WORDS, the biological term/concept. Also, within a couple of statements, **explain** how the picture represents the term or concept. Use the **Biological Collection List** given on the next page. The connection between the item and the definition must be clear or no credit will be given.
2. **Upload the photo, definition, and explanation to a document that you create for the class. Title each entry with the term that you are using.**
3. **Be creative.** If you choose an item that is internal to a plant or animal, like a phloem, you could submit a photograph of the whole organism or a close up of one part, and then explain what a phloem is and **specifically** where the phloem is in the specimen. However, each item can only be used for one term. So, if you use a picture of a daisy for the term phloem you must find a completely different kind of plant to explain the term xylem.
4. **Use original photos ONLY.** You MAY NOT use an image from any publication or from the internet. You must take the photo yourself. The best way to prove that the photo is your work is to have a Proof Object in each photo. A Proof Object is something in your picture that represents you. This could be a key chain, a bracelet, a small toy, etc. **The item must be unique and at the end of the document you must have a picture of you with your Proof Object. A proof object is inanimate and separate from you - it needs to be unique (not ordinary things like a pencil or penny).**
5. **You should only use natural items.** Take a walk in your neighborhood, go to the park or zoo, go for a hike in the woods, etc. Humans are natural items and may be used, but only for a total of two entries.
6. **This is an individual project.** While brainstorming, discussing, and even going on collecting adventures together is welcome, your items and photos are to be unique. With over 90 concept choices, probability says there is a very slim chance that any two students will have the same items chosen from their list.
7. **Be careful and respectful!** Never touch plants or animals you are unfamiliar with. Don't remove any organisms from the natural environment.

Examples: Notice the proof object; my toy hedgehog in each picture

29. Ectotherm - This is Miguel, our class leopard gecko and he is an ectotherm. Ectotherms are what most people refer to as cold blooded animals; they regulate their body temperature using external/environmental sources (i.e. sunlight)



10. Modified leaf - These pine needles are modified leaves of a plant; modified leaves have adapted to perform other functions other than photosynthesis and transpiration. Different kinds of pine needles function to also retain moisture.



Biological Collection List:

1. Adaptation of an animal
2. Adaptation of a plant
3. Altruistic behavior
4. Amniotic egg
5. Analogous structures
6. Animal that has a segmented body
7. Anther and filament of stamen
8. Archaeobacteria
9. Asexual reproduction
10. ATP
11. Autotroph
12. Auxin producing area of a plant
13. Basidiomycete
14. Batesian mimicry
15. Bilateral symmetry
16. Biological magnification
17. C3 plant
18. C4 plant
19. CAM plant
20. Calvin cycle
21. Cambium
22. Cellular respiration
23. Coevolution
24. Commensalism
25. Connective tissue
26. Cuticle layer of a plant
27. Detritivore
28. Dominant vs recessive phenotype
29. Ectotherm
30. Endosperm
31. Ectotherm
32. Enzyme
33. Ethylene
34. Eubacteria
35. Exoskeleton
36. Fermentation
37. Flower ovary
38. Frond
39. Gametophyte
40. Genetic variation
41. GMO
42. Gibberellins
43. Glycogen
44. Gymnosperm cone
45. Gymnosperm leaf
46. Hermaphrodite
47. Heterotroph
48. Homeostasis
49. Homologous structures
50. Hydrophilic
51. Hydrophobic
52. Introduced species
53. Keystone species
54. Krebs cycle
55. K-strategist
56. Lichen
57. Lipids
58. Littoral zone organism
59. Macromolecule
60. Meristem
61. Modified leaf
62. Modified root
63. Mullerian mimicry
64. Mutualism
65. Mycelium
66. Mycorrhizae
67. Niche
68. Parasitism
69. Parenchyma cells
70. Phloem
71. Pollen
72. Pollinator
73. Population
74. Predation
75. Prokaryote
76. R-strategist
77. Radial symmetry
78. Redox reaction
79. Rhizome
80. Seed dispersal
81. Spore
82. Sporophyte
83. Stabilizing selection
84. Succession
85. Taxon
86. Territorial behavior
87. Tropism
88. True breeding
90. Turgor pressure
91. Unicellular organism
92. Unsaturated fats
93. Vestigial structure
94. Xylem

Rubric for Biological Photo Collection

Points per photo :

- 1 - original photo posted
- 1 - Biological term/concept identified
- 2 - Biological term/concept and photo connection fully explained

Points in the following categories are awarded in an all or none format; these categories have to be fully met to earn full credit:

- 5 - Picture of you with your proof object submitted (in addition to your 25 pics that also have your proof object)
- 10 - Each biological term/concept listed in the order it appears
- 10 - Document is easy to follow and neatly presented

Total points possible = 150

