

Advanced Biology Summer Choice Board (Newell/Burgess)

Get excited for Advanced Bio!

This course is structured around 4 "big ideas". **Over the course of the summer, complete at least one activity per row.** Have an idea for something different from what we suggested? Cool! Go with it. You are not limited to only these options.

When we return to school, you will **show evidence of your experiences and share them with the rest of us** to kick off our year of biological investigation.

Big Idea	Activity Choice			
	Something to Experience	Something to Read	Something to Watch	Something to Listen to
<p>1. EVOLUTION <i>Our study of evolution will include the unification of genetics and evolution, historical perspectives of evolutionary theory, gene flow, mutation, speciation, natural selection, genetic drift and sexual selection.</i></p>	<p>Get outside- find some organisms, and describe/document variation in traits within the population</p> <p>Be an artist- draw/paint and label some plant or animal adaptations that you observe in nature</p>	<p>Read this article-Should We Change Species to Save Them? and write a brief reflection arguing whether we should or not</p>	<p>7 Times Humans Changed Animal Evolution</p> <p>First Life: Arrival</p> <p>*take your own notes*</p>	<p>RadioLab- The Good Show</p> <p>Science Friday- The Twists And Turns Of The Evolution Of Life On Earth</p> <p>Science Friday: A Strange Looking Fish. Frozen in Time</p> <p>*take your own notes*</p>
<p>2. ECOLOGY <i>We will study the effects of physical/chemical constraints on all biological relationships and systems. The flow of energy and the cycling of matter as organisms grow, reproduce and die occurs at all levels of biological organization</i></p>	<p>Take up Bird Watching as a summer hobby and start your "Birding Life List".</p> <p>Create an art piece about ecology- how organisms in your backyard are interacting with each other and the environment</p>	<p>Flip through these examples of keystone species. Choose one to focus on and create a food web that includes your species and at least 5 others.</p> <p>Read this book- The Serengeti Rules</p> <p>Read this book-A Walk in the Woods</p> <p>*write a 1 page reflection</p>	<p>Have Netflix? Of course you do. Choose an episode of <i>Planet Earth</i> or something similar to watch.</p> <p>TedTalk- How you can help save the Bees</p> <p>*Write a brief reflection about what blew your mind</p>	<p>Go outside and listen to animals communicating both within a species, and between species- document your observations</p> <p>Science Friday: How Humboldt Squid Talk To Each Other In The Dark</p> <p>Science Friday: Why Is Solving the Plastic Problem so Hard?</p> <p>*take your own notes*</p>

<p>3. HEREDITY</p> <p><i>Our study of heredity will look at the explanation of genetic patterns of inheritance from one generation to the next either asexual or sexual reproduction.</i></p>	<p>Get outside- find some organisms of the same or similar species and describe/document variation in traits you see. Hypothesize how these might be inherited from parents.</p>	<p>Read this book-The Selfish Gene</p> <p>Read this book-Lifespan: Why We Age and Why We Don't Have To</p> <p>*write a 1 page reflection</p>	<p>TedTalk- rewriting DNA</p> <p>TedTalk- Sleep is your Super Power</p> <p>*take your own notes*</p>	<p>Breakthrough: Gene Therapy is Unlocking Medical Cures</p> <p>Breakthrough: Preventing Sports Injuries with Gene Therapy</p>
<p>4. CELLS</p> <p><i>The cell is a system that conducts a variety of functions associated with life. We will look at cellular processes such as photosynthesis, chemosynthesis, cellular respiration and biosynthesis of macromolecules.</i></p>	<p>Build a cell: Choose an animal cell, a plant cell, or a bacterial cell and either draw or build it out of any materials you choose. The more creative the better. Include at least 5 structures/organelles and their functions.</p>	<p>Read this book-The Immortal Life of Henrietta Lacks</p> <p>*write a 1 page reflection</p>	<p>Symptomatic: Search for New Antibiotics Under the Sea</p> <p>Forging the Future: Can Genetic Engineering Save our Lives?</p> <p>*take your own notes*</p>	<p>Science Friday- Personalized Immunotherapy Shows Promise Beyond Cancer</p> <p>Biology Boom: Senses within the Eye and Ear</p> <p>*take your own notes*</p>