**The Georgia Department of Juvenile Justice**

Biology

**Units of**

**Instructions**

**Resource Manual**

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# Acknowledgements

The Georgia Department of Juvenile Justice Department of Education would like to thank the many educators who have helped to create this Biology Units of Instruction Resource Manual. The educators have been particularly helpful in sharing their ideas and resources to ensure the completion and usefulness of this manual.

Students served by the DJJ require a special effort if they are to become contributing and participating members of their communities. Federal and state laws, regulations, and rules will mean nothing in the absence of professional commitment and dedication by every staff member.

# Superintendent’s Letter

The Georgia Department of Juvenile Justice is very proud of its school system. The school system is Georgia’s 181st and is accredited by the Southern Association of Colleges and Schools (SACS). The DJJ School System has been called exemplary by the US Department of Justice. This didn’t just happen by chance; rather it was the hard work of many teachers, clerks, instructors and administrators that earned DJJ these accolades and accreditations. The DJJ education programs operate well because of the dedicated staff. These dedicated professionals are the heart of our system.

These Content Area Units of Instruction were designed to serve as a much needed tool for delivering meaningful whole group instruction. In addition, this resource will serve as a supplement to the skills and knowledge provided by the Georgia Department of Juvenile Justice Curriculum Activity Packets (CAPs).

I would like to thank all the DJJ Teaching Staff, the Content Area Leadership Teams, Kimberly Harrison, DJJ Special Education/Curriculum Consultant and Martha Patton, Curriculum Director for initiating this project and seeing it through. Thank you all for your hard work and dedication to the youth we serve.

Sincerely yours,

James “Jack” Catrett, Ed.D.

Associate Superintendent

# Introduction

The Biology Units of Instruction Resource Manual is a tool that has been created to serve as a much needed tool for delivering meaningful whole group instruction. This manual is a supplement to the skills and knowledge provided by the Georgia Department of Juvenile Justice Curriculum Activity Packets (CAPs). It is imperative that our students learn to identify and investigate problems scientifically, and to work in cooperative learning groups. Best practices in education indicate that teachers should first model new skills for students. Next, teachers should provide opportunities for guided practice. Only then should teachers expect students to successfully complete an activity independently. The Biology Units of Instruction meets that challenge.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **The Georgia Department of Juvenile Justice**  **Office of Education**  **Direct Instruction Lesson Plan** | | |
| Teacher: | | | | |
| Subject:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date:\_\_\_\_\_\_\_\_\_\_\_\_\_to­\_\_\_\_\_\_\_\_\_\_\_­­\_\_\_\_\_\_\_  Period  □ 1st  □ 2nd  □ 3rd  □ 4th  □ 5th  □ 6th | | | Students will engage in:  □ Independent activities □ pairing  □ Cooperative learning □ hands-on  □ Peer tutoring □ Visuals  □ technology integration □ Simulations  □ a project □ centers  □ lecture □ Other | |
| Essential Question(s):  Standards:  CAPs Covered:  Grade Level:\_\_\_\_ Unit:\_\_\_\_\_\_  RTI Tier for data collection: 2 or 3  Tier 2 Students:  Tier 3 Students: | | | | |
| **Time** | **Procedures Followed:** | | | **Material/Text** |
| \_\_\_\_\_\_\_  Minutes | Review of Previously Learned Material/Lesson Connections:  Recommended Time: 2 Minutes | | |  |
| \_\_\_\_\_\_\_  Minutes | Display the Georgia Performance Standard(s) (project on  blackboard via units of instruction located at  <http://thevillage411.weebly.com/units-of-instruction2.html>, or print on blackboard) Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.  Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard). Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.  Recommended Time: 2 Minutes | | |  |
| \_\_\_\_\_\_\_  Minutes | Introduce task by stating the purpose of today’s lesson.  Recommended Time: 2 Minutes | | |  |
| \_\_\_\_\_\_\_  Minutes | Engage students in conversation by asking open ended questions related to the essential question(s).  Recommended Time: 2 Minutes | | |  |
| \_\_\_\_\_\_\_  Minutes | Begin whole group instruction with corrective feedback:  Recommended Time: 10 Minutes | | |  |
| \_\_\_\_\_\_\_  Minutes | Lesson Review/Reteach:  Recommended Time: 2 Minutes | | |  |
| \_\_\_\_\_\_\_  Minutes | Independent Work CAPs:  Recommended Time: 30 Minutes | | |  |
| Teacher Reflections: | | | | |

The Instructional Rotation Matrix has been designed to assist science teachers in providing a balanced approach to utilizing the Science Units of Instruction Manual across all grade levels on a rotating schedule.

|  |  |  |  |
| --- | --- | --- | --- |
| Monday | Tuesday | Wednesday | Thursday |
| 6th Grade Content  Middle School | 9th Grade Content  High School | 7th Grade Content  Middle School | 10th Grade Content  High School |
| 8th Grade Content  Middle School | 11th Grade Content  High School | 6th Grade Content  Middle School | 12th Grade Content  High School |
| 7th Grade Content  Middle School | 9th Grade Content  High School | 8th Grade Content  Middle School | 10th Grade Content  High School |
| 6th Grade Content  Middle School | 11th Grade Content  High School | 7th Grade Content  Middle School | 12th Grade Content  High School |

# Georgia Performance Standards

**SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism**

**in science.**

1. Exhibit the above traits in their own scientific activities.
2. Recognize that different explanations often can be given for the same evidence.
3. Explain that further understanding of scientific problems relies on the design and execution of new experiments which may reinforce or weaken opposing explanations.

**SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.**

1. Follow correct procedures for use of scientific apparatus.
2. Demonstrate appropriate technique in all laboratory situations.
3. Follow correct protocol for identifying and reporting safety problems and violations.

**SCSh3. Students will identify and investigate problems scientifically.**

1. Suggest reasonable hypotheses for identified problems.
2. Develop procedures for solving scientific problems.
3. Collect, organize and record appropriate data.
4. Graphically compare and analyze data points and/or summary statistics.
5. Develop reasonable conclusions based on data collected.
6. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

1. Develop and use systematic procedures for recording and organizing information.
2. Use technology to produce tables and graphs.
3. Use technology to develop, test, and revise experimental or mathematical models.

**SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.**

1. Trace the source on any large disparity between estimated and calculated answers to problems.
2. Consider possible effects of measurement errors on calculations.
3. Recognize the relationship between accuracy and precision.
4. Express appropriate numbers of significant figures for calculated data, using scientific notation where appropriate.
5. Solve scientific problems by substituting quantitative values, using dimensional analysis and/or simple algebraic formulas as appropriate.

**SCSh6. Students will communicate scientific investigations and information clearly.**

1. Write clear, coherent laboratory reports related to scientific investigations.
2. Write clear, coherent accounts of current scientific issues, including possible alternative interpretations of the data.
3. Use data as evidence to support scientific arguments and claims in written or oral presentations.
4. Participate in group discussions of scientific investigation and current scientific issues.

**SCSh7. Students analyze how scientific knowledge is developed.**

Students recognize that:

1. The universe is a vast single system in which the basic principles are the same everywhere.
2. Universal principles are discovered through observation and experimental verification.
3. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.
4. Hypotheses often cause scientists to develop new experiments that produce additional data.
5. Testing, revising, and occasionally rejecting new and old theories never ends.

**SCSh8. Students will understand important features of the process of scientific inquiry.**

a. Scientific investigators control the conditions of their experiments in order to produce valuable data.

b. Scientific researchers are expected to critically assess the quality of data including possible sources of bias in their investigations’ hypotheses, observations, data analyses, and interpretations.

c. Scientists use practices such as peer review and publication to reinforce the integrity of scientific activity and reporting.

d. The merit of a new theory is judged by how well scientific data are explained by the new theory.

e. The ultimate goal of science is to develop an understanding of the natural universe which is free of biases.

f. Science disciplines and traditions differ from one another in what is studied,

techniques used, and outcomes sought.

**SCSh9. Students will enhance reading in all curriculum areas by:**

a. Reading in all curriculum areas

Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.

Read both informational and fictional texts in a variety of genres and modes of discourse.

Read technical texts related to various subject areas.

b. Discussing books

Discuss messages and themes from books in all subject areas.

Respond to a variety of texts in multiple modes of discourse.

Relate messages and themes from one subject area to messages and themes in another area.

Evaluate the merit of texts in every subject discipline.

Examine author’s purpose in writing.

Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

Demonstrate an understanding of contextual vocabulary in various subjects.

Use content vocabulary in writing and speaking.

Explore understanding of new words found in subject area texts.

d. Establishing context

Explore life experiences related to subject area content.

Discuss in both writing and speaking how certain words are subject area related.

Determine strategies for finding content and contextual meaning for unknown words.

**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.

b. Explain how enzymes function as catalysts.

c. Identify the function of the four major macromolecules (i.e., carbohydrates, proteins, lipids, nucleic acids).

d. Explain the impact of water on life processes (i.e., osmosis, diffusion).

**SB2. Students will analyze how biological traits are passed on to successive generations.**

a. Distinguish between DNA and RNA.

b. Explain the role of DNA in storing and transmitting cellular information.

c. Using Mendel’s laws, explain the role of meiosis in reproductive variability.

d. Describe the relationships between changes in DNA and potential appearance of new traits including

Alterations during replication.

* Alterations during replication.
* Insertions
* Deletions
* Substitutions

Mutagenic factors that can alter DNA.

* High energy radiation (x-rays and ultraviolet)
* Chemical

e. Compare the advantages of sexual reproduction and asexual reproduction in different situations.

f. Examine the use of DNA technology in forensics, medicine, and agriculture.

**SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.**

a. Explain the cycling of energy through the processes of photosynthesis and respiration.

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.**

1. Investigate the relationships among organisms, populations, communities,

ecosystems, and biomes.

1. Explain the flow of matter and energy through ecosystems by:

Arranging components of a food chain according to energy flow.

Comparing the quantity of energy in the steps of an energy pyramid.

Explaining the need for cycling of major nutrients (C, O, H, N, P).

1. Relate environmental conditions to successional changes in ecosystems.
2. Assess and explain human activities that influence and modify the environment such as global warming, population growth, pesticide use, and water and power consumption.
3. Relate plant adaptations, including tropisms, to the ability to survive stressful environmental conditions.
4. Relate animal adaptations, including behaviors, to the ability to survive stressful environmental conditions.

**SB5. Students will evaluate the role of natural selection in the development of the theory of evolution.**

1. Trace the history of the theory.
2. Explain the history of life in terms of biodiversity, ancestry, and the rates of evolution.
3. Explain how fossil and biochemical evidence support the theory.
4. Relate natural selection to changes in organisms.
5. Recognize the role of evolution to biological resistance (pesticide and antibiotic resistance).

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [DJJ Intranet Homepage](https://djjintraportal.djj.state.ga.us/)  DJJ Biology Science  Georgia Performance Standards:  Curriculum Map | | | | | | | | | | | | | | | | | | | | | | | | | |
| **1st Semester** | | | | | | | | | | | | | | | **2nd Semester** | | | | | | | | | | |
| Ecology | | The Cell | | | Genetics | | | Biological Diversity | | Bacteria, Viruses, Protists , and Fungi | | | Plants | | | | | Invertebrates | | | Vertebrates | | The Human Body | | |
| Chapter  1 | CAPs  1-4 | Chapter  6 | CAPs  17-21 | Chapter  10 | | CAPs  34-36 | Chapter  14 | | CAPs  48-50 | | Chapter  18 | CAPs  62-64 | | Chapter  21 | | CAPs  73-75 | Chapter  24 | | CAPs  82-84 | Chapter  28 | | CAPs  94-96 | | Chapter  32 | CAPs  105-108 |
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| 3 | 8-11 | 8 | 26-29 | 12 | | 41-44 | 16 | | 54-57 | | 20 | 70-72 | | 23 | | 79-81 | 26 | | 88-90 | 30 | | 100-101 | | 34 | 112-115 |
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| 5 | 14-16 |  |  |  | |  |  | |  | |  |  | |  | |  |  | |  |  | |  | | 36 | 120-122 |
|  |  |  |  |  | |  |  | |  | |  |  | |  | |  |  | |  |  | |  | | 37 | 123-125 |
| **GPS:**  SCSh1a,b,c  SCSh2a,b,c  SCSh3a,b,c,d,e,f  SCSh 4a,b,c,d,e,f  SCSh5a,e  SCSh6a,b,c,d,  SCSh7a,b,c,d,e  SCSh8a,b,c,f  SCSh9a,b,c,d  SB1a,d  SB2d,f  SB3a:  SB5d:  SB4a,b,b,d,e,f | | **GPS:**  SCSh1a,b,c  SCSh2a,b  CSh3a,b,c,d,e,f  SCSh4a,b,c  SCSh5a,b,c,e  SCSh6a,b,f  SCSh7a,b,c  SCSh8a,c,f  SCSh9a.b,c,d  SB1a,b,c,d  SB2a,b,d,e,f  SB4b,d  SB3a | | | **GPS:**  SCSh3b,c,d,e,f  SB1a,b  SB2a,b,c,d,e,f  SCSh1a,b,c  SCSh2a,b,c  SCSh3d  SCSh4a,b  SCSh5a,b,c  SCSh6b,d  SCSh8b,c,f  SCSh9a,b,c,d  SCSh7a,b,c,d,e  SB4f:  SB3d: | | | **GPS:**  SCSh1a,b,c  SCSh2a,b,c  SCSh3a,b,c,d,e,f  SCSh4a,c  SCSh5e  SCSh6b  SCSh7a,b,c,d,e  SCSh8b,f  SCSh9a,b,c,d  SB1a  SB2b,c,d,f  SB3b,c,d  SB4a,d,f  SB5a,b,c,d,e,f | | **GPS:**  SCSh2a,b  SCSh3a,b,c,d,e,f  SCSh4a,c  SCSh5a  SCSh6a,b  SCSh7a,e  SCSh8a,b,f  SCSh9a,b,c,d  SB1a,c,d  SB2b,d,  SB5b,e  SB3a,b,c,d  SB4a,e | | | **GPS:**  SCSh2a,b  SCSh3a,b,c,d,e,f  SCSh4a,b,c  SCSh5c  SCSh6c,d  SCSh8a,c,f:  SCSh9a,b,a,c,d  SB1a,d  SB3b,c  SB4e:  SB5d:  SB2d,e,f | | | | | **GPS:**  SCSh1a  SCSh2a,b  SCSh3a,b,c,d,e,f  SCSh4a,b  SCSh5b  SCSh6a  SCSh9b,c,d  SB1a,d  SB3b,c  SB4f  SB5b,d | | | **GPS:**  SCSh1a  SCSh2a,b  SCSh3a ,b,c,d,e,f  SCSh4a,b  SCSh6b  SCSh9b,c,d  SB5b,d  SB3b,c,d  SB4a,d,f  SB3b,c,d | | **GPS**  SCSh1a:  SCSh2a,b  SCSh3a,b,c,e,f  SCSh4a,c  SCSh5c  SCSh6b,d  SCSh8a  SCSh9a,b,c,d  SB2d,e  SB3b,d  SB1a,b,c,d  SB4b,f  SB5e | | |
| Focus  CAPs:  4,7,11,13,16 | | Focus CAPs:  21,25,29,33 | | | Focus CAPs:  36,40,44,47 | | | Focus  CAPs:  50,53,57,61 | | Focus CAPs:  64,69,72 | | | Focus CAPs:  75,78,81 | | | | | Focus  CAPs:  84,87,90,93 | | | Focus  CAPs:  96,99,101,  104 | | Focus  CAPs:  108,111,115,119,122,125 | | |

# Enduring Understandings & Essential Questions

**Ecology**

**Enduring Understandings:**

* All living things share the characteristics of life
* Science is a process based on inquiry that seeks to develop explanations
* Biologist use specific methods when conducting research
* Biotic and abiotic factors interact in complex ways in communities and ecosystems
* Autorophs capture energy, making it available for all members of a food web

**Essential Questions:**

1. What evidences do you have that living things require each other?
2. How are populations and resources related?
3. How do living things and nonliving things interact and rely on each other within different ecosystems?
4. What are the different trophic levels of an ecosystem and how are they connected?
5. How do producers’ consumers, and decomposers depend on each other for survival?
6. How does energy cycled throughout an ecosystem?
7. What would happen if matter was bound in living matter and never recycled?
8. How are water, carbon, nitrogen and phosphorus cycled in the biosphere?
9. Why is the cycling of inorganic substances important?\
10. How do inorganic and organic components of an ecosystem?
11. What are the abiotic and biotic factors that create biomes and communities?
12. What makes up a community?
13. What factors need to be balanced in a biome?
14. What are the consequences of disturbances within an ecosystem?

**The Cell**

**Enduring Understandings:**

* Every cell is covered by a membrane that controls what can enter and leave the cell.
* In all but quite primitive cells, a complex network of proteins provides organization and shape and, for animal cells, movement.
* Within every cell are specialized parts for the transport of materials, energy transfer, protein building, waste disposal, information feedback, and even movement.
* In addition, most cells in multicellular organisms perform some special functions that others do not.
* The work of the cell is carried out by the many different types of molecules it assembles, mostly proteins.
* Protein molecules are long, usually folded chains made from 20 different kinds of amino-acid molecules.
* The function of each protein molecule depends on its specific sequence of amino acids and the shape the chain takes is a consequence of attractions between the chain's parts.
* The genetic information encoded in DNA molecules provides instructions for assembling protein molecules. The code used is virtually the same for all life forms.
* Before a cell divides, the instructions are duplicated so that each of the two new cells gets all the necessary information for carrying on.
* Complex interactions among the different kinds of molecules in the cell cause distinct cycles of activities, such as growth and division.
* Cell behavior can also be affected by molecules from other parts of the organism or even other organisms.
* Gene mutation in a cell can result in uncontrolled cell division, called cancer. Exposure of cells to certain chemicals and radiation increases mutations and thus increases the chance of cancer.

**Essential Questions:**

1. What are the relationships between elements, atoms, molecules and compounds?
2. What are the bonds that hold molecules together?
3. How is chemistry related to the growth and survival of living organisms?
4. What substances make up the components of living cells?
5. What are enzymes and why are they important to living things?
6. What effects do enzymes have on chemical reactions?
7. What are some biological processes that require enzymatic activity?
8. How do substrate concentrate and pH affect enzyme controlled reactions?
9. How is homeostasis in a cell maintained?
10. What are the differences between the various forms of active transport?
11. How is homeostasis in a cell maintained?
12. How are materials transported in and out of the cell?
13. What are the various forms of active transport and passive transport?

**Genetics**

**Enduring Understandings:**

* Some new gene combinations make little difference, some can produce organisms with new and perhaps enhanced capabilities, and some can be deleterious.
* The information passed from parents to offspring is coded in DNA molecules.
* Genes are segments of DNA molecules. Inserting, deleting, or substituting DNA segments can alter genes.
* An altered gene may be passed on to every cell that develops from it. The resulting features may help, harm, or have little or no effect on the offspring's success in its environment.
* Gene mutations can be caused by such things as radiation and chemicals.

**Essential Questions:**

1. What is the importance of meiosis?
2. What are the cell parts involved in meiosis?
3. How is mitosis different from meiosis?
4. Who was Gregor Mendel?
5. What laws did he discover?
6. What is heredity?
7. How can Punnent squares help predict the traits of offspring?
8. What are some complex patterns of inheritance in humans?
9. How can sex linked traits be identified?
10. What are some examples of recessive genetic disorders?
11. What are the consequences of changes in the genome?
12. How do point mutations and frame shift mutation impact genetic sequence?

**History of Biological Diversity**

**Enduring Understandings:**

* Fossils provide key evidence for understanding the origin and the history of life on Earth
* The theory of natural selection explains evolution and the diversity of life evolutionary change in a group of small, tree-living mammals eventually led to a diversity of species that includes modern humans
* Evolution underlies the classification of life’s diversity
* Fossils provide evidence of change in organisms over time
* Charles Darwin developed the theory of evolution based on natural selection
* Multiple lines of evidence support the theory of evolution

**Essential Questions:**

1. What is natural selection?
2. What evidence supports the theory of evolution due to natural selection?
3. How does natural selection affect allelic frequency?
4. What evidence for life forms that existed in the past do scientist have?
5. What are the characteristics of primates?
6. What is the basis for the statement, “All primates have a common ancestor.”?
7. Does the theory of evolution imply that humans evolved from apes?
8. What are some of the changes that have occurred in man over time?
9. What is the scientific name for humans?
10. What are t he difference in hominins and anthropoids?
11. How are organisms place into classification categories?
12. What are some graphical models used to illustrate evolution?

**Bacteria, Viruses, Protists, and Fungi**

**Enduring Understandings:**

* Bacteria are microscopic organisms, and viruses are nonliving microscopic agents the invade cells
* Protists are a diverse group of unicellular and multicellular organisms that do not necessarily share the same evolutionary history
* The kingdom fungi is made up of four phyla based on unique structures, methods of nutrition, and methods of reproduction

**Essential Questions:**

1. Is a virus a living thing?
2. How do viruses replicate?
3. Why do viruses have specific shapes and sizes?
4. Why are viruses significant to humans?
5. What are the characteristics scientists might use to divide protists into groups?
6. How do the various protists obtain their nutrition?
7. What characteristics do fungi share?
8. What characteristics separate the phyla of fungi?

**Plants**

**Enduring Understandings:**

* Plants have changed over time and are now a diverse group of organisms
* The diverse nature of plants is due to the variety of their structure
* The life cycles of plants include various methods of reproduction
* Different types of plant cells make up plant tissue
* Hormones can affect a plant’s responses to its environment

**Essential Questions:**

1. What organisms are considered to be the ancestors of plants?
2. What adaptations enabled plants to survive on dry land?
3. How does the plant kingdom vary?
4. What is the function of leaves?
5. What factors affect transpiration rate?
6. How are roots adapted to their function?
7. What are t he functions of stems in plants?
8. What are the differences in the ways plants reproduce?
9. What does “Alteration of Generation” mean?

**Invertebrates**

**Enduring Understandings:**

* Animal phylogeny is determined in part by animal body plans and adaptations
* Worms and mollusks have evolved to have a variety of adaptations for living as parasites or for living in water or soil
* Anthropods have evolved to have a variety of adaptations foe successful diversity, populations, and persistence
* Echinoderms and invertebrates chordates have features that connect them to the chordates that evolved after them

**Essential Questions:**

1. What are the stages in the development of a zygote?
2. How are the stages of development reflected in Cnidarians?
3. What organisms are found in the protostome and deuterostome groups?
4. What are the body plans found in the protostome and deuterostome groups?
5. What anatomical structures are found in earthworm?
6. How does each structure of earthworm relate to the function of the structure?

**Vertebrates**

**Enduring Understandings:**

* Fishes have adaptations for living in aquatic environments. Most amphibians have adaptations for living part of their lives on land
* Reptile and bird adaptations enable them to live and reproduce successfully in terrestrial habitats
* Mammals have evolved to have a variety of adaptations for maintaining homeostasis and living in a variety of habitats
* Many animal behaviors are influenced by both genetics and environmental experiences

**Essential Questions:**

1. What are the basic components of vertebrate structure?
2. What are the structural systems found in fish?
3. What are the steps in the life cycle of a frog?
4. What organ systems are found in frogs?
5. How are fossils dated and identified?
6. What is the importance of the amniotic egg?
7. How can mammals be classified?
8. What are the orders of mammals?
9. What are the differences in the digestive systems among mammals?

**The Human Body**

**Enduring Understandings:**

* Skin is multi layered organ that covers and protects the body
* The skeleton provides a structural framework for the body and protects internal organs such as the heart, lungs, and brain
* The three major types of muscle tissue differ in structure and function
* Pathogens are dispersed by people, other animals , and objects
* The immune system has two main components nonspecific immunity and specific immunity

**Essential Questions:**

1. Why might the body need muscles with different structures?
2. How do muscles move parts of the body?
3. How does increased workload affect a skeletal muscle’s threshold of stimulation?
4. What are the components of the human circulatory system?
5. What are the human blood groups?
6. What factors affect the likelihood of hypertension?
7. Why is it important to eat a variety of foods?
8. How does food move through the human digestive system?
9. How does the endocrine system help maintain homeostasis in the human body?
10. What are some organisms that cause disease?
11. How does the body’s immune system fight disease?
12. What are some ways we can treat or prevent disease?

# Ecology

**Georgia Performance Standards**

**SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.**

1. Exhibit the above traits in their own scientific activities.
2. Recognize that different explanations often can be given for the same evidence.
3. Explain that further understanding of scientific problems relies on the design and execution of new experiments which may reinforce or weaken opposing explanations.

**SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.**

1. Follow correct procedures for use of scientific apparatus.
2. Demonstrate appropriate technique in all laboratory situations.
3. Follow correct protocol for identifying and reporting safety problems and violations.

**SCSh3. Students will identify and investigate problems scientifically.**

1. Suggest reasonable hypotheses for identified problems.
2. Develop procedures for solving scientific problems.
3. Collect, organize and record appropriate data.
4. Graphically compare and analyze data points and/or summary statistics.
5. Develop reasonable conclusions based on data collected.
6. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

a. Develop and use systematic procedures for recording and organizing information.

b. Use technology to produce tables and graphs.

c. Use technology to develop, test, and revise experimental or mathematical models.

**SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.**

a. Trace the source on any large disparity between estimated and calculated answers to problems.

e. Solve scientific problems by substituting quantitative values, using dimensional analysis and/or simple algebraic formulas as appropriate.

**SCSh6. Students will communicate scientific investigations and information clearly.**

1. Write clear, coherent laboratory reports related to scientific investigations.
2. Write clear, coherent accounts of current scientific issues, including possible alternative interpretations of the data.
3. Use data as evidence to support scientific arguments and claims in written or oral presentations.

d. Participate in group discussions of scientific investigation and current scientific issues.

**SCSh7. Students analyze how scientific knowledge is developed.**

1. The universe is a vast single system in which the basic principles are the same everywhere.
2. Universal principles are discovered through observation and experimental verification.
3. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.
4. Hypotheses often cause scientists to develop new experiments that produce additional data.
5. Testing, revising, and occasionally rejecting new and old theories never ends.

**SCSh8. Students will understand important features of the process of scientific inquiry.**

1. Scientific investigators control the conditions of their experiments in order to produce valuable data.
2. Scientific researchers are expected to critically assess the quality of data including possible sources of bias in their investigations’ hypotheses, observations, data analyses, and interpretations.
3. Scientists use practices such as peer review and publication to reinforce the integrity of scientific activity and reporting.

f. Science disciplines and traditions differ from one another in what is studied, techniques used, and outcomes sought.

**SCSh9. Students will enhance reading in all curriculum areas by:**

a. Reading in all curriculum areas

* Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
* Read both informational and fictional texts in a variety of genres and modes of discourse.
* Read technical texts related to various subject areas.

b. Discussing books

* Discuss messages and themes from books in all subject areas.
* Respond to a variety of texts in multiple modes of discourse.
* Relate messages and themes from one subject area to messages and themes in another area.
* Evaluate the merit of texts in every subject discipline.
* Examine author’s purpose in writing.
* Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

* Demonstrate an understanding of contextual vocabulary in various subjects.
* Use content vocabulary in writing and speaking.
* Explore understanding of new words found in subject area texts.

d. Establishing context

* Explore life experiences related to subject area content.
* Discuss in both writing and speaking how certain words are subject area
* related.
* Determine strategies for finding content and contextual meaning for
* unknown words.

**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.

d. Explain the impact of water on life processes (i.e., osmosis, diffusion).

**SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.**

1. Explain the cycling of energy through the processes of photosynthesis and respiration.

**SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**

1. Investigate the relationships among organisms, populations, communities, ecosystems, and biomes.
2. Explain the flow of matter and energy through ecosystems by
   * Arranging components of a food chain according to energy flow.
   * Comparing the quantity of energy in the steps of an energy pyramid.
   * Explaining the need for cycling of major nutrients (C, O, H, N, P).
3. Assess and explain human activities that influence and modify the environment such as global warming, population growth, pesticide use, and water and power consumption.
4. Relate plant adaptations, including tropisms, to the ability to survive stressful environmental conditions.
5. Relate animal adaptations, including behaviors, to the ability to survive stressful environmental conditions.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 1

**Essential Questions:**

1. What are renewable resources?
2. What are nonrenewable resources?
3. How are populations and resources related?

**Resources:**

[**Organisms and their Relationships Virtual Unit Launcher**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181885/e3_1int.mov::Section%20Launcher%20Movie)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:
   1. Principles of Ecology: Organisms and Their Relationships p.32
8. Engage students in conversation by asking students the following question: What evidence is there that living things require each other? Write answers on the blackboard.
9. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Organisms and their Relationships Virtual Unit Launcher**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181885/e3_1int.mov::Section%20Launcher%20Movie)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [Organisms and their Relationships Virtual Unit Launcher](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181885/e3_1int.mov::Section%20Launcher%20Movie) as a whole group activity. Students will then work in cooperative learning groups to answer the essential questions.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 2

**Essential Questions:**

1. How do living things and nonliving things interact and rely on each other within different ecosystems?
2. What are the different parts of an ecosystem and how are they connecting?
3. How do producers’ consumers and decomposers depend on each other for survival?
4. How does energy pass through a food chain?

**Resources:**

[**Modeling an Ecosystem Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383926/BL_02.html)

[**Ecosystems, Organisms, and Trophic Levels Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383916/BL_03.html)

[**Desert Community Food Web Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383926/A_Food_Web.swf::A%20Food%20Web)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

* + 1. Explain the activity (activity requirements)
    2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
    3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
    4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
    5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
    6. Review unit vocabulary with students.
    7. Introduce the following:

1. Principles of Ecology: Flow of Energy in an Ecosystem p.41
   * 1. Engage students in conversation by asking students the following question: What is the process by which autotrophs convert light energy into chemical energy? Write answers on the blackboard.
     2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

* + 1. Guide students into the activity utilizing [**Modeling an Ecosystem Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383926/BL_02.html)
    2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
    3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [**Modeling an Ecosystem Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383926/BL_02.html) as a whole group activity. Students will work in peer to peer groups to complete the journal activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 3

**Essential Questions:**

1. What is the flow of energy though food chains and food webs?
2. How is matter cycled in the biosphere?

**Resources:**

[**Cycles Virtual Tutor**](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/cycles_mo.swf)

[**The Water Cycle Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383926/The_Water_Cycle.swf::The%20Water%20Cycle)

[**The Carbon Cycle Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383926/The_Carbon_Cycle.swf::The%20Carbon%20Cycle)

[**The Nitrogen Cycle Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383926/The_Nitrogen_Cycle.swf::The%20Nitrogen%20Cycle)

[**The Phosphorus Cycle Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383926/The_Phosphorus_Cycle.swf::The%20Phosphorus%20Cycle)

[**Visualizing Levels of Organization Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383915/Ch2_Visualizing_Levels_of_Organization.swf::Visualizing%20Levels%20of%20Organization)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

* 1. Explain the activity (activity requirements)
  2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
  3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
  4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
  5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
  6. Review unit vocabulary with students.
  7. Review the following:

1. Principles of Ecology: Flow of Energy in an Ecosystem p. 41
2. Introduce Principles of Ecology: Cycling of Matter p.45
   1. Engage students in conversation by asking students the following question: What would happen if matter was bound in living matter and never recycled? Write answers on the blackboard.
   2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

* 1. Guide students into the activity utilizing [**Visualizing Levels of Organization Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383915/Ch2_Visualizing_Levels_of_Organization.swf::Visualizing%20Levels%20of%20Organization)
  2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
  3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will view the following virtual lessons as a whole group activity:

[**Visualizing Levels of Organization Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383915/Ch2_Visualizing_Levels_of_Organization.swf::Visualizing%20Levels%20of%20Organization)

[**Cycles Virtual Tutor**](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/cycles_mo.swf)

[**The Water Cycle Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383926/The_Water_Cycle.swf::The%20Water%20Cycle)

[**The Carbon Cycle Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383926/The_Carbon_Cycle.swf::The%20Carbon%20Cycle)

[**The Nitrogen Cycle Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383926/The_Nitrogen_Cycle.swf::The%20Nitrogen%20Cycle)

[**The Phosphorus Cycle Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383926/The_Phosphorus_Cycle.swf::The%20Phosphorus%20Cycle)

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 4

**Essential Questions:**

1. What are the abiotic and biotic factors that create biomes and communities?
2. What makes up a community?
3. What factors need to be balanced in a biome?
4. What are the consequences of disturbances within an ecosystem?

**Resources:**

[Communities and Biomes](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383927/BL_24.html)

[A Climax Community Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383927/A_Climax_Community.swf::A%20Climax%20Community)

[Visualizing Global Effects Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383927/Vis_Global_Effects.swf::Visualizing%20Global%20Effects)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

* 1. Explain the activity (activity requirements)
  2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
  3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
  4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
  5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
  6. Review unit vocabulary with students.
  7. Introduce the following:

a. Communities, Biomes, and Ecosystems: Community and Biomes p.60

* 1. Engage students in conversation by asking students the following question: What are some abiotic factors that limit plant growth? Write answers on the blackboard.
  2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

* 1. Guide students into the activity utilizing [**Communities and Biomes**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383927/BL_24.html)
  2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
  3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [**Communities and Biomes**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383927/BL_24.html) as a whole group

activity. Students will work in cooperative learning groups to complete the journal activity.

# The Cell

**Georgia Performance Standards:**

**SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.**

a. Exhibit the above traits in their own scientific activities.

b. Recognize that different explanations often can be given for the same evidence.

c. Explain that further understanding of scientific problems relies on the design and execution of new experiments which may reinforce or weaken opposing explanations.

**SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.**

a. Follow correct procedures for use of scientific apparatus.

b. Demonstrate appropriate technique in all laboratory situations.

**SCSh3. Students will identify and investigate problems scientifically.**

a. Suggest reasonable hypotheses for identified problems.

b. Develop procedures for solving scientific problems.

c. Collect, organize and record appropriate data.

d. Graphically compare and analyze data points and/or summary statistics.

e. Develop reasonable conclusions based on data collected.

f. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

a. Develop and use systematic procedures for recording and organizing information.

b. Use technology to produce tables and graphs.

c. Use technology to develop, test, and revise experimental or mathematical models.

**SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.**

a. Trace the source on any large disparity between estimated and calculated answers to problems.

b. Consider possible effects of measurement errors on calculations.

c. Recognize the relationship between accuracy and precision.

e. Solve scientific problems by substituting quantitative values, using dimensional analysis and/or simple algebraic formulas as appropriate.

**SCSh6. Students will communicate scientific investigations and information clearly.**

a. Write clear, coherent laboratory reports related to scientific investigations.

b. Write clear, coherent accounts of current scientific issues, including possible

alternative interpretations of the data.

**SCSh7. Students analyze how scientific knowledge is developed.**

Students recognize that:

1. The universe is a vast single system in which the basic principles are the same everywhere.
2. Universal principles are discovered through observation and experimental verification.
3. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.

**SCSh8. Students will understand important features of the process of scientific inquiry.**

a. Scientific investigators control the conditions of their experiments in order to produce valuable data.

c. Scientists use practices such as peer review and publication to reinforce the integrity of scientific activity and reporting.

f. Science disciplines and traditions differ from one another in what is studied, techniques used, and outcomes sought.

**SCSh9. Students will enhance reading in all curriculum areas by:**

a. Reading in all curriculum areas

* Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
* Read both informational and fictional texts in a variety of genres and modes of discourse.
* Read technical texts related to various subject areas.

b. Discussing books

* Discuss messages and themes from books in all subject areas.
* Respond to a variety of texts in multiple modes of discourse.
* Relate messages and themes from one subject area to messages and themes in another area.
* Evaluate the merit of texts in every subject discipline.
* Examine author’s purpose in writing.
* Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

* Demonstrate an understanding of contextual vocabulary in various subjects.
* Use content vocabulary in writing and speaking.
* Explore understanding of new words found in subject area texts.

d. Establishing context

* Explore life experiences related to subject area content.
* Discuss in both writing and speaking how certain words are subject area related.
* Determine strategies for finding content and contextual meaning for unknown words.

**SB1. Students will analyze the nature of the relationships between structures and functions in living cells.**

1. Explain the role of cell organelles for both prokaryotic and eukaryotic cells, including the cell membrane, in maintaining homeostasis and cell reproduction.
2. Explain how enzymes function as catalysts.
3. Identify the function of the four major macromolecules (i.e., carbohydrates, proteins, lipids, nucleic acids).
4. Explain the impact of water on life processes (i.e., osmosis, diffusion).

**SB2. Students will analyze how biological traits are passed on to successive generations.**

1. Distinguish between DNA and RNA.
2. Explain the role of DNA in storing and transmitting cellular information.
3. Using Mendel’s laws, explain the role of meiosis in reproductive variability.
4. Describe the relationships between changes in DNA and potential appearance of new traits including:

Alterations during replication.

* Insertions
* Deletions
* Substitutions

Mutagenic factors that can alter DNA.

* High energy radiation (x-rays and ultraviolet)
* Chemical

1. Compare the advantages of sexual reproduction and asexual reproduction in different situations.
2. Examine the use of DNA technology in forensics, medicine, and agriculture.

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**Essential Questions:**

1. What is a cell?
2. What substances make up the components of living cells?

**Resources:**

[Section Launcher Movie Virtual lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181905/e7_1int.mov::Section%20Launcher%20Movie%20)

[Chapter6 Concentration Virtual Game](http://www.glencoe.com/olc_games/game_engine/content/gln_sci/biology_07_nat/chapter6/concentration/)

[How Monomers Bond Virtual Lesson](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/how_monomers_bond_mo.swf)

[Types of Bonds Virtual Lesson](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/types_of_bonds_mo.swf)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

* 1. Explain the activity (activity requirements)
  2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
  3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
  4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
  5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
  6. Review unit vocabulary with students.
  7. Introduce the following:

a. Chemistry in Biology: Atoms, Elements, and Compounds p.148

* 1. Engage students in conversation by asking students the following questions: What is the smallest unit of matter? How are atoms and elements related? Write answers on the blackboard.
  2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

* 1. Guide students into the activity utilizing [Section Launcher Movie Virtual lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181905/e7_1int.mov::Section%20Launcher%20Movie%20)
  2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
  3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

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The teacher and students will complete [Section Launcher Movie Virtual lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181905/e7_1int.mov::Section%20Launcher%20Movie%20) as a whole group activity. Students will answer the essential questions while working in peer to peer learning groups.

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**Essential Questions:**

1. What are enzymes and why are they important to living things?
2. What effects do enzymes have on chemical reactions?
3. What are some biological processes that require enzymatic activity?
4. How do substrate concentrate and pH affect enzyme controlled reactions?

**Resources:**

[Enzyme-Controlled Reaction Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383930/BL_11.html)

[Chemical Reaction Quick Check](http://glencoe.mcgraw-hill.com/sites/0078802849/student_view0/unit2/chapter6/section2/self-check_quizzes-english.html)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

* 1. Explain the activity (activity requirements)
  2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
  3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
  4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
  5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
  6. Review unit vocabulary with students.
  7. Introduce the following:

a. Chemistry in Biology: Chemical Reactions p.156

* 1. Engage students in conversation by asking students the following question: What is the relationship between a chemical bond and a chemical reaction? Write answers on the blackboard.
  2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

* 1. Guide students into the activity utilizing [Enzyme-Controlled Reaction Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383930/BL_11.html)
  2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
  3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

**Activity 1**

The teacher and students will complete [Enzyme-Controlled Reaction Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383930/BL_11.html)

as a whole group activity. Students will complete the journal activity independently.

**Activity 2**

The teacher and students will complete the [Chemical Reaction Quick Check](http://glencoe.mcgraw-hill.com/sites/0078802849/student_view0/unit2/chapter6/section2/self-check_quizzes-english.html) as a whole group closing activity.

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**Essential Questions:**

1. How is homeostasis in a cell maintained?
2. What are the differences between the various forms of active transport?

**Resources:**

[Cellular Pursuit Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383931/BL_20_dev_100.html)

[Visualizing Cells Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383931/Visualizing_Cells.swf::Visualizing%20Cells)

[How a Simple Microscope Works Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/592985/620_How_a_Simple_Microscope_Works.swf::How%20a%20Simple%20Microscope%20Works)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Cellular Structure and Function: Cell Discovery and Theory p.182

1. Engage students in conversation by asking students the following question: What steps are involved in developing a scientific theory? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [Cellular Pursuit Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383931/BL_20_dev_100.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

Activity 1

The teacher and students will complete the [Cellular Pursuit Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383931/BL_20_dev_100.html) as a whole

group activity. Students will complete the journal activity as a ticket out the door.

Activity 2

The teacher and students will complete the [Visualizing Cells Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383931/Visualizing_Cells.swf::Visualizing%20Cells) as a whole group activity.

Activity 3

The teacher and students will complete the [How a Simple Microscope Works Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/592985/620_How_a_Simple_Microscope_Works.swf::How%20a%20Simple%20Microscope%20Works) as a whole group activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 4

**Essential Questions:**

1. How is homeostasis in a cell maintained?
2. How are materials transported in and out of the cell?
3. What are the various forms of active transport and passive transport?

**Resources:**

[**Na/kpump Virtual Lesson**](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/k_pump_mo.swf)

[**Active Transport Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=avi::240::320::/sites/dl/free/0078802849/383931/Active_Transport.AVI::Active%20Transport)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Cellular Structure and Function: Cellular Transport p.201

1. Engage students in conversation by asking students the following question: How can you tell when breakfast is cooking in the morning? How did these smells reach your nose? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Na/kpump Virtual Lesson**](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/k_pump_mo.swf) **and** [**Active Transport Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=avi::240::320::/sites/dl/free/0078802849/383931/Active_Transport.AVI::Active%20Transport)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

Activity 1

The teacher and students will complete [**Na/kpump Virtual Lesson**](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/k_pump_mo.swf) **as a wh**ole group activity. Students will complete the journal activity as a ticket out the door.

Activity 2

The teacher and students will complete view [**Active Transport Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=avi::240::320::/sites/dl/free/0078802849/383931/Active_Transport.AVI::Active%20Transport) **as a wh**ole group activity.

# Genetics

**Georgia Performance Standards:**

**SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.**

1. Exhibit the above traits in their own scientific activities.
2. Recognize that different explanations often can be given for the same evidence.
3. Explain that further understanding of scientific problems relies on the design and execution of new experiments which may reinforce or weaken opposing explanations.

**SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.**

a. Follow correct procedures for use of scientific apparatus.

b. Demonstrate appropriate technique in all laboratory situations.

c. Follow correct protocol for identifying and reporting safety problems and violations.

**SCSh3. Students will identify and investigate problems scientifically.**

1. Suggest reasonable hypotheses for identified problems.
2. Develop procedures for solving scientific problems.
3. Collect, organize and record appropriate data.
4. Graphically compare and analyze data points and/or summary statistics.
5. Develop reasonable conclusions based on data collected.
6. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

a. Develop and use systematic procedures for recording and organizing information.

b. Use technology to produce tables and graphs.

**SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.**

1. Trace the source on any large disparity between estimated and calculated answers to problems.
2. Consider possible effects of measurement errors on calculations.
3. Recognize the relationship between accuracy and precision.

**SCSh6. Students will communicate scientific investigations and information clearly.**

b. Write clear, coherent accounts of current scientific issues, including possible alternative interpretations of the data.

d. Participate in group discussions of scientific investigation and current scientific issues.

**SCSh7. Students analyze how scientific knowledge is developed.**

1. The universe is a vast single system in which the basic principles are the same everywhere.
2. Universal principles are discovered through observation and experimental verification.
3. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.
4. Hypotheses often cause scientists to develop new experiments that produce additional data.
5. Testing, revising, and occasionally rejecting new and old theories never ends.

**SCSh8. Students will understand important features of the process of scientific inquiry.**

b. Scientific researchers are expected to critically assess the quality of data including possible sources of bias in their investigations’ hypotheses, observations, data analyses, and interpretations.

c. Scientists use practices such as peer review and publication to reinforce the integrity of scientific activity and reporting.

f. Science disciplines and traditions differ from one another in what is studied, techniques used, and outcomes sought.

**SCSh9. Students will enhance reading in all curriculum areas by:**

a. Reading in all curriculum areas

* Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
* Read both informational and fictional texts in a variety of genres and modes of discourse.
* Read technical texts related to various subject areas.

b. Discussing books

* Discuss messages and themes from books in all subject areas.
* Respond to a variety of texts in multiple modes of discourse.
* Relate messages and themes from one subject area to messages and themes in another area.
* Evaluate the merit of texts in every subject discipline.
* Examine author’s purpose in writing.
* Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

* Demonstrate an understanding of contextual vocabulary in various subjects.
* Use content vocabulary in writing and speaking.
* Explore understanding of new words found in subject area texts.
* Establishing context
* Explore life experiences related to subject area content.
* Discuss in both writing and speaking how certain words are subject area related.
* Determine strategies for finding content and contextual meaning for unknown words.

**SB2. Students will analyze how biological traits are passed on to successive generations.**

1. Distinguish between DNA and RNA.
2. Explain the role of DNA in storing and transmitting cellular information.
3. Using Mendel’s laws, explain the role of meiosis in reproductive variability.
4. Describe the relationships between changes in DNA and potential appearance of new traits including

Alterations during replication.

* Insertions
* Deletions
* Substitutions

Mutagenic factors that can alter DNA.

* High energy radiation (x-rays and ultraviolet)
* Chemical

1. Compare the advantages of sexual reproduction and asexual reproduction in different situations.
2. Examine the use of DNA technology in forensics, medicine, and agriculture.

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**Essential Questions:**

1. What is the importance of meiosis?
2. What are the cell parts involved in meiosis?
3. How is mitosis different from meiosis?

**Resources:**

[**Visualizing Meiosis Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383915/Ch10_MeiosisI_MeiosisII101706.swf::Visualizing%20Meiosis)

[**Meiosis Crossing Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/592988/meiosis_crossing.swf::Meiosis%20Crossing)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

* 1. Explain the activity (activity requirements)
  2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
  3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
  4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
  5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
  6. Review unit vocabulary with students.
  7. Introduce the following:

a. Sexual Reproduction and Genetics: Meiosis p.270

* 1. Engage students in conversation by asking students the following question: How are the following cell parts involved in mitosis? *Chromosome, microtubules, spindle fibers, nucleus, and nucleolus.* Write answers on the blackboard.
  2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

* 1. Guide students into the activity utilizing [**Visualizing Meiosis Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383915/Ch10_MeiosisI_MeiosisII101706.swf::Visualizing%20Meiosis)
  2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
  3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will view [**Visualizing Meiosis Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383915/Ch10_MeiosisI_MeiosisII101706.swf::Visualizing%20Meiosis)as a whole group activity. Teacher will then have students to draw the general reproduction cycle of a cell that has six chromosomes. Students will indicate the stages in the life cycle that are 2n and the stages that are n.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 2

**Essential Questions:**

1. Who was Gregor Mendel?
2. What laws did he discover?
3. What is heredity?

**Resources:**

[**Mendelian Genetics Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::188::/sites/dl/free/0078802849/181929/e12_1int.mov::Section%20Launcher%20Movie)

[**Punnett Squares Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383934/BL_05.html)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Sexual Reproduction and Genetics: Mendelin Genetics p.277

1. Engage students in conversation by asking students the following questions: Do all dogs look alike? What types of features indicate a particular breed? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Mendelian Genetics Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::188::/sites/dl/free/0078802849/181929/e12_1int.mov::Section%20Launcher%20Movie) and [**Punnett Squares Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383934/BL_05.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

Activity 1

The teacher and students will complete [**Punnett Squares Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383934/BL_05.html) **as** a whole group activity. Students will complete the journal activity in peer to peer learning group.

Activity 2

The teacher and students will complete [**Mendelian Genetics Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::188::/sites/dl/free/0078802849/181929/e12_1int.mov::Section%20Launcher%20Movie)as a whole group activity. Students will answer one essential question as a ticket out the door.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 3

**Essential Questions:**

1. What are some complex patterns of inheritance in humans?
2. How can sex linked traits be identified?
3. What are some examples of recessive genetic disorders?

**Resources:**

[Sex-Linked Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383935/BL_15.html)

[Complex Patterns of Inheritance Virtual Tutor Lesson](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/complex_patterns_mo.swf)

[Recessive Genetic Disorders in Humans Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383935/Table11_2a.swf::Recessive%20Genetic%20Disorders%20in%20Humans%20-%20A)

[Nondisjunction in Sex Chromosomes Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383935/Table_11_4.swf::Nondisjunction%20in%20Sex%20Chromosomes)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Complex Inheritance and Human Heredity: Complex Patterns of Inheritance p.302

1. Engage students in conversation by asking students the following question: What possible eye colors are there? Then have students to examine each other’s eyes. What else do you notice about eye color? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Sex-Linked Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383935/BL_15.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete the [**Sex-Linked Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383935/BL_15.html) **a**s a whole group activity. Students will work in cooperative learning groups to complete the journal activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 4

**Essential Questions:**

1. What are the consequences of changes in the genome?
2. How do point mutations and frame shift mutation impact genetic sequence?

**Resources:**

[Gene Regulation and Mutation Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383936/BL_26.html)

[Tracking Grizzlies Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383918/BL_29.html)

[**Mutation by Base Substitution Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/592990/Mutation_by_base_substitution.swf::Mutation%20by%20Base%20Substitution)

[**Addition and Deletion Mutations Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/592990/Addition_and_deletion_mutations.swf::Addition%20and%20Deletion%20Mutations)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Molecular Genetics: Gene Regulation and Mutation p.342

1. Engage students in conversation by asking students the following question: What words and image come to mind when you hear the words mutation or mutant? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [Gene Regulation and Mutation Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383936/BL_26.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [Gene Regulation and Mutation Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383936/BL_26.html) as a whole group activity. Students will complete the journal activity as a ticket out the door.

# Unit: History of Biological Diversity

**Georgia Performance Standards:**

**SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.**

1. Exhibit the above traits in their own scientific activities.
2. Recognize that different explanations often can be given for the same evidence.
3. Explain that further understanding of scientific problems relies on the design and execution of new experiments which may reinforce or weaken opposing explanations.

**SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.**

a. Follow correct procedures for use of scientific apparatus.

b. Demonstrate appropriate technique in all laboratory situations.

c. Follow correct protocol for identifying and reporting safety problems and violations.

**SCSh3. Students will identify and investigate problems scientifically.**

1. Suggest reasonable hypotheses for identified problems.
2. Develop procedures for solving scientific problems.
3. Collect, organize and record appropriate data.
4. Graphically compare and analyze data points and/or summary statistics.
5. Develop reasonable conclusions based on data collected.
6. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

a. Develop and use systematic procedures for recording and organizing information.

c. Use technology to develop, test, and revise experimental or mathematical models.

**SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.**

e. Solve scientific problems by substituting quantitative values, using dimensional

analysis and/or simple algebraic formulas as appropriate.

**SCSh6. Students will communicate scientific investigations and information clearly.**

b. Write clear, coherent accounts of current scientific issues, including possible

alternative interpretations of the data.

**SCSh7. Students analyze how scientific knowledge is developed.**

Students recognize that:

1. The universe is a vast single system in which the basic principles are the same everywhere.
2. Universal principles are discovered through observation and experimental verification.
3. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.
4. Hypotheses often cause scientists to develop new experiments that produce additional data.
5. Testing, revising, and occasionally rejecting new and old theories never ends.

**SCSh8. Students will understand important features of the process of scientific inquiry.**

b. Scientific researchers are expected to critically assess the quality of data including possible sources of bias in their investigations’ hypotheses, observations, data analyses, and interpretations.

f. Science disciplines and traditions differ from one another in what is studied, techniques used, and outcomes sought.

**SCSh9. Students will enhance reading in all curriculum areas by:**

a. Reading in all curriculum areas

* Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas. Read both informational and fictional texts in a variety of genres and modes of discourse.
* Read technical texts related to various subject areas.

b. Discussing books

* Discuss messages and themes from books in all subject areas.
* Respond to a variety of texts in multiple modes of discourse.
* Relate messages and themes from one subject area to messages and themes in another area.
* Evaluate the merit of texts in every subject discipline.
* Examine author’s purpose in writing.
* Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

* + - Demonstrate an understanding of contextual vocabulary in various subjects.
    - Use content vocabulary in writing and speaking.
    - Explore understanding of new words found in subject area texts.

d. Establishing context

* Explore life experiences related to subject area content.
* Discuss in both writing and speaking how certain words are subject area related.
* Determine strategies for finding content and contextual meaning for unknown words.

**SB2. Students will analyze how biological traits are passed on to successive generations.**

b. Explain the role of DNA in storing and transmitting cellular information.

c. Using Mendel’s laws, explain the role of meiosis in reproductive variability.

d. Describe the relationships between changes in DNA and potential appearance of new traits including Alterations during replication.

* Insertions
* Deletions
* Substitutions

Mutagenic factors that can alter DNA.

* High energy radiation (x-rays and ultraviolet)
* Chemical

1. Examine the use of DNA technology in forensics, medicine, and agriculture.

**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.

d. Assess and explain human activities that influence and modify the environment such as global warming, population growth, pesticide use, and water and power consumption.

f. Relate animal adaptations, including behaviors, to the ability to survive stressful environmental conditions.

**SB5. Students will evaluate the role of natural selection in the development of the theory of evolution.**

1. Trace the history of the theory.
2. Explain the history of life in terms of biodiversity, ancestry, and the rates of evolution.
3. Explain how fossil and biochemical evidence support the theory.
4. Relate natural selection to changes in organisms.
5. Recognize the role of evolution to biological resistance (pesticide and antibiotic resistance).

## Task: 1

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**Essential Questions:**

1. What is natural selection?
2. What evidence supports the theory of evolution due to natural selection?
3. How does natural selection affect allelic frequency?
4. What evidence for life forms that existed in the past do scientists have?

**Resources:**

[**Natural Selection Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383939/BL_12.html)

[**Comparison of Selection Virtual Concept**](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/comparison_mo.swf)

[**Convergent Evolution Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383912/table15_4.swf::Convergent%20Evolution)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Evolution: Shaping Evolutionary Theory p.431

1. Engage students in conversation by asking students the following question: Other than natural selection, how else might species change over time? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Natural Selection Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383939/BL_12.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [**Natural Selection Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383939/BL_12.html)as a whole group activity. Students will form learning circles to complete the journal activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 2

**Essential Question:**

1. What are the characteristics of primates?
2. What ability do gorillas have that humans do not?

**Resources:**

[**Primates Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181961/e19_1int.mov::Section%20Launcher%20Movie)

[**Visualizing Primates Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383925/CH16_Primates_103006.swf::Visualizing%20Primates)

[**Characteristics of Strepsirrhines Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table16_1.swf::Characteristics%20of%20Strepsirrhines)

[Primates Quick Check](http://glencoe.mcgraw-hill.com/sites/0078802849/student_view0/unit4/chapter16/section1/self-check_quizzes-english.html)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Primate Evolution: Primates p.452

1. Engage students in conversation by asking students the following question: What makes humans different from all other species? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Primates Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181961/e19_1int.mov::Section%20Launcher%20Movie)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

**Activity 1**

The teacher and students will view [**Primates Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181961/e19_1int.mov::Section%20Launcher%20Movie)as a whole group activity. Students will answer one essential question as a ticket out the door.

**Activity 2**

The teacher and students will complete the [Primates Quick Check](http://glencoe.mcgraw-hill.com/sites/0078802849/student_view0/unit4/chapter16/section1/self-check_quizzes-english.html) as a whole group activity

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 3

**Essential Questions:**

1. What are some of the changes that have occurred in man over time?
2. What is the scientific name for humans?
3. What are t he difference in hominins and anthropoids?

**Resources:**

[**Characteristics of the Homo Species Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table16_2.swf::Characteristics%20of%20the%20Homo%20species)

[**Human Evolution Virtual Lesson**](http://www.handprint.com/LS/ANC/disp.html)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Primate Evolution: Hominoids to Hominins p.461

1. Engage students in conversation by asking students the following question: What characteristics evolved in hominoids that made them different from other primates and led to the evolution of hominins? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Characteristics of the Homo Species Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table16_2.swf::Characteristics%20of%20the%20Homo%20species)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will view the [**Characteristics of the Homo Species Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table16_2.swf::Characteristics%20of%20the%20Homo%20species) as a whole group activity. Students will work in cooperative learning groups to answer essential questions as a ticket out the door.

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**Essential Questions:**

1. How are organisms place into classification categories?
2. What are some graphical models used to illustrate evolution?

**Resources:**

[Classifying Using Biotechnology Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383941/BL_06.html)

[The Cladistic Method Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383941/The_Cladistic_Method.swf::The%20Cladistic%20Method)

[Evolutionary Trees Virtual Lesson Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383941/Evolutionary_Trees.swf::Evolutionary%20Trees)

[Visualizing the Tree of Life Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383941/Visualizing_Tree_Life.swf::Visualizing%20the%20Tree%20of%20Life)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Primate Evolution: Domains and Kingdomsp.499

1. Engage students in conversation by asking students the following question: Into which domain and kingdom would you classify a prokaryote that uses sulfuric acid for its energy source? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Classifying Using Biotechnology Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383941/BL_06.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [**Classifying Using Biotechnology Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383941/BL_06.html) **a**s a whole group activity. Students will complete the journal activity as a ticket out the door.

# Bacteria Viruses, Protists, and Fungi

**Georgia Performance Standards:**

**SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.**

1. Exhibit the above traits in their own scientific activities.
2. Recognize that different explanations often can be given for the same evidence.
3. Explain that further understanding of scientific problems relies on the design and execution of new experiments which may reinforce or weaken opposing explanations.

**SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.**

a. Follow correct procedures for use of scientific apparatus.

b. Demonstrate appropriate technique in all laboratory situations.

**SCSh3. Students will identify and investigate problems scientifically.**

1. Suggest reasonable hypotheses for identified problems.
2. Develop procedures for solving scientific problems.
3. Collect, organize and record appropriate data.
4. Graphically compare and analyze data points and/or summary statistics.
5. Develop reasonable conclusions based on data collected.
6. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

a. Develop and use systematic procedures for recording and organizing information.

c. Use technology to develop, test, and revise experimental or mathematical models.

**SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.**

a. Trace the source on any large disparity between estimated and calculated answers to problems.

**SCSh6. Students will communicate scientific investigations and information clearly.**

1. Write clear, coherent laboratory reports related to scientific investigations.
2. Write clear, coherent accounts of current scientific issues, including possible alternative interpretations of the data.

**SCSh7. Students analyze how scientific knowledge is developed.**

a. The universe is a vast single system in which the basic principles are the same everywhere.

e. Testing, revising, and occasionally rejecting new and old theories never ends.

**SCSh8. Students will understand important features of the process of scientific inquiry.**

a. Scientific investigators control the conditions of their experiments in order to produce valuable data.

b. Scientific researchers are expected to critically assess the quality of data including possible sources of bias in their investigations’ hypotheses, observations, data analyses, and interpretations.

f. Science disciplines and traditions differ from one another in what is studied, techniques used, and outcomes sought.

**SCSh9. Students will enhance reading in all curriculum areas by:**

a. Reading in all curriculum areas

* Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
* Read both informational and fictional texts in a variety of genres and modes of discourse.
* Read technical texts related to various subject areas.

b. Discussing books

* Discuss messages and themes from books in all subject areas.
* Respond to a variety of texts in multiple modes of discourse.
* Relate messages and themes from one subject area to messages and themes in another area.
* Evaluate the merit of texts in every subject discipline.
* Examine author’s purpose in writing.
* Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

* Demonstrate an understanding of contextual vocabulary in various subjects.
* Use content vocabulary in writing and speaking.
* Explore understanding of new words found in subject area texts.

d. Establishing context

* Explore life experiences related to subject area content.
* Discuss in both writing and speaking how certain words are subject area related.
* Determine strategies for finding content and contextual meaning for unknown words.

**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.

c. Identify the function of the four major macromolecules (i.e., carbohydrates, proteins, lipids, nucleic acids).

d. Explain the impact of water on life processes (i.e., osmosis, diffusion).

**SB2. Students will analyze how biological traits are passed on to successive generations.**

b. Explain the role of DNA in storing and transmitting cellular information.

d. Describe the relationships between changes in DNA and potential appearance of new traits including

Alterations during replication.

* Alterations during replication.
* Insertions
* Deletions
* Substitutions

Mutagenic factors that can alter DNA.

* High energy radiation (x-rays and ultraviolet)
* Chemical

**SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.**

1. Explain the cycling of energy through the processes of photosynthesis and respiration.
2. Compare how structures and function vary between the six kingdoms (archaebacteria, eubacteria, protists, fungi, plants, and animals).
3. Examine the evolutionary basis of modern classification systems.
4. 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.**

1. Investigate the relationships among organisms, populations, communities,

ecosystems, and biomes.

e. Relate plant adaptations, including tropisms, to the ability to survive stressful environmental conditions.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 1

**Essential Questions:**

1. Is a virus a living thing?
2. Why do viruses have specific shapes and sizes?

**Resources:**

[Section Launcher Movie Viruses and Prions Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::240::/sites/dl/free/0078695104/181977/e21_1int.mov::Section%20Launcher%20Movie)

[Retrovirus Replication Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383942/Retrovirus_Replication.swf::Retrovirus%20Replication)

[Human Viral Diseases Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table18_2.swf::Human%20Viral%20Diseases)

[Visualizing Viral Replication Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383925/CH18_Visualizing_Viral_Replication.swf::Visualizing%20Viral%20Replication)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

* 1. Explain the activity (activity requirements)
  2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
  3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
  4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
  5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
  6. Review unit vocabulary with students. [Vocabulary](http://www.glencoe.com/qe/efcwin.php?qi=12607)
  7. Introduce the following:

a. Bacteria, Viruses, Protists and Fungi: Viruses and Prions p.525

* 1. Engage students in conversation by asking students the following question: Are viruses and prions considered cells? Write answers on the blackboard.
  2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

* 1. Guide students into the activity utilizing
  2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
  3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will view [**Section Launcher Movie Viruses and Prions Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::240::/sites/dl/free/0078695104/181977/e21_1int.mov::Section%20Launcher%20Movie)as a whole group activity. Students will select one essential question to answer as a ticket out the door.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 2

**Essential Questions:**

1. What are the characteristics scientists might use to divide protists into groups?
2. How do the various protists obtain their nutrition?

**Resources:**

[The Protists Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table19_1.swf::The%20Protists)

[Some Uses for Algae Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table19_2.swf::Some%20Uses%20for%20Algae)

[Protists Quick Check](http://glencoe.mcgraw-hill.com/sites/0078695104/student_view0/unit5/chapter19/section1/self-check_quizzes-english.html)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Bacteria, Viruses, Protists and Fungi: Introduction to Protists

1. Engage students in conversation by asking students the following question: What are some characteristics scientists might use to divide protists into different groups? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**The Protists Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table19_1.swf::The%20Protists) **and** [**Some Uses for Algae Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table19_2.swf::Some%20Uses%20for%20Algae)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete the [Protists Quick Check](http://glencoe.mcgraw-hill.com/sites/0078695104/student_view0/unit5/chapter19/section1/self-check_quizzes-english.html) as a whole group activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 3

**Essential Questions:**

1. What characteristics do fungi share?
2. What characteristics separate the phyla of fungi?

**Resources:**

[Fungi Phyla - A Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383944/Table20_1a.swf::Fungi%20Phyla%20-%20A)

[Fungi Phyla - B Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383944/Table20_1b.swf::Fungi%20Phyla%20-%20B)

[Visualizing a Fairy Ring Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383944/Visualizing_Fairy_Ring.swf::Visualizing%20a%20Fairy%20Ring)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students. [Vocabulary](http://www.glencoe.com/qe/efcwin.php?qi=12609)
7. Introduce the following:

a. Bacteria, Viruses, Protists and Fungi: Introduction to Fungi p.576

1. Engage students in conversation by asking students the following question: How have you encountered fungi? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [Fungi Phyla - A Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383944/Table20_1a.swf::Fungi%20Phyla%20-%20A) and [Fungi Phyla - B Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383944/Table20_1b.swf::Fungi%20Phyla%20-%20B)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

**Activity 1**

The teacher and students will view [All about Fungi](http://www.glencoe.com/olc_games/game_engine/content/gln_sci/biology_07_nat/chapter20/truefalse/) as a whole group activity.

**Activity 2**

The teacher and students will view [Fungi Phyla - A Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383944/Table20_1a.swf::Fungi%20Phyla%20-%20A) and [Fungi Phyla - B Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383944/Table20_1b.swf::Fungi%20Phyla%20-%20B) as a whole group activity.

**Activity 3**

The teacher and students will complete [Fungi Quick Check](http://glencoe.mcgraw-hill.com/sites/0078695104/student_view0/unit5/chapter20/chapter_test_practice-english.html%09%09%09%20%20%20%20%20%20%20%20%20%20%20%20%20) as a ticket out the door.

# Plants

**Georgia Performance Standards:**

**SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.**

1. Exhibit the above traits in their own scientific activities.
2. Recognize that different explanations often can be given for the same evidence.
3. Explain that further understanding of scientific problems relies on the design and execution of new experiments which may reinforce or weaken opposing explanations.

**SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.**

a. Follow correct procedures for use of scientific apparatus.

b. Demonstrate appropriate technique in all laboratory situations.

**SCSh3. Students will identify and investigate problems scientifically.**

1. Suggest reasonable hypotheses for identified problems.
2. Develop procedures for solving scientific problems.
3. Collect, organize and record appropriate data.
4. Graphically compare and analyze data points and/or summary statistics.
5. Develop reasonable conclusions based on data collected.
6. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

a. Develop and use systematic procedures for recording and organizing information.

b. Use technology to produce tables and graphs.

c. Use technology to develop, test, and revise experimental or mathematical models.

**SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.**

1. Recognize the relationship between accuracy and precision.

**SCSh6. Students will communicate scientific investigations and information clearly.**

c. Use data as evidence to support scientific arguments and claims in written or oral presentations.

d. Participate in group discussions of scientific investigation and current scientific issues.

**SCSh7. Students analyze how scientific knowledge is developed.**

1. The universe is a vast single system in which the basic principles are the same everywhere.
2. Universal principles are discovered through observation and experimental verification.
3. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.
4. Hypotheses often cause scientists to develop new experiments that produce additional data.
5. Testing, revising, and occasionally rejecting new and old theories never ends

**SCSh8. Students will understand important features of the process of scientific inquiry.**

Students will apply the following to inquiry learning practices:

a. Scientific investigators control the conditions of their experiments in order to produce valuable data.

c. Scientists use practices such as peer review and publication to reinforce the integrity of scientific activity and reporting.

f. Science disciplines and traditions differ from one another in what is studied, techniques used, and outcomes sought.

**SCSh9. Students will enhance reading in all curriculum areas by:**

a. Reading in all curriculum areas

* Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
* Read both informational and fictional texts in a variety of genres and modes of discourse.
* Read technical texts related to various subject areas.

b. Discussing books

* Discuss messages and themes from books in all subject areas.
* Respond to a variety of texts in multiple modes of discourse.
* Relate messages and themes from one subject area to messages and themes in another area.
* Evaluate the merit of texts in every subject discipline.
* Examine author’s purpose in writing.
* Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

* Demonstrate an understanding of contextual vocabulary in various subjects.
* Use content vocabulary in writing and speaking.
* Explore understanding of new words found in subject area texts.

d. Establishing context

* Explore life experiences related to subject area content.
* Discuss in both writing and speaking how certain words are subject area related.
* Determine strategies for finding content and contextual meaning for unknown words.

**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.

d. Explain the impact of water on life processes (i.e., osmosis, diffusion).

**SB2. Students will analyze how biological traits are passed on to successive generations.**

d. Describe the relationships between changes in DNA and potential appearance of new traits including:

Alterations during replication.

* Alterations during replication.
* Insertions
* Deletions
* Substitutions

Mutagenic factors that can alter DNA.

* High energy radiation (x-rays and ultraviolet)
* Chemical

e. Compare the advantages of sexual reproduction and asexual reproduction in different situations.

f. Examine the use of DNA technology in forensics, medicine, and agriculture.

**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.

**SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**

e. Relate plant adaptations, including tropisms, to the ability to survive stressful environmental conditions.

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**Essential Question:**

1. What organisms are considered to be the ancestors of plants?
2. What adaptations enabled plants to survive on dry land?

**Resources:**

[Section Launcher Movie Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078695104/182001/e24_1int.mov::Section%20Launcher%20Movie)

[Plant Growth Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/164213/00076704.html)

[Knocking out Genes Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383945/BL_07.html)

[Visualizing the Plant Kingdom Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383925/CH21_Plant_Kingdom.swf::Visualizing%20the%20Plant%20Kingdom)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students. [Vocabulary](http://www.glencoe.com/qe/efcwin.php?qi=12610)
7. Introduce the following:

a. Introduction to Plants: Plant Evolution and Adaptations p. 604

1. Engage students in conversation by asking students the following question: How does the cuticle help a plant conserve water? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [Section Launcher Movie Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078695104/182001/e24_1int.mov::Section%20Launcher%20Movie) and [Plant Growth Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/164213/00076704.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [Knocking out Genes Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383945/BL_07.html)as a whole group activity. Students will work in cooperative learning groups to complete the journal activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 2

**Essential Questions:**

1. What is the function of leaves?
2. What factors affect transpiration rate?
3. How are roots adapted to their function?
4. What are t he functions of stems in plants?

**Resources:**

[Plant Transpiration Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383946/BL_10.html)

[Nutrients Entering Root Cells Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383946/Movement_through_Roots.swf::Nutrients%20Entering%20Root%20Cells)

[Root Systems and Adaptations Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table22_2.swf::Root%20Systems%20and%20Adaptations)

[Types of Stems Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table22_3.swf::Types%20of%20Stems)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students. [Vocabulary](http://www.glencoe.com/qe/efcwin.php?qi=12611)
7. Introduce the following:

a. Plant Structure and Function: Roots, Stems, and Leaves p.639

1. Engage students in conversation by asking students the following question: Why does a plant need a root cap? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [Plant Transpiration Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383946/BL_10.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [Plant Transpiration Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383946/BL_10.html) as a whole

group activity. Students will work in cooperative learning groups to complete the journal activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 3

**Essential Questions:**

1. What are the differences in the ways plants reproduce?
2. What does “Alteration of Generation” mean?

**Resources:**

[Alteration of Generations Visual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383947/Alteration_of_Generations.swf::Alteration%20of%20Generations)

[Conifers Life Cycle Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=avi::240::320::/sites/dl/free/0078695104/383947/Conifers_Life_Cycle.AVI::Conifers%20Life%20Cycle)

[Moss Life Cycle Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383947/Mosss_Life_Cycle.swf::Moss%20Life%20Cycle)

[Types of Fruit Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/Table23_1.swf::Types%20of%20Fruit)

[Reproduction in Plants Quick Check](http://glencoe.mcgraw-hill.com/sites/0078695104/student_view0/unit6/chapter23/chapter_test_practice-english.html)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students. [Vocabulary](http://www.glencoe.com/qe/efcwin.php?qi=12612)
7. Introduce the following:

a. Reproduction in Plants: Introduction to Plant Reproduction p.662

1. Engage students in conversation by asking students the following question: Why do pine trees produce cones? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [Types of Fruit Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/Table23_1.swf::Types%20of%20Fruit), [Alteration of Generations Visual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383947/Alteration_of_Generations.swf::Alteration%20of%20Generations), and [Moss Life Cycle Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383947/Mosss_Life_Cycle.swf::Moss%20Life%20Cycle)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

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**Activity 1**

The teacher and students will view [Types of Fruit Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/Table23_1.swf::Types%20of%20Fruit), [Alteration of Generations Visual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383947/Alteration_of_Generations.swf::Alteration%20of%20Generations), and [Moss Life Cycle Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383947/Mosss_Life_Cycle.swf::Moss%20Life%20Cycle) as a whole group activity.

The teacher and students will complete the [Reproduction in Plants Quick Check](http://glencoe.mcgraw-hill.com/sites/0078695104/student_view0/unit6/chapter23/chapter_test_practice-english.html) as a whole group activity.

# Invertebrates

**Georgia Performance Standards:**

**SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.**

1. Exhibit the above traits in their own scientific activities.

**SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.**

a. Follow correct procedures for use of scientific apparatus.

b. Demonstrate appropriate technique in all laboratory situations.

**SCSh3. Students will identify and investigate problems scientifically.**

1. Suggest reasonable hypotheses for identified problems.
2. Develop procedures for solving scientific problems.
3. Collect, organize and record appropriate data.
4. Graphically compare and analyze data points and/or summary statistics.
5. Develop reasonable conclusions based on data collected.
6. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

a. Develop and use systematic procedures for recording and organizing information.

b. Use technology to produce tables and graphs.

**SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.**

b. Consider possible effects of measurement errors on calculations.

**SCSh6. Students will communicate scientific investigations and information clearly.**

a. Write clear, coherent laboratory reports related to scientific investigations.

**SCSh7. Students analyze how scientific knowledge is developed.**

1. The universe is a vast single system in which the basic principles are the same
2. everywhere.
3. Universal principles are discovered through observation and experimental verification.
4. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.
5. Hypotheses often cause scientists to develop new experiments that produce additional data.
6. Testing, revising, and occasionally rejecting new and old theories never ends.

**SCSh8. Students will understand important features of the process of scientific inquiry.**

* 1. Scientific investigators control the conditions of their experiments in order to produce valuable data.
  2. Scientific researchers are expected to critically assess the quality of data including possible sources of bias in their investigations’ hypotheses, observations, data analyses, and interpretations.
  3. Scientists use practices such as peer review and publication to reinforce the integrity of scientific activity and reporting.

f. Science disciplines and traditions differ from one another in what is studied, techniques used, and outcomes sought.

**SCSh9. Students will enhance reading in all curriculum areas by:**

b. Discussing books

* + - Discuss messages and themes from books in all subject areas.
    - Respond to a variety of texts in multiple modes of discourse.
    - Relate messages and themes from one subject area to messages and themes in another area.
    - Evaluate the merit of texts in every subject discipline.
    - Examine author’s purpose in writing.
    - Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

* Demonstrate an understanding of contextual vocabulary in various subjects.
* Use content vocabulary in writing and speaking.
* Explore understanding of new words found in subject area texts.

d. Establishing context

* Explore life experiences related to subject area content.
* Discuss in both writing and speaking how certain words are subject area related.
* Determine strategies for finding content and contextual meaning for unknown words.

**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.

d. Explain the impact of water on life processes (i.e., osmosis, diffusion).

**SB2. Students will analyze how biological traits are passed on to successive generations.**

e. Compare the advantages of sexual reproduction and asexual reproduction in different situations.

f. Examine the use of DNA technology in forensics, medicine, and agriculture.

**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.

**SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**

f. Relate animal adaptations, including behaviors, to the ability to survive stressful

environmental conditions.

**SB5. Students will evaluate the role of natural selection in the development of the theory of evolution.**

b. Explain the history of life in terms of biodiversity, ancestry, and the rates of evolution.

d. Relate natural selection to changes in organisms.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 1

**Essential Questions;**

1. What are the stages in the development of a zygote?
2. How are the stages of development reflected in Cnidarians?

**Resources:**

[**Development of a Zygote Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Development_of_a_Zygote.swf::Development%20of%20a%20Zygote)

[**Reproductive Cycle of Cnidarians Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Reproductive_Cycle_of_Cnidarians.swf::Reproductive%20Cycle%20of%20Cnidarians)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

* 1. Explain the activity (activity requirements)
  2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
  3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
  4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
  5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
  6. Review unit vocabulary with students. [Vocabulary](http://www.glencoe.com/qe/efcwin.php?qi=12613)
  7. Introduce the following:

a. Introduction to Animals: Animal characteristics p.692

* 1. Engage students in conversation by asking students the following question: In what ways do animals differ from plants? Write answers on the blackboard.
  2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

* 1. Guide students into the activity utilizing [**Development of a Zygote Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Development_of_a_Zygote.swf::Development%20of%20a%20Zygote) **and** [**Reproductive Cycle of Cnidarians Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Reproductive_Cycle_of_Cnidarians.swf::Reproductive%20Cycle%20of%20Cnidarians)
  2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
  3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

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The teacher and students will view [Development of a Zygote Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Development_of_a_Zygote.swf::Development%20of%20a%20Zygote) and

[Reproductive Cycle of Cnidarians Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Reproductive_Cycle_of_Cnidarians.swf::Reproductive%20Cycle%20of%20Cnidarians)as a whole group activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 2

**Essential Questions:**

1. What organisms are found in the protostome and deuterostome groups?
2. Where are the body plans found in the protostome and deuterostome groups?

**Resources:**

[**Visualizing Protostome and Deuterostome Development Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383922/ch24.swf::Visualizing%20Protostome%20and%20Deuterostome%20Development)

[**Introduction to Animals Virtual Crossword**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/181839/bdol_ch_25.html)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Introduction to Animals: Animal Body Plans p.698

1. Engage students in conversation by asking students the following question: What is the earliest branching point? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Visualizing Protostome and Deuterostome Development Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383922/ch24.swf::Visualizing%20Protostome%20and%20Deuterostome%20Development)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will view [**Visualizing Protostome and Deuterostome Development Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383922/ch24.swf::Visualizing%20Protostome%20and%20Deuterostome%20Development)as a whole group activity.

The teacher will divide class into two teams. The two teams will then play[**Introduction to Animals Virtual Crossword**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/181839/bdol_ch_25.html)**.**

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 3

**Essential Questions:**

1. What are the differences of structure of sponges and cnidarians?
2. How are sponges and cnidarians important to humans?

**Resources:**

[Anatomy of a Sponge Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=avi::240::320::/sites/dl/free/0078695104/383949/Anatomy_of_a_Sponge.avi::Anatomy%20of%20a%20Sponge)

[Reproductive Cycle of Cnidarians Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Reproductive_Cycle_of_Cnidarians.swf::Reproductive%20Cycle%20of%20Cnidarians)

[Comparison of Sponges and Cnidarians - A Virtual lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Table24_1a.swf::Comparison%20of%20Sponges%20and%20Cnidarians%20-%20A)

[Comparison of Sponges and Cnidarians - B Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Table24_1b.swf::Comparison%20of%20Sponges%20and%20Cnidarians%20-%20B)

[Introduction to Animals Quick Check](http://glencoe.mcgraw-hill.com/sites/0078695104/student_view0/unit7/chapter24/chapter_test_practice-english.html)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:
   1. Introduction to Animals: Sponges and Cnidarians p.705
8. Engage students in conversation by asking students the following question: How are the bodies of sponges and jellyfish adapted to their habitats? Write answers on the blackboard.
9. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Anatomy of a Sponge Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=avi::240::320::/sites/dl/free/0078695104/383949/Anatomy_of_a_Sponge.avi::Anatomy%20of%20a%20Sponge)

[**Reproductive Cycle of Cnidarians Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Reproductive_Cycle_of_Cnidarians.swf::Reproductive%20Cycle%20of%20Cnidarians)

[**Comparison of Sponges and Cnidarians - A Virtual lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Table24_1a.swf::Comparison%20of%20Sponges%20and%20Cnidarians%20-%20A)

[**Comparison of Sponges and Cnidarians - B Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Table24_1b.swf::Comparison%20of%20Sponges%20and%20Cnidarians%20-%20B)

1. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
2. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

**Activity 1**

The teacher and students will view [Anatomy of a Sponge Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=avi::240::320::/sites/dl/free/0078695104/383949/Anatomy_of_a_Sponge.avi::Anatomy%20of%20a%20Sponge) and the [Reproductive Cycle of Cnidarians Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Reproductive_Cycle_of_Cnidarians.swf::Reproductive%20Cycle%20of%20Cnidarians)as a whole group activity.

**Activity 2**

The teacher and students will complete the [Introduction to Animals Quick Check](http://glencoe.mcgraw-hill.com/sites/0078695104/student_view0/unit7/chapter24/chapter_test_practice-english.html).

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**Essential Questions:**

1. Anatomical structures are found in earthworm?
2. How does each structure of earthworm relate to the function of the structure?

**Resources:**

[**Earth Worm Dissection Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383950/BL_14.html)

[**Earthworm Systems Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383950/Earthworm_Systems.swf::Earthworm%20Systems)

[**Owl pellets Virtual Dissection**](http://www.kidwings.com/owlpellets/barnowl/index2.htm)

[**Invertebrates Virtual lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/167348/00038301.html)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:
   1. Introduction to Animals: Worms and Mollusks p.726
8. Engage students in conversation by asking students the following question: What kind of body plan do flatworms have? Write answers on the blackboard.
9. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Earth Worm Dissection Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383950/BL_14.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

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The teacher and students will complete [**Earth Worm Dissection Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383950/BL_14.html)as a whole group activity. Students will complete the journal activity as a ticket out the door.

# Vertebrates

**Georgia Performance Standards:**

**SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.**

a. Exhibit the above traits in their own scientific activities.

**SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.**

a. Follow correct procedures for use of scientific apparatus.

b. Demonstrate appropriate technique in all laboratory situations.

**SCSh3. Students will identify and investigate problems scientifically.**

1. Suggest reasonable hypotheses for identified problems.
2. Develop procedures for solving scientific problems.
3. Collect, organize and record appropriate data.
4. Graphically compare and analyze data points and/or summary statistics.
5. Develop reasonable conclusions based on data collected.
6. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

a. Develop and use systematic procedures for recording and organizing information.

b. Use technology to produce tables and graphs.

**SCSh6. Students will communicate scientific investigations and information clearly.**

b. Write clear, coherent accounts of current scientific issues, including possible alternative interpretations of the data.

**SCSh9. Students will enhance reading in all curriculum areas by:**

b. Discussing books

* + - Discuss messages and themes from books in all subject areas.
    - Respond to a variety of texts in multiple modes of discourse.
    - Relate messages and themes from one subject area to messages and themes in another area.
    - Evaluate the merit of texts in every subject discipline.
    - Examine author’s purpose in writing.
    - Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

* Demonstrate an understanding of contextual vocabulary in various subjects.
* Use content vocabulary in writing and speaking.
* Explore understanding of new words found in subject area texts.

d. Establishing context

* Explore life experiences related to subject area content.
* Discuss in both writing and speaking how certain words are subject area related.
* Determine strategies for finding content and contextual meaning for unknown words.

**SB2. Students will analyze how biological traits are passed on to successive generations.**

1. Distinguish between DNA and RNA.
2. Explain the role of DNA in storing and transmitting cellular information.
3. Using Mendel’s laws, explain the role of meiosis in reproductive variability.
4. Describe the relationships between changes in DNA and potential appearance of new traits including

Alterations during replication.

* Insertions
* Deletions
* Substitutions

Mutagenic factors that can alter DNA.

* High energy radiation (x-rays and ultraviolet)
* Chemical

1. Compare the advantages of sexual reproduction and asexual reproduction in different situations.
2. Examine the use of DNA technology in forensics, medicine, and agriculture.

**SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.**

1. Explain the cycling of energy through the processes of photosynthesis and respiration.
2. Compare how structures and function vary between the six kingdoms (archaebacteria, eubacteria, protists, fungi, plants, and animals).
3. Examine the evolutionary basis of modern classification systems.

**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.

f. Relate animal adaptations, including behaviors, to the ability to survive stressful environmental conditions.

**SB5. Students will evaluate the role of natural selection in the development of the theory of evolution.**

b. Explain the history of life in terms of biodiversity, ancestry, and the rates of evolution.

d. Relate natural selection to changes in organisms.

**SCSh3. Students will identify and investigate problems scientifically.**

b. Develop procedures for solving scientific problems.

c. Collect, organize and record appropriate data.

d. Graphically compare and analyze data points and/or summary statistics.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

a. Develop and use systematic procedures for recording and organizing information.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 1

**Essential Questions:**

1. What are the basic components of vertebrate structure?
2. What are the structural systems found in fish?

**Resources:**

[Circulatory System of a Fish Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383954/Circulatory_System_of_a_Fish.swf::Circulatory%20System%20of%20a%20Fish)

[Visualizing Bony Fishes Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383923/Ch28.swf::Visualizing%20Bony%20Fishes)

[Vertebrates Visual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/167348/00038302.html)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

* 1. Explain the activity (activity requirements)
  2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
  3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
  4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
  5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
  6. Review unit vocabulary with students. [Vocabulary](http://www.glencoe.com/qe/efcwin.php?qi=12614)
  7. Introduce the following:

a. Vertebrates: Fishes p.820

* 1. Engage students in conversation by asking students to state six common vertebrates and explain how their vertebral columns aid in their activities? Write answers on the blackboard.
  2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

* 1. Guide students into the activity utilizing [Circulatory System of a Fish Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383954/Circulatory_System_of_a_Fish.swf::Circulatory%20System%20of%20a%20Fish), [Visualizing Bony Fishes Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383923/Ch28.swf::Visualizing%20Bony%20Fishes), and [Vertebrates Visual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/167348/00038302.html)
  2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
  3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [Circulatory System of a Fish Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383954/Circulatory_System_of_a_Fish.swf::Circulatory%20System%20of%20a%20Fish) and [Visualizing Bony Fishes Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383923/Ch28.swf::Visualizing%20Bony%20Fishes) as a whole group activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 2

**Essential Questions:**

1. What are the steps in the life cycle of a frog?
2. What organ systems are found in frogs?

**Resources:**

[Frog Dissection Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383954/BL_16.html)

[Frogs Life Cycle Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383954/Frogs_Life_Cycle.swf::Frogs%20Life%20Cycle)

[Adaptations of a Frog Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383954/Adaptations_of_a_Frog.swf::Adaptations%20of%20a%20Frog)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Vertebrates: Amphibians p.834

1. Engage students in conversation by asking students the following question: What are the frog’s adaptations to land? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Frog Dissection Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383954/BL_16.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [**Frog Dissection Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383954/BL_16.html)as a whole group activity. Students will complete the journal activity as a ticket out the door.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 3

**Essential Questions:**

1. How are fossils dated and identified?
2. What is the importance of the amniotic egg?

**Resources:**

[**Dino Dig Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383955/BL_17.html)

[**The Form and Function of an Amniotic Egg Virtual Concept**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383955/The_Form_and_Function_of_an_Amniotic_Egg.swf::The%20Form%20and%20Function%20of%20an%20Amniotic%20Egg)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Vertebrates: Reptiles p.852

1. Engage students in conversation by asking students the following question: How are reptiles adapted to life on land? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Dino Dig Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383955/BL_17.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [**Dino Dig Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383955/BL_17.html)as a whole group activity. Students will work in learning circles to complete the journal activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 4

**Essential Questions:**

1. How can mammals be classified?
2. What are the orders of mammals?
3. What are the differences in the digestive systems among mammals?

**Resources:**

[**Mammals Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383956/BL_27.html)

[**Proportion of Nutrients in the Milk of Mammals Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383956/Table30_1.swf::Proportion%20of%20Nutrients%20in%20the%20Milk%20of%20Mammals)

[**Order of Placental Mammals - A Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383956/Table30_2a.swf::Order%20of%20Placental%20Mammals%20-%20A)

[**Order of Placental Mammals - B Virtual lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383956/Table30_2b.swf::Order%20of%20Placental%20Mammals%20-%20B)

[**Order of Placental Mammals - C Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383956/Table30_2c.swf::Order%20of%20Placental%20Mammals%20-%20C)

[**Visualizing the Digestive Systems of Mammals Virtual Lesson**](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383923/Ch30.swf::Visualizing%20the%20Digestive%20Systems%20of%20Mammals)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students. [Vocabulary](http://www.glencoe.com/qe/efcwin.php?qi=12619)
7. Introduce the following:

a. Vertebrates: Mammals p.880

1. Engage students in conversation by asking students the following question: Why are the hairs in a deer’s winter coat hollow? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Mammals Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383956/BL_27.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [**Mammals Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383956/BL_27.html)as a whole group activity. Students will complete the journal activity as a ticket out the door.

# The Human Body

**Georgia Performance Standards:**

**SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.**

a. Exhibit the above traits in their own scientific activities.

**SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.**

a. Follow correct procedures for use of scientific apparatus.

b. Demonstrate appropriate technique in all laboratory situations.

**SCSh3. Students will identify and investigate problems scientifically.**

1. Suggest reasonable hypotheses for identified problems.
2. Develop procedures for solving scientific problems.
3. Collect, organize and record appropriate data.
4. Graphically compare and analyze data points and/or summary statistics.
5. Develop reasonable conclusions based on data collected.
6. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

**SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.**

a. Develop and use systematic procedures for recording and organizing information.

c. Use technology to develop, test, and revise experimental or mathematical models.

**SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.**

1. Trace the source on any large disparity between estimated and calculated answers to problems.
2. Consider possible effects of measurement errors on calculations.
3. Recognize the relationship between accuracy and precision.
4. Express appropriate numbers of significant figures for calculated data, using scientific notation where appropriate.
5. Solve scientific problems by substituting quantitative values, using dimensional analysis and/or simple algebraic formulas as appropriate.

**SCSh6. Students will communicate scientific investigations and information clearly.**

b. Write clear, coherent accounts of current scientific issues, including possible alternative interpretations of the data.

d. Participate in group discussions of scientific investigation and current scientific issues.

**SCSh7. Students analyze how scientific knowledge is developed.**

1. The universe is a vast single system in which the basic principles are the same everywhere.
2. Universal principles are discovered through observation and experimental verification.
3. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.
4. Hypotheses often cause scientists to develop new experiments that produce additional data.
5. Testing, revising, and occasionally rejecting new and old theories never ends.

**SCSh8. Students will understand important features of the process of scientific inquiry.**

Students will apply the following to inquiry learning practices:

a. Scientific investigators control the conditions of their experiments in order to produce valuable data.

**SCSh9. Students will enhance reading in all curriculum areas by:**

a. Reading in all curriculum areas

* + - Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
    - Read both informational and fictional texts in a variety of genres and modes of discourse.
    - Read technical texts related to various subject areas.

b. Discussing books

* + - Discuss messages and themes from books in all subject areas.
    - Respond to a variety of texts in multiple modes of discourse.
    - Relate messages and themes from one subject area to messages and themes in another area.
    - Evaluate the merit of texts in every subject discipline.
    - Examine author’s purpose in writing.
    - Recognize the features of disciplinary texts.

c. Building vocabulary knowledge

* Demonstrate an understanding of contextual vocabulary in various subjects.
* Use content vocabulary in writing and speaking.
* Explore understanding of new words found in subject area texts.

d. Establishing context

* Explore life experiences related to subject area content.
* Discuss in both writing and speaking how certain words are subject area related.
* Determine strategies for finding content and contextual meaning for unknown words.

**SB2. Students will analyze how biological traits are passed on to successive generations.**

d. Describe the relationships between changes in DNA and potential appearance of new traits including

Alterations during replication.

* Alterations during replication.
* Insertions
* Deletions
* Substitutions

Mutagenic factors that can alter DNA.

* High energy radiation (x-rays and ultraviolet)
* Chemical

e. Compare the advantages of sexual reproduction and asexual reproduction in different situations.

**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).

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.**

b. Explain the flow of matter and energy through ecosystems by

* Arranging components of a food chain according to energy flow.
* Comparing the quantity of energy in the steps of an energy pyramid.
* Explaining the need for cycling of major nutrients (C, O, H, N, P).

f. Relate animal adaptations, including behaviors, to the ability to survive stressful environmental conditions.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 1

**Essential Question:**

1. Why might the body need muscles with different structures?
2. How do muscles move parts of the body?
3. How does increased workload affect a skeletal muscle’s threshold of stimulation?

**Resources:**

[Muscle Stimulation Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383958/BL_21.html)

[Muscle Contraction Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383958/Muscle_Contraction.swf::Muscle%20Contraction)

[Visualizing Muscle Contraction Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383924/Visualizing_Muscle_Contraction_101806.swf::Visualizing%20Muscle%20Contraction)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students. [Vocabulary](http://www.glencoe.com/qe/efcwin.php?qi=12621)
7. Introduce the following:

a. Integumentary, Skeletal, and Muscular Systems: The Muscular System p.947

1. Engage students in conversation by asking students the following question: Why might the body need muscles with different structures? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [Muscle Stimulation Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383958/BL_21.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [Muscle Stimulation Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383958/BL_21.html) as a whole group activity. Students will work in cooperative learning groups to complete the journal activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 2

**Essential Questions:**

1. What are the components of the human circulatory system?
2. What are the human blood groups?
3. What factors affect the likelihood of hypertension?

**Resources:**

[Blood Pressure Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383960/BL_08.html)

[Structure of Blood Vessels Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383960/Structure_Blood_Vessels.swf::Structure%20of%20Blood%20Vessels)

[Blood Groups - A Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383960/Table34_1.swf::Blood%20Groups%20-%20A)

[Blood Groups - B Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383960/Table34_1a.swf::Blood%20Groups%20-%20B)

[Blood Groups - C Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383960/Table34_1b.swf::Blood%20Groups%20-%20C)

[Circulatory System Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383960/Circulatory_System.swf::Circulatory%20System)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. Circulatory, Respiratory, and Excretory Systems: Circulatory System p.992

1. Engage students in conversation by asking students the following question: How do your cells obtain nutrients and dispose of waste products? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [**Blood Pressure Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383960/BL_08.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

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The teacher and students will complete [**Blood Pressure Virtual Lesson**](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383960/BL_08.html) **a**s a whole group activity. Students will complete the journal activity as a ticket out the door.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 3

**Essential Questions:**

1. Why is it important to eat a variety of foods?
2. How does food move through the human digestive system?
3. How does the endocrine system help maintain homeostasis in the human body?

**Resources:**

[The Digestive and Endocrine System Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383961/BL_28.html)

[Food Movement through the Esophagus Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383961/Food_Movement_Through_the_Esophagus.swf::Food%20Movement%20Through%20the%20Esophagus)

[Time for Digestion Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383961/table35_1.swf::Time%20for%20Digestion)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students. [Vocabulary](http://www.glencoe.com/qe/efcwin.php?qi=12623)
7. Introduce the following:

a. Digestive and Endocrine Systems: The Digestive System p.1020

1. Engage students in conversation by asking students the following questions: Why do you eat? What is digestion? and How is energy stored in food? Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [The Digestive and Endocrine System Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383961/BL_28.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

****

The teacher and students will complete [The Digestive and Endocrine System Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383961/BL_28.html) as a whole group activity. Students will work in learning circles to complete the journal activity.

## C:\Users\Marcell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\H8KFQUAH\MC900239667[1].wmfTask: 4

**Essential Questions:**

1. What are some organisms that cause disease?
2. How does the body’s immune system fight disease?
3. What are some ways we can treat or prevent disease?
4. How are blood smears used to diagnose disease?
5. What are some common human allergens?

**Resources:**

[Virtual Pathology Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383963/BL_13.html)

[Complement System Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/Complement_System.swf::Complement%20System)

[Human Infectious Diseases - A Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/Table37_1a.swf::Human%20Infectious%20Diseases%20-%20A)

[Human Infectious Diseases - B Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/Table37_1b.swf::Human%20Infectious%20Diseases%20-%20B)

[Cells of the Immune System Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/Table37_2.swf::Cells%20of%20the%20Immune%20System)

[Common Immunizations Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/Table37_3.swf::Common%20Immunizations)

[Common Allergens Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/table37_4.swf::Common%20Allergens)

[Visualizing Specific Immune Responses Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383924/Ch37.swf::Visualizing%20Specific%20Immune%20Responses)

**Teacher’s Place:**

Prior to beginning the performance activity, the teacher should implement the following steps using teaching techniques you have found to be effective for your students.

1. Explain the activity (activity requirements)
2. Display the Georgia Performance Standard(s) (project on blackboard via units of instruction located at <http://thevillage411.weebly.com/units-of-instruction2.html> units of instruction page, or print on blackboard)
3. Read the Georgia Performance Standard(s) aloud and explain it to your students. You can rephrase the Georgia Performance Standard to make sure your students understand it.
4. Display the Essential Question(s) (project on blackboard via units of instruction, or print on blackboard)
5. Read the Essential Question (s) aloud and explain it to your students. You can rephrase the Essential Question (s) to make sure your students understand it.
6. Review unit vocabulary with students.
7. Introduce the following:

a. The Immune System: Immune System p.1084

1. Engage students in conversation by asking students the following question: Write answers on the blackboard.
2. Discuss answers with the students using the following questioning techniques as applicable:

##### Questioning Techniques:

* **Memory Questions**

Signal words: who, what, when, where?

Cognitive operations: naming, defining, identifying, designating

* **Convergent Thinking Questions**

Signal words: who, what, when, where?

Cognitive operations: explaining, stating relationships, comparing and contrasting

* **Divergent Thinking Questions**

Signal words: imagine, suppose, predict, if/then

Cognitive operations: predicting, hypothesizing, inferring, reconstructing

* **Evaluative Thinking Questions**

Signal words: defend, judge, justify (what do you think)?

1. Guide students into the activity utilizing [Virtual Pathology Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383963/BL_13.html)
2. Complete the activity with the students (some tasks may require students to work independently, peer to peer, learning circles [2-3 students] or as a whole group [the entire class]. Therefore the teacher may serve as activity leader and or facilitator. When an activity calls for students to work in learning circles you should assign roles to students individually i.e. recorder, discussion leader or presenter)
3. At the end of the **\*whole group learning session**, students will transition into independent CAP assignments.

**\*The phrase, “whole group learning session” is utilized “rather than, the end of the activity” because all of the activities may not be completed in one day.**

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The teacher and students will complete [Virtual Pathology Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383963/BL_13.html) as a whole group

activity. Students will complete the journal activity independently as a ticket out the door.

# Task Websites

<http://thevillage411.weebly.com/units-of-instruction2.html>

Unit 1

[Organisms and their Relationships Virtual Unit Launcher](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181885/e3_1int.mov::Section%20Launcher%20Movie)

[Modeling an Ecosystem Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383926/BL_02.html)

[Ecosystems, Organisms, and Trophic Levels Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383916/BL_03.html)

[Desert Community Food Web Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383926/A_Food_Web.swf::A%20Food%20Web)

[Cycles Virtual Tutor](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/cycles_mo.swf)

[The Water Cycle Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383926/The_Water_Cycle.swf::The%20Water%20Cycle)

[The Carbon Cycle Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383926/The_Carbon_Cycle.swf::The%20Carbon%20Cycle)

[The Nitrogen Cycle Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383926/The_Nitrogen_Cycle.swf::The%20Nitrogen%20Cycle)

[The Phosphorus Cycle Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383926/The_Phosphorus_Cycle.swf::The%20Phosphorus%20Cycle)

[Visualizing Levels of Organization Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383915/Ch2_Visualizing_Levels_of_Organization.swf::Visualizing%20Levels%20of%20Organization)

[Communities and Biomes](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383927/BL_24.html)

[A Climax Community Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383927/A_Climax_Community.swf::A%20Climax%20Community)

[Visualizing Global Effects Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383927/Vis_Global_Effects.swf::Visualizing%20Global%20Effects)

Unit 2

[Section Launcher Movie Virtual lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181905/e7_1int.mov::Section%20Launcher%20Movie%20)

[Chapter6 Concentration Virtual Game](http://www.glencoe.com/olc_games/game_engine/content/gln_sci/biology_07_nat/chapter6/concentration/)

[How Monomers Bond Virtual Lesson](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/how_monomers_bond_mo.swf)

[Types of Bonds Virtual Lesson](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/types_of_bonds_mo.swf)

[Enzyme-Controlled Reaction Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383930/BL_11.html)

[Chemical Reaction Quick Check](http://glencoe.mcgraw-hill.com/sites/0078802849/student_view0/unit2/chapter6/section2/self-check_quizzes-english.html)

[Cellular Pursuit Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383931/BL_20_dev_100.html)

[Visualizing Cells Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383931/Visualizing_Cells.swf::Visualizing%20Cells)

[How a Simple Microscope Works Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/592985/620_How_a_Simple_Microscope_Works.swf::How%20a%20Simple%20Microscope%20Works)

[Na/kpump Virtual Lesson](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/k_pump_mo.swf)

[Active Transport Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=avi::240::320::/sites/dl/free/0078802849/383931/Active_Transport.AVI::Active%20Transport)

Unit 3

[Visualizing Meiosis Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383915/Ch10_MeiosisI_MeiosisII101706.swf::Visualizing%20Meiosis)

[Meiosis Crossing Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/592988/meiosis_crossing.swf::Meiosis%20Crossing)

[Mendelian Genetics Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::188::/sites/dl/free/0078802849/181929/e12_1int.mov::Section%20Launcher%20Movie)

[Punnett Squares Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383934/BL_05.html)

[Sex-Linked Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383935/BL_15.html)

[Complex Patterns of Inheritance Virtual Tutor Lesson](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/complex_patterns_mo.swf)

[Recessive Genetic Disorders in Humans Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383935/Table11_2a.swf::Recessive%20Genetic%20Disorders%20in%20Humans%20-%20A)

[Nondisjunction in Sex Chromosomes Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383935/Table_11_4.swf::Nondisjunction%20in%20Sex%20Chromosomes)

[Gene Regulation and Mutation Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383936/BL_26.html)

[Tracking Grizzlies Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383918/BL_29.html)

[Mutation by Base Substitution Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/592990/Mutation_by_base_substitution.swf::Mutation%20by%20Base%20Substitution)

[Addition and Deletion Mutations Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/592990/Addition_and_deletion_mutations.swf::Addition%20and%20Deletion%20Mutations)

Unit 4

[Natural Selection Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078802849/383939/BL_12.html)

[Comparison of Selection Virtual Concept](http://glencoe.com/sites/common_assets/science/biology/personal_tutor/comparison_mo.swf)

[Convergent Evolution Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078802849/383912/table15_4.swf::Convergent%20Evolution)

[Primates Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078802849/181961/e19_1int.mov::Section%20Launcher%20Movie)

[Visualizing Primates Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383925/CH16_Primates_103006.swf::Visualizing%20Primates)

[Characteristics of Strepsirrhines Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table16_1.swf::Characteristics%20of%20Strepsirrhines)

[Primates Quick Check](http://glencoe.mcgraw-hill.com/sites/0078802849/student_view0/unit4/chapter16/section1/self-check_quizzes-english.html)

[Characteristics of the Homo Species Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table16_2.swf::Characteristics%20of%20the%20Homo%20species)

[Human Evolution Virtual Lesson](http://www.handprint.com/LS/ANC/disp.html)

[Classifying Using Biotechnology Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383941/BL_06.html)

[The Cladistic Method Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383941/The_Cladistic_Method.swf::The%20Cladistic%20Method)

[Evolutionary Trees Virtual Lesson Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383941/Evolutionary_Trees.swf::Evolutionary%20Trees)

[Visualizing the Tree of Life Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383941/Visualizing_Tree_Life.swf::Visualizing%20the%20Tree%20of%20Life)

Unit 5

[Section Launcher Movie Viruses and Prions Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::240::/sites/dl/free/0078695104/181977/e21_1int.mov::Section%20Launcher%20Movie)

[Retrovirus Replication Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383942/Retrovirus_Replication.swf::Retrovirus%20Replication)

[Human Viral Diseases Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table18_2.swf::Human%20Viral%20Diseases)

[Visualizing Viral Replication Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383925/CH18_Visualizing_Viral_Replication.swf::Visualizing%20Viral%20Replication)

[The Protists Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table19_1.swf::The%20Protists)

[Some Uses for Algae Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table19_2.swf::Some%20Uses%20for%20Algae)

[Protists Quick Check](http://glencoe.mcgraw-hill.com/sites/0078695104/student_view0/unit5/chapter19/section1/self-check_quizzes-english.html)

[Fungi Phyla - A Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383944/Table20_1a.swf::Fungi%20Phyla%20-%20A)

[Fungi Phyla - B Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383944/Table20_1b.swf::Fungi%20Phyla%20-%20B)

[Visualizing a Fairy Ring Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383944/Visualizing_Fairy_Ring.swf::Visualizing%20a%20Fairy%20Ring)

Unit 6

[Section Launcher Movie Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=mov::196::239::/sites/dl/free/0078695104/182001/e24_1int.mov::Section%20Launcher%20Movie)

[Plant Growth Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/164213/00076704.html)

[Knocking out Genes Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383945/BL_07.html)

[Visualizing the Plant Kingdom Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383925/CH21_Plant_Kingdom.swf::Visualizing%20the%20Plant%20Kingdom)

[Plant Transpiration Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383946/BL_10.html)

[Nutrients Entering Root Cells Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383946/Movement_through_Roots.swf::Nutrients%20Entering%20Root%20Cells)

[Root Systems and Adaptations Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table22_2.swf::Root%20Systems%20and%20Adaptations)

[Types of Stems Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/table22_3.swf::Types%20of%20Stems)

[Alteration of Generations Visual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383947/Alteration_of_Generations.swf::Alteration%20of%20Generations)

[Conifers Life Cycle Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=avi::240::320::/sites/dl/free/0078695104/383947/Conifers_Life_Cycle.AVI::Conifers%20Life%20Cycle)

[Moss Life Cycle Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383947/Mosss_Life_Cycle.swf::Moss%20Life%20Cycle)

[Types of Fruit Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383912/Table23_1.swf::Types%20of%20Fruit)

[Reproduction in Plants Quick Check](http://glencoe.mcgraw-hill.com/sites/0078695104/student_view0/unit6/chapter23/chapter_test_practice-english.html)

Unit 7

[Development of a Zygote Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Development_of_a_Zygote.swf::Development%20of%20a%20Zygote)

[Reproductive Cycle of Cnidarians Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Reproductive_Cycle_of_Cnidarians.swf::Reproductive%20Cycle%20of%20Cnidarians)

[Visualizing Protostome and Deuterostome Development Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383922/ch24.swf::Visualizing%20Protostome%20and%20Deuterostome%20Development)

[Introduction to Animals Virtual Crossword](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/181839/bdol_ch_25.html)

[Anatomy of a Sponge Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=avi::240::320::/sites/dl/free/0078695104/383949/Anatomy_of_a_Sponge.avi::Anatomy%20of%20a%20Sponge)

[Reproductive Cycle of Cnidarians Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Reproductive_Cycle_of_Cnidarians.swf::Reproductive%20Cycle%20of%20Cnidarians)

[Comparison of Sponges and Cnidarians - A Virtual lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Table24_1a.swf::Comparison%20of%20Sponges%20and%20Cnidarians%20-%20A)

[Comparison of Sponges and Cnidarians - B Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383949/Table24_1b.swf::Comparison%20of%20Sponges%20and%20Cnidarians%20-%20B)

[Introduction to Animals Quick Check](http://glencoe.mcgraw-hill.com/sites/0078695104/student_view0/unit7/chapter24/chapter_test_practice-english.html)

[Earth Worm Dissection Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383950/BL_14.html)

[Earthworm Systems Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383950/Earthworm_Systems.swf::Earthworm%20Systems)

[Owl pellets Virtual Dissection](http://www.kidwings.com/owlpellets/barnowl/index2.htm)

[Invertebrates Virtual lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/167348/00038301.html)

Unit 8

[Circulatory System of a Fish Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383954/Circulatory_System_of_a_Fish.swf::Circulatory%20System%20of%20a%20Fish)

[Visualizing Bony Fishes Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383923/Ch28.swf::Visualizing%20Bony%20Fishes)

[Vertebrates Visual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/167348/00038302.html)

[Frog Dissection Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383954/BL_16.html)

[Frogs Life Cycle Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383954/Frogs_Life_Cycle.swf::Frogs%20Life%20Cycle)

[Adaptations of a Frog Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383954/Adaptations_of_a_Frog.swf::Adaptations%20of%20a%20Frog)

[Dino Dig Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383955/BL_17.html)

[The Form and Function of an Amniotic Egg Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383955/The_Form_and_Function_of_an_Amniotic_Egg.swf::The%20Form%20and%20Function%20of%20an%20Amniotic%20Egg)

[Mammals Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383956/BL_27.html)

[Proportion of Nutrients in the Milk of Mammals Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383956/Table30_1.swf::Proportion%20of%20Nutrients%20in%20the%20Milk%20of%20Mammals)

[Order of Placental Mammals - A Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383956/Table30_2a.swf::Order%20of%20Placental%20Mammals%20-%20A)

[Order of Placental Mammals - B Virtual lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383956/Table30_2b.swf::Order%20of%20Placental%20Mammals%20-%20B)

[Order of Placental Mammals - C Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383956/Table30_2c.swf::Order%20of%20Placental%20Mammals%20-%20C)

[Visualizing the Digestive Systems of Mammals Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383923/Ch30.swf::Visualizing%20the%20Digestive%20Systems%20of%20Mammals)

Unit 9

[Muscle Stimulation Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383958/BL_21.html)

[Muscle Contraction Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383958/Muscle_Contraction.swf::Muscle%20Contraction)

[Visualizing Muscle Contraction Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383924/Visualizing_Muscle_Contraction_101806.swf::Visualizing%20Muscle%20Contraction)

[Blood Pressure Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383960/BL_08.html)

[Structure of Blood Vessels Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383960/Structure_Blood_Vessels.swf::Structure%20of%20Blood%20Vessels)

[Blood Groups - A Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383960/Table34_1.swf::Blood%20Groups%20-%20A)

[Blood Groups - B Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383960/Table34_1a.swf::Blood%20Groups%20-%20B)

[Blood Groups - C Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383960/Table34_1b.swf::Blood%20Groups%20-%20C)

[Circulatory System Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383960/Circulatory_System.swf::Circulatory%20System)

[The Digestive and Endocrine System Virtual Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383961/BL_28.html)

[Food Movement through the Esophagus Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383961/Food_Movement_Through_the_Esophagus.swf::Food%20Movement%20Through%20the%20Esophagus)

[Time for Digestion Virtual Lesson](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383961/table35_1.swf::Time%20for%20Digestion)

[Virtual Pathology Lesson](http://glencoe.mcgraw-hill.com/sites/dl/free/0078695104/383963/BL_13.html)

[Complement System Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/Complement_System.swf::Complement%20System)

[Human Infectious Diseases - A Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/Table37_1a.swf::Human%20Infectious%20Diseases%20-%20A)

[Human Infectious Diseases - B Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/Table37_1b.swf::Human%20Infectious%20Diseases%20-%20B)

[Cells of the Immune System Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/Table37_2.swf::Cells%20of%20the%20Immune%20System)

[Common Immunizations Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/Table37_3.swf::Common%20Immunizations)

[Common Allergens Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383963/table37_4.swf::Common%20Allergens)

[Visualizing Specific Immune Responses Virtual Concept](http://glencoe.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::550::400::/sites/dl/free/0078695104/383924/Ch37.swf::Visualizing%20Specific%20Immune%20Responses)