WEBSITES:

[Bozeman](http://www.bozemanscience.com/ap-biology/) –THESE VIDEOS WILL SAVE YOUR LIFE FOR REVIEW FOR AP BIO TEST!

[Khan Academy](https://www.khanacademy.org) –The videos go super into depth and are awesome for notes.

[Crash Course](https://www.youtube.com/playlist?list=PL3EED4C1D684D3ADF) –Really good videos for short and quick reviews

[IFLS](http://www.iflscience.com) –If you’re interested in science and bored, go here and read articles and watch videos, it’s all super interesting.

[Easynotecards](http://www.easynotecards.com/book/39vMSgAACAAJ) –This is specifically questions from the Campbell biology textbook and you can use this to study certain chapters. Great for practice before exams in class!

[Quizlet](https://quizlet.com/subject/biology/) –Great for definitions, questions and answers, and study tools before tests.

[APcentral](http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/2117.html) –Anything and everything that you question about AP Biology

[Shmoop](http://www.shmoop.com/search/?q=biology) –Search whatever you need about biology. Your one stop shop.

[HHMI](https://www.hhmi.org/biointeractive/virtual-lab-series) –Do virtual labs pertaining to what you’re studying.

BIG IDEA 1 EVOLUTION: (Leah)

[Anything and Everything Evolution](http://www.shmoop.com/search/?q=EVOLUTION) –Study Tool to be used when studying for a test on evolution. (Shmoop)

[Questions and Answers on Evolution](http://www.easynotecards.com/search_all?q=evolution) –Study tool to be used when studying for a test on evolution. (easynotecards.com)

[Quizlet Evolution](https://quizlet.com/subject/evolution/) –Definitions, questions and answers, and helpful study tool.

[Intro to Natural Selection](https://www.khanacademy.org/science/biology/her/evolution-and-natural-selection/v/introduction-to-evolution-and-natural-selection) –(Khan Academy)

[Natural Selection?](http://www.bozemanscience.com/001-natural-selection) – Introduces Charles Darwin and the data of the peppered moth (Bozeman)

[MORE NATURAL SELECTION!](https://www.youtube.com/watch?v=aTftyFboC_M&list=PL3EED4C1D684D3ADF&index=14) –Explains how it’s the key mechanism of evolution. (Crash Course)

[Examples of Natural Selection](http://www.bozemanscience.com/002-examples-of-natural-selection) – Explains how changes in environment and mutations cause changes within organisms to change their fitness level (Bozeman)

[What is Genetic Drift?](http://www.bozemanscience.com/003-genetic-drift) – Shows the difference between small and large populations vs chance (Bozeman)

[What evidence is there?](http://www.bozemanscience.com/004-evidence-for-evolution) –Introduces biogeography, fossils, and homologies. (Bozeman)

[What is taxonomy?](https://www.khanacademy.org/science/biology/her/tree-of-life/v/taxonomy-and-the-tree-of-life) –(Khan Academy)

[Taxonomy and how it’s life’s filing system](https://www.youtube.com/watch?v=F38BmgPcZ_I&list=PL3EED4C1D684D3ADF&index=19) –How labeling has helped classify species and scientific evidence.

[What are the characteristics of life?](http://www.bozemanscience.com/005-essential-characteristics-of-life) –Talks about the central dogma of biology, shared metabolic pathways, and universal genetic code. (Bozeman)

[What is phylogenetics?](http://www.bozemanscience.com/006-phylogenetics) –Explains evolutionary relationships of organisms using morphological and molecular data and introduces the cladogram. (Bozeman)

[Fossil Record of Stickleback Evolution Lab](https://www.hhmi.org/biointeractive/fossil-record-stickleback-evolution) –How the pelvic spines of a fish population dramatically reduced. (HHMI)

[What is speciation or extinction?](http://www.bozemanscience.com/007-speciation-and-extinction) –Introduces the concept of evolutionary processes such as allopatric and sympatric speciation and talks about mass extinctions. (Bozeman)

[Speciation intro](https://www.youtube.com/watch?v=2oKlKmrbLoU&list=PL3EED4C1D684D3ADF&index=15) –Explains evolutionary processes using the examples of finches, lingers, mules, and dogs. (Crash Course)

[Speciation in depth](http://www.bozemanscience.com/speciation) –Explains the three main barriers to gene flow: geographic, pre-zygotic, and post-zygotic. (Bozeman)

[Evolution in depth](http://www.bozemanscience.com/evolution-continues) –Talks about artificial, natural, and sexual selection, also directional selection is talked about using the beak of the finch. (Bozeman)

[The Y Chromosome Lab](https://www.hhmi.org/biointeractive/y-chromosome) –Provides a clue to some interesting events in that may have occurred during the course of its evolution. (HHMI)

[What is abiogenesis?](http://www.bozemanscience.com/010-abiogenesis) –Miller Urey experiment. (Bozeman)

[Origin of life](http://www.bozemanscience.com/011-the-origin-of-life-scientific-evidence) –Discusses scientific evidence that lead to the start of life on our planet. (Bozeman)

[More Origins of life!](https://www.khanacademy.org/partner-content/big-history-project/life/life-and-big-history/v/bhp-origin-of-life_crashcourse) –(Khan Academy)

**Big Idea 2: Free Energy (Enzo)**

[Bozeman Science](http://www.bozemanscience.com/ap-biology/) – Contains videos that cover all of free energy as a review but and for basic knowledge

[Crash Course](https://www.youtube.com/user/crashcourse)- Great for review and study

[**In Da Club - Membranes & Transport: Crash Course Biology #5**](https://www.youtube.com/watch?v=dPKvHrD1eS4&list=PL3EED4C1D684D3ADF&index=5) – Has to do with the composition and transport of molecules across a membrane

[**Plant Cells: Crash Course Biology #6**](https://www.youtube.com/watch?v=9UvlqAVCoqY&list=PL3EED4C1D684D3ADF&index=6) – Contains all information on chemical pathways and composition of plant cells

[**ATP & Respiration: Crash Course Biology #7**](https://www.youtube.com/watch?v=00jbG_cfGuQ&list=PL3EED4C1D684D3ADF&index=7) – Goes into the energy pathways in the mitochondrion as well as the cycle that propels the animal and plant cells

[Photosynthesis: Crash Course Biology #8](https://www.youtube.com/watch?v=sQK3Yr4Sc_k&list=PL3EED4C1D684D3ADF&index=8) – Covers the plant cells method of creating glucose and gives step by step analysis of the energy transformations present

[Khan Academy](http://www.khanacademy.org) – Better for slightly more in depth information

[Cells](https://www.khanacademy.org/science/biology/cellular-molecular-biology/cell-division/v/diffusion-and-osmosis) – Good review for basic cell functions including osmosis and diffusion

[Cellular respiration](https://www.khanacademy.org/science/biology/cellular-molecular-biology/cellular-respiration) – Another series of videos that provide in depth analysis on every step of cellular respiration and goes in specifics concerning transfer of energy

[Photosynthesis](https://www.khanacademy.org/science/biology/cellular-molecular-biology/photosynthesis) – Similar to respiration ^ above it goes into explicit detail on the process including C4 plants

[Quizlet AP Bio](https://quizlet.com/subject/ap-bio/) – Need answers to a test or worksheet or just to study

[Negative and Positive feedback](https://quizlet.com/4582074/ap-bio-chapters-40-43-flash-cards/) – review vocab and terms

[Homeostasis and Homeostatic regulations](https://quizlet.com/20425189/ap-bio-homeostasis-and-regulation-flash-cards/) – good for introduction and/or review on the topic

[Compartmentalization and cell structure](https://quizlet.com/18144178/ap-bio-a-tour-of-the-cell-flash-cards/) – important to know the separations of the cell and transport methods

[Cell respiration and Photosynthesis](https://quizlet.com/4018457/ap-biology-respiration-and-photosynthesis-ch-9-and-10-flash-cards/) – More review on cell resp and photosynthesis (big on test)

[Natural selection and evolution (energy)](https://quizlet.com/18042357/ap-bio-evolutionnatural-selection-flash-cards/) – noting important energy transfer in macro biology

[Shmoop AP Bio](http://www.shmoop.com/ap-biology/) – Contains a review test with a specific section in FREE ENERGY

* Big Idea 3: DNA & RNA (Richard)
  + Bozeman Science DNA/RNA Part 1 - <http://www.bozemanscience.com/027-part-1-dna-rna>
    - Covers the history and discovery of DNA as well as an introduction into the biological aspect of DNA & RNA

* Bozeman Science DNA/RNA Part 2 - <http://www.bozemanscience.com/027-part-2-dna-rna>
  + Describes the structure and function of DNA/RNA
  + Introduces the chemical rules for base pairing as well as the big ideas for DNA synthesis and reproduction

* Cell Cycle/ Reproduction
  + Bozeman Science Cell Cycle/Mitosis/Meiosis - <http://www.bozemanscience.com/028-cell-cycle-mitosis-and-meiosis>
    - Covers the mechanisms for cellular reproduction both through meiosis and mitosis
    - Describes binary fission
    - Overviews the steps and checkpoints in the cell cycle

* Genetics
  + Bozeman Science Mendelian Genetics - <http://www.bozemanscience.com/029-mendelian-genetics>
    - Introduces the ideas and experiments which gave way to the theory of genetics
    - Covers basic laws of genetics such as law of segregation and alleles

* Bozeman Science Advanced Genetics - <http://www.bozemanscience.com/030-advanced-genetic>
  + Covers polygenic inheritance and other advanced genetic techniques to determine genetic linkages
  + Uses a bell curve to describe phenotypes

* Bozeman Science Gene Regulation - <http://www.bozemanscience.com/031-gene-regulation>
  + Shows gene regulation in both prokaryotes and eukaryotes
  + Describes the importance of transcription factors
  + Overviews lac and trp operons and their use in bacteria for cellular responses

* Bozeman Science Genotypes/Phenotypes - <http://www.bozemanscience.com/033-genotypes-and-phenotypes>
  + Shows how changes in genotype can have extreme changes on the phenotype
  + Shows the effect of mutations on cells
  + Explains how mistakes in the cell cycle can lead to a change in species

* Bozeman Science Increasing Genetic Variability - <http://www.bozemanscience.com/034-mechanisms-that-increase-genetic-variation>
  + Explains mechanisms for genetic variation within populations
  + Describes horizontal transfer, transformation, transduction, and conjugation in bacteria
  + Shows how crossing over, random assortment, and random fertilization can maintain genetic variation in eukaryotes

* Cell Communication
  + Bozeman Science Signal Transmission - <http://www.bozemanscience.com/032-signal-transmission-and-gene-expression>
    - Explains how signal transmission is used to alter the cellular function and gene expression
    - Uses the example of epinephrine and how it is used in the fight or flight response

* Bozeman Science Evolutionary Significance of Cell Communication -  <http://www.bozemanscience.com/036-evolutinary-significance-of-cell-communication>
  + Describes how cell communication is used in single-celled and multicellular organisms
  + Describes symbiotic relationships

* Bozeman Science Cell Communication - <http://www.bozemanscience.com/037-cell-communication>
  + Explains how communication works with other individuals in a population
  + Explains the several methods used for cell communication
  + Uses the example of antigens with an immune system to show cell communication

* Bozeman Science Signal Transduction Pathways - <http://www.bozemanscience.com/038-signal-transduction-pathways>
  + Shows how cells use transduction pathways to convert chemical messages to cellular action
  + Describes g-protein complexes, adenylyl cyclase, cAMP, and protein kinases

* Bozeman Science Effects of Pathway Changes - <http://www.bozemanscience.com/039-effects-of-changes-in-pathways>
  + Shows how changes in a signal transduction pathway can affect organisms
  + Uses the example of anthrax to show how external influences can shut down signal pathways

* Bozeman Science Information Exchange - <http://www.bozemanscience.com/039-information-exchange>
  + Explains how organisms use information to communicate with each other
  + Shows how several animal populations mate using information exchange

* Nervous System(Maybe)
  + Bozeman Science Nervous System - <http://www.bozemanscience.com/nervous-system>
    - Discusses brain lateralization and gives brief descriptions of split-brain individuals
      1. Describes parts of the neuron and how action potential generate voltage-gated ion channels.

Big Idea 4:  System

Biological Molecules: [Bozeman Science BioMolecules](http://www.bozemanscience.com/042-biologoical-molecules)

This Bozeman Science video gives a good analysis of the four major biological molecules (or biomolecules). These four biomolecules are a crucial part of biology, which is why is in-depth video is a good tool to familiarize yourself with the four, or to review. Bozeman Science videos are especially helpful when used them to take notes

Cellular Organelles: [Quizlet Cell Organelles](https://quizlet.com/410483/cell-organelles-and-their-functions-flash-cards/)

This set of online notecards can be used as a helpful review or cell organelles and their functions. The best way to use this set is to test yourself on flashcard mode.

Cellular Specialization: [Khan Academy Cellular Specialization](https://www.youtube.com/watch?v=lWX_3OmhSds)

This Khan Academy video breaks down how stem cells differentiate into other types of cells, and what makes them do it. This detailed video gives a good description on the process of cellular specialization. Best used to take notes with.

Organ System: [Bozeman Organ Systems](http://www.bozemanscience.com/045-organ-systems)

This Bozeman Science video explains really breaks down organ systems, and how different organ systems working together make up an organism. Mr. Andersen uses examples in this video to explain how organs interact, like how the kidney and the bladder work together in the excretory system. This video clearly explains organ systems, and can be helpful when taking notes.

Communities: [Crash Course Communities](https://www.youtube.com/watch?v=GxE1SSqbSn4)

Hank Green outlines important parts of community ecology including competition, niches, mutualism, and commensalism. Since Crash Course videos are quick and entertaining, they are best used as a tool for reviewing topics.

Ecosystems: [Bozeman Ecosystems](http://www.bozemanscience.com/047-ecosystems)

Mr. Andersen from Bozeman science uses Yellowstone Park as an example of an ecosystem, using it to help explain ecosystems and how they work. He breaks down the importance of food chains and food webs. He also explains population growth, along with carrying capacity. This video, along with the real life example of Yellowstone Park, explains ecosystems very well. This video can be used as an introduction to ecosystems, or as a review video.

Enzymes: [Khan Academy Enzymes](http://www.khanacademy.org/test-prep/mcat/chemical-processes/enzymes/v/the-induced-fit-model-of-enzyme-catalysis)

This video, found in the MCAT section of Khan Academy, explains the induced fit model of enzymes. This video helps explain actives sites, substrates, and how enzymes work. Knowing how enzymes work is important, and this video can be used to take notes.

Populations: [Crash Course Populations](https://www.youtube.com/watch?v=RBOsqmBQBQk)

This Crash Course video explains the basics of population ecology like density, dispersion, and growth. This video uses population ecology to explain an outbreak of the West Nile virus near Dallas, Texas. Through the use of an example, and plenty of definitions, this video explains populations well and is a useful source for note taking.

Genotype Expression: [Bozeman Genotype Expression](http://www.bozemanscience.com/053-genotype-expression)

Mr. Andersen provides in depth descriptions of genotypes and environmental influence. His explanations show the importance of the environment on its organisms. This video could be used to take notes, or just to review this topic.