

AP Biology Summer Assignment

Welcome to AP Bio! This is a college-level course intended to be the equivalent of an introductory biology class for science majors. This means two things for you: first, it will be a challenge and a lot of hard work for everyone, even students who pretty easily aced freshman biology, and two, we'll get to do a lot of cool things that we couldn't do in freshman biology. My goal as your guide is to do everything I can to prepare you for the AP test in May, but this class is not just about one exam. This is an opportunity for you to get a taste of the major fields of biology and build a foundation of knowledge and practical skill. I'm excited about what the year holds for us!

Four main themes, called "Big Ideas", form the foundation of the AP Biology curriculum. These ideas will provide the lens through which we view all of the phenomena we will encounter this year. The themes are as follows:

Big Idea 1: Evolution The process of evolution drives the diversity and unity of life.
Big Idea 2: Energetics Biological systems use energy and molecular building blocks to grow, reproduce, and maintain dynamic homeostasis.
Big Idea 3: Information Storage and Transmission Living systems store, retrieve, transmit, and respond to information essential to life processes.
Big Idea 4: Systems Interactions Biological systems interact, and these systems and their interactions exhibit complex properties.

*You may find it useful to read the more detailed descriptions of each big idea. They can be found [here](#), on page 17 in the pdf of the Course & Exam Description, under "Course Content".

Our summer project is meant to help you start thinking about the living world like a scientist, in a way that is driven by your own interest and curiosity. ***Please read over this entire document, as well as the linked rubric, book choices, etc., before beginning, and email me with any questions. YOUR REPORT MUST BE SUBMITTED BY FRIDAY, AUGUST 18TH, AT MIDNIGHT.*** This is Friday of the first week back to school. Waiting until the end to begin the assignment is going to make you miserable and stressed, and that's no way to start a new school year, so please start working on it sooner rather than later! In addition to priming you for the learning to come, submitting a completed project is a way to start your year off with a bit of a gradebook cushion.

Finally, resting and having fun are as important as anything else you'll do over the break. I hope you have a fantastic time with your family and friends this summer and can't wait to see you in the Fall!

Mrs. Miller

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AP Biology Summer Assignment: Read a book!

In this task, you'll practice reading about science with a critical eye and to learn more about the natural world and the people exploring it. You'll also start practicing the writing skills you'll draw on in the free response portion of the AP test. To this end, you'll read a nonfiction book on a science topic that interests you and write a report that discusses the key ideas, examines the author's perspective and credentials, and ties what you read to one of our big ideas. You may notice that most of the choices are not strictly about scientific research, but include other things like history, politics, individual life stories and more. This is because science does not happen in a vacuum; to truly understand the power of scientific discovery, we need to view it in the context of the real world.

Your report will include the following sections:

- A summary of the major ideas put forth in the book
- A discussion of how the theme(s) of the book tie(s) into one of our AP Bio "big ideas"
- A discussion of the author's background and qualifications, and an examination of the sources cited
- A conclusion that includes your critique of the book and its main ideas

Please see the [attached list](#) for book choices and review the [attached rubric](#) carefully before beginning your report. Reviewing the more detailed descriptions of the big ideas linked above may help you decide which concept is most closely tied to your book. I recommend following MLA format, but only require that your report is neat, organized, and easy to read.

Reminder: This is an individual assignment. Plagiarism will result in a zero, so make sure that you're turning in your own work!

NOT required, but encouraged for you this summer:

- Have an experience! Take a hike, tour a farm, visit a museum, zoo, botanical garden, or any other place that will allow you to explore the natural world.
 - What organisms or phenomena spark your interest?
 - Do you see organisms interacting in some way? (Predator-prey, symbiosis, etc)
 - What would you choose to learn more about if you had unlimited time?



Student Name: _____

Score: _____/100

Item to be graded	Not Present	Below Average	Average	Above Average	Excellent
Formatting & Organization	0	10 Structure is very confused, and disorganization makes reading very difficult	12 Structure is somewhat confused, and there may be no clear introduction, body, or conclusion. Ease of reading is moderately impacted	16 Report is organized and neat, but logical flow is lacking, or transitions may be awkward or missing. There is still a clear structure that allows for easy reading	20 Report is neat, organized, and has a well-structured introduction, body, and conclusion. Topics within the body are sequenced logically, and smooth transitions are employed throughout
Summary	0	10 Summary is missing key aspects of the book or the people within it	12 Summary glosses over important aspects of the major themes, ideas, or characters	16 Summary may miss a detail or two, but the overarching themes and major characters are effectively discussed	20 Summary includes a discussion of the major themes/ideas of the book, along with any people who play a prominent role (if applicable), and any important details
Tie to an AP Bio "Big Idea"	0	10 Discussion is confused and reveals a lack of understanding of both the big idea and the book's themes	12 Discussion either reveals a misunderstanding of the big idea or does not show how the book's ideas fit within that theme.	16 Discussion of how the book's themes relate to a big idea reflects a clear understanding of the big idea but may less effectively communicate the connection to the book's ideas.	20 Discussion of how the book's themes are related to a big idea reflects a clear understanding of both the big idea and the ideas put forth in the book
Author & Sourcing	0	10 Report is missing either the author discussion or discussion of sources	12 Report may gloss over important aspects of the author's background or barely touch on sources	16 Report discusses the author's background and qualifications. Sources are mentioned, but not critically examined	20 Report discusses the author's background and qualifications. Sources are examined critically, and student determines how well they support the ideas put forth in the book
Critique/ Conclusion	0	10 Critique is lacking several important elements and does not effectively communicate the student's response to the book.	12 Critique is missing two elements listed under "excellent"	16 Critique is missing one element listed under "excellent"	20 Critique is a thoughtful response to the book as a whole and the ideas contained within. Student includes their opinion of the overall success or failure of the book, how well written it was, and how effectively it communicated its big ideas.

AP Bio Summer Book Ideas

Title	Author
1. Buzz, Sting, Bite: Why We Need Insects	Anne Sverdrup-Thygeson
2. Once a Wolf: The Science Behind Our Dogs' Astonishing Genetic Evolution	Bryan Sykes
3. Voyage of the Turtle: In Pursuit of Earth's Last Dinosaur	Carl Safina
4. Life's Edge: The Search for What It Means to Be Alive	Carl Zimmer
5. A Planet of Viruses	Carl Zimmer
6. Venomous: How Earth's Deadliest Creatures Mastered Biochemistry	Christie Wilcox
7. The Tangled Tree: A Radical History of Life	David Quammen
8. Why Sharks Matter: A Deep Dive with the World's Most Misunderstood Predator	David Shiffman
9. The Superorganism: The Beauty, Elegance, and Strangeness of Insect Societies	E.O. Wilson, Bert Holldobler
10. I Contain Multitudes: The Microbes Within Us and a Grander View of Life	Ed Yong
11. The Genome Odyssey	Euan Angus Ashley
12. Are We Smart Enough to Know How Smart Animals Are?	Frans de Waal
13. Brains Through Time: A Natural History of Vertebrates	Georg F. Striedter
14. The Brilliant Abyss	Helen Scales
15. Lab Girl	Hope Jahren
16. The Silent World	Jacques-Yves Cousteau
17. In the Shadow of Man	Jane Goodall
18. A Crack in Creation: Gene Editing and the Unthinkable Power to Control Evolution	Jennifer Doudna
19. Life on the Edge: The Coming of Age of Quantum Biology	John-Joe MacFadden, Jim Al-Khalili
20. The Secret Language of Cells: What Biological Conversations Tell Us About the Brain-Body Connection, the Future of Medicine, and Life Itself	Jon Lieff
21. Born Free: A Lioness of Two Worlds	Joy Adamson
22. Entangled Life	Merlin Sheldrake
23. Your Inner Fish: A 3.5 Billion Year History of the Human Body	Neil Shubin
24. The Epigenetics Revolution	Nessa Carey
25. Oxygen: The Molecule that Made the World	Nick Lane

26. The Woman with a Worm in her Head and other Stories of Infectious Disease	Pamela Nagami
27. The Book of Eels: Our Enduring Fascination with the Most Mysterious Creature in the Natural World	Patrick Svensson
28. Microbe Hunters	Paul de Kruif
29. The Hidden Life of Trees: What They Feel, How They Communicate: Discoveries from a Secret World	Peter Wohlleben
30. Immune: A Journey into the Mysterious System that Keeps You Alive	Philipp Dettmer
31. The Immortal Life of Henrietta Lacks	Rebecca Skloot
32. The Selfish Gene	Richard Dawkins
33. The Hot Zone	Richard Preston
34. Mapping the Deep: The Extraordinary Story of Ocean Science	Robert Kunzig
35. Underland: A Deep Time Journey	Robert MacFarlane
36. Braiding Sweetgrass	Robin Wall Kimmerer
37. The Making of the Fittest: DNA and the Ultimate Forensic Record of Evolution	Sean B Carroll
38. Survival of the Sickest: A Medical Maverick Discovers Why We Need Disease	Sharon Moalem
39. The Gene: An Intimate History	Siddharthe Mukherjee
40. The Emperor of all Maladies: A Biography of Cancer	Siddharthe Mukherjee
41. The Revolutionary Genius of Plants: A New Understanding of Plant Intelligence & Behavior	Stefano Mancuso
42. The Panda's Thumb: More Reflections in Natural History	Stephen Jay Gould
43. Wonderful Life: The Burgess Shale and the Nature of History	Stephen Jay Gould
44. The Rise and Fall of the Dinosaurs: A New History of the Lost World	Steve Brusatte
45. The Ghost Map: The Story of London's Most Terrifying Epidemic - and How it Changed Science, Cities, and the Modern World	Steven Johnson
46. Finding the Mother Tree: Discovering the Wisdom of the Forest	Suzanne Simard
47. The Mosquito: A Human History of Our Deadliest Predator	Timothy C Winegard
48. The Code Breaker: Jennifer Doudna, Gene Editing, and the Future of the Human Race	Walter Isaacson
49. Sapiens: A Brief History of Humankind	Yuval Noah Harari