

Unit 3—Biodiversity

Essential Question: How does the transfer of matter and energy through biological communities support diversity of living things?

Major Understandings:

- LE 1.1a:** Living things are composed of cells. Cells provide structure and carry on major functions to sustain life. Cells are usually microscopic in size.
- 1.1b:** The way in which cells function is similar in all living things. Cells grow and divide, producing more cells. Cells take in nutrients, which they use to provide energy for the work that cells do and to make the materials that a cell or an organism needs.
- 1.1c:** Most cells have cell membranes, genetic material, and cytoplasm. Some cells have a cell wall and/or chloroplasts. Many cells have a nucleus.
- 1.1d:** Some organisms are single cells; others, including humans, are multicellular.
- 1.1e:** Cells are organized for more effective functioning in multicellular organisms. Levels of organization for structure and function of a multicellular organism include cells, tissues, organs, and organ systems.
- 1.1f:** Many plants have roots, stems, leaves, and reproductive structures. These organized groups of tissues are responsible for a plant's life activities.
- 1.1g:** Multicellular animals often have similar organs and specialized systems for carrying out major life activities.
- 1.1h:** Living things are classified by shared characteristics on the cellular and organism level. In classifying organisms, biologists consider details of internal and external structures. Biological classifications systems are arranged from general (kingdom) to specific (species).
- 1.2a:** Each system is composed of organs and tissues which perform specific functions and interact with each other, e.g., digestions, gas exchange, excretion, circulation, locomotion, control, coordination, reproduction, and protection from disease.
- 1.2j:** Disease breaks down the structures or functions of an organism. Some diseases are the result of failures of the system. Other diseases are the result of damage by infection from other organisms (germ theory). Specialized cells protect the body from infectious disease. The chemicals they produce identify and destroy microbes that enter the body.
- 3.2a:** In all environments, organisms with similar needs may compete with one another for resources.
- 5.1a:** Animals and plants have a great variety of body plans and internal structures that contribute to their ability to maintain a balanced condition.
- 5.1c:** All organisms require energy to survive. The amount of energy needed and the method for obtaining this energy vary among cells. Some cells use oxygen to release the energy stored in food.
- 5.1d:** The methods for obtaining nutrients vary among organisms. Producers, such as green plants, use light energy to make their food. Consumers, such as animals, take in energy-rich foods.
- 5.1e:** Herbivores obtain energy from plants. Carnivores obtain energy from animals. Omnivores obtain energy from both plants and animals. Decomposers, such as bacteria and fungi, obtain energy by consuming wastes and/or dead animals.
- 6.1b:** Food webs identify feeding relationships among producers, consumers, and decomposers in an ecosystem.
- 6.2c:** Green plants are the producers of food which is used directly or indirectly by consumers.
- 7.1b:** Given adequate resources and no disease or predators, populations (including humans) increase. Lack of resources, habitat destruction, and other factors such as predation and climate limit the growth of certain populations in the ecosystem.
- 7.1c:** In all environments, organisms interact with one another in many ways. Relationships among organisms may be competitive, harmful, or beneficial. Some species have adapted to be dependent upon each other with the result that neither could survive without the other.
- 7.2a:** In ecosystems, balance is the result of interactions between community members and their environment.

CHAPTER 8: Life's Structure and Classification, pp. 220-251**Major Understandings:**


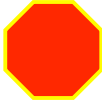
- LE 1.1a:** Living things are composed of cells. Cells provide structure and carry on major functions to sustain life. Cells are usually microscopic in size.
- 1.1b:** The way in which cells function is similar in all living things. Cells grow and divide, producing more cells. Cells take in nutrients, which they use to provide energy for the work that cells do and to make the materials that a cell or an organism needs.
- 1.1c:** Most cells have cell membranes, genetic material, and cytoplasm. Some cells have a cell wall and/or chloroplasts. Many cells have a nucleus.
- 1.1d:** Some organisms are single cells; others, including humans, are multicellular.
- 1.1e:** Cells are organized for more effective functioning in multicellular organisms. Levels of organization for structure and function of a multicellular organism include cells, tissues, organs, and organ systems.
- 1.1f:** Many plants have roots, stems, leaves, and reproductive structures. These organized groups of tissues are responsible for a plant's life activities.
- 1.1g:** Multicellular animals often have similar organs and specialized systems for carrying out major life activities.
- 1.1h:** Living things are classified by shared characteristics on the cellular and organism level. In classifying organisms, biologists consider details of internal and external structures. Biological classifications systems are arranged from general (kingdom) to specific (species).
- 1.2a:** Each system is composed of organs and tissues which perform specific functions and interact with each other, e.g., digestions, gas exchange, excretion, circulation, locomotion, control, coordination, reproduction, and protection from disease.
- 1.2j:** Disease breaks down the structures or functions of an organism. Some diseases are the result of failures of the system. Other diseases are the result of damage by infection from other organisms (germ theory). Specialized cells protect the body from infectious disease. The chemicals they produce identify and destroy microbes that enter the body.
- 5.1a:** Animals and plants have a great variety of body plans and internal structures that contribute to their ability to maintain a balanced condition.
- 5.1c:** All organisms require energy to survive. The amount of energy needed and the method for obtaining this energy vary among cells. Some cells use oxygen to release the energy stored in food.

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ALERT: Look for additional Science Kit items (Human cheek cells prepared slides) coming in January to each Grade 6 teacher.

WEEK 15 (continued)	Section 1: Living Things, pp. 222-225 Objectives <ul style="list-style-type: none"> Distinguish between living and nonliving things. Identify what living things need to survive. 		Alignment with NYS Core Curriculum: LE 1.1a: Living things are composed of cells. Cells provide structure and carry on major functions to sustain life. Cells are usually microscopic in size. Also covered: 4.3d, 5.1a, 5.1c
	Lesson 1 (45 min) Advanced Planning/Notes to Teachers	Investigation/Activity Chapter Opener Journal Activity, p. 220 Launch Lab: <i>Classifying Life</i> , p. 221 Foldable: p. 221 (Foldable worksheet available in the FastFile, p.17)	Homework/Extra Practice
	Lesson 2 (45 min) Advanced Planning/Notes to Teachers	Investigation/Activity Transparency: Most Enlightening Read text: pp. 222-225	Homework/Extra Practice FastFile: Trans Activity <i>Most Enlightening</i> , p.48 NY Living Environment boxes, pp. 222 Reading Essentials: Section 1, pp. 125-128
WEEK 16	Lesson 3 (45 min) Advanced Planning/Notes to Teachers	Investigation/Activity FastFile: Enrichment Living or Nonliving? p. 31 (Small group and class discussion)	Homework/Extra Practice Take Home Science Notebook, pp. 87-90 Section 1 Review, p. 225
	Section 2: How are living things classified? pp. 226-228 Objectives <ul style="list-style-type: none"> Describe how early scientists classified living things. Explain the system of binomial nomenclature. Demonstrate how to use a dichotomous key. 		Alignment with NYS Core Curriculum: LE 1.1h: Living things are classified by shared characteristics on the cellular and organism level. In classifying organisms, biologists consider details of internal and external structures. Biological classification systems are arranged from general (kingdom) to specific (species).
	Lesson 4 (45 min) Advanced Planning/Notes to Teachers	Investigation/Activity Transparency: <i>It's a Bird! It's a Plane! It's All of the Above!</i> Text: pp. 226-228	Homework/Extra Practice FastFile: Trans Activity <i>It's a Bird! It's a Plane! It's All of the Above!</i> p. 49 NY Living Environment box, p. 226 Reading Essentials: Section 2, pp. 129-132

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WEEK 16 (continued)	Lesson 5 (45 min) Advanced Planning/Notes to Teachers Purchase materials for Lessons 7, 8, and 9. Lab setup	Investigation/Activity MiniLAB: <i>Communicating Ideas</i> , p. 227 (Lab worksheet available in the FastFile, p. 3) Suggested Time: 10-15 minutes	Homework/Extra Practice Take Home Science Notebook, pp. 91-93 Section 2 Review, p. 228 Virtual Lab CD-ROM: <i>Taxonomy</i>
	Section 3: Cell Structure, pp. 229-238 Objectives <ul style="list-style-type: none"> Describe the development of the cell theory. Identify names and functions of each part of a cell. Explain how important a nucleus is in a cell. Compare tissues, organs, and organ systems. 		Alignment with NYS Core Curriculum: LE 1.1c: Most cells have cell membranes, genetic material, and cytoplasm. Some cells have a cell wall and/or chloroplasts. Many cells have a nucleus. Also covered: 1.1a, 1.1b, 1.1d, 1.1e, 1.1f, 1.1g
	Lesson 6 (45 min) Advanced Planning/Notes to Teachers  LAST CHANCE – Place your order for aquaria plant set for Unit 3, Lesson 26.	Investigation/Activity Transparency: A Factory Analogy Text: pp. 229-231	Homework/Extra Practice FastFile: Trans Activity <i>A Factory Analogy</i> , p. 50 Reading Essentials: Section 3, pp. 133-134
	Lesson 7 (45 min) Advanced Planning/Notes to Teachers  LAST CHANCE – Place your order for aquaria plant set for Unit 3, Lesson 28.	Investigation/Activity Lab: <i>Using a Microscope</i> , Ancillary Resource— Laboratory Management and Safety, pp. 58-60 Suggested Time: 1 class period	Homework/Extra Practice Take Home Science Notebook, p. 94 FastFile: Enrichment <i>The Early Cell Explorers</i> , p. 33
WEEK 17	Lesson 8 (45 min) Advanced Planning/Notes to Teachers Lab setup	Investigation/Activity National Geographic: <i>Visualizing Microscopes</i> , pp. 230-231 Activity: <i>Microscope Types</i> , Teacher Edition, p. 230 Suggested Time: 10-15 minutes	Homework/Extra Practice
	Lesson 9 (45 min) Advanced Planning/Notes to Teachers Lab setup	Investigation/Activity <i>Use and Care of Microscope</i> and <i>Making a Wet-Mount Slide</i> Reference Handbook, Student Edition, p. 379 Suggested Time: 1 class period	Homework/Extra Practice

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WEEK 17 (continued)	Lesson 10 (45 min) Advanced Planning/Notes to Teachers <i>Lab setup</i>	Investigation/Activity Text: pp. 232-238 MiniLAB: <i>Modeling Cytoplasm</i> , p. 233 (Lab worksheet available in the FastFile, p. 4) <i>Suggested Time: 10-15 minutes</i>	Homework/Extra Practice Take Home Science Notebook, pp. 95-96 Reading Essentials: Section 3, pp. 134-139
	Lesson 11 (45 min) Advanced Planning/Notes to Teachers	Investigation/Activity FastFile: Teaching Transparency <i>Animal and Plant Cells</i> Applying Math: <i>Cell Surface Area and Volume</i> , p. 237	Homework/Extra Practice FastFile: Teaching Transparency <i>Animal and Plant Cells</i> , pp. 53-54 FastFile: Reinforcement <i>Cell Structure</i> , p. 29
	Lesson 12 (45 min) Advanced Planning/Notes to Teachers <i>Lab setup</i>	Investigation/Activity Lab: <i>Comparing Cells</i> , p. 239 [Use the Aquaria plant set for this lab. Save the plant set to be used again with Unit 4, Chapter 11, Section 3, Lesson 2.] (Lab worksheet available in the FastFile, pp. 5-6) <i>Suggested Time: 1 class period</i>	Homework/Extra Practice NY Living Environment boxes, pp. 232, 233, and 234 Section 3 Review, p. 238
WEEK 18	Section 4: Viruses, pp. 240-243 Objectives <ul style="list-style-type: none"> • Explain how a virus makes copies of itself. • Identify the benefits of vaccines. • Investigate some uses of viruses. 		Alignment with NYS Core Curriculum: LE 1.2a: Each system is composed of organs and tissues which perform specific functions and interact with each other, e.g., digestion, gas exchange, excretion, circulation, locomotion, control, coordination, reproduction, and protection from disease. 1.2j: Disease breaks down the structures or functions of an organism. Some diseases are the result of failures of the system. Other diseases are the result of damage by infection from other organisms (germ theory). Specialized cells protect the body from infectious disease. The chemicals they produce identify and destroy microbes that enter the body.
	Lesson 13 (45 min) Advanced Planning/Notes to Teachers	Investigation/Activity Transparency: Thanks for Sharing! Text: pp. 240-243	Homework/Extra Practice NY Living Environment boxes, pp. 241 and 242 Reading Essentials: Section 4, pp. 140-144
	Lesson 14 (45 min) Advanced Planning/Notes to Teachers <i>Lab setup</i>	Investigation/Activity Lab: <i>Comparing Light Microscopes</i> , p. 244-245 (Lab worksheet available in the FastFile, pp. 7-8) <i>Suggested Time: 2 class periods</i>	Homework/Extra Practice Take Home Science Notebook, pp. 97-100 Section 4 Review, p. 243 FastFile: Reinforcement <i>Viruses</i> , p. 30

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WEEK 18 (continued)	<p>Lesson 15 (45 min) Advanced Planning/Notes to Teachers</p> <p>Lab setup</p>	<p>Investigation/Activity Continue Lab: <i>Comparing Light Microscopes</i> p. 244-245 (Lab worksheet available in the FastFile, pp. 7-8)</p>	<p>Homework/Extra Practice Chapter Study Guide, p. 247 Chapter Review, pp. 248-249 Text: Intermediate-Level Science Examination Practice, pp. 250-251</p>
	<p>Lesson 16 (45 min) Advanced Planning/Notes to Teachers</p>	<p>Investigation/Activity Assessment Transparency: Life's Structure and Classification FastFile: Note-Taking Worksheet, pp. 37-38</p>	<p>Homework/Extra Practice FastFile: Chapter Review, pp. 37-38 Foldable: Students complete Visit glencoe.com for Self Check Quiz Chapter Review</p>
	<p>Lesson 17 (45 min) Advanced Planning/Notes to Teachers</p>	<p>Investigation/Activity Chapter Assessment Options: Intermediate-Level Science Examination Practice ExamView CD-ROM, Chapter 8 Chapter Review at glencoe.com For additional assessment options, refer to <i>Performance Assessment in the Science Classroom</i> for rubrics and task lists.</p>	<p>Homework/Extra Practice</p>

CHAPTER 9: Interactions of Life, pp. 252-279

Major Understandings: **LE 3.2a:** In all environments, organisms with similar needs may compete with one another for resources. **5.1d:** The methods for obtaining nutrients vary among organisms. Producers, such as green plants, use light energy to make their food. Consumers, such as animals, take in energy-rich foods. **5.1e:** Herbivores obtain energy from plants. Carnivores obtain energy from animals. Omnivores obtain energy from both plants and animals. Decomposers, such as bacteria and fungi, obtain energy by consuming wastes and/or dead animals. **6.1b:** Food webs identify feeding relationships among producers, consumers, and decomposers in an ecosystem. **6.2c:** Green plants are the producers of food which is used directly or indirectly by consumers. **7.1b:** Given adequate resources and no disease or predators, populations (including humans) increase. Lack of resources, habitat destruction, and other factors such as predation and climate limit the growth of certain populations in the ecosystem. **7.1c:** In all environments, organisms interact with one another in many ways. Relationships among organisms may be competitive, harmful, or beneficial. Some species have adapted to be dependent upon each other with the result that neither could survive without the other. **7.2a:** In ecosystems, balance is the result of interactions between community members and their environment.

<p>Section 1: Living Earth, pp. 254-257 Objectives</p> <ul style="list-style-type: none"> Identify places where life is found on Earth. Define ecology. Observe how the environment influences life. 		<p>Alignment with NYS Core Curriculum: LE 7.1a: A population consists of all individuals of a species that are found together at a given place and time. Populations living in one place form a community. The community and the physical factors with which it interacts compose an ecosystem. Also covered: 7.1c, 7.2a</p>	
WEEK 19	<p>Lesson 18 (45 min) Advanced Planning/Notes to Teachers <i>Purchase lab supplies for Lesson 22.</i> <i>Observing Seedling Competition Lab</i></p>	<p style="text-align: center;">Investigation/Activity</p> <p>Chapter Opener Journal Activity, p. 252 Launch Lab: <i>How do lawn organisms survive?</i>, p. 253 Foldable: p. 253 (Foldable worksheet available in the FastFile, p. 17)</p> <p style="text-align: center;">Homework/Extra Practice</p>	
	<p>Lesson 19 (45 min) Advanced Planning/Notes to Teachers</p>	<p style="text-align: center;">Investigation/Activity</p> <p>Transparency: Hot Enough for Ya? Text: pp. 254-257</p> <p style="text-align: center;">Homework/Extra Practice</p> <p>NY Living Environment boxes, pp. 255 and 257 Reading Essentials: Section 1, p. 145-147 FastFile: Enrichment <i>Tropical Rain Forests</i>, p. 30</p>	
	<p>Lesson 20 (45 min) Advanced Planning/Notes to Teachers</p>	<p style="text-align: center;">Investigation/Activity</p> <p>Essential Question: How does the transfer of matter and energy through biological communities support diversity of living things? Teacher Edition, p. 252A</p> <p style="text-align: center;">Homework/Extra Practice</p> <p>Take Home Science Notebook, pp. 101-104 Section 1 Review, p. 257</p>	
	<p>Section 2: Populations, pp. 259-265 Objectives</p> <ul style="list-style-type: none"> Identify methods for estimating population sizes. Explain how competition limits population growth. List factors that influence changes in population size. 		<p>Alignment with NYS Core Curriculum: LE 7.1b: Given adequate resources and no disease or predators, populations (including humans) increase. Lack of resources, habitat destruction, and other factors such as predation and climate limit the growth of certain populations in the ecosystem. Also covered: 3.2a, 7.1a, 7.1c, 7.2a</p>

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WEEK 19 (cont'd)	<p>Lesson 21 (45 min) Advanced Planning/Notes to Teachers</p>	<p>Investigation/Activity Transparency: That’s a Lot of Penguins Read text: pp. 258-261</p>	<p>Homework/Extra Practice Fast File: Trans Activity <i>That’s a Lot of Penguins</i>, p. 45 Reading Essentials: Section 2, pp. 148-150</p>	
	WEEK 20	<p>Lesson 22 (45 min) Advanced Planning/Notes to Teachers <i>Lab setup</i></p>	<p>Investigation/Activity FastFile: Teaching Transparency, <i>Population Density</i>, pp. 47-48 MiniLAB: <i>Observing Seedling Competition</i>, p. 259 (Lab worksheet available in the Chapter Fast File, p. 3) <i>Suggested Time: 10-15 minutes</i></p>	<p>Homework/Extra Practice FastFile: Teaching Transparency Activity, pp. 47-48 WebQuest <i>Recycling Plastics</i> at glencoe.com</p>
<p>Lesson 23 (45 min) Advanced Planning/Notes to Teachers</p>		<p>Investigation/Activity Applying Science, Do you have too many crickets? p. 261 Text: pp. 262-265</p>	<p>Homework/Extra Practice Take Home Science Notebook, pp. 105-107 Section 2 Review, p. 265</p>	
<p>Lesson 24 (45 min) Advanced Planning/Notes to Teachers <i>Lab setup</i></p>		<p>Investigation/Activity Record <i>Seedling Observations</i> from previous MiniLAB MiniLAB: <i>Comparing Biotic Potential</i>, p. 263 (Lab worksheet available in the Chapter Fast File, p. 4) <i>Suggested Time: 10-15 minutes</i> National Geographic: <i>Visualizing Population Growth</i>, p. 264</p>	<p>Homework/Extra Practice</p>	
<p>Section 3: Interactions Within Communities, pp. 266-270 Objectives</p> <ul style="list-style-type: none"> • Describe how organisms obtain energy for life. • Explain how organisms interact. • Recognize that every organism occupies a niche. 		<p>Alignment with NYS Core Curriculum: LE 5.1d: The methods for obtaining nutrients vary among organisms. Producers, such as green plants, use light energy to make their food. Consumers, such as animals, take in energy-rich foods. 6.1b: Food webs identify feeding relationships among producers, consumers, and decomposers in an ecosystem. Also covered: 5.1e, 6.2c</p>		
<p>Lesson 25 (45 min) Advanced Planning/Notes to Teachers</p>		<p>Investigation/Activity Transparency: Frolics with Sharks Text: pp. 266-270</p>	<p>Homework/Extra Practice NY Living Environment box, p. 267 Reading Essentials: Section 3, pp. 153-156</p>	
<p>Lesson 26 (45 min) Advanced Planning/Notes to Teachers <i>Lab setup</i></p>		<p>Investigation/Activity Record <i>Seedling Observations</i> from previous MiniLAB Lab: <i>Feeding Habits of Planaria</i> p. 271 [Use the planaria and guppies for this lab.] (Lab worksheet available in Chapter Fast File, pp. 5-6) <i>Suggested Time: 1 class period</i></p>	<p>Homework/Extra Practice Take Home Science Notebook, pp. 108-112 Section 3 Review, p. 270 Virtual Lab CD-ROM: <i>Energy Transfer</i></p>	

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WEEK 21	Lesson 27 (45 min) Advanced Planning/Notes to Teachers	Investigation/Activity Assessment Transparency, <i>Interactions of Life</i> Essential Question: <i>Concept Web</i> , Teacher Edition, p. 269	Homework/Extra Practice FastFile: Enrichment <i>Fuel Cells</i> , p. 30
	Lesson 28 (45 min) Advanced Planning/Notes to Teachers Lab setup	Investigation/Activity Record <i>Seedling Observations</i> from previous MiniLAB Lab: <i>Population Growth in Fruit Flies</i> , pp. 272-273 [Use the fruit flies for this lab.] (Lab worksheet available in the Chapter Fast File, pp. 7-8) Suggested Time: 2 class periods	Homework/Extra Practice Chapter Study Guide, p. 275 Chapter Review, pp. 276-277 Text: Intermediate-Level Science Examination Practice, pp. 278-279
	Lesson 29 (45 min) Advanced Planning/Notes to Teachers	Investigation/Activity Continue Population Growth in Fruit Flies Lab	Homework/Extra Practice
	Lesson 30 (45 min) Chapter Review Advanced Planning/Notes to Teachers	Investigation/Activity Essential Question: Class <i>Concept Web</i> , Teacher Edition, p. 275 Fast File: Note-Taking Worksheet, pp. 33-35	Homework/Extra Practice Fast File: Chapter Review, pp. 37-38 Foldable: Students complete Visit glencoe.com for Self Check Quiz Chapter Review
	Lesson 31 (45 min) Chapter Assessment Advanced Planning/Notes to Teachers	Investigation/Activity Record <i>Seedling Observations</i> from previous MiniLAB Chapter Assessment Options: Intermediate-Level Science Examination Practice ExamView CD-ROM, Chapter 9 Chapter Review at glencoe.com For additional assessment options, refer to <i>Performance Assessment in the Science Classroom</i> for rubrics and task lists.	Homework/Extra Practice

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**Reminder**

Here is a list of the Live Materials you will need to order from Science Kit for Unit 4.
Be sure to order at least 2 weeks prior to doing the lab.

CHAPTER	LAB	UNIT / LESSON	LIVE MATERIALS
Chapter 11	What Environment Do Houseplants Need	Unit 4 / Lesson 13	Geranium Plants (set of 6)
Chapter 11	Modeling Freshwater Environments	Unit 4 / Lesson 21	Mixed Pond Culture (classroom set)