

AP Biology Summer 2023

I would like to take a moment to welcome you to next year's AP Biology class, and help you prepare for this upcoming challenge. AP Biology involves a lot of hard work, but it can be incredibly rewarding. We have a lot of interesting things planned, and I am looking forward to an exciting year with all of you.

1. You will need to set up a Mastering Biology account and also complete summer review assignments there before school begins. Mastering Biology is an online platform that presents you with activities and online learning that will help you prepare for your AP Biology course. These are extremely important and valuable lessons that will prepare and enhance your learning and success in the class. I have not received the codes as yet and should have them ready for you by the end of June. I will contact you when they arrive and let you know when you will be able to set up your account and begin the summer assignments. Stay tuned!
2. Please write me a letter! Email to jrogers@stpaulsmd.org before September 1, 2023!
 - a. This letter will be your way of introducing yourself to me. It should be AT LEAST 1 page, typed, double-spaced with one-inch margins, in black Times New Roman or Cambria 12-point font.
 - b. Your letter should include:
 - i. Who you are.
 - ii. A description of something important to you (your family, friends, art, etc.).
 - iii. Why you are interested in taking AP biology.
 - iv. What you think your biggest challenge in the course will be.
 - v. Any information you feel I should know about you.
3. Purchase and read the following book and complete the questions below. It is written at a college-level but is engaging and interestingly written.

Survival of the sickest

The Surprising Connections between disease and longevity

Dr. Sharon Moalem

ISBN 9780060889661

- 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 below. I will NOT be correcting the reading guides. You will have a QUIZ the first or second week of school on this book!
- Survival of the Sickest
- **Answer the questions for each chapter listed below.**

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.

Chapter III

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

9. Briefly describe the connection between any 3 of the following 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

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

11. Explain the good and the bad of ApoE4.

Chapter IV

12. Explain the role of G6PD.

13. Briefly describe the connection between any three of the following concepts:

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

14. Explain the following statement found on page 87: “Life is such a compromise.”

Chapter V: “Of Microbes and Men”

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

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

Chapter VI: “Jump Into the Gene Pool”

17. Briefly discuss any 3 of following terms/scientists:

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

18. What is the Weissman barrier?
19. Make connections between the following terms:
- a. transposons; viruses; evolution
 - b. sunspots; flu epidemics
20. Humans have about 25,000 genes and more than a million different antibodies. How is this possible?
21. What is a persisting virus?

Chapter VII: "Methyl Madness"

22. Make connections between any 3 of 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
23. Epigenesis may be partially responsible for the childhood epidemic of obesity. Explain.
24. "Good times mean more boys. Tough times mean more girls." Explain.

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

25. Make connections between any 3 of 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

26. Explain the author's iPod and aging analogy.
27. Compare and contrast the Savanna and aquatic ape hypotheses.

Conclusion

28. 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 this list?

29. "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?

30. Describe 2 meaningful things you took away from your reading. Support your thoughts with evidence and examples from the book. What will you remember about this book in 5 years? Why?