Weeks 1 – 3T	Weeks 4 – 6G
Unit/Topic **Introduction to Biology & Scientific Inquiry**	**Unit/Topic** **Biochemistry**
In this section IDENTIFY **CORE CONTENT 4.1** **Common Core Standards** SC-HS-1.1.2 Students will understand that the atom's nucleus is composed of protons and neutrons that are much more massive than electrons. When an element has atoms that differ in the number of neutrons, these atoms are called different isotopes of the element. SC-HS-3.4.6 Students will understand that in all organisms and viruses, the instructions for specifying the characteristics are carried in nucleic acids. The chemical and structural properties of nucleic acids determine how the genetic information that underlies heredity is both encoded in genes and replicated.	**In this section IDENTIFY** **CORE CONTENT 4.1** **Common Core Standards** SC-HS-1.1.5 Students will explain the role of intermolecular or intramolecular interactions on the physical properties (solubility, density, polarity, conductivity, boiling/melting points) of compounds. The physical properties of compounds reflect the nature of the interactions among molecules. These interactions are determined by the structure of the molecule including the constituent atoms. *SC-HS-3.4.2 Students will understand that most cell functions involve chemical reactions. Food molecules taken into cells react to provide the chemical constituents needed to synthesize other molecules. Both breakdown and synthesis are made possible by a large set of protein catalysts, called enzymes. The breakdown of some of the food molecules enables the cell to store energy in specific chemicals that are used to carry out the many functions of the cell.* SC-HS-4.6.1 Students will: explain the relationships and connections between matter, energy, living systems and the physical environment; give examples of conservation of matter and energy. As matter and energy flow through different organizational levels (e.g., cells, organs, organisms, communities) and between living systems and the physical environment, chemical elements are recombined in different ways. Each recombination results in storage and

	dissipation of energy into the environment as heat. Matter and energy are conserved in each change. DOK 3 SC-HS-4.6.5 Students will describe and explain the role of carbon-containing molecules and chemical reactions in energy transfer in living systems. Living systems require a continuous input of energy to maintain their chemical and physical organization since the universal tendency is toward more disorganized states. The energy for life primarily derives from the Sun. Plants capture energy by absorbing light and using it to break weaker bonds in reactants (such as carbon dioxide and water) in chemical reactions that result in the formation of carbon-containing molecules. These molecules can be used to assemble larger molecules (e.g., DNA, proteins, sugars, fats). In addition, the energy released when these molecules react with oxygen to form very strong bonds can be used as sources of energy for life processes. SC-HS-4.6.10 Students will: identify the components and mechanisms of energy stored and released from food molecules (photosynthesis and respiration); apply information to real-world situations. Energy is released when the bonds of food molecules are broken and new compounds with lower energy bonds are formed. Cells usually store this energy temporarily in the phosphate bonds of adenosine triphosphate (ATP). During the process of cellular respiration, some energy is lost as heat.

CURRICULUM			CURRICULUM		
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**
Identify Sub-Topics Scientific Method Scientific Investigation Data Collection and Analysis Graphing Data	**Identify Sub-Topics** Lab Safety Proper Lab Technique Improving Experiments	**Identify Sub-Topics** Introduction to Biology (Study of Life) Criteria to Consider Something Living Levels of Biological Organization	**Identify Sub-Topics** Basic Chemistry Acids & Bases Bonding in Biology	**Identify Sub-Topics** Properties of Water Chemical Formulas in Biology Organics vs. Inorganics	**Identify Sub-Topics** Groups of Organic Compounds ATP
I CAN STATEMENTS: **I can…** Design and conduct	**I CAN STATEMENTS:** **I can…** Use laboratory	**I CAN STATEMENTS:** **I can…** Describe the criteria	**I CAN STATEMENTS:** **I can…** Identify and describe	**I CAN STATEMENTS:** **I can…** Define and explain	**I CAN STATEMENTS:** **I can…** Describe the general

different kinds of biological investigations for a wide variety of reasons. Explain through analysis and correctness of scientific investigations. Communicate and defend your investigations using evidence and logical connections.	equipment, tools, and techniques to conduct and improve scientific investigations. Use the metric system and graphs to communicate data.	that are used to consider and organism as living. Define and provide examples of levels of biological organization.	how subatomic particles are arranged in atoms. Describe the difference in ions and atoms and their importance in biological processes. Compare the types of bonding between atoms to form molecules. Explain the fundamental principles of the pH scale and the consequences of having the different concentrations of hydrogen and hydroxide ions.	the unique properties of water that are essential to living organisms. Show how chemical reactions (e.g., photosynthesis, fermentation, cellular respiration) can be represented by chemical formulas. Explain the difference between organic and inorganic compounds.	structure and function of major groups of organic compounds. Explain how cells store energy temporarily as ATP. Describe the function of enzymes, including how enzyme-substrate specificity works, in biochemical reactions.
Critical Vocabulary Analyzing Data Control Independent Variables Dependent Variables Hypothesis Indirect Relationship Direct Relationship Inferring Theory Law Observing Modeling	**Critical Vocabulary** Accuracy Precision Centrifuge Chromatography Electrophoresis Light microscope (and parts) Transmission & Scanning Electron Microscope Lab Safety Rules Metrics	**Critical Vocabulary** Biology Cell Homeostasis Reproduction Metabolism Stimulus Bioethical Issue	**Critical Vocabulary** Elements Compounds Cells Tissue Organ Organ System Organism Atoms Protons Electrons Neutrons Proteins Amino Acids pH	**Critical Vocabulary** Lipids Carbon Carbohydrates Acids Bases Peptide bonds Covalent bonds Ionic bonds Mixtures Solutions	**Critical Vocabulary** Saccharide Disaccharide Polysaccharide Glucose Fructose Sucrose Starch Nucleic Acids Monomer Polymer

Research Bias Inquiry					
Suggested Strategies/Activities Introduce Proper Scientific Method Lab Report Format Activity in which students identify different variables and relationships in data. Have students design an experiment using the scientific method and inquiry.	**Suggested Strategies/Activities** Students will be given a specific problem that requires them to design a basic experiment and test hypotheses to solve the problem. This will require them to appropriately use the scientific research methods addressed in week one as well as lab safety and procedural rules from week 2	**Suggested Strategies/Activities** Students will work in small groups to design and create collages that represent each of the criteria for something to be considered living (homeostasis, reproduction, metabolism, organization, adaptations, and response to stimuli).	**Suggested Strategies/Activities** Lab activity: Identify Acids/Bases in everyday life Students work in pairs to determine bonding types	**Suggested Strategies/Activities** Students perform surface tension activity, showing cohesion/adhesion Demo-show solid (ice) less dense than liquid (water) Write formulas and balance equations.	**Suggested Strategies/Activities** Students prepare and present reports on 4 major groups of organic compounds.
Balanced Assessment: Formative Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple

Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**
Resources Needed Scientific Method Lab Report Format (to be used as notes for this section) Variables (independent, dependent, control) examples & worksheet	**Resources Needed** Lab Safety Rules Lab Safety Assessment Lab "Problems" for Activity Appropriate Lab Equipment Student Lab Journals	**Resources Needed** Notes over "Criteria for Living Organisms" Magazines, Poster Boards, Scissors, Glue for collages.	**Resources Needed** Periodic Table Acid/Base Samples pH paper	**Resources Needed** flat object/pipette	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables

Weeks 7-9	Weeks 10-12
Unit/Topic **Biochemistry/** **Organization of the Biosphere and Ecology Principles**	**Unit/Topic** **Organization of the Biosphere and Ecology Principles/** **Cell Structure, Function, and Transport**
In this section IDENTIFY **CORE CONTENT 4.1**	**In this section IDENTIFY** **CORE CONTENT 4.1**

Common Core Standards	Common Core Standards
SC-HS-3.4.2 Students will understand that most cell functions involve chemical reactions. Food molecules taken into cells react to provide the chemical constituents needed to synthesize other molecules. Both breakdown and synthesis are made possible by a large set of protein catalysts, called enzymes. The breakdown of some of the food molecules enables the cell to store energy in specific chemicals that are used to carry out the many functions of the cell. SC-HS-4.6.1 Students will: • explain the relationships and connections between matter, energy, living systems and the physical environment; • give examples of conservation of matter and energy. As matter and energy flow through different organizational levels (e.g., cells, organs, organisms, communities) and between living systems and the physical environment, chemical elements are recombined in different ways. Each recombination results in storage and dissipation of energy into the environment as heat. Matter and energy are conserved in each change. DOK 3 SC-HS-4.6.5 Students will describe and explain the role of carbon-containing molecules and chemical reactions in energy transfer in living systems. Living systems require a continuous input of energy to maintain their chemical and physical organization since the universal tendency is toward more disorganized states. The energy for life primarily derives from the Sun. Plants capture energy by absorbing light and using it to break weaker bonds in reactants (such as carbon dioxide and water) in chemical reactions that result in the formation of carbon-containing molecules. These molecules can be used to assemble larger molecules (e.g., DNA, proteins, sugars, fats). In addition, the energy released when these molecules react with oxygen to form very strong bonds can be used as sources of energy for life processes. SC-HS-4.6.10 Students will: identify the components and mechanisms of energy stored and released from food molecules (photosynthesis and respiration); apply information to real-world situations. Energy is released when the bonds of food molecules are broken and new compounds with	SC-HS-4.7.1 Students will: analyze relationships and interactions among organisms in ecosystems; predict the effects on other organisms of changes to one or more components of the ecosystem. Organisms both cooperate and compete in ecosystems. Often changes in one component of an ecosystem will have effects on the entire system that are difficult to predict. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years. DOK 3 SC-HS-4.7.2 Students will: evaluate proposed solutions from multiple perspectives to environmental problems caused by human interaction; justify positions using evidence/data. Human beings live within the world's ecosystems. Human activities can deliberately or inadvertently alter the dynamics in ecosystems. These activities can threaten current and future global stability and, if not addressed, ecosystems can be irreversibly affected. DOK 3 SC-HS-4.7.5 Students will: predict the consequences of changes in resources to a population; select or defend solutions to real-world problems of population control. Living organisms have the capacity to produce populations of infinite size. However, behaviors, environments and resources influence the size of populations. Models (e.g., mathematical, physical, conceptual) can be used to make predictions about changes in the size or rate of growth of a population. DOK 3

lower energy bonds are formed. Cells usually store this energy temporarily in the phosphate bonds of adenosine triphosphate (ATP). During the process of cellular respiration, some energy is lost as heat.

SC-HS-4.7.1 Students will:

- analyze relationships and interactions among organisms in ecosystems;
- predict the effects on other organisms of changes to one or more components of the ecosystem.

Organisms both cooperate and compete in ecosystems. Often changes in one component of an ecosystem will have effects on the entire system that are difficult to predict. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years. DOK 3

SC-HS-4.7.3 Students will: predict the consequences of changes to any component (atmosphere, solid Earth, oceans, living things) of the Earth System; propose justifiable solutions to global problems. Interactions among the solid Earth, the oceans, the atmosphere and living things have resulted in the ongoing development of a changing Earth system. DOK 3

CURRICULUM			CURRICULUM		
Week 7	**Week 8**	**Week 9**	**Week 10**	**Week 11**	**Week 12**
Identify Sub-Topics **Energy Storage in Cells** **Enzymes**	**Identify Sub-Topics** **Ecological Organization** **Biotic vs. Abiotic** **Energy Flows in Ecosystems**	**Identify Sub-Topics** **Food Webs & Chains** **Symbiosis**	**Identify Sub-Topics** **Carrying Capacity** **Population Size Changes** **Ecological Succession**	**Identify Sub-Topics** **Environmental Bioethical Concerns** **Human Impact on Ecosystems**	**Identify Sub-Topics** **Eukaryotes vs. Prokaryotes** **Plant vs. Animal Cells** **Organelle Fucntion**
I CAN STATEMENTS: **I can…** Describe the general structure and	**I CAN STATEMENTS:** **I can…** Define and provide examples of	**I CAN STATEMENTS:** **I can…** Explain how organisms cooperate and compete	**I CAN STATEMENTS:** **I can…** Explain the concept of carrying capacity	**I CAN STATEMENTS:** **I can…** Read and describe current journal articles relating to	**I CAN STATEMENTS:** **I can…** Differentiate between eukaryotic versus

function of major organic compound groups. Explain how cells store energy temporarily as ATP. Describe the function of enzymes, including how enzyme-substrate specificity works, in biochemical reactions.	biosphere, biome, ecosystem, community, population, species, habitat, and niche. Discuss biotic and abiotic factors that affect land and aquatic biomes Explain how energy flows through ecosystems in one direction. Explain how the amount of life any environment can support is limited by the available matter and energy	in ecosystems Diagram the flow of energy using food webs, food chains, and pyramids Describe examples of competition, symbiosis, and predation	Describe the growth of populations, including exponential and logistic growth Explain the process of ecological succession. Describe the different communities that result from succession	environmental concerns Discuss and evaluate the significance of human interference with major ecosystems	prokaryotic cells Analyze the similarities between plant and animal cells. Describe the functions of all major cell organelles **target will carry over into week 13*
Critical Vocabulary Monomer, polymer, carbohydrate, lipid, protein, monosaccharide, polysaccharide, nucleic acid, nucleotide, RNA, DNA, amino acid, activation energy, reactant, chemical reaction, substrate, product, catalyst, enzyme	**Critical Vocabulary** Biotic factor, abiotic factor, biosphere, ecosystem, biome, community, population, species, habitat, niche, photic zone, aphotic zone, estuary, limiting factor, density dependent factor, density independent factor	**Critical Vocabulary** Herbivore, carnivore, detritivore, omnivore, producer, consumer, autotroph, heterotroph, food web, food chain, symbiosis, mutualism, commensalism, parasitism, predator, prey, host, energy pyramid, biomass pyramid, pyramid of numbers, trophic level, decomposer	**Critical Vocabulary** Emigration, immigration, carrying capacity, logistic growth, exponential growth, primary-secondary succession, pioneer species, lichen, population density	**Critical Vocabulary** Bioethical, demographic transition, demography, age-structure diagram, green revolution, renewable resources, nonrenewable resources, sustainable use, biodiversity, endangered species, conservation, extinction, invasive species, ozone layer, global warming	**Critical Vocabulary** Chloroplast, nuclear envelope, nucleolus, eukaryotic, prokaryotic, organelle, ribosome, nucleus, mitochondria, endoplasmic reticulum, lysosome, vacuole, cell wall, plasma membrane, cell theory, cytoplasm, chromatin, chromosome, Golgi apparatus, cytoskeleton, microtubule, microfilament

Suggested Strategies/Activities Lab: "The effect of temperature on enzyme activity", Interpreting graphs, Identifying amino acids by chemical groups, Demonstrations Video Clips Manipulatives Calculations Reports	**Suggested Strategies/Activities** Labs Demonstrations Video Clips Manipulatives Calculations Reports Graphs	**Suggested Strategies/Activities** Labs: Owl Pellet Dissection Demonstrations Video Clips Manipulatives Calculations Reports Graphs	**Suggested Strategies/Activities** Labs Demonstrations Video Clips Manipulatives Calculations Reports Graphs	**Suggested Strategies/Activities** Labs: "Effects of Acid Rain" Demonstrations Video Clips Manipulatives Calculations Reports: Current Environmental Concerns Research: Human Impact on Major Ecosystems (ex. Coal Mining) Graphs	**Suggested Strategies/Activities** Labs Demonstrations Video Clips Manipulatives Calculations Reports Graphs Make Models: Animal v.s. Plant Cells Chart: Structure & Function of Organelles (comparing organelles to parts of a factory)
Balanced Assessment: Formative Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative**	**Balanced Assessment: Formative** **Quiz** **Exit slips** **Thumbs Up/Down** **Teacher circulation** **Question/Answer** **Think/pair/share** **Labs** **Summative**

Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**
Resources Needed Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables

Weeks 13-15	Weeks 16-18
Unit/Topic **Cell Structure, Function, and Transport**	**Unit/Topic** **Cellular Energy, Growth, and Reproduction**
In this section IDENTIFY **CORE CONTENT 4.1** **Common Core Standards** SC-HS-3.4.3	**In this section IDENTIFY** **CORE CONTENT 4.1** **Common Core Standards** *SC-HS-3.4.4*

Students will: • describe cell regulation (enzyme function, diffusion, osmosis, homeostasis); • predict consequences of internal/external environmental change on cell function/regulation. Cell functions are regulated. Regulation occurs both through changes in the activity of the functions performed by proteins and through selective expression of individual genes. This regulation allows cells to respond to their internal and external environments and to control and coordinate cell growth and division. DOK 2	*Students will understand that plant cells contain chloroplasts, the site of photosynthesis. Plants and many microorganisms (e.g., Euglena) use solar energy to combine molecules of carbon dioxide and water into complex, energy-rich organic compounds and release oxygen to the environment. This process of photosynthesis provides a vital link between the Sun and energy needs of living systems.* SC-HS-3.4.5 Students will: • explain the relationship between sexual reproduction (meiosis) and the transmission of genetic information; • draw conclusions/make predictions based on hereditary evidence/data (pedigrees, punnet squares). Multicellular organisms, including humans, form from cells that contain two copies of each chromosome. This explains many features of heredity. Transmission of genetic information through sexual reproduction to offspring occurs when male and female gametes, that contain only one representative from each chromosome pair, unite. DOK 3

CURRICULUM			CURRICULUM		
Week 13	**Week 14**	**Week 15**	**Week 16**	**Week 17**	**Week 18**
Identify Sub-Topics Organelle Function Cell Mobility	**Identify Sub-Topics** Cell Membranes Transport Types Homeostasis	**Identify Sub-Topics** **Osmosis** **Diffusion** **Tonicity** **Equilibrium**	**Identify Sub-Topics** **Energy Input** **Chemical Energy for Cells** **Photosynthesis**	**Identify Sub-Topics** **Cellular Respiration** **Energy Flow**	**Identify Sub-Topics** **Cell Cycle** **Mitosis** **Cytokinesis**
I CAN STATEMENTS: **I can…** Describe the functions of all major cell organelles Contrast the structure and function of	**I CAN STATEMENTS:** **I can…** Explain how the cell membrane controls movement of substances both into and out of the cell and within the cell	**I CAN STATEMENTS:** **I can…** Describe and contrast these types of cell transport: osmosis, diffusion, facilitated diffusion, and active transport	**I CAN STATEMENTS:** **I can…** Recognize that living systems require a continuous input of energy. Explain how the chemical bonds of	**I CAN STATEMENTS:** **I can…** Analyze the flow of matter and energy between living systems and environments. I can explain that the	**I CAN STATEMENTS:** **I can…** Explain the occurrences in each of the phases of mitosis. Describe how the phases of mitosis aid

components of motility	Explain how the cell membrane maintains homeostasis	Describe the tonicity of different solutions and explain how they affect cells	food molecules contain energy that is released when the bonds are broken Investigate photosynthesis and cellular respiration and the energy relationships in the processes.	energy of life primarily derives from the sun.	in cell replication.
Critical Vocabulary Chloroplast, nuclear envelope, nucleolus, eukaryotic, prokaryotic, organelle, ribosome, nucleus, mitochondria, endoplasmic reticulum, lysosome, vacuole, cell wall, plasma membrane, cell theory, cytoplasm, chromatin, chromosome, Golgi apparatus, cytoskeleton, microtubule, microfilament	**Critical Vocabulary** Lipid bilayer, selectively permeable, carbohydrate chains, proteins	**Critical Vocabulary** Concentration, diffusion, osmosis, facilitated diffusion, active transport, passive transport, endocytosis, exocytosis, phagocytosis, hypotonic, hypertonic, isotonic, tonicity	**Critical Vocabulary** Heterotroph, autotroph, ATP, ADP, glucose, photosynthesis, stroma, Calvin cycle, pigment, light dependent reaction, light independent reaction, chlorophyll, thylakoid	**Critical Vocabulary** Calorie, calorie, cellular respiration, glycolysis, aerobic, anaerobic, Kreb's Cycle, fermentation, electron transport chain	**Critical Vocabulary** Mitosis, prophase, metaphase, anaphase, telophase, chromosome, spindle fiber, centriole, centromere, cell cycle, S-G1-G2 phase, cytokinesis, sister chromatids, diploid, daughter cells, interphase, cyclin, cancer, tumor
Strategies/Activities Labs Demonstrations Video Clips Manipulatives Calculations Reports Graphs	**Strategies/Activities** Labs: Osmosis/Egg Real World Analogies: selectively permeable/screen door Demonstrations Video Clips Manipulatives	**Strategies/Activities** Labs: "Observing cell parts and processes" Chart: Comparing/Contrasting active & passive transport Demonstrations Video Clips Manipulatives	**Strategies/Activities** Labs Demonstrations: Model how ATP releases energy Video Clips Manipulatives Calculations Reports Graphs	**Strategies/Activities** Labs Demonstrations Video Clips Manipulatives Calculations Reports Graphs Trace: Energy Flows	**Strategies/Activities** Labs: " Observing Phases of Mitosis" (mico/slides) Demonstrations Video Clips Manipulatives: "Mitosis Flipbooks" Calculations

	Calculations Reports Graphs	Calculations Reports Graphs	Compare Chemical Equations for photosynthesis & cellular respiration		Reports Graphs
Balanced Assessment: Formative Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**
Resources Needed Textbook	**Resources Needed** Textbook	**Resources Needed** Textbook	**Resources Needed** Textbook	**Resources Needed** Textbook	**Resources Needed** Textbook

Video Clips Discovery Education Internet Library Lab Equipment Consumables	Video Clips Discovery Education Internet Library Lab Equipment Consumables	Video Clips Discovery Education Internet Library Lab Equipment Consumables	Video Clips Discovery Education Internet Library Lab Equipment Consumables	Video Clips Discovery Education Internet Library Lab Equipment Consumables	Video Clips Discovery Education Internet Library Lab Equipment Consumables

Weeks 19-21	Weeks 22-24
Unit/Topic **Genetics & Biotechnology**	**Unit/Topic** **Genetics & Biotechnology/** **Mendelian Genetics**
In this section IDENTIFY **CORE CONTENT 4.1** **Common Core Standards** SC-HS-3.4.1 Students will explain the role of DNA in protein synthesis. Cells store and use information to guide their functions. The genetic information stored in DNA directs the synthesis of the thousands of proteins that each cell requires. Errors that may occur during this process may result in mutations that may be harmful to the organism. DOK 3 SC-HS-3.4.6 Students will understand that in all organisms and viruses, the instructions for specifying the characteristics are carried in nucleic acids. The chemical and structural properties of nucleic acids determine how the genetic information that underlies heredity is both encoded in genes and replicated. IDENTIFY GAPS for Math/Literacy in this section. These topics/skills need to be taught for 2 – 3 years to avoid gaps in student learning.	**In this section IDENTIFY** **CORE CONTENT 4.1** **Common Core Standards** SC-HS-3.4.5 Students will: • explain the relationship between sexual reproduction (meiosis) and the transmission of genetic information; • draw conclusions/make predictions based on hereditary evidence/data (pedigrees, punnet squares). Multicellular organisms, including humans, form from cells that contain two copies of each chromosome. This explains many features of heredity. Transmission of genetic information through sexual reproduction to offspring occurs when male and female gametes, that contain only one representative from each chromosome pair, unite. DOK 3 SC-HS-3.5.1 Students will: • predict the impact on species of changes to 1) the potential for a species to increase its numbers, (2) the genetic variability of offspring

			due to mutation and recombination of genes, (3) a finite supply of the resources required for life, or (4) natural selection; • propose solutions to real-world problems of endangered and extinct species. Species change over time. Biological change over time is the consequence of the interactions of (1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life and (4) natural selection. The consequences of change over time provide a scientific explanation for the fossil record of ancient life forms and for the striking molecular similarities observed among the diverse species of living organisms. Changes in DNA (mutations) occur spontaneously at low rates. Some of these changes make no difference to the organism, whereas others can change cells and organisms. Only mutations in germ cells have the potential to create the variation that changes an organism's future offspring. DOK 3 ***IDENTIFY GAPS for Math/Literacy in this section. These topics/skills need to be taught for 2 – 3 years to avoid gaps in student learning.***		
CURRICULUM			**CURRICULUM**		
Week 19	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
Identify Sub-Topics Chromosomes Meiosis Meiosis vs. Mitosis	**Identify Sub-Topics** Genes & DNA DNA Structure and Function RNA Structure and Function	**Identify Sub-Topics** Central Dogma (DNA→RNA→Protein) Genetic Code	**Identify Sub-Topics** Selective Breeding Genetic Engineering Cloning	**Identify Sub-Topics** Mendel's Work & Proposals Dominance and Recessiveness Segregation Punnett Squares Pedigrees	**Identify Sub-Topics** Independent Assortment Patterns of Inheritance
• **I CAN STATEMENTS:** • **I can…** Contrast the chromosome number of body	• **I CAN STATEMENTS:** • **I can…** Summarize the relationship between genes and DNA. Describe the overall	• **I CAN STATEMENTS:** • **I can…** Summarize the events of DNA replication	• **I CAN STATEMENTS:** • **I can…** Explain the purpose and	• **I CAN STATEMENTS:** • **I can…** Summarize conclusions about inheritance that	• **I CAN STATEMENTS:** • **I can…** Explain the principle of independent

cells and gametes. Summarize the events of meiosis. Contrast meiosis with mitosis.	structure of the DNA molecule. Compare and contrast the RNA model to that of DNA . Name and describe the three main types of RNA.	. Describe transcription and the editing of RNA. Summarize translation. Identify the genetic code Discuss factors of gene regulation.	techniques used in selective breeding. Explain how scientists manipulate DNA. Discuss applications of genetic engineering. Summarize the main steps in cloning.	resulted from Mendel's work. Explain the principle of dominance. Describe what happens during segregation . Explain how geneticists use Punnett Squares in their work with probability.	assortment. Describe other patterns of inheritance (codominance, incomplete dominance) Explain how Mendel's principles apply to organisms.
Critical Vocabulary Meiosis, haploid, gamete, tetrad, crossing-over, homologous	**Critical Vocabulary** Chromosome, gene, DNA, double helix, phosphate, sugar, organic base, adenine, cytosine, thymine, uracil, guanine, messenger/transfer/ribosomal RNA, Watson-Crick Model	**Critical Vocabulary** Chromatin, histone, replication, DNA & RNA polymerase, transcription, translation, intron, exon, codon, anticodon, promoter, mutation, operon, operator, hox gene	**Critical Vocabulary** Selective breeding, hybridization, inbreeding, polyploidy, variation, genetic engineering, restriction enzyme, gel electrophoresis, recombinant DNA, polymerase, chain reaction, plasmid, gene marker, transgenic, clone	**Critical Vocabulary** Genetics, true breeding, trait, bybrid, gene, allele, segregation, gamete, principle of dominance, probability, Punnett square homozygous, heterozygous, genotype, phenotype	**Critical Vocabulary** Independent assortment, incomplete dominance, codominance, multiple alleles, polygenic traits
Suggested	**Suggested**	**Suggested**	**Suggested**	**Suggested**	**Suggested**

Strategies/Activities	**Strategies/Activities**	**Strategies/Activities**	**Strategies/Activities**	**Strategies/Activities**	**Strategies/Activities**
Labs Demonstrations: Model Meiosis Video Clips Manipulatives Calculations Reports Graphs Chart: "Mitosis v.s. Meiosis"	Labs Demonstrations Video Clips Manipulatives: Make models of DNA & RNA Calculations Reports Graphs	Labs Demonstrations Video Clips Manipulatives: "Interpret DNA-RNA sequences" "Identify amino acids from codons" Calculations Reports Graphs	Labs: "The effect of radiation on seeds" Demonstrations Video Clips: "Dolly the Lamb" Manipulatives Calculations Reports Graphs	Labs Demonstrations Video Clips Manipulatives Calculations: "Use Punnett Squares to predict the outcome of 1 & 2 factor crosses" Reports Graphs	Labs Demonstrations Video Clips Manipulatives Calculations: Interpret Punnett Squares Reports Graphs
Balanced Assessment: Formative Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs	**Balanced Assessment: Formative** Quiz Exit slips Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs	**Balanced Assessment: Formative**

Summative Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**
Resources Needed Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables	**Resources Needed** Textbook Video Clips Discovery Education Internet Library Lab Equipment Consumables

Weeks 25-27	Weeks 28-30
Unit/Topic **Natural Selection/** **Evolution and Speciation**	**Unit/Topic** **Evolution and Speciation/** **Relationships Among Organisms1: Bacteria & Viruses**
In this section IDENTIFY	**In this section IDENTIFY**

CORE CONTENT 4.1 Common Core Standards	CORE CONTENT 4.1 Common Core Standards
SC-HS-3.5.2 Students will: • predict the success of patterns of adaptive behaviors based on evidence/data; • justify explanations of organism survival based on scientific understandings of behavior. The broad patterns of behavior exhibited by organisms have changed over time through natural selection to ensure reproductive success. Organisms often live in unpredictable environments, so their behavioral responses must be flexible enough to deal with uncertainty and change. Behaviors often have an adaptive logic. DOK 3 *SC-HS-4.7.4* *Students will understand that evidence for one-celled forms of life, the bacteria, extends back more than 3.5 billion years. The changes in life over time caused dramatic changes in the composition of the Earth's atmosphere, which did not originally contain oxygen.* *IDENTIFY GAPS for Math/Literacy in this section. These topics/skills need to be taught for 2 – 3 years to avoid gaps in student learning.*	SC-HS-3.5.2 Students will: • predict the success of patterns of adaptive behaviors based on evidence/data; • justify explanations of organism survival based on scientific understandings of behavior. The broad patterns of behavior exhibited by organisms have changed over time through natural selection to ensure reproductive success. Organisms often live in unpredictable environments, so their behavioral responses must be flexible enough to deal with uncertainty and change. Behaviors often have an adaptive logic. DOK 3 SC-HS-4.7.4 Students will understand that evidence for one-celled forms of life, the bacteria, extends back more than 3.5 billion years. The changes in life over time caused dramatic changes in the composition of the Earth's atmosphere, which did not originally contain oxygen. SC-HS-3.4.6 Students will understand that in all organisms and viruses, the instructions for specifying the characteristics are carried in nucleic acids. The chemical and structural properties of nucleic acids determine how the genetic information that underlies heredity is both encoded in genes and replicated. SC-HS-3.4.7 Students will: • classify organisms into groups based on similarities; • infer relationships based on internal and external structures and chemical processes. Biological classifications are based on how organisms are related. Organisms are classified into a hierarchy of groups and subgroups based on similarities that reflect their relationships. Species is the most fundamental unit of classification. Different species are classified by the comparison and analysis of their internal and external structures and the similarity of their chemical processes. DOK 2

			SC-HS-4.7.4 Students will understand that evidence for one-celled forms of life, the bacteria, extends back more than 3.5 billion years. The changes in life over time caused dramatic changes in the composition of the Earth's atmosphere, which did not originally contain oxygen. ***IDENTIFY GAPS for Math/Literacy in this section. These topics/skills need to be taught for 2 – 3 years to avoid gaps in student learning.***		
CURRICULUM			**CURRICULUM**		
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**
Identify Sub-Topics Darwin's Studies Natural Selection vs. Artificial Selection Fitness	**Identify Sub-Topics** Evolutionary Thought Natural Selection Theory	**Identify Sub-Topics** Inheritable Variation Gene Pool	**Identify Sub-Topics** Genetic Equilibrium Genetic Drift Speciation	**Identify Sub-Topics** Bacteria Structure (Prokaryotic) Bacteria Function Bacterial Disease and Control	**Identify Sub-Topics** Virus Structure Viral Infection & Disease
I CAN STATEMENTS: **I can…** Describe the patterns Darwin observed during his time at the Galapagos Islands Describe how natural selection is related to artificial selection.	**I CAN STATEMENTS:** **I can…** Identify evidences used to present the theory of evolutionary thought. Explain the theory of natural selection.	**I CAN STATEMENTS:** **I can…** Identify sources of inheritable variation. Explain what a gene pool is. Explain how natural selection affects single-gene	**I CAN STATEMENTS:** **I can…** Identify conditions needed to maintain genetic equilibrium. Describe genetic drift. Describe the process of speciation. Identify conditions	**I CAN STATEMENTS:** **I can…** Explain how the two groups of prokaryotes, eubacteria and archaebacteria, differ. Describe factors that are used in identifying bacterial	**I CAN STATEMENTS:** **I can…** Describe the structure of a virus. Explain how viruses can cause infection and disease. Identify diseases caused by viral infection.

Explain how natural selection is related to species' fitness.		and polygenic traits.	necessary for a new species to evolve.	cells. Explain what bacteria are vital to maintaining the living world. Identify diseases caused the bacteria . Explain how bacterial grown can be controlled.	
Critical Vocabulary Evolution, theory, fossil, natural selection, artificial selection, struggle for existence, fitness, adaptation, survival of the fittest, natural selection, des cent with modification, common descent, homologous structure, vestigial organ**,**	**Critical Vocabulary** Evolution, theory, fossil, natural selection, artificial selection, struggle for existence, fitness, adaptation, survival of the fittest, natural selection, des cent with modification, common descent, homologous structure, vestigial organ,	**Critical Vocabulary** Gene pool, relative frequency, single-gene trait, polygenic trait	**Critical Vocabulary** Directional selection, stabilizing selection, disruptive selection, genetic drift, founder effect, Hardy-Weinberg principle, genetic equilibrium, speciation, reproductive isolation, behavioral isolation, geographic isolation, temporal isolation	**Critical Vocabulary** Prokaryote, bacillus, coccus, spirillum, flagellum, photoautotroph, chemoautotroph, photoheterotroph, binary fission, conjugation,m endospore, nitrogen fixation, pathogen, antibiotic, sterilization,	**Critical Vocabulary** Virus, capsid, bacteriophage, lytic infection, lysogenic infection, retrovirus, prion
Suggested Strategies/Activities Labs: "Modeling adaptation" Demonstrations Video Clips Manipulatives Calculations Reports	**Suggested Strategies/Activities** Labs: "Analyzing Finch Head and Beak Shape" Demonstrations Video Clips Manipulatives Calculations Reports	**Suggested Strategies/Activities** Labs: "Investigating Genetic Diversity in Bacteria" Demonstrations Video Clips Manipulatives Calculations	**Suggested Strategies/Activities** Labs Demonstrations Video Clips Manipulatives Calculations Reports Graphs	**Suggested Strategies/Activities** Labs: "Identifying limits to the growth of bacteria" Demonstrations Video Clips Manipulatives Calculations	**Suggested Strategies/Activities** Labs: Demonstrations Video Clips Manipulatives: Make model of virus Calculations Reports

Graphs	Graphs	Reports Graphs		Reports: "Should Antibiotic Use be Restricted?" Graphs	Graphs
Balanced Assessment: Formative Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**
Resources Needed Textbook Video Clips Discovery Education Internet	**Resources Needed** Textbook Video Clips Discovery Education Internet	**Resources Needed** Textbook Video Clips Discovery Education Internet	**Resources Needed** Textbook Video Clips Discovery Education Internet	**Resources Needed** Textbook Video Clips Discovery Education Internet	**Resources Needed** Textbook Video Clips Discovery Education Internet

Library Lab Equipment Consumables	Library Lab Equipment Consumables	Library Lab Equipment Consumables	Library Lab Equipment Consumables	Library Lab Equipment Consumables	Library Lab Equipment Consumables

Weeks 31-33	Weeks 34-36
Unit/Topic **Relationships Among Organisms 2: Protists & Fungi/ Animals**	**Unit/Topic** **Animals/ Plants**
In this section IDENTIFY **CORE CONTENT 4.1** **Common Core Standards** SC-HS-3.4.7 Students will: • classify organisms into groups based on similarities; • infer relationships based on internal and external structures and chemical processes. Biological classifications are based on how organisms are related. Organisms are classified into a hierarchy of groups and subgroups based on similarities that reflect their relationships. Species is the most fundamental unit of classification. Different species are classified by the comparison and analysis of their internal and external structures and the similarity of their chemical processes. DOK 2 SC-HS-3.5.2 Students will: • predict the success of patterns of adaptive behaviors based on evidence/data; • justify explanations of organism survival based on scientific understandings of behavior.	**In this section IDENTIFY** **CORE CONTENT 4.1** **Common Core Standards** SC-HS-3.5.2 Students will: • predict the success of patterns of adaptive behaviors based on evidence/data; • justify explanations of organism survival based on scientific understandings of behavior. The broad patterns of behavior exhibited by organisms have changed over time through natural selection to ensure reproductive success. Organisms often live in unpredictable environments, so their behavioral responses must be flexible enough to deal with uncertainty and change. Behaviors often have an adaptive logic. DOK 3 SC-HS-4.7.4 Students will understand that evidence for one-celled forms of life, the bacteria, extends back more than 3.5 billion years. The changes in life over time caused dramatic changes in the composition of the Earth's atmosphere, which did not originally contain oxygen. IDENTIFY GAPS for Math/Literacy in this section. These topics/skills need to be taught for 2 – 3 years to avoid gaps in student learning.

The broad patterns of behavior exhibited by organisms have changed over time through natural selection to ensure reproductive success. Organisms often live in unpredictable environments, so their behavioral responses must be flexible enough to deal with uncertainty and change. Behaviors often have an adaptive logic. DOK 3

SC-HS-4.7.4
Students will understand that evidence for one-celled forms of life, the bacteria, extends back more than 3.5 billion years. The changes in life over time caused dramatic changes in the composition of the Earth's atmosphere, which did not originally contain oxygen.
IDENTIFY GAPS for Math/Literacy in this section. These topics/skills need to be taught for 2 – 3 years to avoid gaps in student learning.

SC-HS-3.4.8

Students will understand that multicellular animals have nervous systems that generate behavior. Nerve cells communicate with each other by secreting specific molecules. Specialized cells in sense organs detect light, sound and specific chemicals enabling animals to monitor what is going on in the world around them.

SC-HS-3.4.4
Students will understand that plant cells contain chloroplasts, the site of photosynthesis. Plants and many microorganisms (e.g., Euglena) use solar energy to combine molecules of carbon dioxide and water into complex, energy-rich organic compounds and release oxygen to the environment. This process of photosynthesis provides a vital link between the Sun and energy needs of living systems.

SC-HS-3.4.7
Students will:

- classify organisms into groups based on similarities;
- infer relationships based on internal and external structures and chemical processes.

Biological classifications are based on how organisms are related. Organisms are classified into a hierarchy of groups and subgroups based on similarities that reflect their relationships. Species is the most fundamental unit of classification. Different species are classified by the comparison and analysis of their internal and external structures and the similarity of their chemical processes. DOK 2

SC-HS-3.4.8

Students will understand that multicellular animals have nervous systems that generate behavior. Nerve cells communicate with each other by secreting specific molecules. Specialized cells in sense organs detect light, sound and specific chemicals enabling animals to monitor what is going on in the world around them.

IDENTIFY GAPS for Math/Literacy in this section. These topics/skills need to be taught for 2 – 3 years to avoid gaps in student learning.

CURRICULUM			CURRICULUM		
Week 31	**Week 32**	**Week 33**	**Week 34**	**Week 35**	**Week 36**

Identify Sub-Topics	**Identify Sub-Topics**	**Identify Sub-Topics**	**Identify Sub-Topics**	**Identify Sub-Topics**	**Identify Sub-Topics**
Types of Protists Ecological Role of Protists Uses of Protists	Characteristics of Fungi Fungi Reproduction Ecological Role of Fungi	Animal Characteristics Trends in Animal Evolution Classification and Taxonomy of Animals	Groups of Animals Behavior and Learning Styles Animal Communication	Plant Structure Types of Plants Reproduction in Plants	Plant Growth Plant Adaptations Plants and Nutrients
I CAN STATEMENTS: **I can…** Explain what a protist is . Identify and describe the three major classifications of protists (animal-like, plant-like, fungus-like) Summarize ecological roles of protists. Identify some human uses of protists.	**I CAN STATEMENTS:** **I can…** Identify the defining characteristics of fungi. Describe the main structures of fungi. Explain how fungi reproduce. Explain the ecological role of fungi. Describe the symbiotic relationships that fungi form with other organisms.	**I CAN STATEMENTS:** **I can…** Identify characteristics that all animals share. Describe the essential functions that animals carry out. Identify important trends in animal evolution. Discuss classification and features of animals.	**I CAN STATEMENTS:** **I can…** Compare animal groups Explain what innate behavior is. Describe the major types of learning. Summarize how animals communicate.	**I CAN STATEMENTS:** **I can…** Identify types and functions of plant tissues and structures. Describe the different types of plants. Explain the reproduction of seed plants.	**I CAN STATEMENTS:** **I can…** Describe patterns of plant growth . Explain what plant hormones are and how they work. Describe plant adaptations to changing environmental conditions. Describe how plants obtain nutrients.
Critical Vocabulary Protist, pseudopos, amoeboid movement, food vacuole, cilium, trichocyst, macronucleus,	**Critical Vocabulary** Chitin, hypha, mycelium, fruiting body, sporangium, sporangiophore, gametangium,	**Critical Vocabulary** Invertebrate, vertebrate, parasite, host, blastula, protostome, deuterostome, anus,	**Critical Vocabulary** Sponges, Cnidarians, Worms, mollusks, arthropods, echinoderms, chordate, fish, amphibians, reptiles,	**Critical Vocabulary** Gametophyte, sporophyte, bryophytes, mosses, liverworts, hornworts, ferns, nonvascular plants,	**Critical Vocabulary** Roots, stems, leaves, meristematic tissue, apical meristem, epidermal cell, cuticle, trichome, vessel

micronucleus, gullet, anal pore, contractile vacuole, conjugation, accessory pigment, eyespot, pellicle, phytoplankton, phycobilin, filament, alternation of generations, gametophyte, spore, sporophyte, cellular slime mold, plasmodium, hypha, zoosporangium, antheridium, oogonium	zygospore, rhizoid, stolon, conidium ascus, ascospore, basidium, basidiospore, saprobe, lichen, mycorrhiza	endoderm, mesoderm, ectoderm, radial symmetry, bilateral symmetry, cephalization	birds, mammals, behavior, stimulus, response, innate behavior, learning, habituation, classical conditioning, operant conditioning, insight learning, imprinting, migration, circadian rhythm, courtship, territory, aggression, communication (visual signals, chemical signals, sound signals), language,	vascular plants, angiosperms, gymnosperms, cone, flower, pollen grain, pollination, seed, embryo, seed coat, fruit, monocot, dicot, cotyledon, annual, biennial, perennial,	element, sieve tube element, companion cell, parenchyma, collenchyma, sclerenchyma, homone, target cell phototropism, auxin, gravitropism, lateral bud, apical dominance, herbicide, cytokinin, gibberellin, ethylene, tropism, thigmotropism, shor-day plant, long-day plant, photoperiodism, phytochrome, dormancy, abscission layer, xerophyte, epiphyte,
Suggested Strategies/Activities Labs: "Investigating Contractile Vacuoles" Demonstrations Video Clips Manipulatives Calculations Reports Graphs Graphic Organizer:	**Suggested Strategies/Activities** Labs: "Examining Seeds for Fungi" Demonstrations Video Clips Manipulatives Calculations Reports Graphs Graphic Organizer:	**Suggested Strategies/Activities** Labs: "How can symmetry affect movement?" Demonstrations Video Clips Manipulatives Calculations Reports Graphs	**Suggested Strategies/Activities** Labs: Dissections – frog, crayfish, pig, squid, starfish, worm, grasshopper, etc. Lab: "Observing behavior of Betta fish" Demonstrations Video Clips Manipulatives	**Suggested Strategies/Activities** Labs: "Comparing Mosses & Ferns" Lab: "Anatomy of a Flower" "Leaf Collection" "Flower Collection" Demonstrations Video Clips Manipulatives	**Suggested Strategies/Activities** Labs: "Can a plant find its way through a maze?", "Using Hormones to Control Plant Growth" Demonstrations Video Clips Manipulatives Calculations

"Categories of Protists"	"Classifying fungi"		Calculations Reports Graphs	Calculations Reports Graphs	Reports: Are Herbal Drugs Safe? Graphs: Analyzing Data "Auxins & Plant Growth"
Balanced Assessment: Formative Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**	**Balanced Assessment: Formative** Quiz Exit slips Thumbs Up/Down Teacher circulation Question/Answer Think/pair/share Labs **Summative** Multiple Choice/Constructed Response **Common (PLC Teams will design the common assessments, i.e., grade level, and/or depts..)**
Resources Needed Textbook	**Resources Needed** Textbook	**Resources Needed** Textbook	**Resources Needed** Textbook	**Resources Needed** Textbook	**Resources Needed** Textbook

Video Clips Discovery Education Internet Library Lab Equipment Consumables	Video Clips Discovery Education Internet Library Lab Equipment Consumables	Video Clips Discovery Education Internet Library Lab Equipment Consumables	Video Clips Discovery Education Internet Library Lab Equipment Consumables	Video Clips Discovery Education Internet Library Lab Equipment Consumables	Video Clips Discovery Education Internet Library Lab Equipment Consumables