AP Biology Summer Homework 2017-2018

Purpose of summer homework

- Introduce the four Big Ideas in AP Biology and how they connect with one another.
- Practice identifying claims, evidence, and reasoning.
- Make connections between the content of biology and your life.
- These books are stories of biology. Biology is amazing, and we only get to cover a tiny slice of that awesomeness in class. Your book should increase your depth of knowledge in an area we won't have time to appreciate in class.

Directions

1. Find the book list! To find the list of books, go to the Cascade High School web page, then click through the following cascade:
    - Library
    - Destiny (left side)
    - Catalog (as opposed to Home, upper left hand corner)
    - Resource Lists (left side)
    - Public lists (as opposed to My Lists, upper right hand corner)
    - AP Biology
2. Pick a book! Click on the different titles for short descriptions of each book. Pimenta and McKay personally chose all of them, and they are all awesome. They cover a wide range of topics related to biology – evolution, genetics, history, ecology, food, plants, diseases, athletic performance, the brain, etc. Some are short and some are long. There is something for everyone! We do only have 1-2 copies of each book, so make sure you have alternatives.
3. Check out the book! Visit the library before they close for the summer and check your book out. It will be due in the fall. If necessary, you may also purchase your book or check it out from another library.
4. Read your book!
5. Complete the assignments below.

Assignment 1: Big Ideas in AP Biology

AP biology is broken into four Big Ideas.

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

This is a very brief description of the Big Ideas! If you need more detail (which you probably do), search for AP Biology Learning Objectives. You will find them on the PDF put out by the College Board titled: AP Biology Course and Exam Description. The Concept Outline gives more detailed information on the four Big Ideas.

As you read your book, keep these four ideas in mind, and try to identify where they pop up.

After you have read your book, answer the following questions (typed, preferably).

1. **Main Big Idea.** In which of the four Big Ideas does your book mostly "live"? If you're having a hard time answering this question, then choose just one chapter or example. Your answer should be thoughtful and thorough and contain specific examples from the book. This will probably take about a page to do well.
2. **All Big Ideas.** How does your book connect with each of the four big ideas? You may need to stretch/make inferences for this one! Your answer should be thoughtful and thorough and contain specific examples from the book. This will probably take about a paragraph each to do well.
3. **Connecting Big Ideas.** How does your book show connections between the four big ideas? Choose a pair of big ideas (for example, Big Idea 1 and Big Idea 3). Choose an example of each from the book, and explain how they connect. This connection will most likely not be explicit in the book, but will be something you infer or connect yourself. Your answer should be thoughtful and thorough and contain specific examples from the book. This will probably take a paragraph or two to do well.

Assignment 2: Claim, Evidence, Reasoning

An important science skill is to be able to make a claim, support that claim with evidence, and explain why that evidence supports the claim. This is a skill we will be working on throughout the year. Equally important is identifying claims, evidence, and reasoning in the writing of others, as it helps us truly understand what the author is saying, and if the author is right.

As you read your book, identify **three claims** your author has made. For each claim, do the following (preferably typed, should be one long paragraph or so each):

1. State the claim. If copied directly from the text, cite it. Otherwise, put it in your own words.
2. Identify the evidence. What evidence does the author use to support the claim? Choose claims backed up by more than one piece of evidence. Again, if copied directly from the text, cite it. Otherwise, put it in your own words.
3. Explain how the evidence supports the claim. The author may have done this for you, or you may have to do it yourself.
4. Evaluate the evidence. Is it sufficient to support the claim? Is there conflicting evidence? What additional evidence would need to be provided for the claim to be fully supported?

Assignment 3: Text-to-self connections

Biology is the study of life, but sometimes it is easy to get mired down in the details of what we are learning and lose sight of the fact that we are learning about ourselves and the world around us.

1. As you are reading, note three times the text resonated with you – maybe an example that applies to you or a family member, or a situation you can empathize with, or something that you couldn't stop thinking about.
2. Quote and cite the text, and explain the connection to your life. This should take about a paragraph each, preferably typed.

SUMMER HOMEWORK IS DUE THE FIRST DAY OF SCHOOL.

You may email it to me at bmckay@everettsd.org or bring it with you in person.

Rubric for AP Bio summer HW

Assignment 1

Criteria	Proficient (2)	Approaching (1)	Missing/inadequate (0)
Main big idea	Connection between big idea and text is thorough, well explained, and supported by evidence from the text	Connection between big idea and text is not well explained or incorrect, OR is not supported by evidence from the text	Connection between big idea and text is incorrect, not well explained, and not supported by evidence from the text
Other big idea	Connection between big idea and text is thorough, well explained, and supported by multiple pieces evidence from the text	Connection between big idea and text is not well explained or incorrect, OR is not supported by multiple pieces of evidence from the text	Connection between big idea and text is incorrect, not well explained, and not supported by multiple pieces of evidence from the text
Other big idea	Connection between big idea and text is thorough, well explained, and supported by evidence from the text	Connection between big idea and text is not well explained or incorrect, OR is not supported by evidence from the text	Connection between big idea and text is incorrect, not well explained, and not supported by evidence from the text
Other big idea	Connection between big idea and text is thorough, well explained, and supported by evidence from the text	Connection between big idea and text is not well explained or incorrect, OR is not supported by evidence from the text	Connection between big idea and text is incorrect, not well explained, and not supported by evidence from the text

Part 1 Total: _____/8

Assignment 2

Criteria	Proficient (2)	Approaching (1)	Missing/inadequate (0)
Claim/evidence #1	Claim, evidence, explanation, and evaluation are present and correct	One of the claim, evidence, explanation, or evaluation are missing or incorrect	Two or more of the claim, evidence, explanation, or evaluation are missing or incorrect
Claim/evidence #2	Claim, evidence, explanation, and evaluation are present and correct	One of the claim, evidence, explanation, or evaluation are missing or incorrect	Two or more of the claim, evidence, explanation, or evaluation are missing or incorrect
Claim/evidence #3	Claim, evidence, explanation, and evaluation are present and correct	One of the claim, evidence, explanation, or evaluation are missing or incorrect	Two or more of the claim, evidence, explanation, or evaluation are missing or incorrect

Part 2 Total: _____/6

Assignment 3

Criteria	Proficient (2)	Approaching (1)	Missing/inadequate (0)
Text to self connection #1	Text is properly cited and quoted, and connection to self is explicit and well explained	Text is quoted or cited but not both, connection to self is explicit and well explained	Text is neither quoted nor cited, OR connection to self is confusing and poorly explained
Text to self connection #2	Text is properly cited and quoted, and connection to self is explicit and well explained	Text is quoted or cited but not both, connection to self is explicit and well explained	Text is neither quoted nor cited, OR connection to self is confusing and poorly explained
Text to self connection #2	Text is properly cited and quoted, and connection to self is explicit and well explained	Text is quoted or cited but not both, connection to self is explicit and well explained	Text is neither quoted nor cited, OR connection to self is confusing and poorly explained

Part 3 Total: _____/6

General

Criteria	Proficient (2)	Approaching (1)	Missing/inadequate (0)
Citations	Text is cited in APA format.	Text is cited in MLA format	Text is not cited, or is cited incorrectly
Appearance	Text is legible, easy to read, and sections are clearly identified	Text is mostly easy to read, and sections are somewhat identified	Text is difficult to read and sections are unidentified
Readability	Spelling and grammar errors are minimal and do not interfere with interpretation of the text	Occasional spelling and grammar errors, but the meaning of the text is not significantly changed	Spelling and grammar errors make the text difficult to understand and are very distracting

General Total: _____/6

Total: _____/28

Late work will be penalized 25%. No late work will be accepted 1 week after the due date

Books for AP Bio summer HW

Title	Author	Brief description
Our inner ape: a leading primatologist explains why we are who we are	Waal, F. B. M. de	Presents the author's research on how human's DNA relationship with their closest biological relatives, primates such as chimpanzees and bonobos, influence and inform a wide range of human behavior.
The botany of desire : a plant's-eye view of the world.	Pollan, Michael	Traces the history of four domesticated species, the apple, the tulip, marijuana, and the potato, from the plant's point of view and discusses how they have been cultivated to fill human needs and desires.
World without fish	Kurlansky, Mark	Describes what is happening to fish, the oceans, and the environment in the early twenty-first century, explaining how commonly-consumed fish, such as tuna, cod, and salmon, are disappearing; and discussing the impact of overfishing on other species and the effects of fishing on the oceans.
A planet of viruses	Zimmer, Carl	Explores the hidden world of viruses, explaining how they impact every aspect of life on Earth, describing the latest research into viruses, examining new treatments for deadly viruses, and tracing the evolution of viruses throughout history.
Dinner at the new gene café : how genetic engineering is changing what we eat, how we live, and the global politics of food.	Lambrecht, Bill	Examines how recent developments in genetic engineering are affecting every aspect of human life, including politics, health, culture, and happiness.
The omnivore's dilemma : a natural history of four meals.	Pollan, Michael	Follows the three major food chains that feed humans--industrial, organic, and hunter-gatherer--from the earth to four meals, exploring the ethical and political effects of one's food choices.
The invention of nature : Alexander von Humboldt's new world.	Wulf, Andrea	Reveals the forgotten life of Alexander von Humboldt, the visionary German naturalist whose ideas changed the way we see the natural world--and in the process created modern environmentalism
Wonderful life : the Burgess Shale and the nature of history.	Gould, Stephen Jay	Explains why the diversity of the Burgess Shale is important in understanding our past and evolution.
How to build a dinosaur : the new science of reverse evolution.	Horner, John R	The author discusses how advancements in evolutionary developmental biology has lead to experimentation on "reverse evolution," which can be used to recreate prehistoric creatures, and educate scientists on ways to overcome birth defects.
The song of the dodo : island biogeography in an age of extinctions.	Quammen, David	Noting that island ecosystems have always suffered high rates of extinction and that human activity increasingly carves the landscape into island-like fragments, David Quammen examines the conditions in many island ecosystems around the world
Into the jungle : great adventures in the search for evolution.	Carroll, Sean B	These nine short tales vividly depict key discoveries in evolutionary biology and the excitement of the scientific process.
The ancestor's tale : a pilgrimage to the dawn of evolution	Dawkins, Richard,	Offers a comprehensive overview of evolution through four billion years of life on Earth, tracing humans back to forty common ancestors in order to demonstrate the link between them and all other forms of life.
The sixth extinction : an unnatural history.	Kolbert, Elizabeth	Explores how human beings have altered life on Earth, discussing a dozen species facing extinction or already extinct.
Wicked plants : the weed that killed Lincoln's mother & other botanical atrocities	Stewart, Amy	Contains alphabetically arranged entries that provide information on two hundred plants that are deadly, intoxicating, or offensive, and includes illustrations.
Horseshoe crabs and velvet worms : the story of the animals and plants that time has left behind	Fortey, Richard A	Former Natural History Museum (London) paleontologist Fortey tells the stories of those plants, animals, and other creatures that have survived from Earth's early days.
A sting in the tale : my adventures with bumblebees	Goulson, Dave	Dave Goulson discusses his plans and attempts to reintroduce the bumblebee to the United Kingdom as well as presenting his research
A plague of frogs : the horrifying true story	Souder, William	A group of Minnesota schoolchildren came upon a pond filled with deformed frogs which launched a four-year federal investigation into the possible pollution of local water supplies.
When a gene makes you smell like a fish-- and other tales about the genes in your body	Chiu, Lisa Seachrist	From the gene that causes people to age prematurely to the "bitter gene" that may spawn broccoli haters, this book explores a few of the more exotic locales on the human genome, highlighting some of the tragic and bizarre ways our bodies go wrong when genes fall prey to mutation and the curious ways in which genes have evolved for our survival.
The third chimpanzee for young people : on the evolution and future of the human animal.	Stefoff, Rebecca	Reflects on the puzzle of human revolution, on where we came from and where we may be heading.

The seven daughters of Eve	Sykes, Bryan	Professor Bryan Sykes gives a firsthand account of his research into a gene which passes undiluted from generation to generation through the maternal line.
The link : uncovering our earliest ancestor	Tudge, Colin	Details the discovery of a forty-seven-million-year-old Darwinius fossil known as Ida, and discusses what scientists have learned from studying it.
Your inner fish : a journey into the 3.5-billion-year history of the human body	Shubin, Neil	The author, a paleontologist and professor of anatomy, follows the path of evolution by linking the organs of the human body with the physical attributes of non-human ancestors.
Gulp : adventures on the alimentary canal	Roach, Mary	Examines the alimentary canal and the digestive system, answering such questions as, can constipation kill a person, why the stomach doesn't digest itself, how much can be eaten before the stomach bursts, and more.
Welcome to your brain : why you lose your car keys but never forget how to drive and other puzzles of everyday life	Aamodt, Sandra	Presents a comprehensive overview on how the brain really works that offers tips on such things as how to cope with jet lag, when to worry about a stroke, and how to keep the brain healthy in old age.
The sports gene : inside the science of extraordinary athletic performance.	Epstein, David J	The argument of whether some athletes are born with their skills is discussed and analyzed.
Spillover : animal infections and the next human pandemic.	Quammen, David	Discusses the animal origins of emerging human diseases, looking at recent outbreaks of Ebola, Marburg, AIDS, SARS, avian influenza, and Lyme disease; and considers whether or not these events are linked and how future epidemics can be stopped.
The ghost map : the story of London's most terrifying epidemic--and how it changed science, cities, and the modern world.	Johnson, Steven	Chronicles the outbreak and spread of Cholera in London during the summer of 1854 and the efforts of Reverend Henry Whitehead and Dr. John Snow who isolated the disease and put an end to the epidemic.
Your brain on food : how chemicals control your thoughts and feelings.	Wenk, Gary Lee	Examines how various foods and drugs have direct consequences on how people think, feel, and act as a result of their effect on certain neurotransmitters in the brain.
Survival of the sickest : the surprising connection between disease and longevity	Moalem, Sharon.	Explores evolutionary history for answers to why certain diseases exist, discussing the effects of environmental factors such as climate, food, and drink on the genes of human ancestors thousands and hundreds of years ago, and examines connections between genetic inheritance and who gets which diseases.
The immortal life of Henrietta Lacks	Skloot, Rebecca	Examines the experiences of the children and husband of Henrietta Lacks, who, twenty years after her death from cervical cancer in 1951, learned doctors and researchers took cells from her cervix without consent which were used to create the immortal cell line known as the HeLa cell; provides an overview of Henrietta's life; and explores issues of experimentation on African-Americans and bioethics.
Blood matters : from inherited illness to designer babies, how the world and I found ourselves in the future of the gene.	Gessen, Masha.	Explores how recent advances in genetic mapping, which are allowing doctors to identify patients who are at increased risk for life-threatening illnesses, are shaping the decisions people make about their lives.
The emperor of all maladies : a biography of cancer.	Mukherjee, Siddhartha	A discussion of the history of the fight to cure, control, and defeat cancer, covering its origins, relevant scientific research, and other related topics.
The knife man : the extraordinary life and times of John Hunter, father of modern surgery.	Moore, Wendy,	Chronicles the life of John Hunter, the most famous anatomist and surgeon of the eighteenth century, focusing on the contributions he made to the fields of science and medicine.
Wicked bugs : the louse that conquered Napoleon's army & other diabolical insects.	Stewart, Amy.	Contains alphabetically arranged entries that provide information and stories of one hundred insects that infest, infect, and make trouble for humans, and includes etchings and drawings of the six- and eight-legged pests
Charles Darwin and his world.	Huxley, Julian,	An account of the life and times of Charles Darwin. The book details his family, the journey he made on board of Beagle, the publication of his theory of evolution through natural selection and the uproar it caused. Contains many black and white photos and drawings.
The Serengeti Rules: The Quest to Discover How Life Works and Why It Matters	Sean B. Carroll	How does life work? How does nature produce the right numbers of zebras and lions on the African savanna, or fish in the ocean? How do our bodies produce the right numbers of cells in our organs and bloodstream? In The Serengeti Rules, award-winning biologist and author Sean Carroll tells the stories of the pioneering scientists who sought the answers to such simple yet profoundly important questions, and shows how their discoveries matter for our health and the health of the planet we depend upon.

Want to read a book not on this list? Just email bmckay@everettsd.org to check first