

# AP Biology Summer Assignment

Welcome to AP Biology! This course is designed to be the equivalent of a two-semester introductory biology course usually taken in the first year of college. In other words, it's a little like drinking from a fire hose. It will be a rewarding experience, but as with most things that are, it will also be challenging. Throughout the course, you will become familiar with major recurring ideas that persist throughout all topics and material.

<b>The 4 Big Ideas of AP Biology</b>
<b>Big Idea 1:</b> The process of evolution drives the diversity and unity of life.
<b>Big Idea 2:</b> Biological systems utilize free energy and molecular building blocks to grow, to reproduce and to maintain dynamic homeostasis.
<b>Big Idea 3:</b> Living systems store, retrieve, transmit and respond to information essential to life processes.
<b>Big Idea 4:</b> Biological systems interact, and these systems and their interactions possess complex properties.

On the pages that follow, you'll find detailed instructions of the two assignments that comprise your summer work for AP Biology. The first assignment is related to becoming acquainted the Science Practices that you'll be learning about this year in AP Biology. The second part deals with collecting, through photography, examples of biological terms or concepts and creating a photo blog of your collection.

**Your video notes are due on the 1<sup>st</sup> day of AP Biology and your photo blog will be due on the 2<sup>nd</sup> day. Both will be averaged together and counted as a test grade for 1<sup>st</sup> quarter. No late summer assignments will be accepted!**

Included in this packet are the following documents:

<b>Document</b>	<b>Page</b>
<b>Assignment #1 – Video Notes</b>	
• Instructions and Content Video List	2
<b>Assignment #2 – Biological Collection Photo Blog</b>	
• Instructions and Grade Rubric	3
• Biological Collection List	4
• Photo Blog Table of Contents <b>(submit this completed form the 2<sup>nd</sup> day of class)</b>	5
• Example Entries for Photo Blog	6
• Instructions for Setting Up Your Photo Blog	7
• Guidelines for Safe Blogging	8

**For digital copies of summer homework, and all other classroom content, please visit...**

**<http://apbio.smitkascience.com>**

## Assignment #1 – Video Notes – due 1<sup>st</sup> day of AP Biology

Watch the videos listed below and take **hand-written** notes on each of them. The note should be your **original work**. EACH note sheet will be scored 0 to 5 based on completeness and thoroughness as shown in the rubric below. Note pages will not be accepted late nor will they be accepted typed.

#	Video Content	Links
1	The Natural of Science	<a href="https://youtu.be/77TFiYWPxoQ">https://youtu.be/77TFiYWPxoQ</a>
2	The Scientific Method	<a href="https://youtu.be/SMGRe824kak">https://youtu.be/SMGRe824kak</a>
3	CER (Claim- Evidence-Reasoning)	<a href="https://youtu.be/5KKsLuRPsuU">https://youtu.be/5KKsLuRPsuU</a>
4	AP Biology Science Practice 1 Model and Representations	<a href="https://youtu.be/v5Nemz_cVew">https://youtu.be/v5Nemz_cVew</a>
5	AP Biology Science Practice 2 Using Mathematics Appropriately	<a href="https://youtu.be/jgqYISKoXak">https://youtu.be/jgqYISKoXak</a>
6	AP Biology Science Practice 3 Formulate Questions	<a href="https://youtu.be/2zB272Ak63A">https://youtu.be/2zB272Ak63A</a>
7	AP Biology Science Practice 4 Data Collection Strategies	<a href="https://youtu.be/AzTXnne40wU">https://youtu.be/AzTXnne40wU</a>
8	AP Biology Science Practice 5 Analyze Data and Evaluate Evidence	<a href="https://youtu.be/0JqkouOtZA">https://youtu.be/0JqkouOtZA</a>
9	AP Biology Science Practice 6 Scientific Explanations and Theories	<a href="https://youtu.be/3gK1xWNM7kk">https://youtu.be/3gK1xWNM7kk</a>
10	AP Biology Science Practice 7 Connecting Knowledge	<a href="https://youtu.be/7l4bcs49JP8">https://youtu.be/7l4bcs49JP8</a>

0 No Credit	2 Below expectations	3-4 Complete	5 Exceeds expectations
No notes OR copied from a peer.	Several criteria are missing from entry	All criteria are met, but there's room for improvement within criteria OR one criterion is missing from entry.	All criteria listed below are met or have been exceeded for each entry.

### What does work that “exceeds expectations” have?

- ✓ Each video’s notes are on a different page.
- ✓ The video’s title is written as it appears in the video on the top line of the paper.
- ✓ The notes are legibly written.
- ✓ Highlighting or colors are used to emphasize key points, new vocabulary, and/or important concepts.
- ✓ Examples are documented in some way when given in the video.
- ✓ Pictures, charts, or graphs are used to display details provided in the video.
- ✓ A summary of the video content is provided at the end of the notes. Please emphasize the summary in some way (title it, star it, highlight it, etc.)

Notes are to be *original work* and are not to be copied from a peer – these serve as a log of what you have learned from the video. Copying them from a peer and not watching the video does you no good. You will receive zero credit if you are found submitting work that is too closely aligned with a classmate’s work.

## Assignment #2 - Biological Collection Photo Blog – due 2<sup>nd</sup> day of AP Biology

For this assignment, you will “collect” 25 photographic examples of biological terms/concepts and post them on a photo blog. Select any of the items from the Biological Collection List to include in your blog. This will introduce you not only to the language of biology, but also emphasize that biology is something that’s *DONE* not just memorized. **A hardcopy of your Photo Blog Table of Contents AND a link to your photo blog is due the second day of class. The link should be written on the table of contents AND emailed to your AP Biology teacher.** Please see your teacher if access to the needed technology is an issue.

Directions for the Biological Collection Photo Blog:

1. “Collect” an item by taking a picture of it. **Define**, in your own words, the biological term/concept. Also within a couple of statements, **explain** how the picture represents the term or concept. Use the Biological Collection List on page 4 to select terms/concepts for your blog. Page 6 will give you examples of what entries should include.
2. Upload the photo, definition, and explanation to a blog that you create for the class. Google’s Blogger is a free and easy blog. Find instructions on page 7 of this packet on how to set up a blog.
3. Be creative. If you choose an item that is internal to a plant or animal, like phloem, you could submit a photograph of the whole organism or a close up of one part, and then explain on the blog *what* phloem is and specifically *where* phloem is in the specimen.
4. Use original photos ONLY. You cannot use an image from any publication or from the internet. You must take the photo yourself. The best way to prove that the photo is your work is to have something in your picture that represents you. This could be a key chain, pen, bracelet, small toy, etc. Submit a picture of you with your proof object when you hand in your summer work.
5. You should only use natural items. Take a walk in your neighborhood, go to the zoo, go for a hike in the woods, etc. Humans are natural items and may be used, but only for a few entries.
6. This is an individual project. While brainstorming, discussing, and even going on collecting adventures together is welcome, your items and photos are to be unique. With over 90 concept choices, probability says there is a very slim chance that any two students will have the same items chosen from their list.
7. Be careful and respectful! Never touch plants or animals you are unfamiliar with. Don’t kill or hurt any organisms. Don’t remove any organisms from the natural environment.
8. Blog safely. See page 8 for guidelines for safe blogging.

Rubric for Biological Collection Photo Blog			
Points	Biological Collection Photo Blog Entry (per photo)	Points	Table of Contents*
1	Original photo posted to blog	3	Blog URL written AND emailed to teacher
1	Biological term/concept identified	2	Picture of you with your proof object submitted
1	Biological term/concept defined in own words	10	Each biological term/concept listed in the order it appears on blog
2	Biological term/concept and photo relationship explained fully	10	Blog is easy to follow and neatly presented
* Points in this selection are awarded in an all or none format. If the guideline is not <u>fully</u> met, <b>no points will be awarded.</b>			

Your photo blog is worth a maximum of 150 points (125 points for your photo blog (5 points for each photo blog entry) and 25 points for a completed Blog Table of Contents)

**Scientific Processes**

- Chi-Square
- Control
- Dependent Variable
- Independent Variable
- Scientific Method
- Hypothesis

**BioChemistry**

- Amino Acid
- Amphipathic
- Denaturation
- Hydrogen Bonding
- Polar
- Non-Polar
- Nucleic Acid
- Carbohydrate
- Cellulose
- Chitin
- Covalent
- Disaccharide
- Enzyme
- Fermentation
- Glycogen
- Ionic
- Keratin
- Lipids
- Protein
- Saturated Fatty Acid
- Unsaturated Fatty Acid
- Hydrophilic
- Hydrophobic

**Environment**

- Autotroph
- K-Strategist
- r-Strategist
- Littoral zone
- Mutualism
- Niche
- Parasite
- Commensalism
- Symbiotic Relationship
- Keystone Species
- Detritivore
- Taxis
- Kinesis

**Evolution**

- Analogous Structure
- Homologous Structure
- Batesian mimicry
- Mullarian mimicry
- Adaptation
- Allopatric
- Sympatric
- Coevolution
- Convergent Evolution
- Gene Pool
- Phenotype
- Postzygotic Isolating Mechanism
- Prezygotic Isolating Mechanism
- Vestigial Structure
- Hardy-Weinberg Equilibrium

**Biological Diversity**

- Archaea
- Bacteria
- Cladistics
- Phylogeny
- Species
- Taxon
- Cladogram

**Cells**

- Active Transport
- Amphipathic
- Apoptosis
- Cell Wall
- Chloroplast
- Diffusion
- Endocytosis
- Hypertonic
- Hypotonic
- Isotonic
- Membrane
- Endocytosis
- Exocytosis
- Osmosis
- Passive Transport
- Active Transport
- Turgor
- Plasma Membrane

**Cell Division**

- Cancer
- Cell Cycle
- Prophase
- Metaphase
- Prometaphase
- Anaphase
- Telophase
- Cytokinesis
- Crossing Over
- Chromosome
- Diploid
- Haploid
- Independent Assortment
- Mitosis
- Meiosis
- Somatic Cell

**Molecular Genetics**

- Anticodon
- Base-Pair Rules
- Codon
- DNA
- Gel Electrophoresis
- RNA
- Mutation
- Polymerase Chain Reaction
- Replication Fork
- Replication
- Transcription
- Translation
- Protein
- Helicase
- DNA Ligase
- DNA Polymerase

**Mendelian Genetics**

- Allele
- Autosome
- Codominance
- Dihybrid Cross
- Dominant
- Recessive
- F1/F2 Generations
- Genotype
- Phenotype
- Non-Disjunction
- Segregation
- Pedigree

**Metabolism**

- ATP
- Autotroph
- Heterotroph
- Glycolysis
- Krebs Cycle
- Electron Transport Chain
- Light Dependent Reactions
- Light Independent Reactions
- NAD+ / NADP
- Photosynthesis
- Cellular Respiration
- Fermentation
- Activation Energy
- Mitochondria
- Chloroplast
- Thylakoid Membrane

**Ecology**

- Abiotic
- Biotic
- Biodiversity
- Carbon Cycle
- Hydrologic Cycle
- Climate Change
- Community
- Environment
- Density Dependent Limiting Factor
- Density Independent Limiting Factor
- Food Web
- Global Warming
- Imprinting
- Interspecific Competition
- Intraspecific Competition
- Primary Consumer
- Secondary Consumer
- Carrying Capacity
- Rule of 10%
- Ecological Pyramid
- Endangered Species
- Exponential Growth
- Logistic Growth
- Trophic Level
- Primary Productivity
- Ecological Succession
- Species Diversity
- Pollution
- Population
- Habitat

**Photo Blog Table of Contents**  
 (Submit this completed form the 2<sup>nd</sup> day of class)

Name \_\_\_\_\_

Blog URL \_\_\_\_\_ URL submitted via email   
 Your photo with proof object submitted via hardcopy

Photo Order	Biological terms/concepts	Comments	Points Earned
1			
2			
3			
4			
5			
6			
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8			
9			
10			
11			
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## Example Entries for Photo Blog

(<http://popeapbiology2011.wordpress.com/2011/06/29/erin-hs-ap-biology-scavenger-hunt-pictures/>)

Notice the toy giraffe in the pictures below. This is this bloggers proof object and is used to demonstrate that the photographs in the blog entries are indeed their original. **Make sure you have proof object in each of your photos.**

### 4. Detritivore



This is a picture of an earthworm. The earthworm represents a *detritivore*. A detritivore, also called a decomposer, is an organism that consumes non-living organic materials (corpses, fallen plant material, and wastes) to obtain its energy and nutrients. They can be found in many different areas (land and water). They can also be found in many different types, for example, fungi, bacteria, and protists, as well.

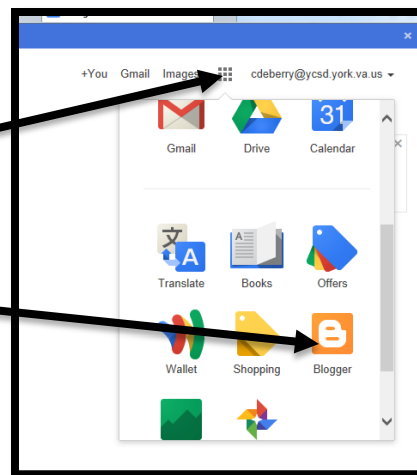
### 10. Modified Leaf



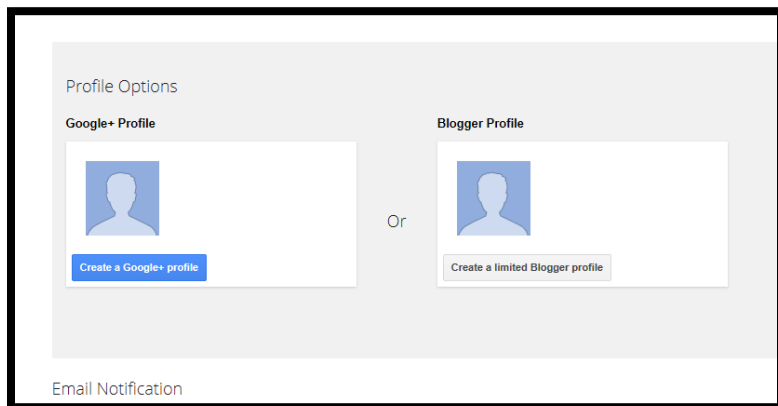
This is a picture of pine needles. Pine needles are an example of a *modified leaf of a plant*. A modified leaf is one that has adapted to perform another function, other than photosynthesis and transpiration. A pine needle's shape functions to retain moisture, which is helpful in dry and windy areas.

## Setting up your AP Biology Biological Collection Photo Blog using Google's Blogger

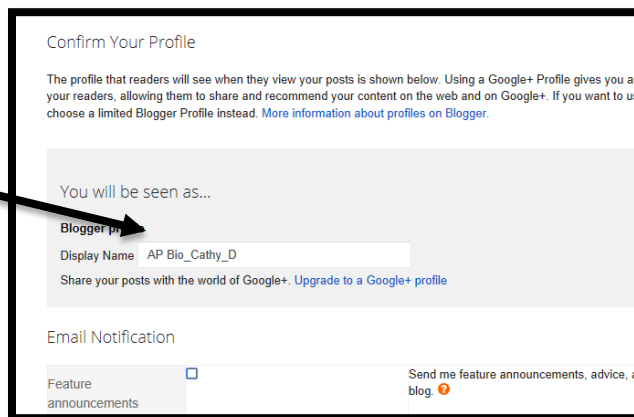
1. Set up a Google account if you don't already have one.
2. In the **Google Apps tool bar** (upper right corner), select **Blogger**.



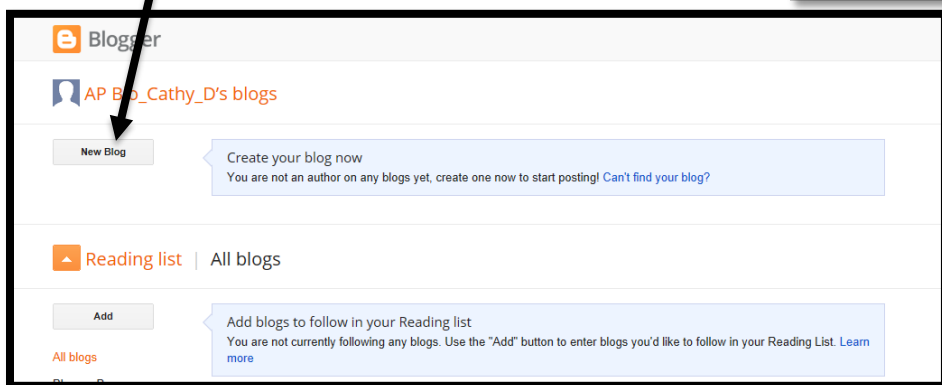
3. Next select **Blogger Profile – Create a Limited Blogger Profile**.



4. Next you'll need to enter a Blogger Profile. Use **AP Bio\_First Name\_Last Initial** as your format. (You'll probably want to de-select the **Email Notification** box.)



5. Click **New Blog** and follow the rest of the directions for



setting up your photo blog for AP Bio.

6. Remember to upload your original 25 photos, definitions, and explanations by the 2<sup>nd</sup> day on AP Biology to your blog. Email a link to your blog to your AP Biology teacher by the 2<sup>nd</sup> day as well.

## **Guidelines for Safe Blogging** (Adapted from Kim Foglia's Class Blog)

Blogging is a very public activity. Anything that is posted on the Internet stays there. FOREVER! Deleting a post simply removes it from the blog it was posted to. Copies of the post may exist scattered all over the Internet. That is why we need to be careful and follow some simple, clear, safety rules.

**FIRST RULE:** To protect your privacy, you need to set up your account using ONLY your first name. This means that many of you need to go in and change your profile. If you have the same first name as another classmate, then let's add only your last initial to your first name, like DanielF.

**SECOND RULE:** We do not use pictures of ourselves in our profiles. If you really want a graphic image associated with your posting use an avatar -- a picture of something that represents you but IS NOT of you.

Other teachers who have blogged with their classes have come up with a list of guidelines for student bloggers. One of them, Bud Hunt, has these suggestions, among others:

Students using blogs are expected to treat blogspaces as classroom spaces. Speech that is inappropriate for class is not appropriate for our blog. While we encourage you to engage in debate and conversation with other bloggers, we also expect that you will conduct yourself in a manner reflective of a representative of this school.

Never EVER EVER give out or record personal information on our blog. Our blog exists as a public space on the Internet. Don't share anything that you don't want the world to know. For your safety, be careful what you say, too. Don't give out your phone number or home address. This is particularly important to remember if you have a personal online journal or blog elsewhere.

Again, your blog is a public space. And if you put it on the Internet, odds are really good that it will stay on the Internet. Always. That means ten years from now when you are looking for a job, it might be possible for an employer to discover some really hateful and immature things you said when you were younger and more prone to foolish things. Be sure that anything you write you are proud of. It can come back to haunt you if you don't.

Never link to something you haven't read. While it isn't your job to police the Internet, when you link to something, you should make sure it is something that you really want to be associated with. If a link contains material that might be creepy or make some people uncomfortable, you should probably try a different source.

Keep all of these in mind as you create your Biological Collection Photo Blog for AP Biology. Email your teacher if you have questions or concerns about blogging.