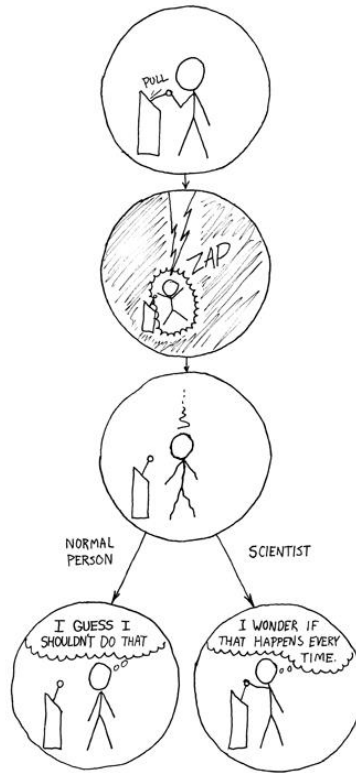


# AP Biology Summer Packet



This packet includes:

1. Welcome Letter
2. Advice/Survival Guide
3. Summer Assignments
  - a. Letter to Mrs. McIntyre
  - b. *Survival of the Sickest*
  - c. Photo Scavenger Hunt
  - d. Chapter 1 and 2 in Biology In Focus Textbook

# Advanced Placement (AP) Biology Summer Homework 2016

If you have ANY questions during the summer, contact me: [cmcintyre@everettsd.org](mailto:cmcintyre@everettsd.org) . These can be content questions or questions about the homework process or even just to notify me of something really cool you observed in your field study. Since it is the summer, please give me 3 days to respond.

## Assignment #1:

Sign up for the 2017-18 AP Biology Classroom

- Log into Google Classroom and Add Class using the following code: **m1rvme9**

*Check it during the summer for updates, more frequently last 2 weeks of August.*

## Assignment #2

E-mail Mrs. McIntyre at [cmcintyre@everettsd.org](mailto:cmcintyre@everettsd.org)

**Due no later than Friday June 30th, 2017**

Introduce yourself and your family, your hobbies, interests, extra-curricular activities you plan to participate in next year (school or community), one really interesting thing about yourself, your favorite book, favorite music, favorite sweet treat, what extra curricular activities will you be participating in throughout next year (school and community), where you are thinking about going to college (yes, it is time to be thinking about this seriously), what you think you want to major in at this time, what profession you think you would like to do post college. Use professional organization in your letter.

Date:

Dear Mrs. McIntyre,

Body of letter.....

Sincerely,

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## Assignment #3: Reading *Survival of the Sickest*

2. Summer reading: You will be reading one text this summer. It is written at a college-level, but is engaging and interestingly written.
  - Moalem, Sharon. *Survival of the Sickest*. New York: HarperCollins, 2007.
  - While the book is very readable and intended for a general audience, I would allow yourself two weeks of reading 15-20 minutes a day to complete the assignment. Many students require far less time.
  - Your reading guide for this assignment is attached. I will NOT be correcting the reading guides. **We will have a class discussion on this assignment the first week of school. Your summer work in this book will help you be successful in the class discussion and assignments week one.**

## **Assignment #4: Reading and Learning using your Textbook:**

This course is taught at a college level, and like Bio101-102, it covers EVERYTHING in biology – a LOT of content. This means you will need to learn to build and improve your technical reading and comprehension skills. To be successful you will need to:

- be willing to be challenged and put in the work that a college level class requires
- maintain a strong consistent work ethic staying on top of assignments,
- participate in collaborative discussions and inquires to help you gain understanding
- request or come to tutorials when a topic seems to be over challenging
- be curious, ask questions and then ask more questions ( this is called being the scientist 😊)

You are all capable of this and I am here to help you be successful in your efforts. 😊

The summer textbook homework

Chapter 1: Introduces you to the course and the 4 Big Ideas and 5 major themes we will study in AP Biology next year.

Chapter 2: Reviews basic chemistry and gets us ready to look at the molecular basis of life.

### **Read Chapter 1: Evolution and the Foundations of Biology and Chapter 2: The Chemical Context of Life**

#### **Make one creation for each chapter.**

The textbook we are using is Campbell Biology in Focus: AP 2nd Edition 2014, by Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Robert B. Jackson, and Jane B. Reece.

Your goal is to achieve a firm understanding of the concepts presented in these chapters rather than just memorizing facts. To reach this goal you are required to create something that will help you *learn* the material for each chapter that you read. (Learning is making connections between things you already know and new ideas and understanding those new ideas and their significance.) One creation per chapter is required. Hard copies of creations will be due the first day of class in September. You will be allowed to use these creations on a quiz we will have the first week of classes.

**Creation ideas** – Creations can be, but are not limited to, the following list. The only limitation is that whatever you make has to be created by YOU and you must bring a hard copy of it to class. (If this is not possible, please communicate with me ahead of time ie. during the summer).

1. **Concept Map** – this is my # 1 recommendation. There is excellent concept mapping software online that are super fun to use! While you can create a concept map by hand, the computer ones are so much more flexible and easy to make changes to. Search for your own or try this one: <https://www.gliffy.com/>
2. **Diagrams / Drawings** (with annotations) – Try drawing out main ideas and labeling your drawing. Note: Your textbook contains diagrams and pictures for many of the important concepts. Do not simply copy the diagrams! Add something of your own to them, try connecting them or changing them in some way. Copying rarely helps anyone learn.
3. **Flashcards** – Often the hardest part of biology is learning all the vocabulary. If you feel like this, try making creative flashcards. Again, don't just copy definitions. Put the ideas into your own words on one side and pictures on the other side. Then create a game with them to see how many of the terms you lay out together explaining how they are related or connected to each other to explain a concept in the chapter.
4. **Table/Chart** – If you feel like the main ideas of a chapter would fit well into a table format, organize ideas (again, in your own words) into a table or a chart.
5. **Outline** – Organize the main ideas in the chapter in outline form. Again, do not copy from the textbook, but state in our own words. You are encouraged NOT to write in complete sentences. Partial sentences that contain the main part of the idea are much easier to review.
6. **Teach It** – Put together a sequence of creative story boards that would help you teach the chapter to a 7<sup>th</sup> grade student.

**How the creations will be graded** (15 points each): Remember at the end of the year you will take the College Board (CB) Exam which covers the entire year so what you are creating is a learning for understanding and review tool for now and for preparing for the CB exam in May.

\_\_\_\_\_ Scope and Depth (6 points):

Scope: How much of the chapter does your creation cover?

- Most – All                       Half – Most                       Less than half

Depth: How many of the key ideas of the chapter are represented in your creation?

- Most – All                       Half – Most                       than half

\_\_\_\_\_ Understanding (5 points)

Language:

- Points written mostly in own words                       A lot of copying from textbook

Connections made (not all of these are required for a perfect score. Chose one or two if you can).

- between parts of chapter                       Connection between reading and other chapters / topics  
 Connection between reading and personal experience

\_\_\_\_\_ Utility for Review (4 points)

- Short enough to review                       Formatting easy to review

**Checklist for the first AP Biology Class in September:** (pack the night before so you don't forget anything in the morning!) **Let me know if you are unable to provide any of these for yourself. I have donated items I can provide. ☺**

- 3" Binder with dividers and college ruled paper
- calculator
- Black or Blue Ink Pens Only (professional colors)
- #2 pencils
- Color pencils and highlighters at home – I will provide them for classroom activities
- AP Biology Journal – Bound Composition notebook
  - *Please also decorate your Journal to make a fun scientific point! Think T-Shirt Logo*  
*This will not have a grade but it will show me how excited you are to be in AP Bio!*
  - *Be sure to leave 3 pages for Table of Contents before putting in any of your summer work.*
- Start your journal with the Survival of the Sickest Assignment then,
- Creations from Chapter 1 and 2 in Biology In Focus Textbook

### **Advice From Students Who Have Been Through AP Biology**

- While some lab reports can seem daunting at first glance, if you break them down into bite-sized chunks you will find them very manageable. They already are split into results, analysis, and conclusion sections, so tackling each section on its own can make lab reports a breeze.
- The reading assignment from "Survival of the Sickest" was very beneficial though out the whole school year with helping me understanding key concepts of biology. The topics discussed in the book were all brought up in class at one point and gave me the advantage in class discussions.

- Listen to Mrs. McIntyre's advice and go in immediately for assistance if you get confused or need help on an assignment! If she tells you that you should start on an assignment a week before, then you should definitely start on it the night you go home.
- One more thing that I must say is, to have fun. This is a class where you get to explore and go deeper into science. You get to design your own experiments, and work with different technology. Have fun, and open your mind, so that you can absorb information.
- AP Biology, like many AP courses, covers a lot of material quickly and you must be careful not to get behind in the class. Missing only a class or two can set you behind in the class easily and you have to work hard to make up what you missed.
- There are videos online concerning the course material. Watch them a day or two or three before your quizzes and tests. They're good, quick reviews. Use your textbook CD-ROM. It has videos and activity quizzes to help you review the material and see how much you know.
- Study hard. Don't think that the taking notes in class are enough to pass the test or that studying a day before the test is a way to successfully get a high score on a quiz.
- Ask for help. Always ask for help even if you kind of get the information given to you because your understanding of the material is not clear until you fully get the information.
- You should also be aware that just like any other AP classes there is a lot of work and you need to spend or devote an hour or two to biology every night in order to be successful in this class. In other words, every school night you should do something biology-related and catch up on the weekends what you could not do during the week.
- Acting out and modeling really helped me remember a lot of processes. When I think about photosynthesis and respiration I remember modeling it out with Legos. Word roots from the beginning of the year were also very important to remember. By just knowing the root of the word you can possibly guess the definition and function of the word.
- It requires commitment and determination. Once you have decided to take the course, you have to prepare for the work ahead of you. This especially goes for seniors. Do not expect you can relax after the first semester. AP Biology does not work well that way.
- When you get a quiz or a test back and it says in big capital letters "SEE ME," go see Mrs. McIntyre as soon as you can and also use the mistakes you made in quizzes to correct yourself before the test. I GUARANTEE this will help.

# How to Survive AP Biology

Before you panic about the amount of work and material in AP Biology, here are a few things to try. All of these methods have been suggested by students successful in the AP Biology Course:

- Tape/staple this at the beginning of your notebook!
- Stay organized! There will be a LOT of handouts for this course. Keep them in dated order, secured (not just shoved into your notebook) in folders, and review them before quizzes/tests.
- Extra help: Extra help for the course is available from Mrs. McIntyre from 2-3:30 and most days before school, pending research student schedule to be determined in September. ASK 24 hours in advance before coming for extra help so I am prepared and there are not too many other students already scheduled for help.
- Do your reading guides! These guides are linked to each unit. Rather than filling out the diagrams by copying from the book, fill them out from memory and correct them using the book.
- Use 5 Steps to a Five throughout the year! The book has great review questions, summaries, etc. and will help you focus on what's important.
- Use the online practice and study tools that come with your text: Mastering Biology
- Use the following video resources – many of these use YouTube, so will have to be accessed via a non-school site:
  - Bozeman Biology – GREAT video reviews of specific topics in biology.
    - <http://www.youtube.com/user/bozemanbiology#g/u>
  - Khan Academy – GREAT video reviews of specific topics in biology. The biology section is the equivalent of AP Biology.
    - <http://www.khanacademy.org/#biology>
  - OpenStax offers a FREE comprehensive online textbook including quizzes and animations.
    - <http://openstaxcollege.org/textbooks/biology>
    - <http://openstaxcollege.org/textbooks/biology/resources>
- Review the homework questions. Questions similar to homework and review questions will appear on tests/quizzes.
- Many students choose to buy additional review books and/or flashcards. Make sure any review book you buy is for the course revision. Ask before spending money. Excellent resources are available online with no charge.

## Summer Reading Assignment

**Survival of the Sickest ( a few copies are available in the library and Mrs. McIntyre has a few. If you purchase your own you can write in it, highlight it, etc. 😊)**

### Introduction

1. What is the “big” question the book will attempt to answer?

### Chapter I

2. The author points out many ways in which iron impacts life. Identify/describe at least five.

3. In the context of this chapter, explain the author’s reference to Bruce Lee and to the barber pole.

### Chapter II

4. Distinguish between each of the three types of diabetes.

5. What did the ice cores of 1989 reveal about the Younger Dryas?

6. Describe the body’s “arsenal of natural defenses” against cold.

7. Describe the connection between *Rana sylvatica* and diabetes.

8. In Chapters I and II several inherited disorders were discussed. Create and complete a chart with the following information: Disease/Disorder, Symptoms, Evolutionary Advantage.

### Chapter III

9. Why do we need Vitamin D? Cholesterol? Folic acid?

10. Briefly describe the connection between the two concepts:

a. tanning beds; birth defects

b. sunglasses; sunburn

c. hypertension; slave trade

d. Asian flush; drinking water

e. skull shape; climate

f. body hair; malaria

11. What’s so fishy about the Inuits’ skin color?

12. Explain the good and the bad of ApoE4.

### Chapter IV

13. Explain the role of G6PO.

14. Briefly describe the connection between the two concepts:

- a. European clover; Australian sheep breeding crisis of the 1940s
- b. Capsaisin; birds and mammals
- c. Malaria; air conditioning
- d. Favism; fava beans

15. Explain the following statement found on page 87: "Life is such a compromise."

### **Chapter V: "Of Microbes and Men"**

16. Complete Parasite Chart (Go to end of assignment.)

17. Identify 3 ways in which microbes/parasites move from host to host.

18. For each pathway listed in question #2, explain the relationship of the mode of transmission to the virulence of the invader.

19. What is our advantage in the survive-and -produce race?

### **Chapter VI: "Jump Into the Gene Pool"**

20. Briefly discuss the following terms/scientists:

- a) Jenner
- b) vaccine
- c) antibodies
- d) B-cells
- e) "junk DNA"
- f) Lamarck
- g) McClintock
- h) retroviruses

21. What is the Weissman barrier?

22. Make connections between the following terms:

- a. transposons; viruses; evolution
- b. sunspots; flu epidemics

23. Humans have about 25,000 genes and more than a million different antibodies. How is this possible?

24. What is a persisting virus?

### **Chapter VII: "Methyl Madness"**

25. Make connections between the following terms:

- a) vitamin supplement; agouti mice



- b) snakes; long-tailed lizards
- c) Barker Hypothesis; fathers who smoke
- d) Smoking grandmothers; asthmatic children
- e) Betel nut chewing; cancer

26. Epigenesis may be partially responsible for the childhood epidemic of obesity.

Explain.

27. "Good times mean more boys. Tough times mean more girls." Explain.

### **Chapter VIII: "That's Life: Why You and Your iPod Must Die"**

28. Make connections between the following terms:

- a) Progeria; lamina A
- b) Hayflick limit; telomeres
- c) Cancer cells; stem cells
- d) Size; life expectancy
- e) Risky child birth; big brains and bipedalism

29. Explain the author's iPod and aging analogy.

30. Identify the 5 lines of cancer defense.

31. What are the two accomplishments of biogenic obsolescence?

32. Compare and contrast the Savanna and aquatic ape hypotheses.

### **Conclusion**

33. The author hopes that you will come away from this book with an appreciation of three things:

- a) Life is in a constant state of creation
- b) Nothing in our world exists in isolation
- c) Our relationship with disease is often much more complex than we may have previously realized.

On a personal note, what would you add to his list?

34. "Nothing in biology makes sense except in the light of evolution." How does the book, *Survival of the Sickest*, support this quote by Theodosius Dobzhansky, a noted evolutionary biologist?

Parasites: Survive and Reproduce!

Parasite	Host/s	Manipulative Adaptation	Evolutionary Advantage
<i>Dracunculus metinensis</i> Guinea worm			
<i>Hymenoepimecis argyraphaga</i> wasp			
<i>Dicrocoelium dentriticum</i> Liver fluke			
<i>Spinochordodes tellinii</i> Hairworm			
Rabies virus			
<i>Toxoplasma gondii</i>			
Pin worms			
Cholera			
<i>Plasmodium</i> Malaria			