

Hesperia Community Schools

Timeline	HSCE's/GLCE's and CCSS	Content—the "WHAT" of teaching. Specific themes, units & topics.	Essential Skills: the "Important Details/Essential Questions" you are teaching (How & essential of What)	Content Vocabulary	Assessment: the products & performances of learning	Resources
3 weeks	<p>B2.3A Describe how cells function in a narrow range of physical conditions, such as temperature and pH (acidity), to perform life functions.</p> <p>B2.3B Describe how the maintenance of a relatively stable internal environment is required for the continuation of life.</p> <p>B2.3C Explain how stability is challenged by changing physical, chemical, and environmental conditions as well as the presence of disease agents.</p> <p>B2.3e Describe how human body systems maintain relatively constant internal conditions (temperature, acidity, and blood sugar).</p> <p>B2.6a Explain that the regulatory and behavioral responses of an organism to external stimuli occur in order to maintain both short- and long-term equilibrium.</p> <p>B1.1A Generate new questions that can be investigated in the laboratory or field.</p> <p>B1.1B Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumption</p> <p>B1.2A Critique whether or not specific questions can be answered through scientific investigations.</p> <p>B1.2B: Identify and critique arguments about personal or societal issues based on scientific evidence.</p> <p>B1.2C Develop an understanding of a scientific concept by accessing information from multiple sources. Evaluate the scientific accuracy and significance of the information.</p> <p>B1.2D Evaluate scientific explanations in a peer review process or discussion format.</p> <p>B1.2E Evaluate the future career and occupational prospects of science fields.</p> <p>B1.2f Critique solutions to problems, given criteria and scientific constraints.</p> <p>B1.2g Identify scientific tradeoffs in design decisions and choose among alternative solutions.</p> <p>B1.2h Describe the distinctions between scientific theories, laws, hypotheses, and observations.</p> <p>B1.2i Explain the progression of ideas and explanations that leads to science theories that are part of the current scientific consensus of core knowledge.</p> <p>B1.2j Apply science principles or scientific data to anticipate effects of technological design decisions.</p> <p>B1.2k: Analyze how science and society interact from a historical, political, economic, or social perspective.</p> <p>B2.3B: Describe how the maintenance of a relatively stable internal environment is required for the continuation of life</p>	<p>Chapter 1: Biology AND You</p> <p>Section 1: Themes of Biology</p> <p>Section 2: Biology in Your World</p> <p>Section 3: Scientific Process</p>	<p>Section 1: Themes of Biology</p> <ul style="list-style-type: none"> Characteristics of Living Organisms Unifying Themes of Biology <p>Section 2: Biology in Your World</p> <ul style="list-style-type: none"> Solving Real World Problems Fighting Disease <p>Section 3: Scientific Processes</p> <ul style="list-style-type: none"> Observation: The Basis of Scientific research Stages of Scientific Investigations Scientific Explanations 	<p>Biology</p> <p>Cell</p> <p>Reproduction</p> <p>Metabolism</p> <p>Homeostasis</p> <p>Gene</p> <p>Heredity</p> <p>Mutation</p> <p>Evolution</p> <p>Species</p> <p>Natural selection</p> <p>Ecology</p> <p>Species</p> <p>Natural Selection</p> <p>Ecology</p> <p>Genome</p> <p>HIV</p> <p>Cancer</p> <p>Cystic Fibrosis</p> <p>Gene Therapy</p> <p>Observation</p> <p>Hypothesis</p> <p>Prediction</p> <p>pH</p> <p>experiment</p> <p>control group</p> <p>independent variable</p> <p>dependent variable</p> <p>theory</p>	<ul style="list-style-type: none"> Seven Themes of Biology Project Sponge Bob/Controls and Variables Activity <p>Chapter 1 – Unit Test</p>	<ul style="list-style-type: none"> Vocab table 1.1 Directed Reading 1.1 Vocab Pictionary/charade Power Point 1.1 Brain POP – Homeostasis Brain POP – Scientific Method <ul style="list-style-type: none"> Vocab table 1.2 Directed Reading 12 Power Point 1.2 <ul style="list-style-type: none"> Vocab table 1.3 Directed Reading 1.3 Power Point 1.3 Vocab No Brain POP – Scientific Method Peeking Search Rescue

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2.5 Weeks	<p>B2.2A Explain how carbon can join to other carbon atoms in chains and rings to form large and complex molecules.</p> <p>B2.2B: Recognize the six most common elements in organic molecules (C, H, N, O, P, S).</p> <p>B2.2C Describe the composition of the four major categories of organic molecules (carbohydrates, lipids, proteins, and nucleic acids). B2.2D Explain the general structure and primary functions of the major complex organic molecules that compose living organisms.</p> <p>B2.2E Describe how dehydration and hydrolysis relate to organic molecules. B2.2f Explain the role of enzymes and other proteins in biochemical functions (e.g., the protein hemoglobin carries oxygen in some organisms, digestive enzymes, and hormones).</p> <p>B2.2g Propose how moving an organism to a new environment may influence its ability to survive and predict the possible impact of this type of transfer.</p> <p>B2.3A Describe how cells function in a narrow range of physical conditions, such as temperature and pH (acidity), to perform life functions.</p> <p>B2.3B Describe how the maintenance of a relatively stable internal environment is required for the continuation of life.</p> <p>B2.3C Explain how stability is challenged by changing physical, chemical, and environmental conditions as well as the presence of disease agents.</p> <p>B2.3e Describe how human body systems maintain relatively constant internal conditions (temperature, acidity, and blood sugar).</p> <p>B2.3g: Compare the structure and function of a human body system or subsystem to a nonliving system (e.g., human joints to hinges, enzyme and substrate to interlocking puzzle pieces).</p> <p>B2.5A: Recognize and explain that macromolecules such as lipids contain high energy bonds</p> <p>B2.6a Explain that the regulatory and behavioral responses of an organism to external stimuli occur in order to maintain both short- and long-term equilibrium.</p>	<p>Chapter 2: Chemistry of Life</p> <p>Section 1: Nature of Matter</p> <p>Section 2: Water and Solutions</p> <p>Section 3: Chemistry of Cells</p> <p>Section 4: Energy and Chemical Reactions</p>	<p>Section 1: Nature of Matter</p> <ul style="list-style-type: none"> • Atoms • Chemical Bonds <p>Section 2: Water and Solutions</p> <ul style="list-style-type: none"> • Water in Living Things • Aqueous Solutions <p>Section 3: Chemistry of Cells</p> <ul style="list-style-type: none"> • Carbon Compounds <p>Section 4: Energy and Chemical Reactions</p> <ul style="list-style-type: none"> • Energy and life Processes 	<p>Atom</p> <p>Element</p> <p>Compound</p> <p>Molecule</p> <p>Ion</p> <p>Cohesion</p> <p>Adhesion</p> <p>Solution</p> <p>Acid</p> <p>Based</p> <p>carbohydrate</p> <p>monosaccharide</p> <p>lipid</p> <p>protein</p> <p>amino acid</p> <p>nucleic acid</p> <p>nucleotide</p> <p>DNA</p> <p>RNA</p> <p>ATP</p> <p>Energy</p> <p>Activation Energy</p> <p>Enzyme</p> <p>Substrate</p> <p>Active Site</p>	<p>Pineapple Enzyme Lab</p> <p>Penny Cohesion/ Adhesion Lab</p> <p>Chapter 2 – Unit Test</p>	<ul style="list-style-type: none"> • Paper clip cohesion demo • Vocab table 2.1/2.2 • Directed Reading 2.1/2.2 • Vocab Bingo • Power Point 2.1 • Brain POP – Homeostasis • Brain POP – Scientific Method <ul style="list-style-type: none"> • Vocab table 2.3 • Directed Reading 2.3 • Power Point 2.3 <ul style="list-style-type: none"> • Vocab table 2.4 • Directed Reading 2.4 • Power Point 2.4 <p>Mind Point Quiz Review Game</p> <p>Search and Rescue Review</p>

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2.5 Weeks	<p>B2.5A Recognize and explain that macromolecules such as lipids contain high-energy bonds.</p> <p>B.2.5B Explain how major systems and processes work together in animals and plants, including relationships between organelles, cells, tissues, organs, organ systems, and organisms. Relate these to molecular functions.</p> <p>B2.5g Compare and contrast plant and animal cells.</p> <p>B2.5h Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, and active transport).</p> <p>B2.5i Relate cell parts/organelles to their function.</p> <p>B2.4h Describe the structures of viruses and bacteria</p> <p>B2.4i Recognize that while viruses lack cellular structure, they have the genetic material to invade living cells.</p> <p>B2.4g Explain that some structures in the modern eukaryotic cell developed from early prokaryotes, such as mitochondria, and in plants, chloroplasts.</p> <p>B2.4d Analyze the relationships among organisms based on their shared physical, biochemical, genetic, and cellular characteristics and functional processes.</p>	<p>Chapter 3: Cell Structure</p> <p>Section 1: Looking at Cells</p> <p>Section 2: Cell Features</p> <p>Section 3: Cell Organelles</p>	<p>Section 1: Looking at Cells</p> <ul style="list-style-type: none"> • Cells Under the Microscope • Types of Microscopes <p>Section 2: Cell Features</p> <ul style="list-style-type: none"> • The Cell Theory • Prokaryotes • Eukaryotic Cells • The Cell Membrane <p>Section 3: Cell Organelles</p> <ul style="list-style-type: none"> • The Nucleus • Ribosome's and the Endoplasmic Reticulum • Mitochondria • Structures of Plant Cells 	<p>Light microscope, electron microscope,, magnification, resolution, scanning tunneling microscope</p> <p>Cell theory, cell membrane, cytoplasm, cytoskeleton, ribosome, prokaryote, cell wall, flagellum, eukaryote, nucleus, organelle, cilium, phospholipid, lipid bilayer</p> <p>Endoplasmic reticulum, vesicle, Golgi apparatus, lysosome, mitochondrion, chloroplast, central vacuole</p>	<p>Microscope Parts Quiz</p> <p>Intro to the Microscope Lab "The e's have it"</p> <p>Pond Water Lab</p> <p>Onion root/ hair Lab</p> <p>Cell Book</p> <p>Chapter 3 – Unit Test</p>	<p>Introduction to the Compound Microscope</p> <p>Identifying parts of the microscope</p> <p>Microscope vocab</p> <p>Microscope No peaking Review</p> <p>Microscope Power Point</p> <p>Practice Focusing Lab</p> <p>Vocab 3.1, 3.2, 3.3</p> <p>Brain POP: Cell specialization Cell structures</p> <p>Cell Packet – label and color organelles</p> <p>Cell as a School Analogy Power Points 3.1, 3.2, and 3.3</p> <p>Notes 3.2 Cell Features</p> <p>Directed Reading 3.1, 3.2, and 3.3</p> <p>Vocab Review</p> <p>Vocab Bingo Review</p> <p>Search and Rescue</p>

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2 Weeks	<p>B2.2E Describe how dehydration and hydrolysis relate to organic molecules.</p> <p>B2.5h Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, and active transport).</p> <p>B2.6a Explain that the regulatory and behavioral responses of an organism to external stimuli occur in order to maintain both short- and long-term equilibrium.</p>	<p>Chapter 4 Cells and Their Environment</p> <p>Section 1: Passive Transport</p> <p>Section 2: Active Transport</p>	<p>Section 1: Passive Transport</p> <ul style="list-style-type: none"> • Diffusion • Osmosis • Crossing the Cell membrane <p>Section 2: Active Transport</p> <ul style="list-style-type: none"> • Movement Against a Concentration Gradient • Movement in Vesicles • Membrane Receptor Proteins 	<p>Passive transport, concentration gradient, equilibrium, diffusion, osmosis, hypertonic solution, hypotonic solution, isotonic solution, ion channel, carrier protein, facilitated diffusion</p> <p>Active transport, Sodium-potassium pump, Endocytosis, Exocytosis, Receptor protein, second messenger</p>	<p>Gummy Bear Lab/ Conclusion -reflection</p> <p>Egg Lab</p> <p>Active transport concept map</p> <p>Chapter 4 - Unit Test</p>	<p>Potato – diffusion demo</p> <p>Food coloring in water demo</p> <p>PPT 4.1 and 4.2</p> <p>Vocab tables 4.1 and 4.2</p> <p>Directed Reading 4.1 and 4.2</p> <p>Brain POP - passive transport -active transport</p> <p>Search and Rescue</p> <p>Mind Point Quiz Review Game</p> <p>No peeking review activity</p> <p>Vocab bingo</p>

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2.5 Weeks	<p>B3.1A Describe how organisms acquire energy directly or indirectly from sunlight.</p> <p>B3.1B Illustrate and describe the energy conversions that occur during photosynthesis and respiration.</p> <p>B3.1C Recognize the equations for photosynthesis and respiration and identify the reactants and products for both.</p> <p>B3.1e: Write the chemical equation for photosynthesis and cellular respiration and explain in words what they mean.</p> <p>B2.2B: Recognize the six most common elements in organic molecules (C, H, N, O, P, S).</p> <p>B2.4g Explain that some structures in the modern eukaryotic cell developed from early prokaryotes, such as mitochondria, and in plants, chloroplasts.</p> <p>B2.4i: Recognize that while viruses lack cellular structure, they have the genetic material to invade living cells.</p> <p>B2.5B: Explain how major systems and processes work together in animals and plants, including relationships between organelles, cells, tissues, organs, organ systems, and organisms. Relate these to molecular functions.</p> <p>B2.5i: Relate cell parts/organelles to their function.</p> <p>B3.1C: Recognize the equations for photosynthesis and respiration and identify the reactants and products for both.</p> <p>B3.1f: Summarize the process of photosynthesis.</p> <p>B2.5C: Describe how energy is transferred and transformed from the Sun to energy-rich molecules during photosynthesis</p> <p>B2.5D: Describe how individual cells break down energy-rich molecules to provide energy for cell functions.</p> <p>B2.5e: Explain the interrelated nature of photosynthesis and cellular respiration in terms of ATP synthesis and degradation.</p> <p>B2.5f: Relate plant structures and functions to the process of photosynthesis and respiration.</p> <p>B2.5h: Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, and active transport).</p> <p>B2.1A Explain how cells transform energy (ultimately obtained from the sun) from one form to another through the processes of photosynthesis and respiration. Identify the reactants and products in the general reaction of photosynthesis.</p> <p>B2.1B Compare and contrast the transformation of matter and energy during photosynthesis and respiration.</p>	<p>Chapter 5 Photosynthesis and Cellular Respiration</p> <ol style="list-style-type: none"> 1. Energy and Living Things 2. Photosynthesis 3. Cellular Respiration 	<p>Section 1: Energy and Living Things</p> <ul style="list-style-type: none"> • Energy in Living Systems • ATP <p>Section 2: Photosynthesis</p> <ul style="list-style-type: none"> • Using the Energy in Sunlight • Stage 1: Absorption of Light Energy • Stage 2: Conversion of Light Energy • Stage 3: Storage of Energy <p>Section 3: Cellular Respiration</p> <ul style="list-style-type: none"> • Cellular Energy • Stage 1: Breakdown of Glucose • Stage 2: Production of ATP • Fermentation in the Absence of Oxygen 	<p>Photosynthesis, Autotroph, Heterotroph, Cellular respiration,</p> <p>Pigment, Chlorophyll, Carotenoid, Thylakoid, Electron transport chain, NADPH, Carbon Dioxide fixation, Calvin Cycle</p> <p>Aerobic, Anaerobic, Glycolysis, NADH, Krebs cycle, Fermentation FADH₂</p>	<p>Poster: Tracing a Foods energy back to the sun</p> <p>Calvin Cycle Drawing</p> <p>Venn Diagram – Photosynthesis/ Cellular Respiration</p> <p>Chapter 5 - Unit Test</p>	<p>Vocab tables 1, 2, and 3</p> <p>Brain POP - Photosynthesis -Cellular Respiration</p> <p>Power Point Sec 1, Sec 2 and Sec 3</p> <p>Directed Reading 1, 2, and 3</p> <p>Vocab Review</p>

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2.5 Weeks	<p>B2.5g: Compare and contrast plant and animal cells.</p> <p>B2.1C Explain cell division, growth, and development as a consequence of an increase in cell number, cell size, and/or cell products.</p> <p>B2.1d Describe how, through cell division, cells can become specialized for specific function.</p> <p>B2.1e Predict what would happen if the cells from one part of a developing embryo were transplanted to another part of the embryo.</p> <p>B4.2A Explain that living things can be classified based on structural, embryological, and molecular (relatedness of DNA sequence) evidence.</p> <p>B4.3C Explain how it might be possible to identify genetic defects from just a karyotype of a few cells.</p>	<p>Chapter 6 - Chromosomes and Cell Reproduction</p> <ol style="list-style-type: none"> 1. Chromosomes 2. Cell Cycle 3. Mitosis and Cytokinesis 	<p>Section 1: Chromosomes</p> <ul style="list-style-type: none"> • Formation of New Cells by Cell Division • How Chromosome Number and Structure Affect Development <p>Section 2: The Cell Cycle</p> <ul style="list-style-type: none"> • Live of a Eukaryotic Cell • Control of the Cell Cycle <p>Section 3: Cellular Respiration</p> <ul style="list-style-type: none"> • Chromatid Separation in Mitosis • Mitosis and Cytokinesis 	<p>Gamete, binary fission, gene, chromosome, chromatid, centromere, homologous chromosome, diploid, haploid, zygote, autosome, sex chromosome, Karyotype, somatic cell, Trisomy</p> <p>Cell cycle, interphase, mitosis, cytokinesis, cancer</p> <p>Spindle, prophase, metaphase, anaphase, telophase, mitosis, cytokinesis, centriole</p>	<p>Section 6.1 Test</p> <p>Lab: A Chromosome Study - karyotypes</p> <p>Lab: Chromosomal Mutations</p> <p>Lab: Observing mitosis (onion root)</p> <p>Mitosis Concept map</p> <p>Chapter 6 – Unit Test</p>	<p>Section 6.1 Search and Rescue</p> <p>Section 6.1 Vocab Review</p> <p>Animated Cell Cycle – http://www.cell-action.com/cell_cycle/cell_cycle.html</p> <p>poster class activity</p> <p>Brain pop Mitosis</p> <p>Mitosis Animated PPT</p> <p>Mitosis animation http://www.cellsalive.com/mitosis.htm</p> <p>Mitosis book</p> <p>Directed Reading 6.1, 6.2, 6.3</p> <p>Vocab Tables 6.1, 6.2, 6.3</p> <p>Vocab Review</p> <p>Cell Cyle PPT – skeleton notes</p> <p>Vocabulary bingo</p> <p>Full Chapter - Search and Rescue –</p> <p>Mind Point Quiz Review game</p>

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3 Weeks	<p>B4.3B Explain why only mutations occurring in gametes (sex cells) can be passed on to offspring.</p> <p>B4.3A Compare and contrast the processes of cell division (mitosis and meiosis), particularly as those processes relate to production of new cells and to passing on genetic information between generations.</p> <p>B2.1d Describe how, through cell division, cells can become specialized for specific function.</p> <p>B2.1e Predict what would happen if the cells from one part of a developing embryo were transplanted to another part of the embryo.</p> <p>B4.2B Recognize that every species has its own characteristic DNA sequence.</p> <p>B4.2C Describe the structure and function of DNA.</p> <p>B4.3g Explain that cellular differentiation results from gene expression and/or environmental influence (e.g., metamorphosis, nutrition).</p> <p>B4.3C Explain how it might be possible to identify genetic defects from just a karyotype of a few cells.</p> <p>B4.3d Explain that the sorting and recombination of genes in sexual reproduction result in a great variety of possible gene combinations from the offspring of two parents.</p> <p>B4.3e Recognize that genetic variation can occur from such processes as crossing over, jumping genes, and deletion and duplication of genes.</p> <p>B4.3f Predict how mutations may be transferred to progeny.</p> <p>B2.1C Explain cell division, growth, and development as a consequence of an increase in cell number, cell size, and/or cell products.</p>	<p>Chapter 7 - Meiosis and Sexual Reproduction</p> <ol style="list-style-type: none"> 1. Meiosis 2. Sexual Reproduction 	<p>Section 1: Meiosis</p> <ul style="list-style-type: none"> • Formation of Haploid Cells • Meiosis and Genetic Variation • Meiosis and Gamete Formation <p>Section 2: Sexual Reproduction</p> <ul style="list-style-type: none"> • Sexual and Asexual Reproduction • Sexual Life Cycles in Eukaryotes 	<p>Meiosis, crossing-over, independent assortment, spermatogenesis, oogenesis, ovum</p> <p>Asexual reproduction, clone, sexual reproduction, life cycle, fertilization, sporophyte, spore, gametophyte</p>	<p>Meiosis Poster with rubric</p> <p>Chapter 7 – Unit Test</p>	<p>Directed Reading : 7.1 and 7.2</p> <p>Vocab Tables: 7.1 and 7.2</p> <p>Vocab Review</p> <p>Vocab Bingo</p> <p>Chapter Search and Rescue</p> <p>Meiosis – Activity using Yarn and Beads</p> <p>Search and Rescue Review</p> <p>No Peeking vocab activity</p>

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3 Weeks	<p>B4.1B Explain that the information passed from parents to offspring is transmitted by means of genes that are coded in DNA molecules. These genes contain the information for the production of proteins.</p> <p>B4.1c Differentiate between dominant, recessive, codominant, polygenic, and sex-linked traits.</p> <p>B4.1d Explain the genetic basis for Mendel's laws of segregation and independent assortment.</p> <p>B4.1A Draw and label a homologous chromosome pair with heterozygous alleles highlighting a particular gene location.</p> <p>B4.1e Determine the genotype and phenotype of monohybrid crosses using a Punnett Square.</p>	<p>Chapter 8 – Mendel and Heredity</p> <ol style="list-style-type: none"> The Origins of Genetics Mendel's Theory Studying Heredity Complex Patterns of Heredity 	<p>Section 1: The Origins of Genetics</p> <ul style="list-style-type: none"> Mendel's Studies of Traits Traits Expressed as Simple Ratios <p>Section 2: Mendel's Theory</p> <ul style="list-style-type: none"> A Theory of Heredity The Laws of Heredity <p>Section 3: Studying Heredity</p> <ul style="list-style-type: none"> Punnett Squares Outcomes of Crosses Inheritance of Traits <p>Section 4: Complex Patterns of Heredity</p> <ul style="list-style-type: none"> Complex Control of Traits Genetic Disorders 	<p>Heredity, genetics, monohybrid cross, true-breeding, P generation, F₁ generation, F₂ generation</p> <p>Allele, dominant, recessive, homozygous, heterozygous, genotype, phenotype, law of segregation, law of independent assortment</p> <p>Punnett square, test cross, probability, pedigree, sex-linked trait</p> <p>Polygenic trait, incomplete dominance, multiple alleles, codominance</p>	<p>Lab: Genetics Dragan Lab</p> <p>Interpreting Information in a Pedigree</p> <p>Evaluating a Pedigree</p> <p>Punnett Squares Quiz sheet</p> <p>Lab: Pipe Cleaner Babies</p> <p>DNA – Heredity Poster (Quiz Grade)</p> <p>Chapter 8 – Unit Test</p>	<p>Bill Nye – Genes with question set</p> <p>Vocab Tables: 8.1, 8.2, 8.3, and 8.4</p> <p>Directed Reading: 8.1, 8.2, 8.3, and 8.4</p> <p>Calculating Mendel's Ratios</p> <p>PPT - SEC 1 and Sec 2</p> <p>Genetic Practice Problems</p> <p>Punnett Square Practice Problems</p> <p>Additional Practice with Punnett Squares</p> <p>Analyzing a Test Cross</p> <p>Predicting the Results of Crosses Using Probabilities</p> <p>Mind Point quiz Review Game</p> <p>Search and Rescue Review</p> <p>XFiles review</p>

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3 Weeks	<p>B4.2A Show that when mutations occur in sex cells, they can be passed on to offspring (inherited mutations), but if they occur in other cells, they can be passed on to descendant cells only (noninherited mutations).</p> <p>B4.2B Recognize that every species has its own characteristic DNA sequence.</p> <p>B4.2E Propose possible effects (on the genes) of exposing an organism to radiation and toxic chemicals.</p> <p>B4.2D Predict the consequences that changes in the DNA composition of particular genes may have on an organism (e.g., sickle cell anemia, other).</p> <p>B4.2E Propose possible effects (on the genes) of exposing an organism to radiation and toxic chemicals.</p> <p>B4.2C Describe the structure and function of DNA.</p>	<p>Chapter 9– DNA – The Genetic Material</p> <ol style="list-style-type: none"> Identifying the Genetic Material The Structure of DNA The Replication of DNA 	<p>Section 1: Identifying the Genetic Material</p> <ul style="list-style-type: none"> Transformation Viral Genes and DNA <p>Section 2: The Structure of DNA</p> <ul style="list-style-type: none"> A Winding Staircase Discovering DNA's Structure <p>Section 3: The Replication of DNA</p> <ul style="list-style-type: none"> The Roles of Enzymes in DNA Replication The Rate of Replication 	<p>Vaccine, virulent, transformation, bacteriophage</p> <p>Double Helix, nucleotide, deoxyribose, base-pairing rules, complementary base pair</p> <p>DNA replication, DNA helicase, replication fork, DNA polymerase, purines, pyrimidines</p> <p>People: Wilkins and Franklin, Griffith, Chargaff, Watson and Crick</p>	<p>Vocab Quiz</p> <p>Lab: Building a DNA model</p> <p>Chapter 9 – Unit Test</p>	<p>Chapter Vocab Table – 13 words</p> <p>Directed Reading: 9.1, 9.2, and 9.3</p> <p>Vocab Review</p> <p>Search and Rescue</p> <p>Vocab Bingo</p> <p>Video – GATTACA /with questions pertaining to genetics and DNA</p>

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2 Weeks	<p>B2.2f Explain the role of enzymes and other proteins in biochemical functions (e.g., the protein hemoglobin carries oxygen in some organisms, digestive enzymes, and hormones).</p> <p>B2.2g Propose how moving an organism to a new environment may influence its ability to survive and predict the possible impact of this type of transfer.</p> <p>B4.2h Recognize that genetic engineering techniques provide great potential and responsibilities.</p> <p>B4.r2i Explain how recombinant DNA technology allows scientists to analyze the structure and function of genes.</p> <p>B4.2f Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms.</p> <p>B4.2g Describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology.</p>	<p>Chapter 10– How Proteins Are Made</p> <ol style="list-style-type: none"> From Genes to Proteins 	<p>Section 1: From Genes to Proteins</p> <ul style="list-style-type: none"> Decoding the information in DNA Transfer of Information from DNA to RNA Genetic Code: Three-Nucleotide "Words" RNA's Role in Translocation 	<p>RNA – ribonucleic acid, uracil, transcription, translation, gene expression, RNA polymerase, Messenger RNA, codon, genetic code, transfer RNA, anticodon, ribosomal RNA,</p>	<p>Decoding – Lab</p> <p>Chapter 10 – Unit Test</p> <p>Lab – modeling transcription with pencil and paper</p>	<p>Chapter Vocab Table</p> <p>Brain Pop – RNA</p> <p>DNA vs RNA the differences</p> <p>Codon – decoding</p> <p>DNA – decoding</p> <p>Midnd Point quiz Review</p> <p>Search and Rescue</p>

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2 Weeks	B3.4e List the possible causes and consequences of global warming.	Chapter 12 – History of Life on Earth <ol style="list-style-type: none"> 1. How Did Life Begin? 2. The Evolution of Cellular Life 3. Life Invaded the Land 	Section 1: How Did Life Begin? <ul style="list-style-type: none"> • The Age of Earth • Formation of the Basic Chemicals of Life • Precursors of the First Cells Section 2: The Evolution of Cellular Life <ul style="list-style-type: none"> • The Evolution of Prokaryotes • The Evolution of Eukaryotes • Multicellularity Section 3: Life Invaded the Land <ul style="list-style-type: none"> • The Ozone Layer • Plants and Fungi on Land • Arthropods • Vertebrates 	Radiometric dating, radioisotope, half-life, microsphere Fossil, Cyanobacteria, eubacterias, archaeobacteria, endosymbiosis, protist, extinction, mass extinction Mycorrhizae, mutualism, arthropod, vertebrate, continental drift	Lab – Modeling Radio Active Decay Chapter 12 – Unit Test	Chapter 12 vocab tables Power Point - Section 1-3 “Primordial Soup” Model vs Lerman’s Bubble Model Skeleton Notes – Fill in notes Partner Read Activity Brain Pop – Carbon Dating Discuss and Look at Fossils Time Line Clock vs Time line Reciept tape (5 meters long) Directed Reading 1, 2, and 3 Vocab Review Search N Rescue – Review activity Vocab Bingo

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3 Weeks	<p>B5.1A Summarize the major concepts of natural selection (differential survival and reproduction of chance inherited variants, depending on environmental conditions).</p> <p>B5.1B Describe how natural selection provides a mechanism for evolution.</p> <p>B5.1c Summarize the relationships between present-day organisms and those that inhabited the Earth in the past (e.g., use fossil record, embryonic stages, homologous structures, chemical basis).</p> <p>B5.1d Explain how a new species or variety may originate through the evolutionary process of natural selection.</p> <p>B5.1e Explain how natural selection leads to organisms that are well suited for the environment (differential survival and reproduction of chance inherited variants, depending upon environmental conditions).</p> <p>B5.1f Explain, using examples, how the fossil record, comparative anatomy, and other evidence may support the theory of evolution.</p> <p>B5.1g Illustrate how genetic variation is preserved or eliminated from a population through natural selection (evolution) resulting in biodiversity.</p> <p>B5.2a Describe species as reproductively distinct groups of organisms that can be classified based on morphological, behavioral, and molecular similarities.</p> <p>B5.2b Explain that the degree of kinship between organisms or species can be estimated from the similarity of their DNA and protein sequences.</p> <p>B5.2c Trace the relationship between environmental changes and changes in the gene pool, such as genetic drift and isolation of subpopulations.</p> <p>B5.r2d Interpret a cladogram or phylogenetic tree showing evolutionary relationships among organisms.</p> <p>B5.3A Explain how natural selection acts on individuals, but it is populations that evolve. Relate genetic mutations and genetic variety produced by sexual reproduction to diversity within a given population.</p> <p>B5.3B Describe the role of geographic isolation in speciation.</p> <p>B5.3C Give examples of ways in which genetic variation and environmental factors are causes of evolution and the diversity of organisms.</p> <p>B5.3d Explain how evolution through natural selection can result in changes in biodiversity.</p> <p>B5.3e Explain how changes at the gene level are the foundation for changes in populations and eventually the formation of new species.</p> <p>B5.3f Demonstrate and explain how biotechnology can improve a population and species</p>	<p>Chapter 13 – The Theory of Evolution</p> <ol style="list-style-type: none"> The Theory of Evolution by Natural Selection Evidence of Evolution Examples of Evolution 	<p>Section 1: The Theory of Evolution by Natural Selection</p> <ul style="list-style-type: none"> Darwin Proposed a Mechanism for Evolution Evolution by Natrual Selection Darwin's Ideas Updated <p>Section 2: Evidence of Evolution</p> <ul style="list-style-type: none"> The Fossil Record Anatomy and Development Biological Molecules <p>Section 3: Examples of Evolution</p> <ul style="list-style-type: none"> Natrual Selection at Work Formation of New Species 	<p>Charles Darwin, <i>HMS Beagle</i>, population, natural selection, adaptation, reproductive isolation, gradualism, punctuated equilibrium</p> <p>Paleontologist, vestigial structures, homologous structure</p> <p>Divergence, speciation, subspecies</p>	<p>Quick Lab – Modeling Natural Selection</p> <p>Math Lab – Analysing Change in Lizard Populations</p> <p>Skills Lab – Homologus Structures</p> <p>Chapter 13 – Unit Test</p>	<p>Brain Pop – Natural Selection, Charles Darwin</p> <p>Video (questions) Galopogos Island – a look at natural selection at work</p> <p>Chapter 13 Vocab Tables</p> <p>Directed Reading – 1, 2, and 3</p> <p>Darwin's Finches</p> <p>Vocab Bingo</p> <p>Search and Rescue Review</p> <p>Mind Point Quiz Review Game</p>

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2 Weeks	<p>B5.2a Describe species as reproductively distinct groups of organisms that can be classified based on morphological, behavioral, and molecular similarities.</p> <p>B5.2b Explain that the degree of kinship between organisms or species can be estimated from the similarity of their DNA and protein sequences.</p> <p>B5.2c Trace the relationship between environmental changes and changes in the gene pool, such as genetic drift and isolation of subpopulations.</p> <p>B5.r2d Interpret a cladogram or phylogenetic tree showing evolutionary relationships among organisms.</p>	<p>Chapter 14 – Classification of Organisms</p> <ol style="list-style-type: none"> Categories of Biological Classification How Biologists Classify Organisms 	<p>Section 1: Categories of Biological Classifications</p> <ul style="list-style-type: none"> Taxonomy Classifying Organisms <p>Section 2: How Biologists Classify</p> <ul style="list-style-type: none"> What is a Species? Evolutionary History 	<p>Taxonomy, binomial nomenclature, genus, family, order, class, phylum, kingdom, domain</p> <p>Biological Species, phylogeny, convergent evolution, analogous character, cladistics, cladogram, evolutionary systematic, phylogenetic tree</p>	<p>Making a Dichotomous Key</p> <p>Making a Cladogram</p> <p>Chapter 14 – Unit Test</p>	<p>Chapter Vocab Table</p> <p>Brain Pop – Classification</p> <p>Power Point – All sections</p> <p>Skeleton Fill in Notes all sections</p> <p>Solving a Dichotomous Key</p> <p>Using a Cladogram</p> <p>Practice – Making a Dichotomous Key</p> <p>What is a hybrid? Hybrid from nature vs hybrid made in the lab</p> <p>Search N Rescue</p> <p>Vocab No Peaking Review Game</p> <p>Mind Point Quiz Review Activity</p>

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3 Weeks	<p>B3.2A Identify how energy is stored in an ecosystem.</p> <p>B3.2B Describe energy transfer through an ecosystem, accounting for energy lost to the environment as heat.</p> <p>B3.2C Draw the flow of energy through an ecosystem. Predict changes in the food web when one or more organisms are removed.</p> <p>B3.4A Describe ecosystem stability. Understand that if a disaster such as flood or fire occurs, the damaged ecosystem is likely to recover in stages of succession that eventually result in a system similar to the original one.</p> <p>B3.4B Recognize and describe that a great diversity of species increases the chance that at least some living organisms will survive in the face of cataclysmic changes in the environment.</p> <p>B3.3A Use a food web to identify and distinguish producers, consumers, and decomposers and explain the transfer of energy through trophic levels.</p> <p>B3.3B Describe environmental processes (e.g., the carbon and nitrogen cycles) and their role in processing matter crucial for sustaining life.</p> <p>B3.4d Describe the greenhouse effect and list possible causes.</p> <p>B3.5B Explain the influences that affect population growth.</p> <p>B3.4C Examine the negative impact of human activities.</p> <p>B3.5A Graph changes in population growth, given a data table.</p> <p>B3.5C Predict the consequences of an invading organism on the survival of other organisms.</p> <p>B3.5d Describe different reproductive strategies employed by various organisms and explain their advantages and disadvantages.</p> <p>B3.5e Recognize that and describe how the physical or chemical environment may influence the rate, extent, and nature of population dynamics within ecosystems.</p> <p>B3.5f Graph an example of exponential growth. Then show the population leveling off at the carrying capacity of the environment.</p> <p>B3.r5g Diagram and describe the stages of the life cycle for a human disease-causing organism.</p>	<p>Chapter 16 – Ecosystems</p> <ol style="list-style-type: none"> 1. What is an Ecosystem? 2. Energy Flow in Ecosystems 3. Cycling of Materials in Ecosystems 	<p>Section 1: What is an Ecosystem?</p> <ul style="list-style-type: none"> • Interactions of Organisms and Their Environment • Diverse Communities in Ecosystems • Change of Ecosystems over Time <p>Section 2: Energy Flow in Ecosystems</p> <ul style="list-style-type: none"> • Movement of Energy Through Ecosystems • Loss of Energy in a Food Chain <p>Section 3: Cycling of Materials in Ecosystems</p> <ul style="list-style-type: none"> • Biogeochemical Cycles • The Water Cycle • The Carbon Cycle • The Phosphorus and Nitrogen Cycles 	<p>Ecology, habitat, community, ecosystem, abiotic factor, biotic factor, biodiversity, pioneer species, succession, primary succession, secondary succession</p> <p>Primary productivity, producer, consumer, primary consumer, secondary consumer, trophic level, food chain, food web, herbivore, carnivore, omnivore, detritivore, decomposer, energy pyramid, biomass</p> <p>Biogeochemical cycle, ground water, transpiration, nitrogen fixation</p>	<p>Ecosystem Poster – Rubric</p> <p>Poster Extension – Organisms in an Ecosystem</p> <p>Skills Work Sheet – Food Chains</p> <p>Chapter 16 – Unit Test</p>	<p>Brain Pop –</p> <ul style="list-style-type: none"> • Ecosystem • Biomes • Food Chain • Food Web • The Water Cycle • The Carbon Cycle • The Nitrogen Cycle <p>Bill Nye – Food Web</p> <p>Food Web vs Food Chain</p> <p>Glacier Bay – an Example of Succession</p> <p>Oceans Video – Name the Ecosystem/Name the Habitat</p> <p>Directed Reading – Sections 1, 2, and 3</p> <p>Vocab Review</p> <p>Search N Rescue</p> <p>Vocab Bingo</p>