

Advanced Biology

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September 2022

EQ & Content	Skills	Learning Targets	Standards	Assessment	Resources & Technology
CEQ <ul style="list-style-type: none"> ● WHAT ARE THE NECESSARY CHARACTERISTICS FOR LIFE? ● HOW DO CELLS MAINTAIN HOMEOSTASIS? ● HOW ARE GENES PASSED ON AND CONTROLLED IN A LIVING ORGANISM? ● WHY DO ORGANISMS VARY AND HOW DOES EVOLUTION AFFECT ORGANISMS? ● WHAT FACTORS INFLUENCE THE ENVIRONMENT? ● HOW DOES FORM RELATE TO THE FUNCTION OF A LIVING ORGANISM? 	NATURE OF SCIENCE Students will be able to (SWBAT)... Explain the characteristics of living things. Model water's properties and define why it is the solvent of life. Compare/contrast the structure/function of organic macromolecules. Diagram and explain how enzymes regulate the rate of chemical reactions List and explain the factors that regulate enzyme activity	__ (1.1) I can describe & give examples of the characteristics of all living things under the acronym of "GRACE". __ (1.2) I can list & give examples for the hierarchy of organization on Earth. (include biotic & abiotic factors) __ (1.3) I can describe how cells are the "building blocks of life" and compare the 2 basic types of cells. __ (1.8-9) I can identify the components of a written scientific experiment. __ (1.8-9) I can do the scientific method in an experiment. __ form a testable hypothesis, __ conduct a controlled experiment, __ gather data, __ make a graph, __ analyze the data, __ & write a valid conclusion.		Campbell Textbook: <u>Biology: Concepts & Connections</u> Chapter 1: Sections 1.8 & 1.9-1.11 ch 2 pgs 16-31 Chapter 3: Sections: 3.1-3.16 Unit 1 Assessment	<u>Vocab:</u> Homeostasis Organic Compounds Enzymes Polar/Nonpolar Capillary action <u>Labs/Activities</u> *Lecture notes *Virtual SM lab *Experimental Scenario worksheet *Microscope Lab *Enzyme Lab *Water Labs *Organic Compounds Lab *Review Jeopardy *review Kahoot Outdoor activity: Journal the abiotic and biotic factors of the outdoor classroom ecosystem. Compose a list of traits "alive" organisms need to have. pond analysis (sometimes

<p><u>NATURE OF SCIENCE</u></p> <p>9.1.3.4.2</p> <p>Determine and use appropriate safety procedures, tools, computers and measurement instruments in science and engineering contexts.</p> <p>9.1.3.4.3</p> <p>Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas,</p>		<p>1. I can define the difference between elements and compounds that make up matter.</p> <p>2. I can identify the four elements essential to life that make up 96% of living matter and explain why some trace elements are also valuable to organisms.</p> <p>3. I can describe the structure of an atom using the words protons, neutrons & electrons from the Periodic Table of Elements.</p> <p>4. I can define and distinguish among atomic number, mass number, atomic weight, and valence electrons from a periodic table.</p> <p>5. I can explain why radioactive isotopes are important to biologists & how they are used as tracers in medicine.</p> <p>6. I can explain the octet rule and predict how many bonds an atom might form.</p> <p>7. I can identify a compound with the 4 different ways it is represented in science (ball & stick models, formulas, structural formulas, & electron distribution diagrams. See table 2.6)</p> <p>8. I can describe the formation of a hydrogen bond and explain how it differs from a covalent or ionic bond, as well as its importance to living organisms.</p> <p>9. I can write and describe the reactants & products in some basic chemical reactions related to living organisms.</p>		<p>done in May instead)</p> <ul style="list-style-type: none"> · MATTER <ul style="list-style-type: none"> o ELEMENTS o COMPOUNDS · TRACE ELEMENTS · ATOM STRUCTURE <ul style="list-style-type: none"> o PROTONS, o NEUTRONS o ELECTRONS o & VALENCE ELECTRONS · RADIOACTIVE ISOTOPES & TRACERS · CHEMICAL BONDS <ul style="list-style-type: none"> o COVALENT, o IONIC, o HYDROGEN · CHEMICAL REACTIONS (REACTANTS → PRODUCTS)
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<p>procedures and experimental results.</p> <p>9.1.3.1.3</p> <p>Describe how positive and/or negative feedback occur in systems.</p> <p>9.4.1.1.1</p> <p>Explain how cell processes are influenced by internal and external factors, such as pH and temperature, and how cells and organisms respond to changes in their environment to maintain homeostasis.</p> <p>9.4.1.1.2</p>		<p>10. I can describe how water is the solvent of life using words: aqueous solution, solvent, solute in examples.</p> <p>11. I can identify 6 characteristics of a water molecule resulting from hydrogen bonding & its polarity.</p> <p>12. I can explain how water's high specific heat, high heat of vaporization, and expansion upon freezing affect living organisms or their ecosystems.</p> <p>13. I can explain the pH scale [0 to 14] & its relative sections using the words base, acid, neutral, H+ & OH- with common examples of each.</p> <p>14. I can explain how acids and bases affect the hydrogen or hydroxide ion concentrations of a solution.</p> <p>1) ___ I can identify the 4 organic molecules & their relationship to carbon.</p> <p>2) ___ I can recognize the different molecules by their structures.</p> <p>3) ___ I can recognize some of the more common names for the 4 types of organic molecules.</p> <p>4) ___ I can determine how their structures help them do various jobs for the living organisms.</p>			<ul style="list-style-type: none"> · POLARITY (POLAR MOLECULES) · COHESION · ADHESION · SURFACE TENSION · DENSITY · SOLUTIONS <ul style="list-style-type: none"> o SOLVENT o SOLUTE · AQUEOUS SOLUTION · pH SCALE <ul style="list-style-type: none"> o ACID (ACIDIC SOLUTION) o BASE (BASIC SOLUTION OR ALKALINE SOLUTION) · IONS
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<p>Describe how the functions of individual organ systems are integrated to maintain homeostasis in an organism.</p> <p>9.4.1.2.2</p> <p>Recognize that the work of the cell is carried out primarily by proteins, most of which are enzymes, and that protein function depends on the amino acid sequence and the shape it takes as a consequence of the interactions between those amino acids.</p> <p>9.4.1.2.1</p> <p>Recognize that cells are composed primarily of a few elements (carbon,</p>		<p>5) ___ I can define & give examples of homeostasis.</p> <p>6) ___ I can explain the importance of enzymes and how they are specific.</p>			<ul style="list-style-type: none">o HYDROGEN IONSo HYDROXIDE IONS <p>enzymes homeostasis proteins carbohydrates lipids nucleic acids</p> <p>Enzymes labs & demos</p> <p>Organic Molecules Lab</p>
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hydrogen, oxygen, nitrogen, phosphorus, and sulfur), and describe the basic molecular structures of cells and the primary functions of carbohydrates, lipids, proteins and nucleic acids.

UEQ

How is scientific inquiry used to answer questions?

What are the chemical & physical properties that make water vital to life?

How is carbon vital to the molecular diversity of life?

How are carbohydrates, lipids, proteins, & nucleic acids similar

<p>and different in their structure & function?</p> <p>What purpose do enzymes serve in living systems?</p>					
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<p><u>ECOLOGY</u></p> <p><u>Standards</u></p> <p>9.1.2.1.1</p> <p>Understand that engineering designs and products must be continually checked and critiqued for alternatives, risks, costs and benefits, so</p>	<p>SWBAT:</p> <p>*Illustrate how nutrients cycle through a MN ecosystem.</p> <p>*Analyze how populations change due to human activity.</p>	<p>1. I can explain the 5 ways humans are causing a threat to biodiversity.</p> <p>2. I can draw (diagram form) how nutrients recycle through an ecosystem.</p> <p>3. I can explain how energy flows through an ecosystem. (carbon cycle)</p>	<p>Campbell Textbook: <u>Biology</u></p> <p>Chapter 34: "The Biosphere"</p> <ul style="list-style-type: none"> Sections 34.1-34.18 <p>Chapter 35: Behavioral Adaptations</p> <ul style="list-style-type: none"> 35.1-35.3, 35.5, 35.12-35.13 	<p><u>Essential Vocab:</u></p> <p>Hypothesis</p> <p>Theory</p> <p>Control</p> <p>Independ/Depend Variables</p> <p>Observation/Inference</p> <p>Ecosystems</p> <p>Carrying Capacity</p> <p>Population (immigration, emigration, exp/log growth)</p> <p>Feeding relationships</p>

<p>that subsequent designs are refined and improved.</p>		<p>1) I can determine the limiting factors that influence populations and their carrying capacities in an ecosystem.</p>	<p>Chapter 36: "Population Ecology"</p>	<p>HIPPO</p>
<p>9.1.3.4.6</p>		<p>2) I can trace the energy flow through a community using food webs and food chains.</p>	<ul style="list-style-type: none"> ● Sections: 36.1-36.6 ● Section: 36.9 	<p>Ecology Biotic Abiotic</p>
<p>Analyze the strengths and limitations of physical, conceptual, mathematical and computer models used by scientists and engineers.</p>		<p>3) I can identify different trophic levels in a food chain or food web.</p>	<p>Chapter 37: Communities & Ecosystems</p>	<p>Population Species Community</p>
<p>9.4.4.1.2</p>		<p>4) I can describe the importance of carbon, nitrogen, phosphorus, and water to living organisms.</p>	<ul style="list-style-type: none"> ● Sections: 37.1-37.4, 37.7-37.10, 37.14-37.16 	<p>Ecosystem Limiting factor Carrying capacity Trophic levels</p>
<p>Describe the social, economic and ecological risks and benefits of changing a natural ecosystem as a result of human activity.</p>		<p>5) I can compare and contrast the biogeochemical cycles (carbon, nitrogen, phosphorus, water) that recycle matter within an ecosystem.</p>	<p>Chapter 38: Conservation Biology</p>	<p>Producer Consumer Herbivore Carnivore</p>
<p>9.4.4.1.3</p>			<ul style="list-style-type: none"> ● Sections: 38.1-38.5 	<p>Omnivore Primary consumer Secondary consumer Tertiary consumer</p>
<p>Describe contributions from diverse cultures, including Minnesota American Indian</p>			<p>Weekly quizzes Unit Test</p>	<p>Decomposer Energy pyramid Biogeochemical cycle Carbon Nitrogen Nitrogen fixation Denitrification Phosphorus Erosion</p>
				<p>Nitrogen Cycle Activity Carbon Cycle Activity</p>

tribes and communities, to the understanding of interactions among humans and living systems.

UEQ

1. How do biotic and abiotic factors affect community structure and ecosystem function?
2. How do elements (C,N,P,S,O) cycle through ecosystems?
3. How do organisms affect the cycling of elements and water through the biosphere?
4. In what ways are humans affecting the biogeochemical cycles?
5. Why is conservation important and how can we reduce the biodiversity crisis?

Food Web Activity
Graph/Data Analysis

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<p>Cells</p> <p>Standards: 9.4.1.2.3</p> <p>Describe how viruses, prokaryotic cells and eukaryotic cells differ in relative size, complexity and general structure.</p> <p>9.4.1.2.4</p> <p>Explain the function and importance of cell organelles for prokaryotic and/or eukaryotic cells as related to the basic cell processes of respiration, photosynthesis, protein synthesis and cell reproduction.</p>	<p>SWBAT: *Compare and contrast between the 2 different cell types.</p> <p>*Illustrate the cycles of photosynthesis and respiration.</p> <p>*Examine the cell membrane and model how small and large substances go into/out of the cell.</p> <p>*Analyze how the human body defends off a virus and bacterial infection.</p>	<p>1. I can identify and explain the cell parts and their functions.</p> <p>2. I can explain how the mitochondria performs respiration.</p> <p>3. I can show the critical cell parts responsible for photosynthesis. (stoma, root hairs & chloroplasts)</p> <p>*I can describe the basis of life comes from abiotic molecules and the concept of cell theory.</p> <p>* When studying Biology at the cellular level, I can describe the importance of technology</p>	<p>Chapter 4 "A tour of the cell"</p> <ul style="list-style-type: none"> Sections: 4.2-4.22 <p>Chapter 5 "The Working Cell"</p> <ul style="list-style-type: none"> Sections: 5.1-5.9 Sections: 5:10-5.12 <p>Chapter 6: "Chemical Energy"</p> <ul style="list-style-type: none"> Sections: 6.1-6.5 <p>Chapter 7: "Photosynthesis"</p> <ul style="list-style-type: none"> Sections: 7.1-7.5 Ch 16 pgs 320-329 <p>Osmosis/Diffusion Lab Cell types lab-scopes Membrane models Weekly quizzes Unit Test</p>	<p><u>Essential Vocab:</u> Antibiotics Antibodies Virus Photosynthesis & Respiration</p> <p>Cell Eukaryote Prokaryote Virus Bacteria Organelle Vaccine Antibiotic Allergic reaction Nucleus Vacuole Vesicle Lysosome Cytoskeleton Centriole Ribosome Endoplasmic reticulum Golgi apparatus Chloroplast Mitochondria</p>

<p>9.4.1.2.5</p> <p>Compare and contrast passive transport (including osmosis and facilitated transport) with active transport, such as endocytosis and exocytosis.</p> <p>9.4.2.2.1</p> <p>Use words and equations to differentiate between the processes of photosynthesis and respiration in terms of energy flow, beginning reactants and end products.</p> <p>9.4.4.2.2</p> <p>Explain how the body produces antibodies to fight disease and how vaccines assist this process.</p>		<p>with the development of the microscopes and measure the size of a specimen using a microscope.</p> <p>*I can compare Eukaryotes vs Prokaryotes in terms of their size, cell structures & common examples.</p> <p>*I can provide examples of various prokaryotes that illustrate how bacteria can be: “good” “bad” & “ugly” to other organisms and their environments.</p> <p>*I can give details how Prokaryotes are single celled living creatures and their abilities for all aspects of characteristics of life.</p> <p> *I can explain how antibiotics kill bacteria cells & summarize the results of a lab investigation.</p> <p>I can describe how & why cell membranes are selectively</p>		<p>Cell wall Cell membrane ATP Photosynthesis Cellular respiration Metabolism Semi-permeable Passive transport Osmosis Diffusion Facilitated diffusion Active Transport Endocytosis Exocytosis Ion pump Hypertonic Hypotonic Isotonic Concentration gradient</p> <p>cell diffusion lab</p> <p>algae beads lab</p> <p>yeast demonstrations</p> <p>Organelle Profiles</p>
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<p>UEQ</p> <p>1. What are various mechanisms by which substances cross membranes?</p> <p>2. How do organelles function together in cellular processes?</p> <p>3. What interactions exist between photosynthesis and respiration?</p> <p>4. What are the differences between eukaryotic, prokaryotic, bacterial cells and viruses?</p>		<p>permeable (semi-permeable).</p> <p>I can count solutes to determine the concentrations gradients & how molecules flow.</p> <p>I can determine the different types of solutions: hypertonic, hypotonic & isotonic.</p> <p>I can compare & contrast passive transports versus active transports.</p>		<p>bacteria samples & antibiotic lab</p>
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<p><u>DNA Structure & Protein Synthesis</u></p> <p>UEQ</p> <p>1. What is the structure of DNA and how does it</p>	<p>SWBAT: *Construct a model of DNA.</p> <p>*Model the steps of protein synthesis.</p>	<p>1. I can draw and label the structure of DNA.</p> <p>2. I can model how DNA replicates.</p>	<p>Chapter 10: Molecular Biology of a Gene</p> <ul style="list-style-type: none"> Sections: 10.1-10.23 	<p>Essential Vocab: Gene Homologous chromosome DNA & RNA Translation & Transcription Protein Synthesis</p>

<p>replicate?</p> <p>2. How does DNA translate information for assembling proteins and expressing genetic traits?</p> <p>3. What is the difference between the DNA in different cell types? (ie. prokaryotic/eukaryotic/virus/bacteria)</p> <p>4. What is a gene?</p> <p>5. How do mutations affect DNA sequences and genetic variation within a species?</p> <p>Standards: 9.4.3.1.1</p> <p>Explain the relationships among DNA, genes and chromosomes.</p> <p>9.4.3.1.3</p> <p>Describe the process of DNA replication and the role of DNA and RNA in</p>	<p>*Summarize the parts of a gene.</p>	<p>3. I can give examples of DNA mutations and what they cause in humans.</p> <p>1) I can describe the people that helped discover DNA structure and their contributions.</p> <p>2) I can identify the part/forms of DNA and explain why its structure allows it to accomplish its functions.</p> <p>3) I can explain how DNA copies itself during replication.</p> <p>4) I can list and describe the phases of mitosis.</p> <p>5) I can recognize that uncontrolled mitosis results in cancer cells.</p> <p>6) I can describe how DNA instructions are used to build proteins in the cell through the process of protein synthesis (transcription and translation).</p> <p>7) I can explain the structure of a protein and how the order</p>	<p>DNA extraction Construct a DNA model lab Monster genetics</p> <p>Weekly quiz Unit Test</p>	<p>Mutation</p> <p>DNA Adenine Thymine Cytosine Guanine Base pairing Nucleotide Chromosomes Phosphate Deoxyribose Hydrogen bonds Double helix Replication R. Franklin and M. Wilkins J. Watson and F. Crick L. Pauling E. Chargaff Mitosis Prophase Metaphase Anaphase Telophase Cytokinesis Interphase Sister Chromatids Centromere Centriole Amino acids Protein Synthesis Transcription Translation</p>
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<p>assembling protein molecules.</p>		<p>of amino acids determines its ability to function.</p> <p>8) I can give examples of the functions of proteins in the body.</p>		<p>mRNA tRNA rRNA (ribosome) Codon Anticodon Uracil</p> <p>DNA replication models</p> <p>DNA translation activity</p> <p>Types of proteins interactive</p> <p>Protein folding</p> <p>Mutations</p>
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<p><u>Cell Growth & Reproduction</u></p> <p><u>UEQ</u></p> <p>1. How does the cell cycle assure genetic continuity?</p> <p>2. How is the cell cycle regulated?</p> <p>3. How does failure of the cell cycle control mechanisms lead to cancer?</p>	<p>SWBAT:</p> <p>*Analyze the process of mitosis and explain how it causes cancer.</p> <p>*List the advantages and disadvantages of asexual/sexual reproduction and compare the two.</p>	<p>1. I can explain the process of mitosis and meiosis.</p> <p>2. I can explain how mitosis and cancer are related.</p>	<p>Chapter 8: "Cellular Basis of Reproduction and Inheritance"</p> <ul style="list-style-type: none"> Sections 8.1-8.23 <p>Mitosis microscope slides Meiosis tutorial Cancer lab</p>	<p>Essential Vocab: Mitosis & Meiosis PMAT Interphase Cytokinesis Diploid & Haploid</p> <p>cell cycle activity</p>

<p>4. What is the purpose of meiosis and how do the events of meiosis cause variety?</p> <p>Standards:</p> <p>9.4.1.2.6</p> <p>Explain the process of mitosis in the formation of identical new cells and maintaining chromosome number during asexual reproduction.</p> <p>9.4.3.2.2</p> <p>Use the processes of mitosis and meiosis to explain the advantages and disadvantages of asexual and sexual reproduction.</p>	<p>*Identify how meiosis causes genetic differences.</p>		<p>Weekly quiz Unit assessment</p>	<p>data analysis with cancer cells slides lab "ready to roll"</p>
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<p>Genetics</p> <p>CEQ</p> <p>1. How did Mendel's work lay the foundation of modern genetics?</p> <p>2. What are the principal patterns of inheritance?</p> <p>3. How do genes affect phenotypes of organisms?</p> <p>Standards:</p> <p>9.4.3.1.2</p> <p>In the context of a monohybrid cross, apply the terms phenotype, genotype, allele, homozygous and heterozygous.</p> <p>9.4.3.2.3</p> <p>Explain how mutations like deletions, insertions, rearrangements or substitutions of DNA</p>	<p>SWBAT:</p> <p>*Complete a monohybrid and dihybrid cross.</p> <p>*compare & utilize punnett squares from sex linked and codominant traits</p> <p>*Construct a list of Mendel's laws of inheritance.</p> <p>*Analyze a pedigree.</p> <p>*Evaluate a karyotype and determine what genetic disorder it will give the organism.</p>	<p>1. I can use key genetic terms to construct a punnett square and predict genotype & phenotype %.</p> <p>2. I can explain Mendel's impact on genetics (3 laws).</p> <p>1) I can describe the relationship between DNA, genes and chromosomes.</p> <p>2) I can describe how various mutations in DNA segments can result in a faulty protein.</p> <p>3) I can describe Mendel's three laws of genetic inheritance and how this relates to meiosis and Punnett squares</p> <p>4) I can complete a monohybrid cross and explain it using the words dominant, recessive, genotype, phenotype, homozygous and heterozygous.</p> <p>5) I can predict the outcomes of other types of</p>	<p>Chapter 9: Patterns of Inheritance</p> <ul style="list-style-type: none"> Sections: 9.1-9.23 <p>Pedigree lab Punnett square lab Interactive pedigree analysis Karyotype activity Weekly quiz Unit Test</p>	<p>Essential vocab:</p> <p>Homozygous & Heterozygous Recessive & Dominant Phenotype & Genotype Pedigree Punnett square Monohybrid & Dihybrid</p> <p>Genetics Heredity Gregor Mendel Fertilization Trait Genes Alleles Dominant allele Recessive allele Homozygous Heterozygous Genotype Phenotype Mitosis Meiosis Tetrad Crossing over Gamete Autosome Haploid Diploid Mutation Homologous Chromosomes</p>
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<p>segments in gametes may have no effect, may harm, or rarely may be beneficial, and can result in genetic variation within a species.</p> <p>9.4.4.1.1</p> <p>Describe the social, economic and ecological risks and benefits of biotechnology in agriculture and medicine.</p> <p><i>For example: Selective breeding, genetic engineering, and antibiotic development and use.</i></p> <p>9.4.4.2.1</p> <p>Describe how some diseases can sometimes be predicted by genetic testing and how this affects parental and community decisions.</p>		<p>genetic crosses, including dihybrid, sex-linked, codominant, and incompletely dominant traits.</p> <p>6) I can describe how meiosis creates unique gametes.</p>		<p>Independent Assortment Segregation Punnett Square Incomplete dominance Codominance Dihybrid cross Hybrid True breeding (purebred) Sex-linked trait Pedigree Multiple alleles</p> <p>P generation F₁ generation F₂ generation</p> <p>punnett squares</p> <p>genetic case studies with pedigrees</p> <p>coin flip activity (meiosis)</p>
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<p><u>Evolution</u></p> <p><u>UEQ</u></p> <p>1. What is the evidence for evolution?</p> <p>2. What is the role of natural selection in the process of evolution?</p> <p>3. How does evolution occur in populations?</p> <p>4. How does microevolution lead to new species over time?</p> <p>Standards: 9.4.3.3.2</p> <p>Use scientific evidence, including the fossil record, homologous structures, and</p>	<p>SWBAT: *Summarize the history of evolutionary thought from the views of Lamarck, Darwin Wallace</p> <p>*Analyze creature adaptations to its environment can help survival.</p> <p>*Describe examples of speciation</p>	<p>1) I can describe how the Earth and living things have changed throughout Earth's history.</p> <p>2) I can explain the diversity of life on Earth using Darwin's theory of evolution.</p> <p>3) I can describe how various types of evidence support Darwin's theory of evolution.</p> <p>4). I can calculate and use the Hardy-Weinberg formula to show allele frequencies in a population.</p>	<p>Chapter 13: How Populations Evolve</p> <ul style="list-style-type: none"> ● Sections: 13.1-13.9 <p>Chapter 14: The Origin of Species</p> <ul style="list-style-type: none"> ● Sections: 14.1-14.11 <p>Noodle Lab (optional)</p> <p>Hardy-weinberg lab Weekly quiz Unit Test</p>	<p>Essential Vocab: Gene pool Evolution Speciation Hardy-Weinberg Genetic drift</p> <p>HHMI interactives & data analysis labs</p> <p>anole lizards</p> <p>molly's eyesight</p> <p>wallace line activity</p> <p>rabbit simulation (phET)</p> <p>vocab scenario practices</p>

<p>genetic and/or biochemical similarities, to show evolutionary relationships among species.</p> <p>9.4.3.3.3</p> <p>Recognize that artificial selection has led to offspring through successive generations that can be very different in appearance and behavior from their distant ancestors.</p> <p>9.4.3.3.1</p> <p>Describe how evidence led Darwin to develop the theory of natural selection and common descent to explain evolution.</p> <p>9.4.3.3.4</p> <p>Explain why genetic variation within a population</p>				<p>natural selection</p> <p>genetic variation</p> <p>mutation(s)</p> <p>survival of the fittest</p> <p>reproductive success</p> <p>struggle for existence</p> <p>common ancestry</p> <p>descent with modifications</p> <p>selective pressures</p> <p>evolution</p> <p>homologous structures</p> <p>embryology</p> <p>fossils</p> <p>genetic switches</p> <p>Charles Darwin</p> <p>Charles Lyell</p>
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<p>is essential for evolution to occur.</p> <p>9.4.3.3.5</p> <p>Explain how competition for finite resources and the changing environment promotes natural selection on offspring survival, depending on whether the offspring have characteristics that are advantageous or disadvantageous in the new environment.</p> <p>9.4.3.3.6</p> <p>Explain how genetic variation between two populations of a given species is due, in part, to different selective pressures acting independently on each population and how, over time, these differences</p>				<p>James Hutton</p> <p>Jean-Baptiste Lamarck</p> <p>Thomas Malthus</p> <p>cladogram</p> <p>adaptation</p> <p>vestigial structures</p> <p>artificial selection</p> <p>HOX gene</p> <p>Fitness</p> <p>Transitional fossils</p> <p>Vestigial structures</p>
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can lead to the development of new species.

Content	Skills	Learning Targets	Assessment	Resources & Technology
<p><u>Anatomy & Physiology</u></p> <p><u>UEQ</u></p> <p>1. How does "form to function" relate to the human body?</p> <p>2. How do vertebrates show diversity?</p> <p>3. How is homeostasis maintained in each system of the body?</p> <p>Standards</p> <p>9.4.4.2.3</p>	<p>SWBAT:</p> <p>*Dissect and compare/contrast invertebrates and vertebrates.</p> <p>*Analyze the major clades of chordates.</p> <p>*Compare and contrast the respiratory, digestive, circulatory and reproductive systems of the shark, frog and rat.</p>	<p>1. I can compare and contrast the anatomy & physiology of the following invertebrates: earthworms, crayfish and sea stars.</p> <p>2. I can compare and contrast the anatomy and physiology of the following vertebrates: rat & shark.</p>	<p>Chapter 19: Evolution Of Vertebrate Diversity</p> <ul style="list-style-type: none"> Sections: 19.1-19.8 <p>Chapter 20: Unifying Concepts of Animal structure & Function</p> <ul style="list-style-type: none"> Sections: 20.1-20.15 <p>Earthworm dissection Crayfish dissection Shark dissection Rat dissection</p>	<p>Essential Vocab: Homeostasis Invertebrates Vertebrates</p> <p>Dissections:</p> <p>Earthworm Crayfish star fish Rat Shark</p>

~~Describe how the immune system sometimes attacks some of the body's own cells and how some allergic reactions are caused by the body's immune responses to usually harmless environmental substances.~~

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9.4.4.2.4

~~Explain how environmental factors and personal decisions, such as water pollution, air quality and smoking affect personal and community health.~~