⚹ AP Biology ⚹

Summer Assignment, 2003

As you are beginning to learn, contemporary biology is an enormous subject, one that takes a lifetime to appreciate. (I'm still trying!) We have ***one*** year. So, something has to give. Enter the Summer Assignment. (Horns ring out!! Cymbals crash!!!) In an attempt to cover as many topics as possible so that you can do well on the AP Biology Test in May, you will complete this summer assignment before returning to Emma Willard in September. I will collect it at the beginning of our first class together. *Late assignments will not be accepted*.

You should now own a copy of your textbook, Biology: The Unity and Diversity of Life, by Cecie Starr and Ralph Taggart (10 th edition, 2004).

If you find yourself having difficulties this summer, contact me. E-mail is the best option (jcalos@emmawillard.org). If that fails, call me (802/ 862 - 3650). I will be in and out this summer, so please don't expect a prompt reply. (If you are really desperate, I'll be somewhere in Newfoundland in July! ☺)

Don't worry, you'll make through this summer fine. It's all about pace. Do a little at a time, and it will seem much more doable.

If you lose this sheet, see the AP Biology homepage for another copy.

http://community.emmawillard.org

We will review the summer assignment and cover some new topics (ecology) during the first two weeks of school during this upcoming September (see the "super useful" schedule below). All of this material will be on your first ***Test***. I will assume that most of this information will be review for you (at least evolution). If not, you will have to work a bit harder. I'm leaving this up to you!

Good Luck!

The Summer Assignment

Reading Assignment

Answer the reading questions below after reading these sections in your textbook.

Topic	Text Chapter	Pages to Read
Microevolution	17	18
Speciation	18	8
Macroevolution	19	14
Evolution of Life	20	14
Organismal Inventory	*No assigned reading*	
	Total	= about 54 pages*

* = Why, that's not too bad!! ☺

Reading Questions

Microevolution (CH 17)

1. What selective forces drive evolution? Give a brief description of each.
2. Under what conditions will natural selection occur?
3. What biological mechanisms create genetic diversity (new alleles, or new combinations of alleles)?
4. Given the information below, complete these problems and questions.
   (A) Review the table below.
   (B) Fill in the empty cells.
   (C) Are there any generations that are in Hardy-Weinberg equilibrium (HWE)? Explain what this tells you about the evolution of this population.

Population Genetics Data Table

	Genotypic frequencies			Allelic frequencies	
Generation	***AA***	***Aa***	***aa***	***p***	***q***
1	9	42	49		
2				0.5	0.5
3			9		

5. Sexual selection and natural selection sometimes select for opposite evolutionary events. Create a detailed situation in which this would be so. Be creative.

Speciation (CH 18)

1. Give the significance of reproductive isolating mechanisms (RIM). Which comes first, RIM or species status? Also, describe each form of RIM.
2. Distinguish between allopatric, sympatric and parapatric speciation.

Macroevolution (CH 19)

1. Discuss the various forms of evidence for evolution.
2. Try to explain why taxonomy is so important to biology.
3. Describe the organization of life on earth. Use the domain system. Where do humans fit in?

Evolution of Life (CH 20)

1. Give a plausible explanation for how life evolved on earth.
2. What is the endosymbiotic hypothesis? What is its significance? What evidence supports this hypothesis?

Organismal Inventory

Using your textbook, and any other resource that you have access to, create a table with the following format. Include these phyla. Use Appendix I in your text for definitions. Please follow the given order.

Phyla

1) Pyrrhophyta	5) Sarcodina	9) Ascomycetes	13) Basidiomycetes
2) Lycophyta	6) Bryophyta	10) Coniferophyta	14) Anthophyta
3) Porifera	7) Cnidaria	11) Platyhelminthes	15) Nematoda
4) Mollusca	8) Annelida	12) Arthropoda	16) Echinodermata

Phyla Table

Phylum	↓ You fill these in!!! ↓
Representative organisms	
Body plan	
Nutrition/Digestion	
Gas exchange	
Circulation	
Excretion	
Locomotion	
Reproduction	
Nervous system	

Representative organisms	Give examples of organisms in this phylum.
Body plan/Symmetry	What is the overall shape and structure of these organisms? What type of symmetry, if any, do they have?
Nutrition/Digestion	How do these organisms acquire food? What kind of food is it? How do they process it?
Gas exchange	Through which body part does this organsism exchange gas (ex. CO2 & O2)?
Circulation	Do these organisms have a circulatory system? Give a brief description or diagram.
Excretion	How are waste products (usually nitrogenous waste) excreted from these organisms?
Locomotion	How do these organisms move?
Reproduction	How do these organisms reproduce? Sexually, asexually, or both? Brieflydescribe.
Nervous system	Do these organisms have a nervous system. Give a brief description or diagram.

Extra Credit

If you find yourself with nothing to do this summer, and wishing that you had more AP Biology work to do, read on! Please remember that this part is ***optional***, but fun! Anyway, for each phylum that you describe in the ***Organismal Inventory*** above, I will award extra credit points for each preserved specimen that you collect. (Partially degraded, smelly specimens will be incinerated, and ignored!) Only one specimen will count for each category. Follow these tips for preserving your organisms. For those of you not residing in the US, you might consider shipping these to Emma Willard in a box before you travel.

Taxonomic Group	***Preservation Technique***
Bacteria and Viruses	Forget it. These guys are too small! Unless you have an electron microscope! ☺
Protists	Pickle in ethanol, or 100+ proof alcohol, like vodka (ask your parents first!).
Fungi	Make a spore print*, then slice in half and air dry until stiff (like dried fruit).
Plants	Press between sheets (several) of newspaper. Include flowers, roots, fruit. etc.
Invertebrates	***Soft*** ones: pickle in alcohol (see above). ***Hard*** ones: insects can be pinned and dried. ***Others***: Pickle spiders.
Vertebrates	Skin and stuff. Save skull. Yeah, right. I dare you!

*Make spore prints by placing a mushroom cap (without stem) on a white or black piece of paper (Depends on spore color. Go for contrast.) Leave or 24 hours.

Super Useful Fall Semester Schedule

Here's the plan. Stay tuned, as the details may change! AP Biology meets Tuesdays, Wednesdays, and Fridays, during periods G and H.

Monday	***Tuesday***	***Wednesday***	***Thursday***	***Friday***
1 Sept	2 Sept	3 Sept	4 Sept	5 Sept
	1/2 day classes	-Discuss CH 17 -Read CH 45		- Discuss CH 18 -Read CH 46
8 Sept	9 Sept	10 Sept	11 Sept	12 Sept
	- Discuss CH 19	***Evolution Quiz*** - Discuss CH 45		- Discuss CH 46 -Read CH 47
15 Sept	16 Sept	17 Sept	18 Sept	19 Sept
	- Discuss CH 47 -Read CH 48	- Discuss 48		***TEST*** (Evolution, Ecology)

think 5!