AP biology information packet 25-26

I am glad you have signed up for AP biology!!! I am sure you may have some questions about how the course will work, so I will attempt to address a few of them. Please feel free to contact me at home (859-258-9187) or by email (kjasper@lexingtonchristian.org) if you or your parents have further questions.

What books do I need?

1. **For the summer work, you will need <u>Barron's AP biology 2025 (PREMIUM with 5 practice tests)</u>** book. ***This will need to be NEW because this is a recently released version*** **-** but is easily accessed on Amazon and other sellers for $20 or less.
   INFORMATION FOR BARRON's book:
   Publisher : Barrons Educational Services; Premium edition (2025)
   ISBN-13 : 978-1506291666

This is the only textbook you will need for AP BIOLOGY.

What is the focus of AP biology?
This class is like taking a first year college biology majors class.
This course takes the concepts learned in general or Honors biology and covers them in a significant amount of detail. We will also attempt to link processes and systems to give you a big-picture understanding of the living world and the understanding of how to apply your knowledge. We will spend about 20% of the class in laboratory activities. Since this is a second year course for you, it is expected that some of the material will be a review, allowing us to move quickly to applying the information in lab context.

What are the summer assignments?
OK, so you maybe were NOT asking that question. Anyway, to get us started, here are a few things you need to do over the summer. All are due **THE FIRST MONDAY OF SCHOOL, August 18th.**

NOTE: If you have never had an AP class or haven't taken/didn't do well in Honors Biology, it would be wise to look over the assignments early to see if you feel the class is a good fit for you. If these assignments are difficult, the class is going to push you and maybe another class is a better fit.

SUMMER ASSIGNMENTS LIST (Best done in order)

1. AP BIOLOGY SCAVENGER HUNT – See page 2 (**canvas turn in**)
Create a Powerpoint of pictures, with terms and definitions from the ecology unit
2. Graphing and ecology terms (from assignment one) exercises (I'll look at in class Monday 8/18)
3. Chp 3 in Barron's book – Water (I'll look at in class Monday 8/18)
Read the chapter in the book and complete all questions (10 MC and 3 FR – 2 short and 1 long) at the end of the chapter. Check your work and note any questions or issues you have.

I am looking forward to working with you this coming year. This class is a challenge for both teacher and student, but we will have fun along the way. I have been praying this verse over the class as we embark on this exciting journey of learning more about the Lord through HIS creation. "Let the favor of the Lord our God be on us; establish for us the work of our hands – establish the work of our hands!" Psalm 90:17.

Blessings,

Mrs Jasper

Assignment One, Summer Scavenger Hunt

Part 1 – Below is a list of 50 biological terms and concepts related to the class. Locate **25 of those items** and have someone take a picture of you with the item, or take a selfie with the item. **Everyone must do #49 and 50 and it will be our way of getting to know each other day one.**
Stuffed versions of animals, fake plants and props are acceptable. However, you cannot use pictures printed from the internet in any way. **You must be in the photo or place your student id in the photo to get credit!**

1. Aquatic Ecosystem (Freshwater lake or stream) 2. Population 3. Autotrophic organism 4. Heterotroph organism 5. Organism that performs cellular respiration 6. Community (different populations in the same area) 7. Flower (describe why plants use them) 8. A C4 plant or CAM plant (define both) 9. An endotherm 10. An ectotherm 11. You eating/holding something with a low pH. 12. A parasite/parasitic relationship 13. A mutualistic relationship 14. A decomposer 15. Solid form of water 16.Herbivory or predation 17. A primary consumer 18. The ultimate source of all energy on Earth (hint: it's not on Earth). 19. A plant organ/structure that performs photosynthesis 20. surface tension in water 21. Something with a basic pH 22. Biome/Ecosystem 23. Biotic factor 24. Abiotic factor 25. a dominant genetic trait 26. a recessive genetic trait 27. symbiosis (an organism that is part of one) 28. invasive species	29. Genetically modified organism (or a labelled NON GMO product) 30. monoculture 31. a keystone species 32. an organism that has undergone artificial selection/hybridization 33. an organism that displays hybrid sterility 34. a simple Carbohydrate 35. a complex carbohydrate 36. a protein 37. a denatured protein (a high protein item that is cooked) 38. a lipid 39. a phospholipid (easiest – egg yolk) 40. (part of) the water cycle (ex. Precipitation) 41. a eukaryotic organism 42. a prokaryotic organism (or the product of one) 43. phototrophism 44. melatonin 45. metabolic rate – pic of an organism that could have a high metabolic rate 46. cohesion/surface tension of water 47. evaporative cooling (something sweating) 48. a mixture of polar and nonpolar liquids **49.Something related to biology that you absolutely love and why.** **50. Something related to biology that you absolutely hate (doesn't have to be a selfie) and why** ****everyone does these two**

<u>Create a powerpoint presentation using the following format.</u>
<u>Slide 1</u>: Your name and grade
<u>Slides 2 through 28/29</u>: Each slide should contain three (3) pieces of information, and be in the order listed below.

*1. **The picture of you and the biology term**. If you just want a partial selfie that's fine too OR you can sit your school id in the picture. Do not simply copy and paste images you find online. You will not get credit for stock images*
*2. **The biologically relevant definition** of the term. You can use the glossary of your Barron's book or an online dictionary, just make sure the term relates to biology.*
*3. **The date and general location** of the picture.*

Once you have completed the AP Biology Summer Scavenger Hunt and created your powerpoint, submit it on canvas.

<u>Assignment 1, Part 2</u>
For the items you did NOT photograph, create a word document with the biologically relevant definition for each term. This will be submitted on canvas separately.

Assignment 2 –AP Bio Graphing and Data Analysis Practice

Read this first! Barron's book - pages 11 (null hypothesis) skip chi square, and then read p 13-18 on descriptive statistics. I will check the worksheets in class on Monday
Watch this second! Graphing https://www.youtube.com/watch?v=9BkbYeTC6Mo

1. Line graphs – Show change over _____ and Scatter plots show correlation of _____

FOR BOTH OF LINE GRAPHS AND SCATTER PLOTS
X axis is for the _____variable
Y axis is for the _____ variable

3. Bar graph Comparing _____

4. Histogram - Distribution of _____

5. Pie Chart Parts of a _____

6. List 5 elements that all graphs should display

Read the following article
https://www.biologyforlife.com/interpreting-error-bars.html

After watching the video and reading the article, answer the following practice AP Biology questions. You should answer in COMPLETE SENTENCES and label each part of the question (a, b, etc)

Question 1 – Use the graphing grid to answer part b, then write the rest of the answers on the following page

Cellular glucose levels are critical for proper cell function in all living things. In humans, blood glucose levels can be measured to diagnose several different metabolic diseases, including diabetes. Table 1 shows the results of a blood glucose test in several members of a family and Table 2 gives the normal, at risk and affected ranges for a metabolic disease.

TABLE 1. AVERAGE BLOOD GLUCOSE LEVELS IN MEMBERS OF A FAMILY

Individual	Average Blood Glucose Level (mg/dL $\pm$ $2SE_{\bar{x}}$)
IV–1	170 ± 15
IV–2	190 ± 10
IV–3	145 ± 5
IV–4	165 ± 15
IV–5	110 ± 15
IV–6	125 ± 5
IV–7	105 ± 15
IV–8	120 ± 10

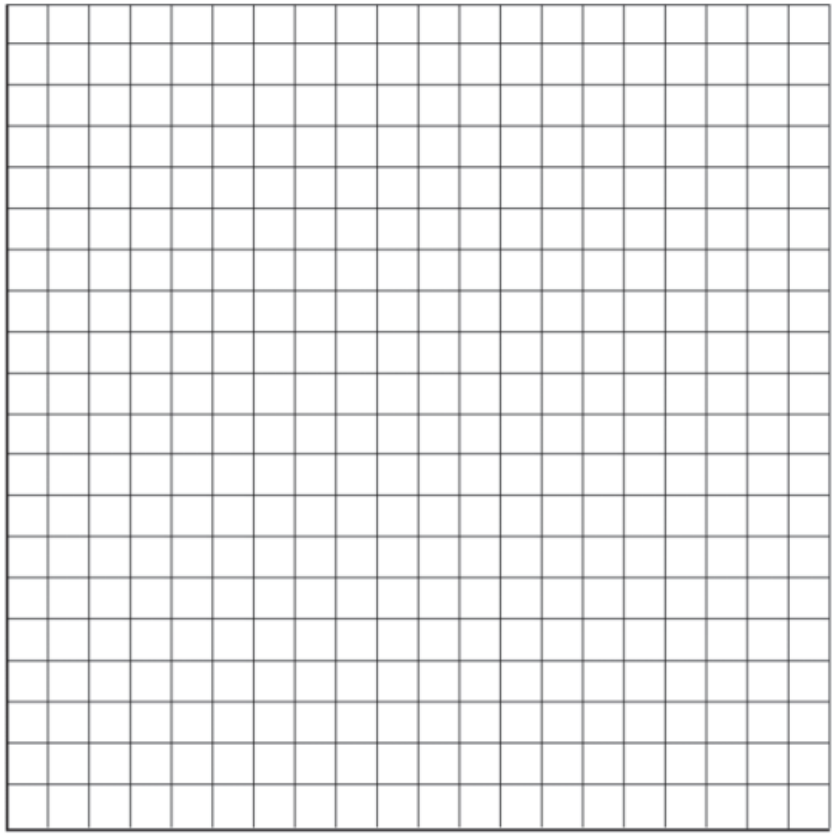
TABLE 2. PHENOTYPIC CLASSIFICATIONS BASED ON BLOOD GLUCOSE LEVELS

Phenotype	Blood Glucose Level (mg/dL)
Normal	< 140 mg/dL
At risk	140 – 199 mg/dL
Affected	≥ 200 mg/dL

a. This disorder alters glucose metabolism. **Describe** the chemistry of glucose including elements, bond type and overall structure/shape.

b. Using the grid on the following page, **graph** the data using a bar graph with standard error bars. **Determine** one individual who is both at risk of developing the disorder and has a significantly different blood glucose level than individual IV-1.

c. The metabolism of glucose produces a molecule called ATP. **Describe** the chemical structure of ATP and **identify** its role in cells.



The common wild oat is native to regions of Europe and Asia but is an invasive species in central California grasslands. In California, the common wild oat has almost completely replaced some species of native bunchgrass. Researchers found that aphids, a type of small insect that often carries plant viruses, have a much higher reproductive rate in grasslands that include the common wild oat than in grasslands composed of only native bunchgrass species. Additionally, the viruses carried by the aphids appear to affect only the native bunchgrasses and not the common wild oat. Native bunchgrasses infected by the virus have much higher death rates than do native bunchgrasses that are not infected.

(a) **Describe** the change in the resilience of an ecosystem when there is a decrease in the number of species.

(b) **Explain** how the addition of the common wild oat affects the number of native bunchgrass plants that can be supported by the California grasslands ecosystem.

(c) Researchers suggest adding ladybugs, predators of aphids, to the California grasslands. **Predict** the effect of adding ladybugs on the abundance of the native bunchgrass population.

(d) **Justify** your prediction in part (c).

Assignment 3 – Barron's Water Chapter

Read Barron's chapter 3 on water and answer the following questions/fill in the guided notes.

Water is a _____molecule. This allows it to form _____ bonds between the molecules.
What is polar?

What is a covalent bond and what types of atoms does it form between?

Sketch a molecule of water, showing the polarity.

The book lists 5 properties of water. List them, and describe them in your own words.

What is pH and what does it measure?

Label the scale on the bottom with the following – pH values 0, 14 and 7, areas that are acid, basic and neutral (alkaline)

←----------→

If a substance has a H+ concentration of $1x\ 10^{-3}$ is it acidic or alkaline?

Define BUFFER:

Why do biological systems need buffers?

Use the space below to do the end of chapter questions in the Barron's book on pages 33-35.
Do all 10 multiple choice, and numbers 11- 13 in the free response. You should check your work at the end of the chapter and come to class prepared with any questions you had. These will be checked on the first Monday of class.