# **AP BIOLOGY SUMMER ASSIGNMENT 2016**

Welcome to the world of Advanced Placement Biology! The attached summer assignment is required for all AP Biology students for the 2016-2017 school year.

DO THESE THINGS FIRST!

# 1) Sign up for my Remind.com AP Biology 2017 to receive messages about class by sending a text to: 81010 with the message: @faec8a

#### 2) Join my google classroom – AP biology 2016-17.

Go to: www.classroom.google.com use code: **eknyir4** to join class It works best if you use a school google account, with your name, then @longbranch.k12.nj.us We will use google drive throughout year and you can submit your assignment to me here. I will be putting this assignment on google drive AND my teacher page on the High School web site

#### You are required to do 3 things before school starts in September:



Part 1 – Video Learning- Bozeman AP Biology – 30 pts Part 2 – Biology Scavenger hunt – 50 pts Part 3 – Root word investigation – 20 pts

You will get a 100 point Summative grade for this assignment

By completing the assignment you will get an understanding of The AP biology course and have some basics to succeed in class

The assignments are due NO LATER than the second day of class, if not submitted earlier. Note that the summer assignment will be your first summative grade for the class

1) If you do not do the summer assignment, you will start behind in the course.

2) Don't get overwhelmed. Plan out when you will do it. Have your list of terms ready to take a quick picture when you see something

#### The AP Biology course.

The AP Biology course is rigorous. It is a college level course. Expect to do homework every night. You will get out what you put in to the course. You will be given the tools needed to get a 4 or 5 on the AP Biology exam by taking this course, but it will be up to you to use them and employ them.

The text we use is Raven-Johnson Biology 8<sup>th</sup> ed. 2008 in class, but most of your assignments will be using computers and other technology. During the year we will complete the 8 required AP labs as well as many additional labs and activities. You will gain practice in writing AP Free Response Questions, and in answering AP level multiple choice questions.

**<u>I</u> STRONGLY SUGGEST that you invest in an AP Biology study guide</u> (revised version) such as Cliff's AP biology or Princeton review. Students who regularly use a study guide on their own beyond class work <u>greatly</u> increase their chances of getting a 5 on AP exam.** 

If you have questions about this assignment, or to send me completed sections, you may contact me via remind.com for a quick response or you can email me at <u>dclark@longbranch.k12.nj.us</u> if you are not in a hurry for the response. Don't wait until the week before school to find out what you need to do!

Have a great summer!

Mr. D. Clark

# Part I: Video learning Bozeman Science - 30 Pts total

You will learn about 3 key practices to succeed in AP biology by watching a video and answering questions about each. We will be using a lot of videos for Bozeman science this year as homework so this will give you a good introduction to the Host Mr. Anderson and the videos. Each video is about 10 minutes but allow yourself 30 minutes each to pause video and answer questions

#### Each video centers on the **<u>4 Big Ideas of AP biology:</u>**

#### **Big Idea 1: EVOLUTION**

The process of evolution drives the diversity and unity of life.

#### **Big Idea 2: Cellular Processes: ENERGY and Communication**

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

#### **Big Idea 3: Genetics and INFORMATION Transfer**

Living systems store, retrieve, transmit, and respond to information essential to life processes.

#### **Big Idea 4: Interactions of SYSTEMS**

Biological systems interact, and these systems and their interactions possess complex properties.

The 3 videos are as follows: Each work sheet has a specific link, but you can access them all if you google: < Bozeman AP biology> and choose first link. They will all be listed

- 1) Video 1 Using Models 10 pts
- 2) Video 2 Using Mathematics 10 pts
- 3) Video 3 Scientific Questioning 10 pts

You must print out or obtain the 3 sheets following on next page. They can also be submitted on google drive. Note. There are 7 Intro AP practice videos by Bozeman science, You can do more for extra credit

Evolution	Free Energy and Cell Processes
Information	Systems and
and Genetics	Interactions

#### AP Biology Practice 1 – Models and Representations Video Review – 10 pts

Video - www.bozemanscience.com/apb-practice-1-models-representations

- A) What is a model?.....A visual representation of \_\_\_\_\_\_
- B) A \_\_\_\_\_\_ of how it works is a "Conceptual Model".
- C) What are the **four Big Ideas** we will be discussing in AP Biology? List below along with associated example:
  - 1) \_\_\_\_\_\_ example shows natural \_\_\_\_\_\_
  - 2) \_\_\_\_\_\_ example:
  - 3) \_\_\_\_\_\_ genetics and cell
  - 4) \_\_\_\_\_\_ pyramid of
- D) What are the <u>5 things</u> you will need to be able to do using models and visual representations? List below and then answer [Please keep in mind, some of the examples that he uses may be unknown to you at this time, focus on the "practice" not the content.]
  - Relating to beetles, draw/label the final graph he created below:

- ii. Why do you think there were fewer light colored beetles when the trees became darker?
- iii.
- 2) \_\_\_\_\_\_ What was is going to move in his example? \_\_\_\_\_\_
- 3) \_\_\_\_\_ They will give you a model and then \_\_\_\_\_ based on that. ...
- 4) \_\_\_\_\_ Means that you are \_\_\_\_\_ your knowledge to a visual representation
- 5) \_\_\_\_\_ Asking you to \_\_\_\_\_ the knowledge that you have.
- E) Models allow us to make \_\_\_\_\_\_ of a \_\_\_\_\_ model.
- F) What is the most famous model of all? \_\_\_\_\_ That was created by \_\_\_\_\_

#### <u>AP Biology Practice 2</u> – Using Mathematics Video Review Sheet – 10 pts

www.bozemanscience.com/apb-practice-2-using-mathematics

A)	) All sciences have what at their core?					
B)	What	is "Mathematical Biology" driven by:				
	1)	: sequencing DNA – what is the trend?				
	2)	Theory: being used to predict	Rule of			
	3) Co	mputing: computers are getting				
	4) La	boratory experiments in silico:				
	a)	In vitro:				
	b)	In vivo:				
	c)	In silico: simulating				
C)	<u>Four (</u> 1)	equations in the four big ideas: You want to be familiar with th Evolution: 3) Free energy:	ese			
	2)	Information: 4) Systems:				
D)	D) Understandings in Using Mathematics:					
	1)	the of a Mathematical Routine and then check it. If you can no do, just take notes (CALCULATO	e: Pause video, try and do it R REQUIRED)			
	2)	Apply Routines: Again, try this probased on common sense! (CALCULATOR REQUIRED)	blem. You can do this one			

3) \_\_\_\_\_ quantities that \_\_\_\_\_ natural phenomena.a) Estimate which way water will go in each.

b) Potatoes: you can do this, just use graph. Potatoes have\_\_\_\_\_M Sucrose

#### AP Biology Practice 3 – Scientific Questioning Video Review Sheet – 10 pts

www.bozemanscience.com/apb-practice-3-scientific-questioning

- 1. I should be able to ask you, "How do we....
- 2. Students should be able to answer, "This is how....
- 3. What is a good example of how you ask questions all the time?
- 4. What is the problem with:
  - a. Smallest bird question?
  - b. Universe question?
  - c. Genetically modified food question?
- 5. Why is the plant growth question more scientific?....but what is a problem with it too?
- 6. Why is the CO2 question a good scientific question?
- 7. A good question is going to lead to: (2x)
- 8. What are the three things you have to be able to do during the practice of "Scientific Questioning"?
- 9. Write out one of the three questions he "posed" concerning the phylogenetic tree. (You are just asking, not answering.)
- 10. When you "refine" a question, you are taking it to another \_\_\_\_\_\_
- 11. What is the third part of scientific questioning?
- 12. What can you then do if you are good at scientific questioning?

# Part II: Biology Term Scavenger Hunt - 50 pts

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 and finding them in a practical situation

> Select and "collect" 25 words/terms from the list (On Next Page)

When I say "collect", I mean you should collect that item by finding it and taking a **photograph.** You will make a digital "collection", along with corresponding explanations. Use google drive to create a slide show or just make a google doc with pictures pasted in along with identification and description for each. If you do not have computer access, I will accept an actual photo album to physically turn in. You can have more than one item on a page.

You do not need to find the exact item on the list, say for example, if it is an internal part to an organism, but you must apply the term to the specimen you find and explain in your finished project how this specimen represents the term.

• **EXAMPLE:** I chose the word "phloem", I then took a picture of a flower and stem and would then write a description of phloem and where it is my flower



# > ORIGINAL PHOTOS ONLY:

You cannot use an image from any publication or the Web. You must have taken the photograph yourself. You MUST

prove this by placing a small item (stuffed animal, a button, toy car, etc.) in all of your photographs that only you could have added each time. You could also make a small sign of your name that will be in each photo/drawing. You can even have yourself in the picture.

• **EXAMPLE:** In photo of flower I placed my scorpion egg

## > NATURAL ITEMS ONLY:

Specimens may be used for only one item/word, and all must be from something that you have found in nature that is or once was alive. Ex. You can not use your little sister's stuffed pony for a picture of a mammal. Take a walk around your yard, neighborhood, and town or even the beach. Go to a store that has living things, like home depot (plants) or PetSmart (animals) DON'T SPEND ANY MONEY! Research what the term means and in what organisms it can be found... and then go out and find one.

Be sure to include a description of the term and how it relates to the Photograph

#### **Biology Scavenger Hunt list.**

#### You must photograph at least 25 of the terms below as well as identify and describe each

Each photo and description is 2 pts for a total of 50 pts

- 1. adaptation of an animal
- 2. adaptation of a plant
- 3. abscisic acid
- 4. actin
- 5. amniotic egg
- 6. amylase
- 7. angiosperm
- 8. animal with 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 w/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

99. two-chambered heart

102. stem – herbaceous

104. stigma & style of carpel

98. rhizome

100. spore

101. sporophyte

103. stem – woody

105. tendril of a plant

106. thorn of a plant

109. xerophyte

110. xvlem

107. unicellular organism

108. vascular plant tissue

**Part III – Root word investigation** – Research each root word write definition - **20 pts** The main reason students find it difficult to understand science is because of all the hard to write, spell and read words. Actually, scientific vocabulary is a mix of small words that are linked together to have different meanings. If you learn the meanings of the little words, you'll find scientific vocabulary much easier to understand. Find the mean to the following Greek/Latin root words.

Word	Meaning
a- / an-	
meso-	
leuco-	
aero-	
anti-	
amphi-	
aqua- / hydro-	
arthro-	
auto-	
bi- / di-	
bio-	
cephal-	
chloro-	
chromo-	
-cide	
cyto-	
derm-	
haplo-	
ecto- / exo-	
endo-	
epi-	
gastro-	
-genesis	
herba-	
hetero-	
homo-	
ov-	
kary-	
neuro-	
soma-	
saccharo-	
primi-/ archea-	
-phyll	

Word	Meaning
hemo-	
hyper-	
hypo-	
intra-	
-itis	
lateral	
-logy	
-lysis	
-meter	
mono-	
morph-	
micro-	
macro-	
multi- / poly-	
-path / -pathy	
-ped /-pod	
phago-	
-phobia	
-philia	
proto-	
photo-	
pseudo-	
-stasis	
sub-	
sym- / -syn	
-synthesis	
-taxis	
-troph	
-tropism	
-therm	
tri-	
zoo-, -zoa	
zyg- / -zygous	

### Using Root words to define unknown words

Once you have completed the above root word table, use it to develop a SIMPLE definition, **<u>in your</u> <u>own words</u>**, for each of the following terms:

1. Hydrology
2. Cytolysis
3. Protozoa
4. Epidermis
5. Spermatogenesis
6. exoskeleton
7. Abiotic
8. Pathogen
9. pseudopod
10. Hemophilia
11. Endocytosis
12. herbicide
13. Anaerobic
14. Bilateral
15. autotroph
16. Monosaccharide
17. Arthropod
18. Polymorphic
19. Hypothermia
20. Biogenesis

You will have a QUIZ on these words and the above root words on the first day of class and a TEST on them the second day of class