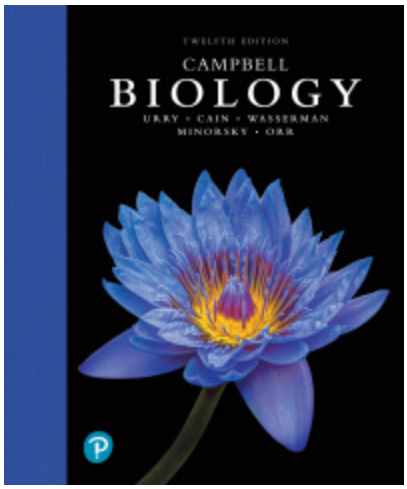

WELCOME TO AP BIOLOGY
&
☺ The Summer Assignment ☺

By: Lisa A. Urry; Michael L. Cain; Steven A. Wasserman; Peter V. Minorsky; Rebecca Orr

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Dear AP Biology Students:

If you are reading this CONGRATULATIONS! ☺ You have made the "grade" and have been enrolled into Dr. Cappelletti's AP Biology Class! If you have decided to drop this class ☹ you MUST contact Dr. Cappelletti immediately (bcappelletti@jserra.org), and your counselor, so you can be placed in another course/class.

Sophomores enrolled in this class are already in the Pre-Medical Professional Magnet Program (PMPMP). If you are not in the program or have decided to unenroll in the medical magnet program, you, too, MUST contact me immediately so you can be placed into the right courses for the fall 2022 (no sophomores can enroll if not in the program.

You are to complete four assignments before we meet the first day of school. Please pay attention to the due dates for each assignment.

-Be Aware should you prefer to be "SLEEPING" through your summer
- this "Beauty" of an assignment is not for you -
There is NO LATE WORK ACCEPTED – NO EXCUSES!
This is a college course!!
Your college professors will not take late assignments – neither will I ☹
Late Assignments will cause your grade to self-destruct ☹

Should you decide to accept the AP Bio summer assignment
Continue on to the "forbidden apple's first assignment ☺

ASSIGNMENT # 1: Introduction Letter: Due date June 24th,

"Letter of Introduction" e-mail

1. Follow these instructions for full credit – 15 points
   a) Send your e-mail "Letter of Introduction" to Dr. Cappelletti
      e-mail: bcappelletti@jserra.org
      Email Must be received by June 24th for credit (15 Points)

Email format:
b) Subject Box: type the following: Introduction: *your full name*
c)Salutation: Dear/Hi/Hello Dr. Cappelletti,
d) Body of Letter: Tell me something about yourself using complete sentences and correct grammar. No AIM or Text message format.
Example: UR MBS - translation – You are my best student. ☺
e) Closing; Sincerely, respectfully yours, Cordially, regards, ***type your full name***
f) Click and send! If you followed the instructions – you just received 15 points ☺ easy!

Any and all communication with me needs to follow the above format. Your college professors will expect you to e-mail them using the above protocol. You are taking a college class, so you should be introduce to, and become familiar with college expectations.

Assignment #2: Threaded Discussion Forum (worth 15 points)

a) After completing Assignment #1, I will send you an email to invite you to join NowComment– https://nowcomment.com/groups/apbio you will be given details in the e-mail. It is extremely important that the e-mail you use when you send your "Letter of Introduction" is an e-mail you will have access to **ALL summer**! I will be communicating using e-mails throughout the summer and it is IMPERATIVE I have the correct address.

Remember no excuses:

"Dr. Cappelletti, I sent you the wrong e-mail address for the summer assignment"

- you will receive ***NO CREDIT*** for assignments –
- your 1st quarter grade will reflect the "**zero**" -

b) when you receive the invitation, you will be given instruction on how to sign in.

c) I will provide you with a "username" and password" make sure you save the information (Maybe a word document in an AP Bio Folder on your computer)

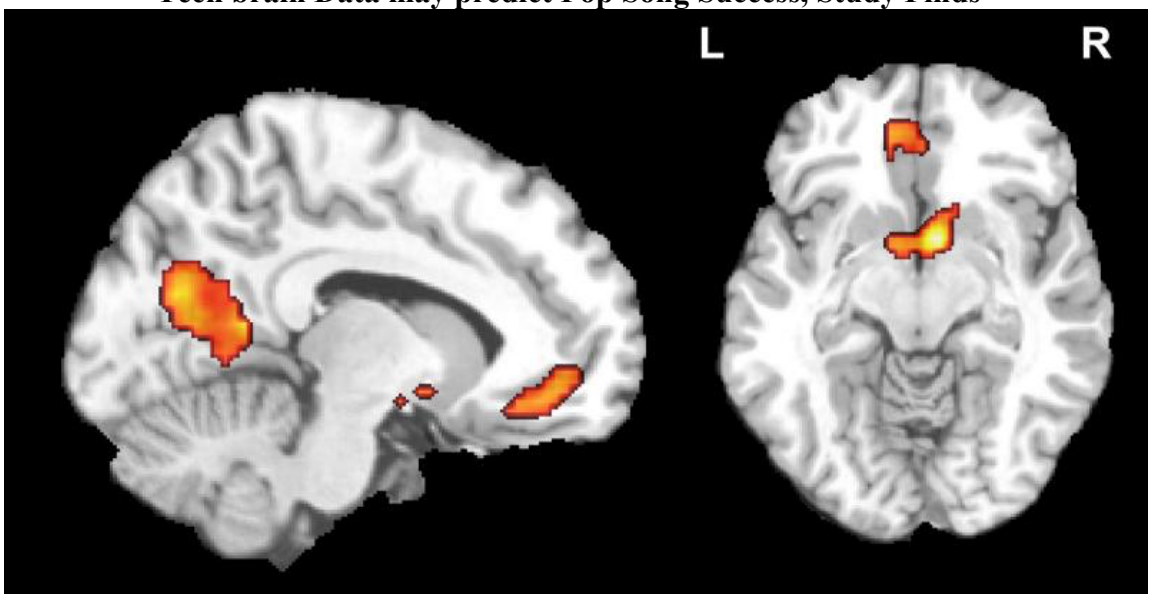
d) Must be signed in by July 10th. Worth 15 points.

Time needed to complete Assignments #1 and #2: 10-15 minutes – Delicious Apple Points: 30

Check your e-mail regularly throughout the summer for messages from Dr. Cappelletti ☺

Assignment # 3: Timely Topic Project: Read the following article

Teen brain Data may predict Pop Song Success, Study Finds



Brain regions positively correlated with the average likability of the song: cuneus, orbitofrontal cortex and ventral striatum. (Credit: Image courtesy of Emory University)

ScienceDaily (June 13, 2011) — An Emory University study suggests that the brain activity of teens, recorded while they are listening to new songs, may help predict the popularity of the songs

"We have scientifically demonstrated that you can, to some extent, use neuroimaging in a group of people to predict cultural popularity," says Gregory Berns, a neuroeconomist and director of Emory's Center for Neuropolicy.

The *Journal of Consumer Psychology* is publishing the results of the study, conducted by Berns and Sara Moore, an economics research specialist in his lab.

In 2006, Berns' lab selected 120 songs from MySpace pages, all of them by relatively unknown musicians without recording contracts. Twenty-seven research subjects, aged 12 to 17, listened to the songs while their neural reactions were recorded through functional magnetic resolution imaging (fMRI). The subjects were also asked to rate each song on a scale of one to five.

The data was originally collected to study how peer pressure affects teenagers' opinions. The experiment used relatively unknown songs to try to ensure that the teens were hearing them for the first time.

Three years later, while watching "American Idol" with his two young daughters, Berns realized that one of those obscure songs had become a hit, when contestant Kris Allen started singing "Apologize" by One Republic.

"I said, 'Hey, we used that song in our study,'" Berns recalls. "It occurred to me that we had this unique data set of the brain responses of kids who listened to songs before they got popular. I started to wonder if we could have predicted that hit."

A comparative analysis revealed that the neural data had a statistically significant prediction rate for the popularity of the songs, as measured by their sales figures from 2007 to 2010.

"It's not quite a hit predictor," Berns cautions, "but we did find a significant correlation between the brain responses in this group of adolescents and the number of songs that were ultimately sold."

Previous studies have shown that a response in the brain's reward centers, especially the orbitofrontal cortex and ventral striatum, can predict people's individual choices -- but only in those people actually receiving brain scans.

The Emory study enters new territory. The results suggest it may be possible to use brain responses from a group of people to predict cultural phenomenon across a population -- even in people who are not actually scanned.
The "accidental discovery," as Berns describes it, has limitations. The study included only 27 subjects, and they were all teenagers, who make up only about 20 percent of music buyers.
The majority of the songs used in the study were flops, with negligible sales. And only three of the songs went on to meet the industry criteria for a certified hit: More than 500,000 unit sales, including albums that had the song as a track and digital downloads.
"When we plotted the data on a graph, we found a 'sweet spot' for sales of 20,000 units," Berns said. The brain responses could predict about one-third of the songs that would eventually go on to sell more than 20,000 units.
The data was even clearer for the flops: About 90 percent of the songs that drew a mostly weak response from the neural reward center of the teens went on to sell fewer than 20,000 units.
Another interesting twist: When the research subjects were asked to rate the songs on a scale of one to five, their answers did not correlate with future sales of the songs.
That result may be due to the complicated cognitive process involved in rating something, Berns theorizes. "You have to stop and think, and your thoughts may be colored by whatever biases you have, and how you feel about revealing your preferences to a researcher."
On the other hand, "you really can't fake the brain responses while you're listening to the song," he says. "That taps into a raw reaction."
The pop music experiment is merely "a baby step," Berns says. As a leader in the nascent field of neuroeconomics, he is interested in larger questions of how our understanding of the brain can explain human decision-making. Among his current projects is a study of sacred values, and their potential for triggering violent conflict.
"My long-term goal is to understand cultural phenomena and trends," Berns says. "I want to know where ideas come from, and why some of them become popular and others don't. It's ideas and the way that we think that determines the course of human history. Ultimately, I'm trying to predict history.

Story Source:
The above story is reprinted (with editorial adaptations by Science*Daily* staff) from materials provided by **Emory University**. The original article was written by Carol Clark.

For this assignment you will be using a threaded discussion(TD) forum
Topics: Each of these six topics with be one TD

A. Background on how a scientific study is published
B. Research author of this article: What else has he/she researched and published
C. Define the following anatomy: orbitofrontal cortex and ventral striatum
   a) discuss why these anatomical structures may be of importance with regards to the teen brains
D. History of MRI
   a) describe the different types of MRI, how are they similar; how do they differ
E. Does this article have any place in Biology? Why/why not?
F. Explain what you think the author means by the following statement.

It's ideas and the way that we think that determines the course of human history. Ultimately, I'm trying to predict history. **Do you agree/disagree with author -explain**

Starting July 10th These topics will appear as a "Threaded Discussion" in *NowComment*

You are to "join the class" and comment on the topic and least one of your classmates posts (2 posts total). Each session will be open for 5 days. Please make sure you post before the forum closes for credit. Each threaded discussion is worth 10 points for an assignment totaling 60 points. You will be graded on the information you enter. You will not be given credit for postings such as: *I agree with you.* You must state why you agree *and* be specific, using information from researching the topic. This is something you will be doing in college. Many professors require their students to comment in threaded discussion forums.

Time needed to complete Assignment #3
Starts July 10th : Each threaded discussion lasts 5 days. This includes weekends!!
Total days threaded discussion forum will be open: 30 days. It should take you 10 – 15 minutes a topic
Total time per student for entire assignment: 3 hours or less ☺

Bulk of Your Summer Assignment

BIOLOGY DEFINITION – NOT A WRITTEN ASSIGNMENT
Go over these terms so you are familiar with them when you return to class

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. archaebacteria
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. pine cone – 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

Assignment #4 PART D: Major portion of your summer assignment.

READ, READ, READ Time Frame: Approximately 6 Hours

☺ YOU <u>WILL NOT BE E-MAILING</u> THIS TO ME! ☺

Basic Ecology and Behaviors

- **Chapter 51: Animal behavior – Reading Time: 1 hr**
- **Chapter 52: An Introduction to Ecology and the biosphere – Reading Time: 1 hour**
- **Chapter 53: Population Ecology – Reading Time: 1 hour**
- **Chapter 54: Community Ecology- Reading Time: 1 Hour**
- **Chapter 55: Ecosystems and Restoration Ecology: Reading Time: 1 Hour**
- **Chapter 56: Conservation Biology and Global Change – Reading Time 1 Hour**

This assignment will allow you, the student to become familiar in utilizing a college-level text to begin studying Advanced Placement Biology. By completing this unit, we will be able to move forward quickly in order to complete the necessary curriculum by the May 2023 testing date.

What the student needs to do: You should read chapters 51-56 in the Ecology Unit portion of: *Biology (12th ed.)* by Campbell and Reece, and answer the questions that correspond to the study of Ecology. Please answer the questions in detail (no one/two word answers) using complete sentences. We will be discussing this unit the first week of school and you will be tested on the entire unit.
Feel free to consult sources other than your books such as the internet to find the answers. I will NOT provide answers for you. This is YOUR assignment! ☺
For each of the six chapters you need to:
1. Preview the chapter and focus on:
a. *Key Concepts* (noted at the beginning of the chapter)
b. *Vocabulary Terms* (in **bold** – see below, you might want to make some type of vocabulary list or flashcards to use when you review for the AP Exam in May 2023)
d. *Graphics* (read the captions and see if you understand the figure)
2. Read thoroughly the *Summary of Key Concept*s at the end of each chapter.

Remember no late work is accepted after the due date which is the first day of school. You will hand in a hard copy the work to me at the beginning of class!
Evaluation: These questions will be evaluated and discussed. ***pre-test on the material and key terms will be given on the 3rd day of school. Unit exam TBD***
Please enjoy your time exploring the topics of ecology and animal behavior.
If you have any questions about the reading or guided questions during the summer e-mail me: bcappelletti@jserra.org

Helpful Websites

These are just a few of the many websites that are available for you to use.
1. Tour of Biomes
There are many different kinds of plants and animals on the Earth, but only certain kinds are naturally found in any particular place.
URL: www.cotf.edu/ete/modules/msese/earthsysflr/biomes.html
2. Biomes
The World's Biomes. This is an introduction to the major biomes on Earth.
URL: www.ucmp.berkeley.edu/glossary/gloss5/biome/index.html
3. AZ Biomes
URL: www.for.nau.edu/azproject/Biozone/biome.html
4. Biomes
Major Biomes of the World.
http://www.runet.edu/~swoodwar/CLASSES/GEOG235/biomes/intro.html
6. Biomes
Scientists have developed the term Biome to describe areas on the earth with similar climate, plants, and animals.
URL: ths.sps.lane.edu/biomes/index1.html
7. Sierra Club
URL: www.sierraclub.org/ecoregions/
8. Wetland, Forest & Other Biomes
WETLAND, FOREST & OTHER BIOMES. BIOMES: "A major community of Living organisms; a complex of climax communities of plants and animals.

URL: www.educationalimages.com/cg040002.htm
9. NatureServe. A database of information on over 50,000 species of plants and animals found in North America. Also included is information on 5,000 ecological communities.URL: www.natureserve.org
AP Biology helpful web site: www.course-notes.org

You may "cut and paste"questions to a word document to make it easier for you to answer them (your answers may be typed)

DO NOT E-MAIL this assignment to me. Hand in on the first day of school as a hard copy. ☺

Questions: Chapter 51 Objectives: Time required: 1 hour

1. Define behavior.
2. Distinguish between proximate and ultimate questions about behavior.
3. Explain how genes and the environment contribute to behavior. Explain what is unique about innate behavior.
4. Define fixed action patterns and give examples in fish and humans.
5. Explain how mayflies are threatened by an inappropriate response to an environmental stimulus.
6. Describe the evolutionary basis for behavioral ecology. Explain why these adaptations may result in suboptimal behavior.
7. Explain how learning, maturation, and habituation influence behavior.
8. Define imprinting and explain the importance of the sensitive period. Illustrate these concepts using examples from bird song.
9. Distinguish between classical conditioning and operant conditioning.
10. Define sociobiology and describe the development of this field of behavior.
11. Define agonistic behavior, dominance hierarchy, and territories; give examples of each.
12. Describe the typical circumstances associated with the defense of territories.
13. Describe the advantages of courtship.
14. Explain how parental investment influences the different mating behaviors of males and females.
15. Define and distinguish between monogamous and polygamous mating relationships and between polygyny and polyandry.
16. Describe how the certainty of paternity influences the development of mating systems.
17. Discuss why altruistic behavior might evolve.
18. Define Hamilton's rule and the concept of kin selection.
19. Define reciprocal altruism.

Chapter 52 Objectives: Time required 1 hour

1. Define the scope of population ecology
2. Define and distinguish between density and dispersion.
3. Explain how ecologists measure the density of a species.
4. Describe conditions that may result in the clumped dispersion, uniform dispersion, and random dispersion of populations.
5. Describe the characteristics of populations that exhibit Type I, Type II, and Type III survivorship curves.
6. Define and distinguish between semelparity and iteroparity.
7. Explain how limited resources affect life histories.
8. Explain how an environment's carrying capacity affects the intrinsic rate of increase of a population.
9. Distinguish between *r*-selected populations and *K*-selected populations.
10. Explain how a "stressful" environment may alter the standard *r*-selection and *K*-selection characteristics

Chapter 54 Objectives: Time required: 1 hour

1. Explain the relationship between species richness and relative abundance.
2. Explain how interspecific competition may affect community structure.
3. Describe the competitive exclusion principle and explain how competitive exclusion may affect community structure.
4. Define an ecological niche and restate the competitive exclusion principle using the niche concept.
5. Explain how resource partitioning can affect species diversity.
6. Define and compare predation, herbivory, and parasitism.
7 Describe the defense mechanisms that evolved in plants to reduce predation by herbivores.
8. Explain how cryptic coloration and warning coloration aid an animal in avoiding predators.
9. Distinguish between Batesian mimicry and Müllerian mimicry.
10 Distinguish among endoparasites, ectoparasites, and pathogens.
11. Distinguish among parasitism, mutualism, and commensalism.
12. Define the species-area curve.

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Chapter 54 Objectives: Time Required: 1 hour

1. Describe the relationship between autotrophs and heterotrophs in an ecosystem.
2. Explain how decomposition connects all trophic levels in an ecosystem.
3. Explain how the first and second laws of thermodynamics apply to ecosystems.
4. Explain why the amount of energy used in photosynthesis is so much less than the amount of solar energy that reaches Earth.
5. Define and compare gross primary production and net primary production.
6. Define and compare biomass and standing crop.

Chapter 56 Objectives: Time Required 1 Hour

1. Describe the three levels of biodiversity.
2. Explain why biodiversity at all levels is vital to human welfare.
3. List the four major threats to biodiversity and give an example of each.
4. Define biophilia and explain why the concept gives some biologists hope

AP Biology Supplies

Please use the summer as your opportunity to get your supplies for AP Biology early!

Materials:

1. 3-ring class notebook (2.5 – 3 inches) for handouts (Yes, I know that's BIG, but you will fill it more than once!)
2. Lined Loose leaf paper (should be in binder)
3. Blue/black pens and *pencils* must be brought to class everyday.
4. Textbook: Biology 12th Edition Campbell/Reece: ***Must have to complete summer assignment Should be able to find for a reasonable price on EBay or Amazon.com***

If you have questions about any of the assignments, e-mail me ASAP!
Do not wait until August 10th ☹

This summer assignment may look overwhelming, however, if you pace yourself and work on assignments 3 and 4, 1 to 2 hours a day, you will complete it well before the August 10th due date. Notice I have given an approximate "time required" for each assignment. Assignments #1 and # 2 should take very little time. Make sure assignments are e-mailed on time.

Late - No credit – No Excuses! This is a college class – I teach it and treat it as such!

Again, Welcome to College ☺ and AP Biology!

I love teaching this class!
I am looking forward to reading your e-mails and threaded discussions.
See you in the fall!

Have a wonderful, safe, summer! ☺

Dr. Cappelletti ☺

NOTE: A copy of this assignment is available on the JSerra Website.
Hint: You should cut and paste the questions for assignment # 4 into a word document: this will help to cut the amount of time it takes to complete the question/answer portion. ☺