EXPLORING LIFE!

WELCOME TO AP BIOLOGY!

The Summer Assignment in AP Biology is intended to prepare you for the arduous year set before you by enrolling in this course! Congratulations on your choice! We hope you will discover that challenging yourself to difficult tasks only serve to strengthen your resolve and give you more opportunities to succeed, more options, and more choices!

“Education is not the filling of a pail, but the lighting of a fire”
-William Butler Yeats

This summer, we hope to light a few “fires” by piquing your interest in some of the many topics we will be covering over the course of the school year. Biology is the study of life, and its infinite variety allows us to study it in many, many ways! It can be viewed from the eyes of a Biochemist, Ecologist, Environmentalist, Geneticist, Molecular biologist, Biotechnologist, Evolutionary biologist, Conservationalist, even Artist...the options are almost unlimited!

You can’t depend on your eyes when your imagination is out of focus
-Mark Twain

The three assignments presented to you for this summer are designed to allow you to try on a few different pairs of “eyes” in looking at the grand topic of biology, as well as give you the opportunity to draw a picture of who you are, so that we might visualize ways to personalize this class to our many interests and learning styles, as well allowing you to share something about yourself.
A writer writes not because he is educated but because he is driven by the need to communicate. Behind the need to communicate is the need to share. Behind the need to share is the need to be understood.

-Léo Rosten

**Assignment #1**

**INTRODUCTORY EMAIL – LETTER OF INTRODUCTION**

**Point worth – 50 points**

**Due Date: First Day of School**

Your first assignment is to draft an email to your AP Biology teacher. In this letter, you will introduce yourself, and provide information that is interesting (and essential) to our successful collaboration on the path to a passing score on your AP Biology Examination in May of 2018!

Use the following rules by which to draft your letter:

1. Address it to BOTH: k.pawul@schoolsofwestfield.org and c.breed@schoolsofwestfield.org
2. The subject line should say: AP Bio, Introduction to (insert your name here)
3. This is your chance to introduce yourself – many of you for the first time. Your writing style, your personality will come through in HOW you compose this letter, so I will not limit how you should write it. But consider including things like
   * what you like to do (hobbies, sports, interests, etc)
   * do you have a job? A dream job?
   * tell me about your family
   * what movies or books or games do you enjoy?
   * what are you looking forward to the most in AP Biology
   * what are you anxious about in AP Biology
   * what school means to you...what is important to you...
   * what are your hopes for the future .. anything else you want to be known – including things that will allow you to learn to the best of your ability in this class!
4. Make sure you end your letter with a formal closing, “sincerely”, “with warm regards”, etc and add your name as if you signed a letter.
5. Before you hit send, use spell check 😊
Assignment #2

CREATION AND SUBMISSION OF SCIENCE FAIR RESEARCH IDEA AND ANALYSIS OF THE SCIENTIFIC METHOD IN REGARDS TO SCIENCE FAIR PROJECTS

Due Date: Set by Science Fair Committee – Dates and submission information can be found on paperwork provided to you by the science department at the end of the school year, and also available on our school website.

As you are aware, all students enrolled in a Pre-AP or Advanced Placement Level Science course are required to take part in our WHS Science Fair, which has been fortunate enough to send former students onto both the State and International Fairs since its inception.

Although you will be allowed to participate in this fair with a partner, the summer assignment is designed for you to brainstorm critically on your own, and consider a topic that you may be interested in researching further during the year. It will give you an option to design an experiment that is suitable for your particular interests and abilities. In this way, every student will have the option to complete a project which is unique and important.
A photograph is usually looked at – seldom looked into.
-Ansel Adams

**Assignment #3**
**BIOLOGY COLLECTION**
**Point worth – 200 points**
**Due Date: First Day of School**

Scientists often observe life through a unique perspective, with eyes trained to see things analytically, methodically, precisely. You are a scientist!

For this assignment, you will be asked to familiarize yourself with some of the science terms that we will be using at various points throughout the year. The list of terms includes many you will know, some you think you may know, and others that you have never heard of before! After you do this assignment, you will know something you didn’t about these terms, and maybe even about yourself!

(And isn’t that the point of education?)

On the following pages you will find a list of 100 interesting terms. Look carefully through this list, starting with the letter of the alphabet in which your last name begins. (Human nature lends us to order things – we don’t want everyone to choose the first 40 words starting with A!) Choose ANY 40 terms from this list to “collect”. Each item collected will be worth 5 points, for a maximum of 200 points. Then do the following:

1. **COLLECT.** “Collect” this term. When I say “collect”, I mean that you should take a photograph (digital or paper printed) of that item. Either print out this picture, or load the picture into a PowerPoint, one picture per page.
2. **DEFINE & REPRESENT.** You will tag each photograph with the science term it represents, provide a biological definition of this term, and explain WHY this photograph is a good representation of this term.
3. BE ORIGINAL. You absolutely CANNOT use an image from any publication or from the Web. You must have taken the photograph yourself. The best way to prove this is to place a particular item in all of your photographs, something that you may have with you at any time (a key, a coin, your school id, etc).

4. BE CREATIVE. If you choose an item that is internal to a plant or animal, you could submit a photo of the whole organism, or a close up view of just one part, then explain in your representation of the term what the photograph shows, and where or what we should be “seeing”

5. BE CHEAP. All items are things that you can find in nature. Although maintaining the purity of nature is costly, this project should not require any money to be spent! Research what the term means, and be creative about where you can locate a good representation of the term.

6. FRIENDS. We all have them. 😊 Feel free to work with friends to talk about this project, brainstorm on collecting trips, discuss your ideas and proofread your project. However….each student must turn in her OWN PROJECT, with a unique set of terms. There are 100 items, so the laws of probability predicts a very slim chance that any two students will have the exact same items chosen for their project.

7. TIME IT RIGHT. This will be the first project you will be doing for me. Start off on the right foot. Plan your completion of this project with the respect it deserves, understanding it will take time and effort to procure photographs of 40 items, define, and subsequently explain your representation of them. Do a good job! It isn’t often you will be given such a large timetable for the completion of any project – map out a schedule for yourself. Don’t wait until the last minute to do it.

8. RULES. An individual organism can be used only once—no repeats of your dog, no matter how cute he is! Humans are acceptable for one term only. You must take all of the photographs yourself! No internet photos will be allowed, no photographs of drawings will be allowed.

9. HAVE FUN. Make this project fun for you to do! Let your creative nature shine through! Get excited for all of the new things that you will be learning this year, and get pumped for what the year will offer you!
10. **SUBMIT.** Present your project **on time** in either electronic (email the PowerPoint, provide a flash drive of the PowerPoint) or printed (print out the PowerPoint, print out the photographs with the definitions and descriptions) on or before the due date listed.

**BIOLOGY COLLECTION TERMS**

Below are the items that you are to “collect”. An individual organism can be used only *once*. Humans are acceptable for one term only. Photographs of drawings are not acceptable. START LOOKING AT THE LETTER WHICH YOUR LAST NAME BEGINS, then start choosing. You may choose 40 of any of the following terms. You must take all of the photographs yourself. Be creative!

### Summer Word List

**AP Biology 2017**

- Acquired immunity
- Active site
- Adaptive evolution
- Adenosine triphosphate
- Aldosterone
- Altruism
- Antigen
- Apoptosis
- Asexual reproduction
- Assayed
- Auxin
- Bacteriophage
- Barr body
- Batesian mimicry
- Biotechnology
- Blebbing
- Carbon fixation
- Carotenoid
- Carrying capacity
- Catalyst
- Cohesion
- Commensalism
- Dehydration synthesis
- Denaturation
- DNA
- Divergence
- Emergent property
- Encode
- Endangered species
- Epigenetic inheritance
- Evolutionary fitness
- Extremophile
- Fermentation
- Fixed action pattern
- Gene
- Gradient
- Homologies
- Hox genes
- Hybrid
- Hydrolysis
- Hydrophilic
- Incomplete dominance
- Indicator
- Inhibition
- Intrin
- Invasive species
- Karyotype
- Keystone species
- Kinase
- Linked genes
- Lymph
- Lysosome
- Macromolecule
- Mast cell
- Medulla oblongata
- Mullerian mimicry
- Mutagen
- Neurotransmitter
- Nucleus
- Operon
- Osmosis
- Parasite
- Pathogen
- Permeate
- Phenotype
- Polyploidy
- Positive feedback
- Predominant
- Prokaryote
- Protist
- Relative fitness
- Repress
- Restriction enzyme
- Ribosome
- R-selected species
- Secretion
- Selective permeability
- Shmoo
- Social learning
- Solute
- Somatic
- Species
- Stoma
<table>
<thead>
<tr>
<th>Sustainable development</th>
<th>Transpiration</th>
<th>Voltage gated channel</th>
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</thead>
<tbody>
<tr>
<td>Symbiont</td>
<td>Tropism</td>
<td>X-linked gene</td>
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<tr>
<td>Taxis</td>
<td>Turgid</td>
<td>Xylem</td>
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<tr>
<td>Thylakoid</td>
<td>Vascular plant</td>
<td>Zygote</td>
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<td>Transgenic</td>
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