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| **Unit 1 - ( Organization) 7 weeks**  **Cells**   * **Cells have particular structures that underlie their functions. SB1A** * **All cells are composed of many different molecules that are organized into specialized structures that carry out cell functions. SB1C** * **Multi-cellular organisms are formed as highly organized arrangements of differentiated cells. SB3b** * **Cellular processes of prokaryotic and eukaryotic cells are similar in-spite of their structural differences. SB1a**   **Ecology**   * **Patterns of ecological organization are similar to those of cells and organisms.**   **Organisms**   * **Viruses are complex structures and their evolutionary relationship is still under investigation. SB3 d** * **Organisms carry out common life processes differently. SB3b** * **All organisms and systems are organized from simple parts into complex systems that must maintain homeostasis in order to survive. SB3b**   **Evolution**   * **The millions of different species of plants, animals and microorganism that live on earth today are related by descent from common ancestors. SB5b** * **The great diversity of organisms is the result of more than 3.5 billion years of evolution that has filled every available niche with life forms. SB5 b** * **Modern classification systems are based upon biochemical and genetic evidence that indicates evolutionary relationships. SB3 c** * **Evolution explains the number of different life forms we see, similarities in anatomy and chemistry and sequence of changes in fossils formed over more than a billion years. SB5c** * **Molecular evidence supports anatomical evidence from fossils about the sequence of descent. SB5c**   **First 5 days on Safety and Classroom Protocol/Procedures** (you will find all resources for the corresponding sections in separate folders and documents)  **Section 1: Characteristics of Life**—briefly introduce major themes of biology by using GRACE-growth, reproduction,adapt/adjust, cells, & energy—requirements for all living things and leads to each thematic unit of instruction.  **Section 2**: Organization of Cells  **Section 3**: Organization of Ecosystems  **Section 4**: Organization of Kingdoms and Viruses  **Section 5**: Organization of Evolutionary History | | |
| **Standards**  **SB1. Students will analyze the nature of the relationships between structures and functions in living cells.**  a. Explain the role of cell organelles for both prokaryotic and  eukaryotic cells, including the cell membrane, in maintaining  Homeostasis and cell reproduction.  **SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.**  b. Compare how structures and function vary between the six kingdoms (Archaebacteria, Eubacteria, Protists, Fungi, Plants, and Animals).  c. Examine the evolutionary basis of modern classification systems.  d. Compare and contrast viruses with living organisms.  **SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**  a. Investigate the relationships among organisms, populations, communities, ecosystems, and biomes.  **SB5. Students will evaluate the role of natural selection in the development of the theory of evolution.**  a. Trace the history of the theory.  b. Explain the history of life in terms of biodiversity, ancestry, and the rates of evolution.  c. Explain how fossil and biochemical evidence support the theory.   * **ELA Reading and Writing Standards (Common Core)** * **Any related Math Standards that may be addressed (Common Core)**   [**https://www.georgiastandards.org/Standards/pages/BrowseStandards/ELAStandards9-12.aspx**](https://www.georgiastandards.org/Standards/pages/BrowseStandards/ELAStandards9-12.aspx) | **Enduring Understandings**   * Modern classification systems are based upon biochemical and genetic evidence that indicates evolutionary relationships. * Viruses are complex structures and their evolutionary relationship is still under investigation. * The millions of different species of plants, animals and microorganisms that live on earth today are related by descent from common ancestors. * The great diversity of organisms is the result of more than 3.5 billion years of evolution that has filled every available niche with life forms. * Evolution explains the number of different life forms we see, similarities in anatomy and chemistry, and the sequence of changes in fossils formed over more than a billion years. * Patterns of ecological organization are similar to those of cells and organisms. * Molecular evidence supports anatomical evidence from fossils about the sequence of descent. * All cells are composed of many different molecules that are organized into specialized structures that carry out cell functions * Cells have particular structures that underlie their functions. * Cellular processes of prokaryotic and eukaryotic cells are similar in-spite of their structural differences. * All organisms and systems are organized from simple parts into complex systems that must maintain homeostasis in order to survive. * All cells are composed of many different molecules that are organized into specialized structures that carry out cell functions. * Multi-cellular organisms are formed as highly organized arrangements of differentiated cells. * The millions of different species of plants, animals and microorganisms that live on earth today are related by descent from common ancestors. * The great diversity of organisms is the result of more than 3.5 billion years of evolution that has filled every available niche with life forms. * Modern classification systems are based upon biochemical and genetic evidence that indicates evolutionary relationships. * Evolution explains the number of different life forms we see, similarities in anatomy and chemistry, and the sequence of changes in fossils formed over more than a billion years. * Molecular evidence supports anatomical evidence from fossils about the sequence of descent. * Evolution explains the number of different life forms we see, similarities in anatomy and chemistry, and the sequence of changes in fossils formed over more than a billion years. | |
| **Essential Questions**   1. What are the environmental factors that might shape or limit how a community functions? 2. What are some ways organisms might interact with other living organisms in their community? 3. How much are you worth? 4. Are you really what you eat? 5. What separates you from bacteria? 6. Which came first the chicken or the egg? 7. How can you compare the area of the school to the functions of the organelles in a cell? 8. How is a cell like a factory? 9. Why would it be helpful to use the same system in organizing books at all libraries? 10. How has technology changed the way we classify living things today? 11. What are you hiding? 12. What can fossils tell us about past and present life on Earth? 13. How has life on Earth changes over time? 14. What’s in your bathroom? 15. What hit me? 16. What’s in your water? 17. What’s in your garbage? 18. What would your life be like without plants? 19. Venus fly trap, plant or animal? 20. What’s your number? 21. What’s in your tank? | **Key Vocabulary Terms/Language**  **Cells**   * **Unicellular, multicellular, eukaryotic, prokaryotic, organelle, cell membrane, centrioles, chloroplasts, chlorophyll, chromatin, cytoplasm, DNA, endoplasmic reticulum, golgi complex, lysosomes, mitochondria, selectively permeable, ribosome, vacuole, homeostasis, cell wall, vacuole, nucleus,**   **Ecology**   * **Biosphere, population, community, ecosystem, niche, habitat, predation, competition, commensalism, mutualism, symbiosis, parasitism**   **Evolution**   * **Fossils, evolution, natural variation, adaptation, natural selection, common descent, homologous structure, vestigial structures, theory, survival of the fittest, descent of modification, structural adaptations, physiological adaptations, behavioral adaptations, adaptive radiations, convergent evolution, gradualism, paleontologist, extinct, relative dating, speciation.**   **Classification and Viruses**   * **Taxonomy, binomial nomenclature, common names, kingdom, phylum, class, order, family, genus, species, scientific name, Aristotle. Linnaeus, evolutionary classification, DNA, RNA, cladogram, cladistics, analysis, derived characters, domain, arachae, bacteria, eukarya, arachaebacteria, eubacteria, Protista, fungi, plantae, animalia, virus, lytic, lysogenic, capsids, vaccine.** | |
| **Misconceptions**   * Viruses are living cells. * Only animals move. * All bacteria are harmful. * All animals are vertebrates. * Humans are not animals. * Mushrooms are plants. * Man came from monkeys. * Evolution happens quickly. Students should understand that evolution generally occurs over long periods of time. * Darwin was the only evolutionary theorist. Students should understand that many scientists have contributed to our understanding of the current theory of evolution. | **Proper Conceptions**   * Students should understand that viruses are typically identified as intracellular obligate parasites that exhibit living characteristics only when they are functioning in a host cell. * Students should understand that there are many organisms that are capable of free movement including bacteria and protists. They should also recognize that not all adult animal species are motile. * Students should understand that the majority of bacterial species are beneficial. Many species play an essential role in nutrient cycling and some are involved in food production processes. * Students should understand that all animals are not characterized by the presence or absence of a backbone. * Students should understand that humans share the same basic characteristics that other animals possess. * Students should understand that mushrooms are fungi because they have chitinous cell walls and are non-photosynthetic. * Students should understand that man is not a direct descendent of monkeys. Although evidence suggests that they share a common ancestor, the evolutionary pathway of man is still a major research topic among scientists. * Students should understand that evolution generally occurs over long periods of time. * Students should understand that many scientists have contributed to our understanding of the current theory of evolution | |
| **Unit Requirements**   * [Outbreak at Central](file:///F:/Unit%201%20Organization/Outbreak%20at%20Central%20High.docx) * [Unit 1 Organization Test](file:///F:/Unit%201%20Organization/Unit%201%20Organization%20Test.docx) * [Unit 1 Key](file:///F:/Unit%201%20Organization/Unit%201%20Organization%20Key.docx) | | |
| **Suggested Activities and Performance Tasks**  Writing activities:   * [Section 1 Suggested Writing Activity](https://ccpsshare.clayton.k12.ga.us/academicpath/Documents/Science/EOCT-%20Biology/Unit%201-%20Organization/1st-%20Unit%20Overview%20and%20Scope%20and%20Sequence%202013-2014/Section%201%20Suggested%20Writing%20Prompt.docx)   Laboratory Experiences:   * [Virus Lytic Cycle Gizmo](F:\\Unit 1 Organization\\VirusLyticCycleSE.doc)   Graphic Organizers:   * **[Six Kingdom Classification System Graphic Organizer](F:\\Unit 1 Organization\\The Six Kingdom System Chart.doc)**   GRASPS activities:   * [GRASP INSTRUCTIONAL ACTIVITY – TAXONOMY: Identifying Distinguishing Characteristics of Organisms](F:\\Unit 1 Organization\\GRASPS Dichotomous Key.doc) * [“WHAT ON EARTH IS THAT?”](file:///F:/Unit%201%20Organization/Taxonomy%20GRASPS%20What%20on%20Earth%20is%20That.doc) | | **Common Assessments**  [Classification and Viruses Assessment](file:///F:/Unit%201%20Organization/Classification%20and%20Viruses%20Assessment.docx) |
| **Differentiation**   * **What activities and strategies are included to address the Exceptional Education Student?** * **What activities and strategies are included to address the English Language Learner?** [**Refer to WIDA standards**](http://www.wida.us/standards/ELP_StandardLookup.aspx) * **What activities and strategies are included to address the Gifted/Advanced Learner?** | | |
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