

# Mrs. Fehr & Ms. Lee—AP Biology 2018-2019

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: **4dyrvf0**

## Summer Assignment: Review from Freshmen Year

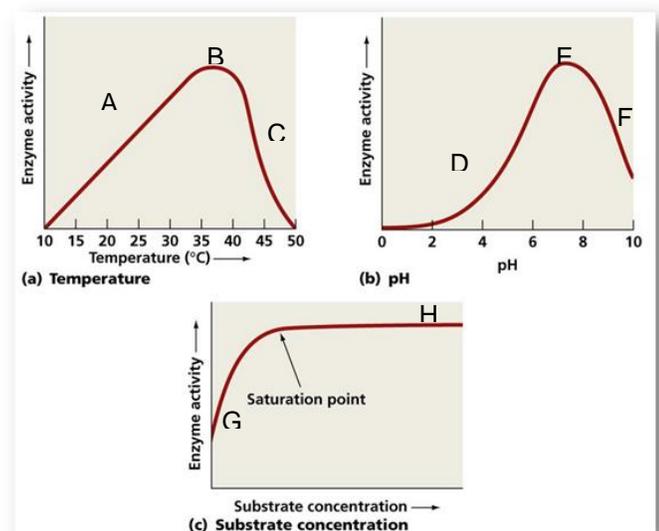
- Go to google classroom—the assignment is there.
- Answer the following questions on a separate document:
  - Powerpoint, word, handwritten.
- Do not just copy from the book or the class notes. Use your imagination, use your own examples!
- All work must be typed and your own. Drawings, diagrams, etc 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 Bonds
- The four macromolecules we will learn are:

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

- 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.



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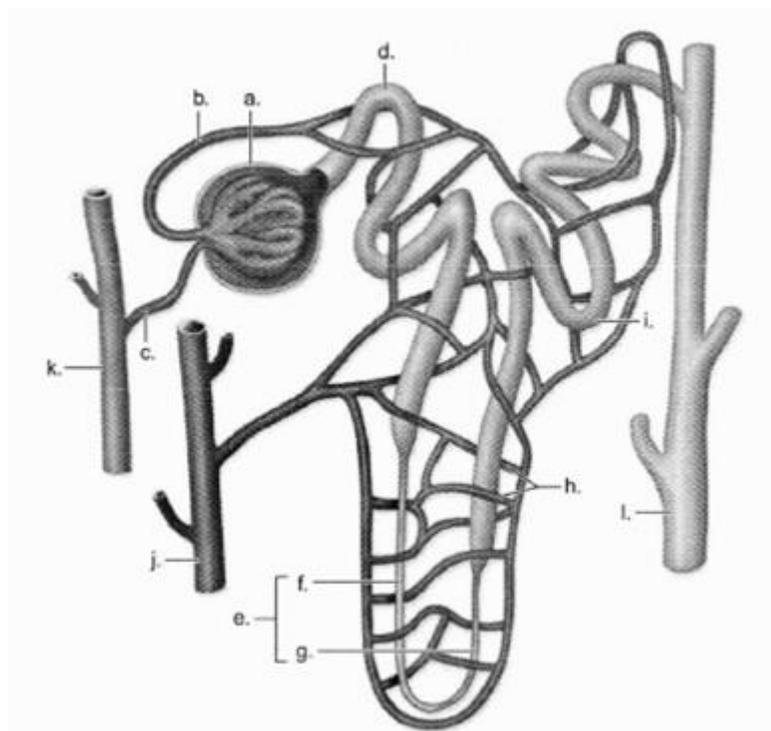
vi) What is genetic engineering? What is a benefit that has been gained from genetic engineering?

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) 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) 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
  - (b) Eubacteria
  - (c) Eukaryotes
- 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!**

