

Mrs. Fehr & Ms. Lee—AP Biology 2021-2022

If you have any questions, feel free to email us at hlfehr@fcps.edu or cle2@fcps.edu

THIS IS STRONGLY ADVISED...THIS IS A REVIEW OF FRESHMEN YEAR BIOLOGY. this will be content we will expect you to have a basic understanding of.

Step 1: 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: **kxba5dp**

YES WE WILL BE USING SCHOLOGY BUT THIS MAY BE A GOOD RESOURCE FOR CONTENT until schoology gets up and running.

Step 2: Log into the online textbook--Mastering Biology.

To register for AP Biology 21-22:

1. Go to <https://www.pearson.com/mastering>.

2. Under Register, select Student.

3. Confirm you have the information needed, then select OK! Register now.

4. Enter your instructor's course ID: **fehr99000** and Continue.

5. Enter your existing Pearson account username and password to Sign In. You have an account if you have ever used a MyLab or Mastering product. »

If you don't have an account, select Create and complete the required fields.

6. Select an access option. » Enter one of the following access codes...if one is not available, try a different one.

SSSRCC-CHUFF-RUMEN-CRUET-OASIS-SEVIW

SSSRCC-CRISS-RUMEN-CRUET-RERUN-SWORD

SSSRCC-STOUP-RUMEN-CRUET-LAPIS-WIPES

7. From the You're Done! page, select Go To My Courses. 8. On the My Courses page, select the course name AP Biology 21-22 to start your work

After you register your book code, from here on out you will

1. Go to <https://www.pearson.com/mastering>.

2. Select Sign In.

3. Enter your Pearson account username and password, and Sign In.

4. Select the course name AP Biology 21-22 to start your work.

Strongly advised summer Assignment: Review from Freshmen Year

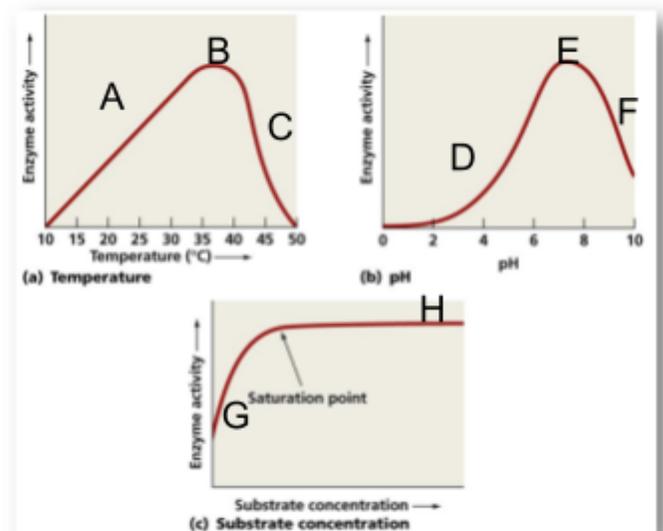
1) Biochemistry

- 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) Lam
arck

(b) Darwin
(c) Wallace

(d) Linr
aeus

iii) Theory of abiogenic 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

(3) Convergent evolution

(2) Divergent 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:

part:

a—

d—

e—

f—

g—

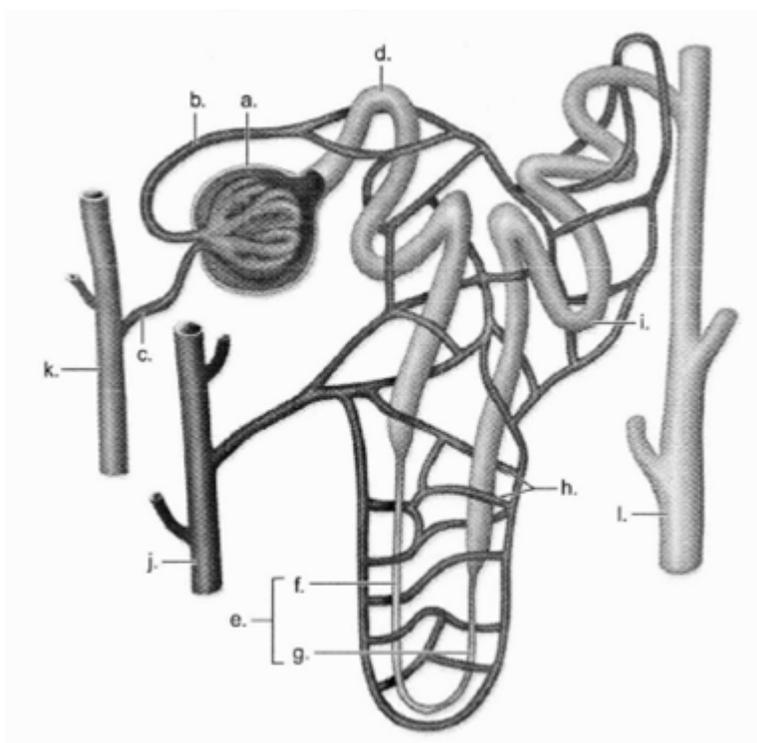
i—

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 1st line of



defense, 2nd line and 3rd 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.

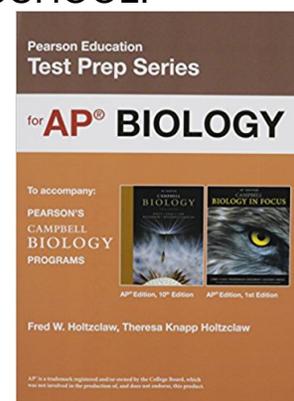
NECESSARY ITEMS FOR NEXT YEAR:

- 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!