

## AP Biology Summer Assignment 2017

Dear AP Biologist,

Welcome to the wonderful world of AP Biology! In order to experience the best course possible, it is very important that each student enter the class armed with the knowledge that Advanced Placement Biology is designed to be the equivalent of a college introductory course usually taken by biology majors during their first year of study. Therefore, this course requires that the student possess a level of maturity and sophistication found in the typical university undergraduate.

We will use a college textbook, conduct college level labs, and our tests and exams will be analogous to those administered by undergraduate professors. Please keep in mind that AP Biology differs significantly from a typical honors biology course in the depth and breadth of content that is presented and particularly, in the time and effort required of students. We will delve more deeply into the topics that were first introduced to you in your sophomore or freshman biology course with a focus on student – directed inquiry laboratory investigations.

Since this is a college level biology course, we encourage you to **consider the following**:

1. You need to use what you learn. That means practice. There are no tricks for high grades.
2. You need to “make” notes-as in, you need to jot down, draw and interact with the handouts that are provided to you.
3. You need to make time. **College level=more time needed.** It’s your priorities that will determine the outcome of your experience in this course.
4. You need to study. This doesn’t mean the night before a test. It means during Remediation Time, before a game, before you go to Grandma’s house on Saturday. Again, see #1.
5. If you need help, you need to ask. You need to come in the morning or after school for help. You need to **take responsibility** for your education.
6. There’s **NO** such thing as late in AP biology

**Bottom line:** No one learns unless they decide they want to and people put in about as much effort as they decide they are going to. Learning is a biological process. The best ways to learn have already been discovered; you don’t need to reinvent the wheel. Practice, interact, time, study, ask, responsibility. Learning is the only way, but it is sometimes difficult and it requires effort. But when it’s done right, awesomeness occurs 😊

This summer assignment has been designed for one main purpose: To introduce you to major concepts from AP Biology through non-classroom methods of learning. With that in mind, it is imperative that you complete the following 3 assignments by their individual due dates:

**Assignment #1: Meet Your Teacher** – Send an email to [tholderfield@randolph.k12.nc.us](mailto:tholderfield@randolph.k12.nc.us) and type “AP Bio: Introduction to (your name)” in the subject.

Include the following:

- Your full name and the name you prefer to be called
- Interests & Family (music, art, sports, job, family, pets, etc.)
- Why you are taking AP Biology, what you are most anxious about in AP Biology and what you are most looking forward to.
- Use clearly written, full sentences. Do not abbreviate words like you are texting with a friend. This is a professional communication like you would have with a college professor, and it’s important to practice for the near future!

DUE: August 17, 2017 (first day back to school for faculty)

**Assignment #2: Read The Immortal Life of Henrietta Lacks by Rebecca Skloot.**-- Purchase The Immortal Life of Henrietta Lacks by Rebecca Skloot ISBN 978-1-4000-5217-2 and a blank writing journal that you will use for the reading assignment. You will be expected to turn in Canvas assignments for certain chapters as well as extension activities as the course progresses.

**Story Synopsis:** 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, they 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. Yet Henrietta Lacks remains virtually unknown, buried in an unmarked grave. Henrietta’s family did not learn of her “immortality” until more than twenty years after her death, when scientists investigating HeLa began using her husband and children in research without informed consent. And though the cells had launched a multimillion-dollar industry that sells human biological materials, her family never saw any of the profits. As Rebecca Skloot so brilliantly shows, the story of the Lacks family—past and present—is inextricably connected to the dark history of experimentation on African Americans, the birth of bioethics, and the legal battles over whether we control the stuff we are made of. Intimate in feeling, astonishing in scope, and impossible to put down, The Immortal Life of Henrietta Lacks captures the beauty and drama of scientific discovery, as well as its human consequences. (Excerpt from: <http://www.amazon.com/The-Immortal-Life-Henrietta-Lacks/dp/1400052173>)

Please contact [tholderfield@randolph.k12.nc.us](mailto:tholderfield@randolph.k12.nc.us) if you have any concerns about this text or if you need an alternate text assigned due to an issue with this text.

If a financial hardship exists that prevents you from purchasing this text, the school has a few copies available for checkout. These copies are located in the front office. However, we strongly recommend that each student purchase his/her own copy of this text if possible.

**Complete the following two activities before you begin reading the book:**

**1) PBS Video** - Different cultures hold different beliefs about health, religion, and death. To gain some perspective on this, watch the short (7 minute) PBS video Informed Consent and Medical Research: <http://video.pbs.org/video/1530382889>

**2) Radiolab** - Listen to the Radiolab segment, Henrietta's Tumor, featuring Rebecca Skloot and Deborah Lacks discussing Henrietta and her cells, as well as exclusive audio clips of Rebecca's interview tapes that contain recordings of actual scenes you will read about in the book. <http://www.wnyc.org/shows/radiolab/episodes/2010/05/07/segments/150681>

After completing each of the two tasks you will complete the "sum it up" handout for both 1 and 2. This should be emailed to [tholderfield@randolph.k12.nc.us](mailto:tholderfield@randolph.k12.nc.us) no later than **AUGUST 17** (first day for faculty). No late submissions will be graded.

### **Assignment #3: Classification Project--**

*Classification* is an important part of any biology course. You will discover as you work on this project, organisms can be classified with a variety of methods. A *phylogenetic tree* is a specialized classification scheme that is used to demonstrate possible evolutionary relationships between types of organisms. With this project, you will be designing and constructing either a Word document or Power Point presentation, and your information will progress from the earliest known organisms to most recently evolved. Each entry you make will demonstrate the classification and evolutionary relationships between the six kingdoms of life.

#### **The purposes of this project are:**

- To familiarize yourself with the characteristics of the six kingdoms
- To explore the world around you, so you can apply what you learn to daily life
- To provide you with a quick reference of the *kingdoms and phyla* that you will use in AP Biology.

#### **After completing this project, you will be able to:**

- Identify the six kingdoms used to classify all organisms on Earth.
- Describe the main characteristics of each kingdom and provide examples of each.
- Identify major phyla within each of the six kingdoms.
- Describe the main characteristics of each phyla and provide examples of each.
- You are expected to work on this project during June, July and August, to research outside of class, and to complete your project before the school year begins. This assignment is worth a test grade.
- Your end product should be the result of 15 to 5 hours of research and work. How long it takes you will depend on many factors--your skill level with Word/Power Point, your focus, quality of your work, etc.
- It is due **via email to [tholderfield@randolph.k12.nc.us](mailto:tholderfield@randolph.k12.nc.us) by 6PM the Sunday before the first day of school** (August 27). Your submission is not complete until you receive a response from [tholderfield@randolph.k12.nc.us](mailto:tholderfield@randolph.k12.nc.us) confirming I have received your email. Late work is without excuse. **No** submissions will be accepted after 6PM on Thursday, August 28.
- **20 pts. of extra credit** will be applied to your project grade if a **COMPLETE** submission is made (again, via email) by **midnight on August 15**.
- Any technology problems you have or issues with attaching your file to an email must be

communicated to me by August 13. I will respond within 48 hours, so that you can still submit your work on time. Submissions after Aug. 15 will NOT be eligible for extra credit points-- no excuses.

Sources of information:

■ Listed below are several web sites I found useful for researching this project.

You are not limited to these sites, but **YOU MAY NOT USE WIKIPEDIA.**

Always find out who authored the web page you're taking notes from in order to make sure you are using a valid and reliable site.

○ <http://biology.about.com/od/evolution/a/aa092304a.htm> - Classification Basics

○ <http://biology.about.com/od/evolution/a/aa091004a.htm> - Six Kingdoms of Life

○ <http://tolweb.org/tree/phylogeny.html> - Tree of Life web site

■ You will likely be learning *new terms* as you progress through this project, especially as you read “**Required Information**” on the next few pages. Use RELIABLE sources for your definitions, such as [www.merriam-webster.com](http://www.merriam-webster.com). **Always** check your source before you use information from the Internet!!

■ All of your sources will be cited at the end of your project, in a separate “Reference” section.

#### **REQUIRED INFORMATION:**

##### **A. For each of the six kingdoms, you will need to provide a page containing the following information:**

■ Description of the major characteristics of that kingdom.

■ Divergent Event :A significant change that led to the *evolution* of this kingdom and separation from previously existing kingdoms

■ Cell type – whether it is a *prokaryotic* or *eukaryotic* organism

■ Cell Structure: does it have a *cell wall* or *membrane*? Any special molecules found in the structure?

■ Body Plan: *Unicellular*, *multicellular*, or are *both* types of body plans found in that kingdom? (If both, then examples should be noted.)

■ Metabolism: *Autotrophs*, *heterotrophs*, or *both* types found in that kingdom? (If both, then examples should be noted.)

■ Reproduction: *Sexual*, *asexual*, or are *both* types of reproduction found in that kingdom? (If both, then examples should be noted.)

■ Examples – List one example of an organism from that kingdom.

○ These examples should not duplicate the examples used for phyla within that kingdom.

##### **B. The following lists the kingdoms in the order to be presented, as well as additional instructions for each.**

**1. For Kingdoms *Archaeobacteria* and *Eubacteria***, all I require is the kingdom page (A) described above.

You must define any words that are new to you.

○ Include a picture or a drawing for each kingdom.

● Please include an appropriate citation for artwork that is not your own creation.

**2. For Kingdom *Protista***, you will need to list these 6 phyla: Ciliophora, Zoomastigina, Euglenophyta, Chlorophyta, Phaeophyta, and Rhodophyta.

Additionally, you must include the following information for each phylum:

- Description of the major characteristics of the phylum. What makes each phylum unique?
- Type of Protist – *Animal-like, plant-like, or fungus-like* protists? What does this mean?
- Examples – Give at least one example of an organism in that phylum. Include a picture or a drawing.
- Please include an appropriate citation for artwork that is not your own creation.

**3. For Kingdom *Fungi***, you will need to list these 4 phyla: Basidiomycota, Ascomycota, Deuteromycota, and Zygomycota

Additionally, you must include the following information for each phylum:

- Description of the major characteristics of the phylum. What makes each phylum unique? (Reproductive strategies will definitely be mentioned in each description.)
- Commercial Value – Identify at least one specific example from this phylum that either provides a cost or a benefit to humans (medicinal, agricultural, epicurean, detrital).
- Examples – Give at least one example of an organism in that phylum. Include a picture.
- Please include an appropriate citation for artwork that is not your own creation.

**4. For Kingdom *Plantae***, you will need to list these 6 Phyla: Bryophyta, Pterophyta, Cycadophyta, Ginkgophyta, Coniferophyta, and Anthophyta.

Additionally, you must include the following information for each phylum:

- Description of the major characteristics of the phylum. What makes each phylum unique?
- Environment – Where are these plants natively (typically) found?
- Examples – Give at least one example of an organism in that phylum. Include a picture or a drawing.
- Please include an appropriate citation for artwork that is not your own creation.

**5. For Kingdom *Animalia***, you will need to list these 9 Phyla: Porifera, Cnidaria, Platyhelminthes, Nematoda, Annelida, Mollusca, Arthropoda, Echinodermata, and Chordata.

Additionally, you must include the following information for each phylum:

- Circulatory system – *Open or closed* circulation? Type of *heart*, if any.
- Respiratory system – What structure(s)? (Gills, book lungs, lungs...)
- Description of the major characteristics of the phylum. What makes each phylum unique?
- Examples – Give at least one example of an organism in that phylum. Include a picture or a drawing.
- Please include an appropriate citation for artwork that is not your own creation.

#### **EXPECTED ORGANIZATION:**

**Your project will include the following items:**

- Title Page – This will be the first page or slide. It must contain your creative title and your name.
- Table of Contents – You will list each kingdom and phylum you researched, and navigation for when each item is found. As you put your work together, you may include more than one kingdom and/or phylum on each page/slide **if it fits neatly**. Kingdoms and phyla should be in the order I listed above.
- Pictures - You may choose these from online sources **IF** you give credit to the photographer. When

possible, it's best to provide your own pictures taken from your property, town, vacation site, etc...

■ Resource Page – all the sources that were used for your project.

○ How to cite your sources: you should use MLA format—examples:

● From an edited reference book

Bremner, G., & Fogel, A. (Eds.). (2001). Blackwell handbook of infant development. Malden, MA: Blackwell.

● Web page

Bailey, Regina. (2011). Taxonomy. Retrieved May 22, 2011, from <http://biology.about.com/od/evolution/a/aa092304a.htm>

■ All information will be typed and submitted in electronic form. You are to email your FINAL Product (either Word or Power Point) to me at [tholderfield@randolph.k12.nc.us](mailto:tholderfield@randolph.k12.nc.us)

\*\*Please be aware that you may have to modify your format if I am not able to view your work. I use **Microsoft Office 2016**. Take this into consideration when planning to turn your work in on time.

**This project is worth a test grade.**

**To contact me, send an email to [tholderfield@randolph.k12.nc.us](mailto:tholderfield@randolph.k12.nc.us) Be sure to include your name.**

If you feel like you need to review, we would encourage you to purchase a study guide review book **THIS SUMMER**. Look for one with the most current publishing date (Barron's, Cliff's Notes, Princeton Review, etc). In addition, you may wish to watch videos from the following websites:

[www.youtube.com/user/bozemanbiology](http://www.youtube.com/user/bozemanbiology)

<http://www.khanacademy.org/>

Crash Course channel on YouTube

It is important that you understand that all work done for this class, unless stated otherwise, is **INDEPENDENT**. Any reproduction of another student or former student is considered cheating and will result in a zero. Any reproduction of work that is not yours from the internet or printed source without the proper citations is considered plagiarism. This will result in a zero as well as consequences per school administration.