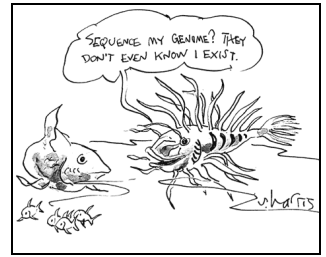


Welcome to AP Biology!

Summer Assignment

The AP Biology Curriculum centers around the **4 Big ideas** and you will need to not only know these but also understand how they are interconnected.



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

These **4 big ideas** are the framework for the **8 main units** of the course:

AP Biology Overview Video: A great resource to use to review but also give you a good idea of what to expect from this course: <https://youtu.be/Kuxic6y6pwkn>

1. Chemistry of Life
2. Cell Structure and Function
3. Cellular Energetics
4. Cell Communication and Cell Cycle
5. Heredity
6. Gene Expression and Regulation
7. Natural Selection/Evolution
8. Ecology

Summer Assignment:

Part 1:

- You will **Read** the book: *Survival of the Sickest* by Dr. Sharon Moalem.
 - Check out a DIGITAL FORM of the Use this Sora [link](#) to go directly to the book. If you are not signed into ClassLink you will be prompted to do so.
 - If you prefer a physical copy of the book, you can get one from the bookroom or you can try to borrow a copy from the public library or purchase your own from a bookstore/Amazon.
- **Create** 1 page to visually share key ideas and information from what you have learned from reading the book. When you create this one-page document, you are trying to use both **visual** symbols/pictures and **important words** to clearly and concisely share your most important takeaways with someone else.

For this assignment, you will use the **8.5 X 14 Inches, legal size piece of paper** that has been provided to complete this assignment. If you **did not pick up the paper**, please use a (8.5 X 14 Inches).

Here's what MUST be INCLUDED:

- A border that includes words and/or images to represent the main themes of the work - **"Survival of the Sickest"**
 - A section which shows at least three important quotations, along with symbols to represent them
 - A section that connects this text to what's going on in our world today
 - The AP Biology course is designed to emphasize the **4 Big Ideas**. The big ideas serve as the foundation of the course and allow students to create meaningful connections among course concepts. Often, these are concepts or themes that become threads that run throughout the course. For each of the 4 Big Ideas listed below, **identify** an **example** from *Survival of the Sickest* that illustrates that idea.
 - An **image** that represents a key moment in the text.
 - A section that **identifies** anything from the book that **applies to your own life** and a description of why you have a connection to your choice
- **You may also add other symbols, drawings, and words that represent the reading as you wish.**

The 4 Big Ideas

Big Idea 1: The process of evolution drives the diversity and unity of life.

Evolution is a change in the genetic makeup of a population over time, with natural selection as its major driving mechanism. Darwin's theory, which is supported by evidence from many scientific disciplines, states that inheritable variations occur in individuals in a population. Due to competition for limited resources, individuals with more favorable genetic variations are more likely to survive and produce more offspring, thus passing traits to future generations. A diverse gene pool is vital for the survival of species because environmental conditions change. The process of evolution explains the diversity and unity of life, but an explanation about the origin of life is less clear. In addition to the process of natural selection, naturally occurring catastrophic and human-induced events as well as random environmental changes can result in alteration in the gene pools of populations. Scientific evidence supports that speciation and extinction have occurred throughout Earth's history and that life continues to evolve within a changing environment, thus explaining the diversity of life.

Big Idea 2: Biological systems utilize free energy and molecular building blocks to grow, to reproduce and to maintain dynamic homeostasis.

Cells and organisms must exchange matter with the environment. Organisms respond to changes in their environment at the molecular, cellular, physiological, and behavioral levels. Living systems require energy and matter to maintain order, grow, and reproduce. Organisms employ various strategies to capture, use, and store energy and other vital resources. Energy deficiencies are not only detrimental to individual organisms but they can cause disruptions at the population and ecosystem levels. Homeostatic mechanisms that are conserved or divergent across related organisms reflect either continuity due to common ancestry or evolutionary change in response to distinct selective pressures

Big Idea 3: Living systems store, retrieve, transmit, and respond to information essential to live processes.

Genetic information provides for continuity of life, and, in most cases, this information is passed from parent to offspring via DNA. Non heritable information transmission influences behavior within and between cells, organisms, and populations. These behaviors are directed by underlying genetic information, and responses to information are vital to natural selection and evolution. Genetic information is a repository of instructions necessary for the survival, growth, and reproduction of the organism. Genetic variation can be advantageous for the long-term survival and evolution of a species.

Big Idea 4: Biological systems interact, and these systems and their interactions possess complex properties.

All biological systems comprise parts that interact with one another. These interactions result in characteristics and emergent properties not found in the individual parts alone. All biological systems from the molecular level to the ecosystem level exhibit properties of biocomplexity and diversity. These two properties provide robustness to biological systems, enabling greater resiliency and flexibility to tolerate and respond to changes in the environment. Nothing in our world exists in isolation and even things such as disease and the evolution of disease are more complex than most realize.

Survival of the Sickest Poster Rubric

Rubric	5	4	3	2	1
Border	All four borders are written neatly, with the themes; displayed through words, pictures, symbols, or quotes, and all directions were followed.	Two or more borders are written neatly, with at least two of the following: theme, words, pictures, symbols, or quotes, and all directions were followed.	One border is written neatly, with at least one of the following: the theme, words, pictures, symbols, or quotes, and all directions were followed.	Border is written neatly, but does not include at least one of the following: the theme, words, pictures, symbols, or quotes, and all directions were followed.	No border.
Information	The information used is correct, used appropriately, and follows ALL directions given.	The information used is mostly correct, used appropriately some of the time but not all directions were followed.	Some of the information used is correct, but is not used appropriately and directions were only partially followed.	Very little of the information used is correct, used inappropriately, and directions were not followed.	The information used is irrelevant or off topic and shows no understanding of the topic.
Personal Response	Response indicates a thorough understanding of the text	Response indicates an understanding of the text	Response indicates a partial understanding of the text; information may be too general or simplistic	Response indicates a very limited understanding of the text; response may exhibit some flaws	Response is inaccurate, confused, and/or irrelevant
Illustrations	Illustration was created with effort (not hurried); large enough to see; does a good job illustrating the quotations. Entire page is colored.	Illustration was created with "some" effort; picture illustrates quotations. Most of the page is colored.	Illustration was created with "some" effort; picture does not necessarily illustrate quotation. Some of the page is colored.	Illustration was created hastily; does not clearly illustrate the quotation. Some or none of the page is colored.	No illustrations.
Appearance	The project was neat, clear, and shows a lot of brainstorming and effort went into it.	The project is not as neat as it could be, but the information is organized.	The project lacks neatness and looks like little effort was put into it; the information isn't organized.	The project is sloppy and disorganized; it looks like it was done in a hurry.	The project is extremely sloppy and disorganized or large sections are missing.

Total Points: ____ X 2 = ____ /50

Part 2: Foundational Skills for AP Biology

Science Practices for AP Biology:

A practice is a way to coordinate knowledge and skills to accomplish a goal or task. The science practices enable students to establish lines of evidence and use them to develop and refine testable explanations and predictions of natural phenomena. These science practices capture important aspects of the work that scientists engage in, at the level of competence expected of AP Biology students.

- We will be using these Science Practices throughout the school year in this course.

AP Biology Science Practices:

■ **Concept Explanation**

- ◆ Explain biological concepts, processes, and models presented in written format.

■ **Visual Representations**

- ◆ Analyze visual representations of biological concepts and processes.

■ **Questions and Methods**

- ◆ Determine scientific questions and methods.

■ **Representing and Describing Data**

- ◆ Represent and Describe Data

■ **Statistical Tests and Data Analysis**

- ◆ Perform statistical tests and mathematical calculations to analyze and interpret data.

■ **Argumentation**

- ◆ Develop and justify scientific arguments using evidence.

Part 2 - Science Practices Graphic Organizer Assignment:

You have been given a packet that includes graphic organizers, also linked [here](#) which you will utilize the Google presentations embedded in each section to complete the skills packet. These resources will also be linked in your teacher-specific Google Classroom.

The purpose of this assignment is to expose you to the knowledge needed to properly apply the science practices needed throughout the AP Biology course. We will review these organizers during the first week of classes and apply these concepts throughout the year. You will be assessed during the first month of school on these concepts.

****For this summer assignment, and all future AP Biology assignments, you must abide by the Academic Integrity Policy (see last page). A signed copy of the integrity policy must be submitted to your teacher at the beginning of the school year.**

- Your Summer Assignment is due on 9/2/2025

Academic Integrity Policy

Our school values academic integrity. Honest scholarly investigation is the cornerstone of our community's desire to promote the dignity of individual accomplishment.

Cheating or plagiarism on academic work will result in no credit for the material. Parents will be notified. An academic incident report will be filed with the student's school counselor and dean.

Academic dishonesty at Fairfield Public Schools is defined as, but not limited to:

- a. Using or possessing unauthorized notes or electronic devices during a test or quiz.
- b. Copying or possessing another student's work during summative assessments such as lab reports, projects, tests or quizzes.
- c. Sharing answers during a test or quiz.
- d. Giving information to others who have not taken the test or receiving information from those who have.
- e. Copying another student's class work or homework or allowing your work to be copied.
- f. Plagiarizing another person's work from any resource (periodical, book, the internet, etc.) and submitting it as one's own.
- g. Plagiarism by paraphrasing or using parts of another person's work (ideas, text, images, etc.) without citing it as a source.
- h. Using an electronic, computer-based, or internet site and/or program translator for the purpose of completing any written or oral class assignment.

LAB REPORT EXPECTATIONS:

All science courses require laboratory work as a part of the curriculum. This often involves students working together to complete the laboratory activity. A written lab report is turned in to the teacher with information regarding the procedure, data, and an analysis/conclusion based on the data gathered during the lab exercise. It is the expectation of the Fairfield Public Schools that ALL of the information included in a student's lab report **except** for the procedure and the raw data will be done independently by the student.

The purpose of the lab report is for each student to demonstrate his/her own understanding of the concept(s) used in the lab activity and the report should be treated just as any test or quiz would be.

Students are **NOT** permitted to "work together" on any parts of the lab report beyond the procedure and raw data.

I have read and agree to abide by this academic integrity policy. _____ (Date)

(Student printed name)

(Parent/Guardian printed name)

(Student signature)

(Parent/Guardian signature)