

# Mrs. Fehr & Ms.Lee—AP Biology 2020-2021

If you have any questions, feel free to email us at [hlfehr@fcps.edu](mailto:hlfehr@fcps.edu) or [clee2@fcps.edu](mailto:clee2@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 Or Christina Lee)
- 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: **75f5wjj**

## Summer Assignment: Review from Freshmen Year

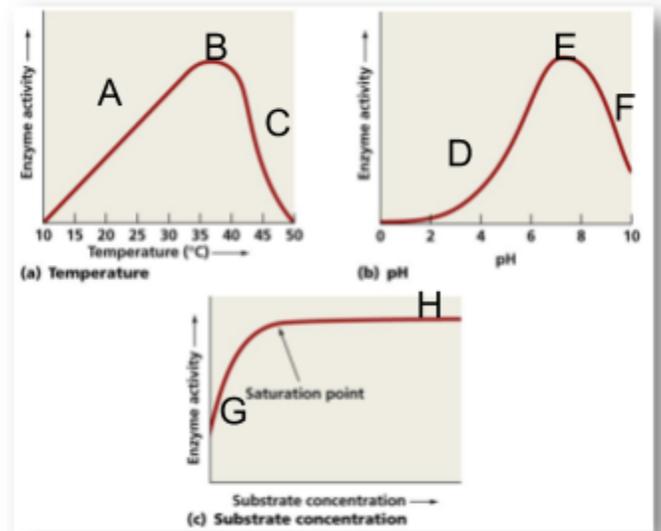
- 1) Go to google classroom—the assignment is there.
- 2) Answer the following questions on a separate document:
  - a. Powerpoint, word, handwritten.
- 3) Do not just copy from the book or the class notes. Use your imagination, use your own examples!
- 4) All work must be typed and your own. Drawings, diagrams, etc can be handdrawn, but not cut from the internet, book, etc.

### 1) Biochemistry

- i) What element is considered to be organic?
- ii) What are at least 4 properties of water? (do not say “wet”, etc).
- iii) Define AND give examples of the following bonds:
  - (a) Covalent, Ionic, Hydrogen, Glycosidic & Peptide Bonds
- iv) The four macromolecules we will learn are:

	Carbohydrates	lipids	nucleic acids	Proteins
Elements				
3 Examples				
Functions				
Monomer/subunits				
DRAW A DIAGRAM of the MONOMER				

- v) What is an enzyme?
  - (a) What are their functions?
  - (b) Where on the enzyme does the work get performed?
  - (c) What happens if the enzyme structure is changed?
  - (d) Describe what is happening at the following points (A-H) and WHY?
- vi) Diagram or explain a condensation reaction.
- vii) Diagram or explain a hydrolysis reaction.
- viii) Define and give an example of the following: endergonic, exergonic, catabolic and anabolic.



## 2) The Cell & Transport

- i) Define eukaryote (do not say “has nucleus”)
- ii) Define prokaryote (do not say “no nucleus”)
- iii) What are four things present in all cells—whether prokaryote or eukaryote?
- iv) List at least 10 organelles and their functions.
- v) Diagram a cell membrane (Do NOT cut and paste a picture from Internet etc...draw your own)
  - (1) 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? DO NOT JUST SAY ONE WORD ANSWER. Should be multiple items happening in each part.
- ii) Diagram the steps of mitosis. (Do NOT cut and paste a picture from Internet etc...draw your own)
  - (1) Describe what is happening?
- 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?
- iv) What is the relationship between photosynthesis and 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 are the three components of a nucleotide?
- iv) How do we copy DNA?
  - (1) When in the cell cycle would it be copied?
- v) Fill in the following table:

	Basic Definition	Where it occurs?	Types of Nucleic Acids Involved
Transcription			
Translation			

- vi) What is genetic engineering? What is a benefit that has been gained from genetic engineering?

6) Evolution:

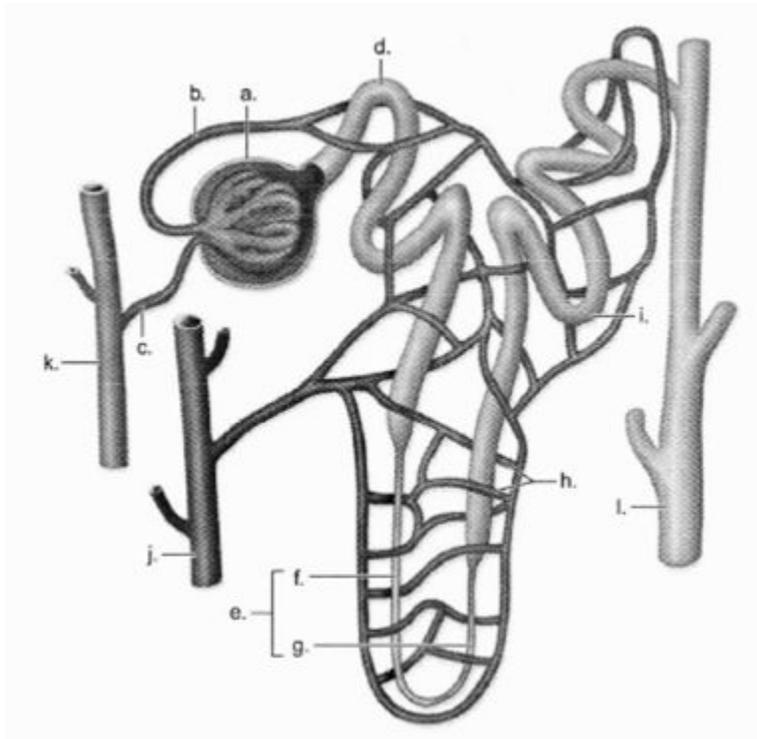
- i) Define spontaneous generation and biogenesis
- ii) Write an explanation describing the importance or the findings of each of the following scientists.
  - (a) Lamark
  - (b) Darwin
  - (c) Wallace
  - (d) Linnaeus
- iii) Theory of abiotic synthesis: write the importance of the following scientists.
  - (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) What are the 5 properties of Hardy Weinberg? Is a population ever truly in Hardy Weinberg Equilibrium?
- vi) Define the following evidence of evolution:
  - (a) Morphological (homologous structures)
  - (b) Morphological (analogous structures)
  - (c) Vestigial structures
  - (d) Fossils
  - (e) biochemical/genetic similarities
- vii) Describe (if you prefer to diagram these terms instead you can):
  - (1) Adaptive radiation
  - (2) Divergent evolution
  - (3) Convergent evolution
- viii) 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) Label the nephron and describe the function of each part:

- a—
- d—
- e—
- f—
- g—
- i—
- l—



ii) What is the function of the immune system?

(1) What are 4 different types (there are a LOT more than 4) of White blood cells and their functions?

(2) What is the difference between the 1<sup>st</sup> line of defense, 2<sup>nd</sup> line and 3<sup>rd</sup> line of defense?

8) Taxonomy, Domains & The Kingdoms.

i) What is taxonomy?

ii) Provide a description and example from each of the three domains:

(a) Archaeobacteria

(c) Eukaryotes

(b) Eubacteria

iii) Diagram the lytic AND lysogenic Cycle

(1) Provide an example of a virus who uses Lytic Cycle.

(2) Provide an example of a virus who uses Lysogenic Cycle.

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.**
  - **Strongly recommended:** “Preparing for the Biology AP\* Exam (School Edition) (Pearson Education Test Prep) 5th Edition” ***or later***
  - Or
  - Barrons, 5 Steps, etc Look at the one best for you!

Desire to learn more about biology and

**willingness to work.**

SUGGESTED ITEMS: Barron’s AP Biology Vocabulary cards

**Sense of humor!**

