

AP BIOLOGY SUMMER ASSIGNMENT 2022

Welcome to the world of Advanced Placement Biology! The attached summer assignment is required for all AP Biology students for the 2022-2023 school year. This assignment is very light and designed to help keep your brain engaged over the summer. Space it out and it will be totally manageable. Enjoy! 😊

DO THIS FIRST!

- 1) **Join our Remind** – text @mmhsapbio to 81010
- 2) **Join our Class Instagram** -- @mesabiogeeks
- 3) **Join our class Facebook** – search “Mesa Biology”
- 4) **Connect with class email:** ap.bio.mesa@gmail.com

You are required to do 4 things before school starts in August:



Part 1 – Join Remind (see above) – 10 pts

Part 2 – Email a letter of introduction to me – 10 pts

Part 3 -- Video Learning- Bozeman AP Biology – 60pts

Part 4 – Root word investigation – 20 pts

BONUS – Life Experiences (extra credit)

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

Parts 3 and 4, are due Tuesday, 8/9 if not submitted earlier. Note that the summer assignment will be your first summative grade for the class. I've spaced out the due dates in our canvas class to make it easier for you.

- 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.

The AP Biology course.

The AP Biology course is rigorous. It is a college level course. Expect to do homework every night. As with everything else in life, you will get out what you put into 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. 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.

I STRONGLY SUGGEST that you invest in an AP Biology Exam Study Guide: In class, we use the Princeton Review, “Cracking the AP Biology Exam” Editions 2019 to present. We will use the study guide in class on a regular basis. Student who do work in the study guide on their own beyond class work greatly increase their chances of getting a 5 on AP exam.

If you have questions about this assignment, or to send me completed sections, you can email me at ap.bio.mesa@gmail.com . Don't wait until the week before school to find out what you need to do!

Have a great summer!

Mr. Chitraroff

Part II: Letter of Introduction - 10 Pts total

Letter of Introduction – DUE FRI 6/10 via email to ap.bio.mesa@gmail.com

Write a brief letter of introduction to me. Letters are to be emailed to me from the email you check most frequently and should be written within the body of the email, not attached as a document. In the subject line write "Introduction – (last name_first initial)". Letters are to be written in a formal style with proper salutation, correct language, grammar, and spelling (no text speak) and a proper closing.

Include the following information in your email:

- Are you a junior or senior? What other science courses have you taken, who was your teacher? What was your favorite part of your last science class and your least favorite part?
- Why you are taking AP Biology and what are your expectations regarding the course (amount of study time, difficulty of content, lab experiences, etc...)? What are you looking forward to in the class and what are you most anxious about?
- What other AP courses are you taking this upcoming school year?
- What activities/hobbies/interests do you have (at school as well as outside of school)
- What are your tentative plans after high school?
- Include anything interesting about yourself that you would like to share with me.

Or, describe 3 places on this planet that you would like to visit and an activity you would participate in at each location. (e.g. I would like to ride vespa scooters with my wife in Sicily, Italy and eat an authentic, Italian meal. Hike in south America in the Patagonia mountains while searching for mountain goats. Eat chicken mole tacos with crema fresca cheese in Oaxaca, Mexico.)

Part III: Video learning Bozeman Science - 60 Pts

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 **4 Big Ideas of AP biology:**

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.

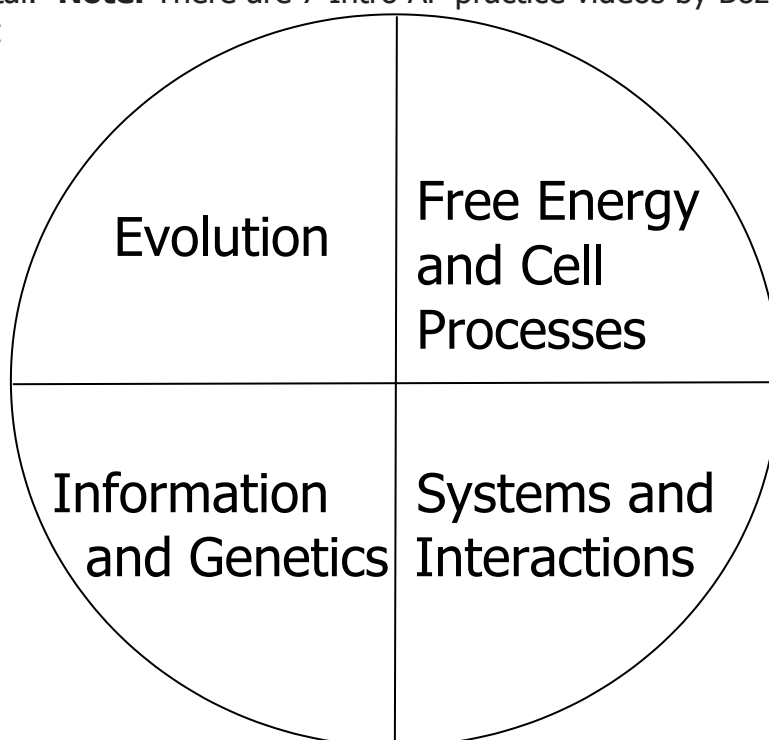
Big Idea 4: Interactions of SYSTEMS

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 – 20 pts
- 2) Video 2 – Using Mathematics – 20 pts
- 3) Video 3 – Scientific Questioning – 20 pts

You must print out or obtain the 3 sheets following on next page. Scan your work and upload to the Canvas Assignment portal. **Note.** There are 7 Intro AP practice videos by Bozeman science, You can do more for extra credit



AP Biology Practice 1 – Models and Representations Video Review – 20 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 **5 things** 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.]
- 1) _____
 - i. 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?
 - 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 _____

AP Biology Practice 2 – Using Mathematics Video Review Sheet – 20 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) Computing _____: computers are getting
 - 4) Laboratory experiments in silico:
 - a) In vitro: _____
 - b) In vivo: _____
 - c) In silico: simulating _____
- C) **Four equations in the four big ideas:** You want to be familiar with these
- 1) Evolution:
 - 2) Information:
 - 3) Free energy:
 - 4) Systems:
- D) Understandings in Using Mathematics:
- 1) _____ the _____ of a Mathematical Routine: Pause video, try and do it and then check it. If you can no do, just take notes (CALCULATOR REQUIRED)
 - 2) Apply _____ Routines: Again, try this problem. You can do this one based on common sense! (CALCULATOR REQUIRED)
 - 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 – 20 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 IV – 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 meaning 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, **in your own words**, for each of the following terms:

- Example: "the study of water mechanics".
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

BONUS: LIFE EXPERIENCES EXTRA CREDIT

*As motivation for you to do more than sleep, do AP Homework and watch Netflix this summer ☺, I am challenging you to get outside. Complete any of the tasks listed below, and provide the appropriate documentation (indicated in parentheses). For every five tasks that you complete and document successfully, I will give you five bonus points on your first course exam. Photos requested should always show YOU in the picture. Whoever accomplishes the most tasks by Friday, 8/12 will get an In-N-Out lunch for you and a friend by the second week of school. Organize your extra credit into a powerpoint or Google Slides and upload to Canvas. **Extra credit can ONLY be earned when the other summer assignments have been completed. No Exceptions!***

1. Catch a wave. Have someone take a picture or video of you surfing, boogie boarding or on some sort of floating device on an ocean wave. (picture and Ziploc baggy, 1/3 full of sand (labeled) from the beach).
2. See a movie outdoors or at a drive-in theater. Make sure it's a good one. Write a paragraph opinion of the movie and give it a rating. Indoor movies don't count. (stub, paragraph and photo)
3. Go on a bike ride with friends. At least 3 miles. (photos of cyclists with bikes at destinations)
4. Grow a potted plant from a seed (living plant donated to class on day 1). Chart its growth by measuring stem length, by taking a sequence of photos, or by completing a time lapse of 1 second video per day.
5. Visit two CA state parks (or the same one two different times). (photos of you and friends at park entrance AND maps from the visitor center)
6. Go to a Natural History Museum (LA or SD?). (photo of you in front and brochure/receipt)
7. Make a new culinary dish you've never made or tried before. (recipe AND photo of you, the food, and the people eating it)
8. Go to an amusement park, water park, bowling, or mini-golf. (photo AND stub/receipt/scorecard)
9. Go to a theatrical show and/or concert. There are many free ones offered throughout the summer. (stub AND photo)
10. Make a plant press, then press and ID at least 5 plants to Genus and Species. (press with ID'd plants)
11. Sleep outside, under the stars. (photos @ night and in morning. Note: Sleeping in a tent doesn't count.)
12. Complete a 30 minute sit spot, where you sit in one spot, solo, outdoors for at least 30 minutes without distractions (i.e. phone off) and record two pages of observations and questions. (bring two pages)
13. Read more than one book. (list, photos, AND 3 sentence summaries for each book)
14. Play the board game "Settlers of Catan", Chess, Risk, Backgammon or a new card game. (list game(s) and take photo)
15. Go to the Santa Rosa Plateau or another natural county, state or national park. Identify and classify 5 living things from the park. (photos & notes of genus/species of organisms). Get help @ Visitor Center.
16. Grow a summer vegetable garden. (photo document and bring Mr. C a piece of your homegrown food :)
17. Go geocaching with a friend or map out and complete at least a 4-mile hike in dirt. (photo and map)
18. Make your own clothing using a sewing machine. (wear it to school and photo of you sewing).
19. Night swim and play the game "Marco-Polo". (photos/videos of you and friends).
20. Cliff Jumping at least 10 feet high. Stay safe and have a spotter. (video or picture of you airborne).
21. Explore the ocean tidepools. Take a picture of you holding/near 3 living things with close ups. (photos)
22. Volunteer your time with a non-profit organization. (picture and a paragraph summary of the event)