AP Biology Summer Work

While you are sitting on the beach this summer here is some summer reading to keep you busy. We have **a lot** of material to cover and the pace will be intense. This summer assignment will help keep you sharp and get you mentally prepared to work **hard** in September.

Due to the volume of material students need to know and to give us more time for our inquiry labs this course will take a flip classroom approach. That means that students will be doing much of the initial learning at home on their own. This will usually take the form of textbook readings, power points, and short videos. Class time will primarily be used to clarify points and to engage in inquiry based lab work.

To be successful in AP Biology you need to:

1) Do all the required work.
2) Do at least a little biology everyday so you do not get behind. Fifteen to twenty minutes of studying each day will go a long way.
3) Participate in class by asking questions and taking the labs seriously.

In order to prepare for the beginning of the course each student should:

A. Read chapters #1-5 in the textbook and create an outline that focuses on the most important ideas of each chapter.

B. Answer the questions included in this packet on a separate piece of lined paper.

C. Participate in evolution online dialogue: Research the topic of evolution using 5 sources. Of your sources one must be a chapter from a book, one must be a movie, and one must be a magazine or journal article. Be sure to cite your sources on teams with your name in order to receive credit. You should have at least 5 posts and 5 responses to others people postings. The postings do not have to be very long, a few substantive paragraphs should be sufficient. Your posts should include your thoughts, opinions, and insights on this topic. Post these to the “AP Bio Evolution Journal Summer

2021" team page. You should have a total of 5 posting and 5 responses to someone else's post for a total of 10. If I comment on one of your postings or comments you should reply to that comment or it will not count towards your 10 your postings or comments. The chapter readings, outlines, and questions are due the first day of school and we will have a test the first Monday after we get back. Half of your Evolution journal postings should be completed by July 25th and the other half should be completed by August 25th.

Some possible resources:

- Ch. 22 in textbook Descent with Modification
- Movie series "Evolution" (Boyden Public Library)
- Any evolution movie on The Discovery Channel
- Nature magazine
- Sex, Genes & Rock 'n' Roll: How Evolution Has Shaped the Modern World by Rob Brooks
- The Ascent of Man by Jacob Bronowski
- The Origin of Species by Charles Darwin
- The Pandas Thumb by Stephen Jay Gould
- Your Inner Fish by Neil Shubin (book or movies)
- The Blind Watchmaker by Richard Dawkins
- The Mismeasure of Man by Stephen Jay Gould

Textbook – "Campbell Biology AP Edition"

Any readings, including the summer readings will be available on Teams and the FHS website. If students really want a textbook at home to read, they can sign one out and of course, a classroom set will be available to students.

Summer work questions:

1. What is an isotope?
2. What is a trace element?
3. In humans, iron is a trace element required for proper functioning of hemoglobin, the molecule that carries oxygen in the red blood cells. What might be the effects of iron deficiency?
4. What are the two main types of chemical bonds? How are they different?
5. What are the most common weak chemical bonds?
6. What happens during a chemical reaction?
7. What is a polar molecule?
8. What are the four emergent properties of water? Explain each.
9. Why is water considered the solvent of life?
10. What are acids and bases? Explain how they affect living organisms.
11. What is a buffer and why is it important in living organisms?

12. What makes carbon so special that it forms the basis of all organic molecules?
13. What is an isomer? Describe two types of isomers and explain how they are different.
14. What is a functional group? Draw the structural formulas and name the structural groups on p. 64-65.
15. What is a dehydration reaction?
16. What is a hydrolysis reaction?
17. What elements make up carbohydrates?
18. What are the monomers of carbohydrates?
19. What are the functions of carbohydrates?
20. What elements make up a lipid?
21. What are three functions of lipids?
22. What are the monomers of proteins? How many are there?
23. Describe the four levels of protein organization and the bonds that are responsible.
24. What are the monomers of nucleic acids?
25. What three components make up a nucleic acid?
26. What are the two main types of nucleic acids and which nucleotide monomers make them up?
27. Why is DNA referred to as being antiparallel?