Welcome to AP Biology - Summer Work Tasks

Hello and welcome to AP Biology! I am excited to meet you and have you in my class this year! This course will focus on the four Big Ideas of biology: evolution, energetics, information storage and transmission, and systems interactions. AP Biology is designed to cover the equivalent of two semesters of introductory biology courses at a college level and to prepare you for how to manage college courses.

To prepare for this busy year, please complete the following assignments over the summer.

1. Read and take notes on Chapter 1 of OpenStax and answer all questions at the end of the chapter (#1-23).
    a. Please print the answer sheet in this packet and be ready to turn it and your notes in on the first day of school.
2. Read a book about biology – then write a 1-2 page paper about how it relates to one (or more) of the Big Ideas (evolution, energetics, information storage and transmission, and systems interactions). I am happy to consider alternate books if you find one that interests you more!
    a. *The Origin of Species* by Charles Darwin
        i. First published in 1859, this landmark book on evolutionary biology was not the first to deal with the subject, but it went on to become a sensation—and a controversial one for many religious people who could not reconcile Darwin's science with their faith. Darwin worked on the book for over 20 years before its publication. The radical crux of his scientific theory was the idea of natural selection, which meant that chance, not a divine Creator, played a great role in humanity's advancement and that individuals who weren't physically able to adapt with the greater populace died off.
    b. *How to Tame a Fox* by Lee Alan Dugatkin and Lyudmila Trut
        i. Tucked away in Siberia, there are furry, four-legged creatures with wagging tails and floppy ears that are as docile and friendly as any lapdog. But, despite appearances, these are not dogs—they are foxes. They are the result of the most astonishing experiment in breeding ever undertaken—imagine speeding up thousands of years of evolution into a few decades. In 1959, biologists Dmitri Belyaev and Lyudmila Trut set out to do just that, by starting with a few dozen silver foxes from fox farms in the USSR and attempting to recreate the evolution of wolves into dogs in real time in order to witness the process of domestication. This is the extraordinary, untold story of this remarkable undertaking.
    c. *Darwin's Backyard* by James T. Costa
        i. James T. Costa takes readers on a journey from Darwin's childhood through his voyage on the HMS Beagle where his ideas on evolution began. We then follow Darwin to Down House, his bustling home of forty years, where he kept porcupine quills at his desk to dissect barnacles, maintained a flock of sixteen pigeon breeds in the dovecote, and cultivated climbing plants in the study, and to Bournemouth, where on one memorable family vacation he fed carnivorous plants in the soup dishes.
    d. *The Immortal Life of Henrietta Lacks* by Rebecca Skloot
        i. Her name was Henrietta Lacks, but scientists know her as HeLa. She was a poor Southern tobacco farmer who worked the same land as her slave ancestors, yet her cells—taken without her knowledge—became one of the most important tools in

medicine: The first “immortal” human cells grown in culture, which are still alive today, though she has been dead for more than sixty years. HeLa cells were vital for developing the polio vaccine; uncovered secrets of cancer, viruses, and the atom bomb’s effects; helped lead to important advances like in vitro fertilization, cloning, and gene mapping; and have been bought and sold by the billions.

3. Biology Terminology: Latin and Greek Roots and Word Parts
    a. Biology students are faced with the unique challenge of learning a large number of new terms predominantly based on Latin and Greek languages. Learning the word parts will give clues to what words mean, even if they are novel to a student. Research suggests that students knowledgeable of these terms score higher on standardized tests.
    b. You will be quizzed on the following terms throughout the school year, including the first week back to school.
4. Be prepared to tell me a little bit about yourself on the first day of class including …
    a. Your name and any nickname you prefer to go by
    b. What other science courses you have previously taken?
    c. What is your favorite hobby or activity?
    d. Will you be participating in any extracurriculars at Maryvale this year?
    e. Why did you decide to take AP Biology?

Be ready to turn in your Ch. 1 notes and answer sheet **and** your biology essay on the first day of class and to take a quiz the first week of class on biology terminology.

I am looking forward to working with you this year!

-Ms. Connell

Name: _____

AP Biology Summer Work – Chapter 1 Review Questions

Directions: Read and take notes on Chapter 1 in OpenStax "Biology for AP Courses", and then use the table of contents to navigate to the "Review Questions", "Critical Thinking Questions", and "Test Prep for AP Courses" questions for the chapter. Write the letter of the most correct answer on the line next to number. Please use capital letters.

Chapter 1: The Study of Life – Review Questions

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____

Chapter 1: The Study of Life – Critical Thinking Questions

12. _____
13. _____
14. _____
15. _____
16. _____
17. _____

Chapter 1: The Study of Life – Test Prep for AP Courses

18. _____
19. _____
20. _____
21. _____
22. _____
23. _____

Biology Terminology: Latin and Greek Word Parts (Roots, Prefixes, and Suffixes)

Biology students are faced with the unique challenge of learning a large number of new terms predominantly based on Latin and Greek languages. Learning the word parts will give clues to what words mean, even if they are novel to a student. Research suggests that students knowledgeable of these terms score higher on standardized tests.

You will be quizzed on the following terms throughout the school year, including the first week back to school.

Word Part/Root	Meaning
a-, an-, non-	Without, Not
amphi-	Both
aqua-, hydro-	Water
allo-	Other
bi-, di-, diplo-	Two
chloro-	Green
co-, com-, con-	Together, Both, With
deca-, deci-	Ten
ecto-, exo-	Out, Outside
equ-, iso-	Same
ex-, extra-	Out, Outside, Beyond
homo (Greek)	Same
hypo-, sub-	Below, Less
hetero-	Different, Other
intra-, endo-	Inside
macro-, mega-	Large
micro-	Small
multi-, poly-	Many
neo-	New
para-	Beside
photo-, lumin	Light
pino-	To Drink
pre-, pro-	Before, Forward
quat-, quad-, tetra-	Four
semi-, hemi-	Half
tert-, tri-	Three

Word Part/Root	Meaning
adi-, lip-	Fat
anti-, contra-	Opposite, against
-ase	Enzyme
auto-	Self
bio-, vita-	Life
chrom-	Color
-cyte, cyto-	Cell
dia-, dif-, diss-	Through, Apart, Across
epi-	Over, Atop, Upon
eu-	True
hapl-, mono-, uni-	One
hyper-	More, Excessive
helix	Spiral, Coil
inter-	Between
lys-	To loosen, Separate
meta-	Change
morph	Shape, Form
muta-	Change
-ose, gly-, sacchar-	Sugar
phago-, -troph	To Eat
-phyte, phyto-	Plant
-ploid	Chromosome
pseudo-	False
re-	Again
sym-, syn-, -sys	With, Together
trans-, per-	Across, Through

The best way to study the biology terminology is to read through (silently and out loud) flashcards you make (digital or physical) so that you can get used to remembering the connections both ways. Go through the entire stack multiple times a week to build these terms into your long-term memory.

Hint: During concentrated study times, go through the cards once and place all of the incorrectly answered cards in a separate pile. Go through the pile of incorrectly answered cards, again separating the ones you got correct from the ones you incorrectly answered. Continue going through the “wrong” pile until you can answer each one correctly.