

AP Biology 2018

If you have any questions, feel free to email me at hlfehr@fcps.edu

This is due the first day of class!

Step 1: enroll into the blackboard site

- Go to blackboard
- Click courses
- Click course search—type: AP Bio
 - Find our AP biology site (heather fehr)
- Click the Enroll button to the right.

Step 2: enroll into the Google classroom

- Go to Google classroom (login under your fcpschools.net account)
- Click the + (Join a Course button)
- Click join course, and type: cm89b5

Summer Assignment: Review from Freshmen Year

DO NOT JUST COPY FROM THE BOOK or THE CLASS NOTES. USE YOUR IMAGINATION, USE YOUR OWN EXAMPLES!

Create a presentation via powerpoint, word, written on paper, etc, that demonstrates your knowledge of the following:

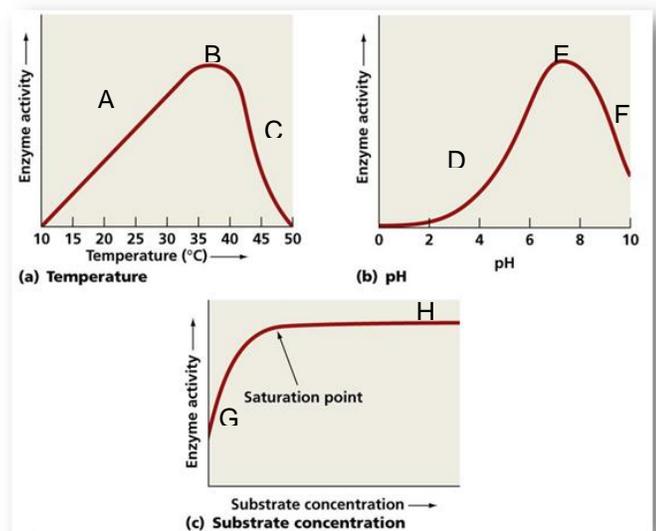
DIRECTIONS: ALL WORK MUST BE TYPED AND YOUR OWN. DRAWINGS, DIAGRAMS, ETC CAN BE HANDDRAWN, BUT NOT CUT FROM THE INTERNET, BOOK, ETC.

1) Biochemistry

- What element is considered to be organic?
- What are at least 4 properties of water? (do not say “wet”, etc).
- Define AND give examples of the following bonds:
 - Covalent, Ionic, Hydrogen, Glycosidic, Peptide, Ester & Phosphodiester Bonds
- The four macromolecules we will learn are: carbohydrates, lipids, nucleic acids & proteins
 - What elements are present in each molecule?
 - Give three examples of each molecule.
- What is an enzyme?
 - What are their functions?
 - Where on the enzyme does the work get performed?
 - What happens if the enzyme structure is changed?
 - Describe what is happening at the following points (A-H) and WHY?
- Diagram or explain a condensation reaction.
- Diagram or explain a hydrolysis reaction.

2) The Cell & Transport

- Define eukaryote (do not say “has nucleus”)
- Define prokaryote (do not say “no nucleus”)
- What are four things present in all cells—whether prokaryote or eukaryote?
- List at least 10 organelles and their functions.
- Diagram a cell membrane (Do NOT cut and paste a picture from Internet etc...draw your own)
 - label the phospholipid, protein channel, carbohydrate side chain, cholesterol.



- (2) What are the functions of each of these components?
- vi) Define passive transport
 - (1) When is this process used?
 - (2) List at least 2 types
- vii) Define active transport.
 - (1) When is this process used?
 - (2) List at least 2 types

3) Cell cycle

- i) What are the 4 main parts to the cell cycle?
 - (a) What happens in each part?
- ii) Diagram the steps of mitosis. (Do NOT cut and paste a picture from Internet etc...draw your own)
- iii) Diagram the steps of meiosis. (Do NOT cut and paste a picture from Internet etc...draw your own)
 - (a) How is meiosis different from mitosis (list at least three ways)?
- iv) How does meiosis promote varying traits in organisms?

4) Energy

- i) What is the purpose of ATP?
 - (1) What is the structure of ATP?
 - (2) What macromolecule is it classified by?
- ii) What is the formula for photosynthesis?
 - (a) The two steps of photosynthesis are Light Reaction and the Calvin Cycle:
 - 1. Give a **brief** description of step.
 - 2. State the location of each step (do not just say the chloroplast)
 - (b) What's the purpose of photosynthesis?
- iii) What is the formula for cellular respiration?
 - (a) The three steps of cellular respiration are: Glycolysis, Krebs & ETC (*electron transport chain).
 - 1. Give a brief description of each.
 - 2. State the location of each step (do not just say the mitochondria)
 - (b) What's the purpose of cellular respiration?

5) Genetics

- i) Perform a Punnett Square. Cross a homozygous dominant individual with a heterozygous individual.
 - (a) What are the phenotypes of the offspring?
 - (b) What are the genotypes of the offspring?
- ii) How does phenotypic variation relate to evolution?
- iii) What were the contributions of the following scientists?
 - (a) Watson, Crick, Wilkins & Franklin
 - (b) Avery-Macleod McCarty
 - (c) Hershey Chase
- iv) What are the three components of a nucleotide?
- v) How do we copy DNA? When in the cell cycle would it be copied?
- vi) What are the two main steps to protein synthesis?
 - (a) What are the three types of RNA? What are the functions of each?
- vii) What is genetic engineering? What is a benefit that has been gained from genetic engineering?

6) Evolution:

- i) Define spontaneous generation and biogenesis
- ii) Write an explanation describing the importance or the findings of each of the following scientists.
 - (a) Lamarck
 - (b) Darwin
 - (c) Wallace
 - (d) Linnaeus
- iii) Theory of abiotic synthesis: write the importance of the following scientists.
 - (a) Oparin/Haldane
 - (b) Miller & Urey
- iv) Define natural selection.
 - (a) How does natural selection relate to antibiotic resistance? Use Darwin's four points to illustrate this process.
- v) Define the evidence of evolution:
 - (a) Morphological (homologous structures)
 - (b) morphological (analogous structures)

- (c) Vestigial structures
- (d) Fossils
- (e) biochemical/genetic similarities
- vi) Describe (if you prefer to diagram these terms instead you can):
 - (a) Adaptive radiation
 - (b) Divergent evolution
 - (c) Convergent evolution
- vii) Diagram and describe the steps of endosymbiotic theory.
 - (a) List 4 pieces of evidence that support this theory.

7) Human Body

- i) What is the function of the excretory system?
 - (1) Diagram and label the nephron
- ii) What is the function of the immune system? List at least three components of the immune system?
- iii) What is the function of the nervous system?
 - (1) Diagram and label the neuron
- iv) How do cells communicate within the human body?

8) Taxonomy, Domains & The Kingdoms.

- i) What is taxonomy?
- ii) Provide a description and example from each of the three domains:
 - (a) Archaeobacteria
 - (b) Eubacteria
 - (c) Eukaryotes

9) Ecology

- i) Define autotroph, heterotroph, trophic levels, food chain, food web
- ii) Autotrophs can use what two processes to make sugar?
- iii) Heterotrophs can use what 3 different processes to make ATP from sugar?
- iv) The four nutrient cycles are: phosphorus, nitrogen, carbon and water.
 - (a) List at least three important vocab terms from each and define them.
 - (b) Show a connection between at least 2 of the cycles.

NECESSARY ITEMS FOR NEXT YEAR:

- 3 Ring Binder for notes & work
- 3 Ring binder for labs (1/2 inch approximately)
- Colored pencils, highlighters,
- AP Biology Review Book: **NEEDED THE FIRST DAY OF SCHOOL.**
 - Barrons, 5 Steps, etc Look at the one best for you!
 - Strongly recommended: “Preparing for the Biology AP* Exam (School Edition) (Pearson Education Test Prep) 5th Edition” or later ISBN-13: 978-0133458145 ISBN-10: 0133458148

⑥ Desire to learn more about biology and

willingness to work.

SUGGESTED ITEMS:

Barron's AP Biology Vocabulary cards

Sense of humor!

