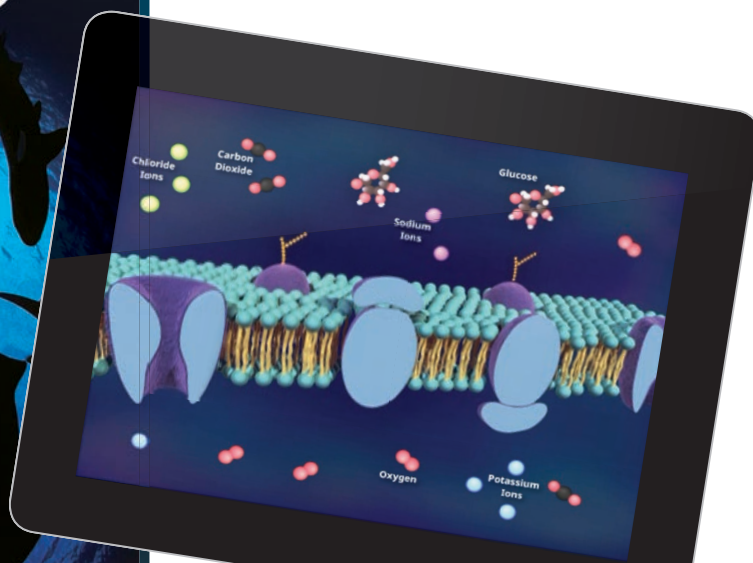
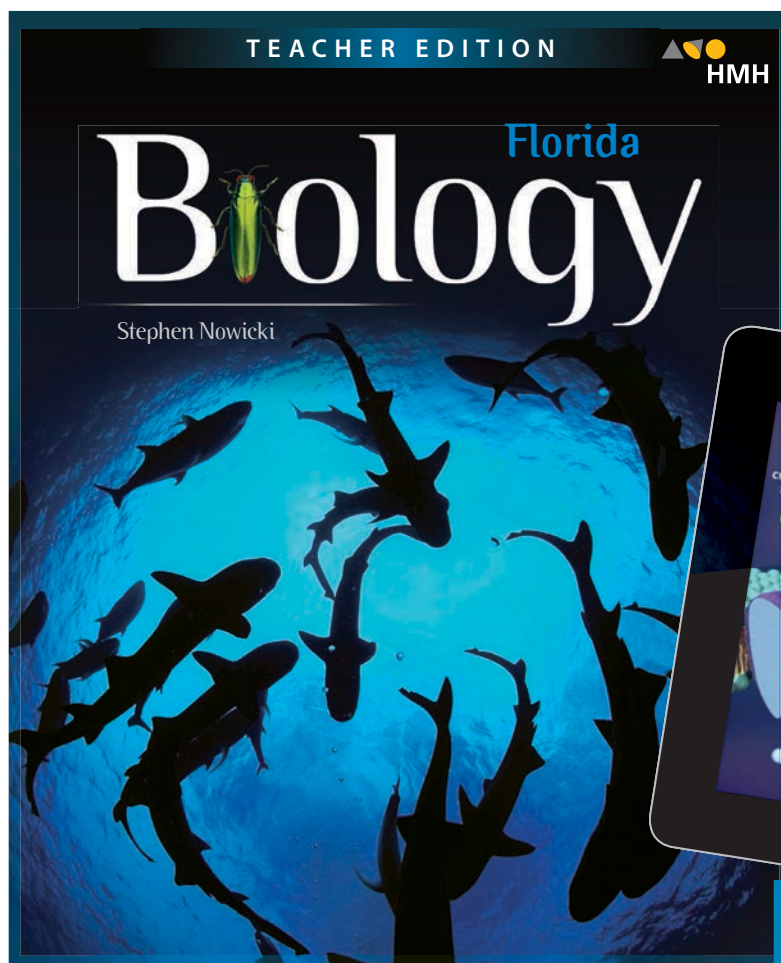


Biology



Reviewer's Guide



Featuring **THING
EXPLAINER** &

 Google Expeditions

Tired of hauling your books back and forth from school to home?

Houghton Mifflin Harcourt® **Biology** Less Paper, More **Convenience**

Everything you need—now in one convenient online location!

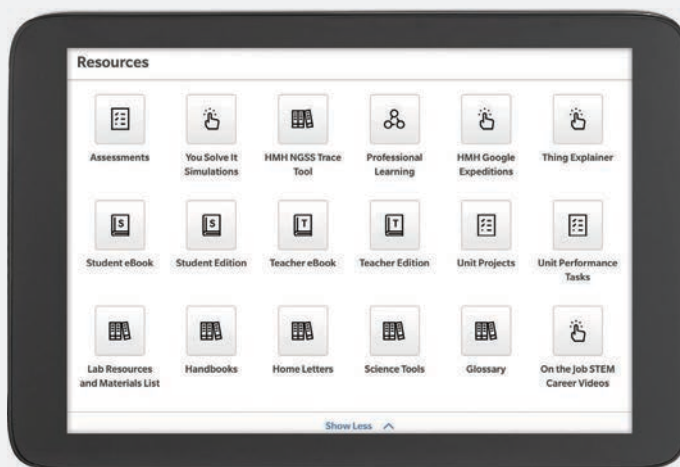
The **Interactive Online Edition** gives you and your students 24/7 point-of-use access to all program components.

Data Analysis

These worksheets help build data analysis skills by having students draw graphs, interpret graphs and data tables, and draw conclusions.

Animated Biology

Nearly 100 animations and simulations bring biology concepts and principles to life.



Interactive Whiteboard Resources

Teaching visuals from each chapter have been adapted specifically for interactive whiteboard use.

Virtual Investigations

Twenty-two engaging presentations, interactive activities, and simulated scientific investigations reinforce students' understanding of biology and science skills as well as strengthen critical-thinking and problem-solving skills.



Dashboard

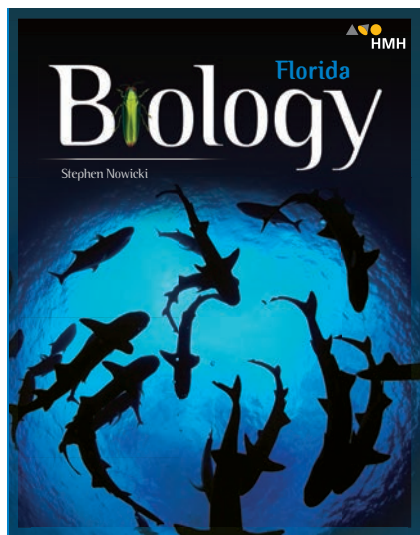
Classrooms using **Florida Biology** © 2019 will now have the benefit of the **improved** online interface provided by the HMH Dashboard. This also includes *mySmartPlanner*, enabling you to combine calendar functionality with curriculum mapping and program resources.



For Online Access please contact
your local Account Executive
hnhco.force.com/replocator

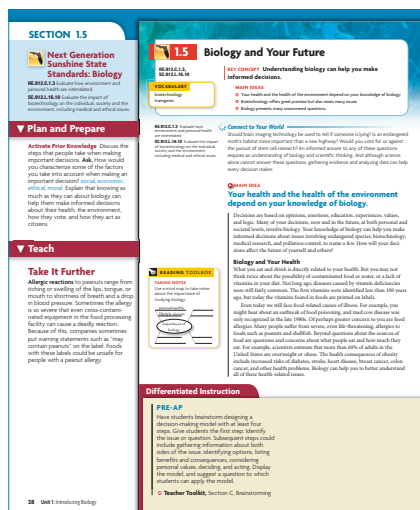
Print Components **Designed** and **Aligned** for Easy Access

HMH Florida *Biology* enables you to reach all learners by providing time-saving, easy-to-use resources to help students of all abilities achieve understanding and success.



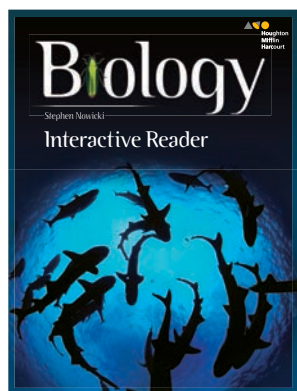
Florida Student Edition

Offers features that make biology concepts more accessible, such as **highlighted vocabulary**, **problem-solving support**, and references to online student support tools.



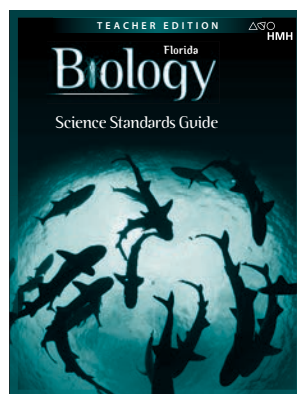
Florida Teacher Edition

Packed with a wide variety of **strategies** to help all students master biology concepts, plus **extended learning** opportunities for advanced students. Correlated to the **Florida Next Generation Sunshine State Standards** for biology.



Interactive Reader and Answer Key

A **write-in worktext** that provides all of the essential content and vocabulary of the Student Edition at a reading level one to two grades below the text. A great resource for students of all ability levels, the Interactive Reader is both a core instructional tool for **struggling students** and a useful **study guide** for all students. The Answer Key provides teacher notes and answers for every section of the Interactive Reader.

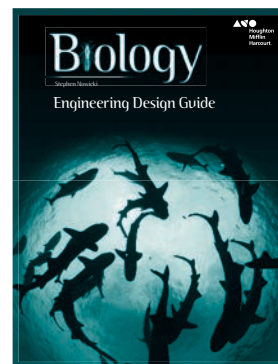


Florida Science Standards Guide (Student and Teacher Editions)

Designed to provide a two-page **Challenge Activity** for every biology standard, the **Florida Science Standards Guide** includes teacher notes and evaluation guidelines for each challenge as students perform a lab, an investigation, a research project, or another activity.

Engineering Design Guide (Student and Teacher Editions)

This Engineering Design Guide provides an overview of the **engineering design process** along with activities and checklists that can help foster students' **critical-thinking** and **problem-solving skills**.



How do you put your students in the moment?

Digital Tools That **Motivate** and **Engage**

HMH Biology offers the latest multimedia resources that speak directly to your students in a visual language they understand—ensuring that they will stay engaged.



HMH Field Trips

powered by

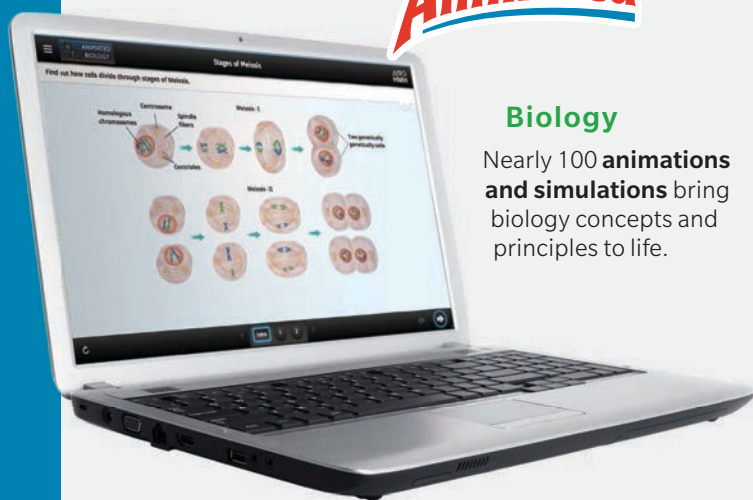


Google Expeditions

As a Google® content partner, HMH® has developed K–12 field trips for Google Expeditions. Using a virtual reality viewer—like Google Cardboard™—and a smartphone, students are swept away into immersive virtual worlds where learning and engagement are maximized. These virtual field trips are 3D, 360-degree panoramas from fascinating locations, directly tied to science content! An **HMH Teacher Guide** provides ideas for incorporating the Expeditions into your lessons, as well as tips on how to guide and customize the experience.

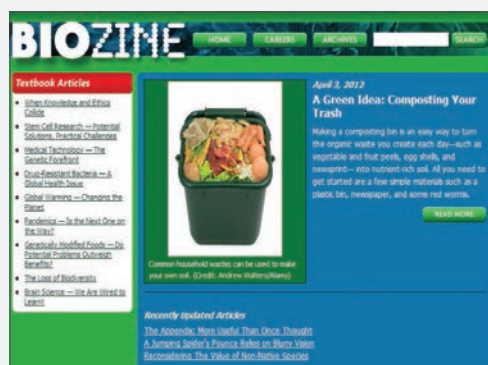


Animated



Biology

Nearly 100 **animations and simulations** bring biology concepts and principles to life.



BioZine

This interactive online magazine keeps the program up to date by connecting students to **current events**, with features such as science news feeds, updates on current biology research, careers, and in-depth detail about unit features.



Scan here to view
On the Job STEM videos.



On the Job STEM Videos

Are your students gamers who dream of creating the next big hit? Or music lovers who want to work with the biggest artists? Or thrill seekers with designs in mind for race cars or roller coasters?

As part of our Premium, Hybrid, and Digital Enhanced offerings, HMH now includes 29 **On the Job** STEM videos that **profile STEM careers** in today's fastest-growing industries. Our energetic hosts shadow passionate professionals in a day "on the job." These short segments are inspirational and entertaining with the hosts actually performing parts of the job! These videos will **motivate students** to enter emerging STEM fields.

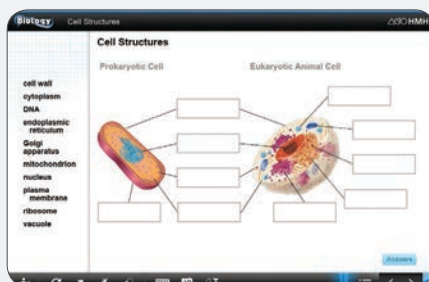
That's Amazing! Video-Based Inquiry

Online video-based inquiry activities engage students by offering a glimpse into the bizarre world of nature and the **application of the scientific method**. After being amazed by nature's wonders, students will apply the Data Analysis and Conclusion phases of the scientific method on editable lab datasheets.



Teaching Visuals

Digital illustrations and diagrams (many from the textbook) are ideal for **whole-class instruction**.



WebLinks

Hand-selected resource links save you endless hours of research, bringing the BEST of the Internet to the classroom to **extend and enrich** each chapter's content.

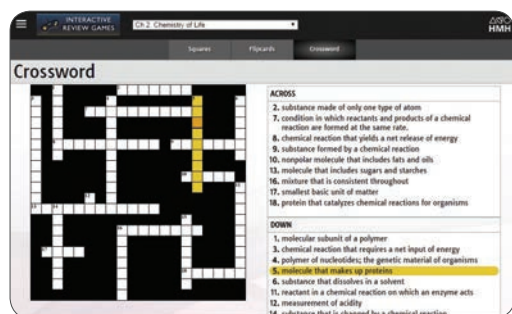
Interactive Whiteboard Resources

Key **teaching visuals** and **content-reinforcement lessons** from each chapter have been adapted specifically for interactive whiteboard use. IWB resources are available in SMART Notebook™ and ActivInspire® Flipchart formats.



PhET Simulations

PhET Simulations are interactive, online science simulations produced under Creative Commons licensing by the University of Colorado at Boulder. They provide fun, interactive, **research-based simulations** of real-life phenomena.



Interactive Review Games

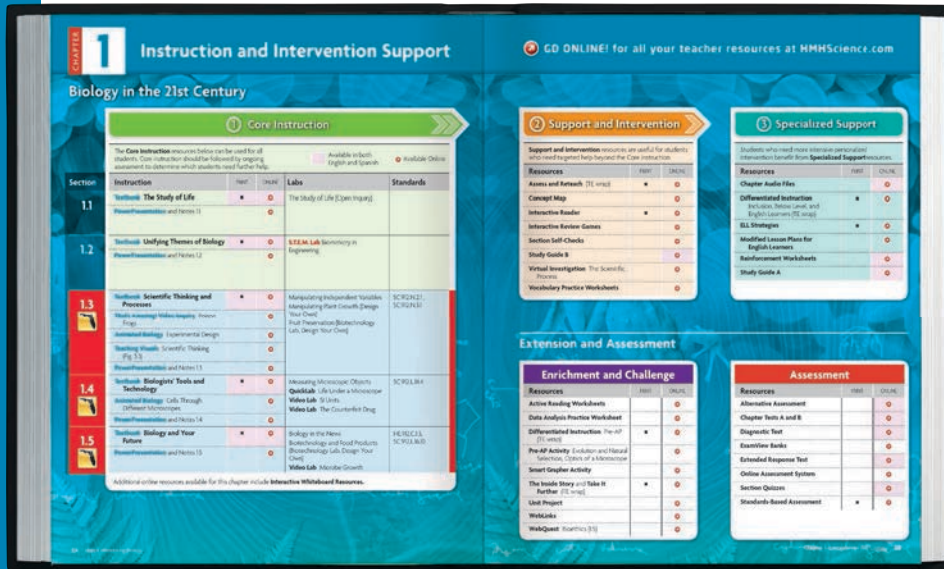
Nothing encourages students to study and review more than a game! The **online review games** covering the key concepts and vocabulary from each chapter will keep students engaged while they prepare for upcoming tests.

A&E® Biology Videos

These professionally produced **engaging videos** can be used to introduce or reinforce core biology concepts.

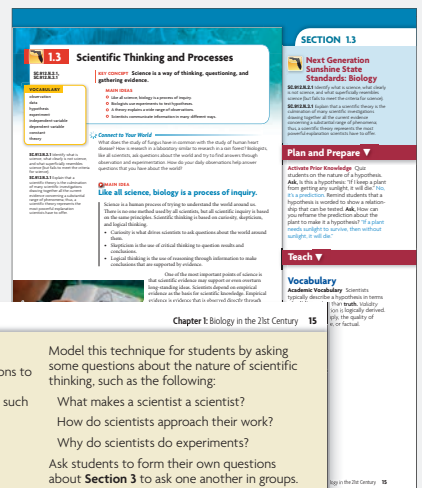
Unparalleled Resources for Differentiated Instruction

Students approach biology with a wide variety of skills and levels of preparation. **HMH Biology** enables you to reach all learners by providing time-saving, easy-to-use resources to help students of all abilities achieve understanding and success.



Florida Teacher Edition

The **Differentiated Instruction** feature located in each section of the Teacher Edition includes learning strategies for **below-level, English learner, inclusion, and Pre-AP®** students.



The **Instruction and Intervention Support** feature located in each chapter of the Teacher Edition provides **strategies for every lesson** to assist you in helping students with a wide range of needs. To simplify lesson planning, these support pages at the beginning of each chapter provide a full listing of the activities and classroom resources available for each section.

Section Study Guides A and B

A student worksheet that covers the content in each section of the textbook. Each study guide is organized by key concepts, main ideas, and vocabulary checks. Study Guide A, designed for **struggling students** or **English language learners**, is a lower-level version of Study Guide B.

Textbook Audio Files

The entire Student Edition textbook has been professionally read and is available to students in either English or Spanish, providing an alternative means of accessing the content for students who require additional **comprehension support**.

Name: _____ Class: _____ Date: _____

Section 1: Cell Theory
Study Guide A

KEY CONCEPT
Cells are the basic unit of life.

VOCABULARY

cell theory	organelle	eukaryotic cell
cytoplasm	prokaryotic cell	

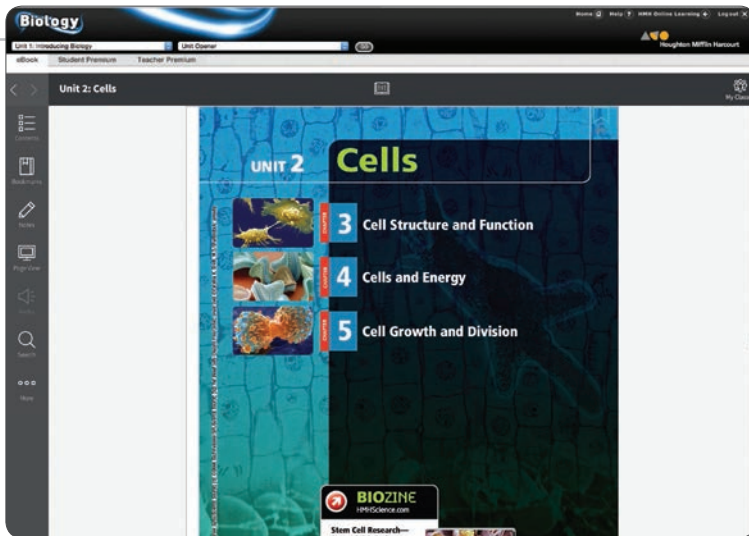
MAIN IDEA: Early studies led to the development of the cell theory.
Match each scientist in the table with the statement listed below that describes what he did to help develop the cell theory.

- concluded that animals and, in fact, all living things are made of cells.
- was the first to identify cells and name them.
- proposed that all cells come from other cells.
- concluded that plants are made of cells.
- observed live cells and observed greater detail.

Scientist	Letter of Statement that Completes the Sentence
1. Hooke	
2. Leeuwenhoek	
3. Schleiden	
4. Schwann	
5. Virchow	

Editable!

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HMH Biology
Study Guide A



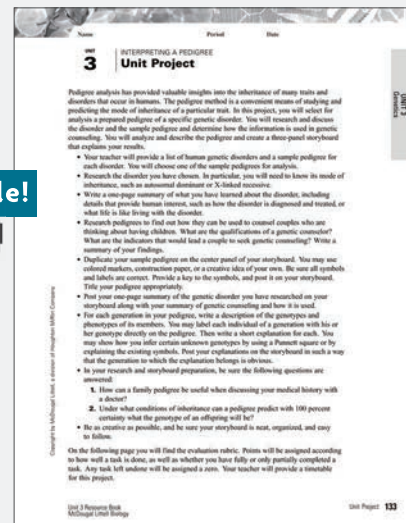
eBook

This online version of the print Student Edition offers point-of-use references to online animations, simulations, video clips, and virtual labs that bring biology to life. Features include on-page media links, bookmarking, search, notes, and highlighting functionality. Audio files of the chapter summaries offer students an alternative way to access the content and enhance comprehension.

Unit Projects

Long-term projects provide opportunities for **independent learning** during the course of the unit and involve **scientific writing**, creativity, and research. Each project includes a rubric as well as teacher notes, with strategies for project management and differentiated instruction.

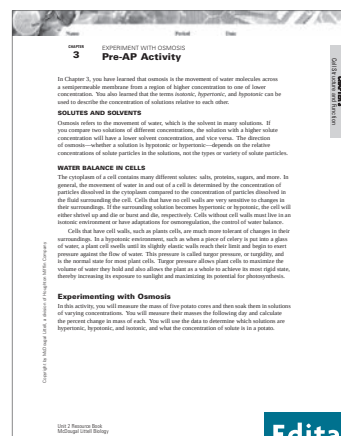
Editable!



Reinforcement

A one-page section-level worksheet that **summarizes core concepts** and asks students to provide short answers to questions relating to the summary.

Editable!



Editable!

Pre-AP® Activity

These chapter worksheets are designed for more advanced students who need an **extra challenge**. They commonly cover more complex topics within the chapter.

Wide-Ranging Support for Reading and Vocabulary

Your students will get the most out of their reading with numerous print and multimedia point-of-use resources that enable them to build understanding and retain more information on key concepts.

CHAPTER

3

Cell Structure and Function

BIG IDEA

Cells are the smallest unit of living matter that can carry out all processes required for life.

Student Edition

Big Ideas in every Chapter Opener & Summary help students concentrate on key concepts.

KEY CONCEPT Fermentation allows the production of a small amount of ATP without oxygen.

MAIN IDEAS

- Fermentation allows glycolysis to continue.
- Fermentation and its products are important in several ways.

4.6 Fermentation

VOCABULARY
fermentation
lactic acid

KEY CONCEPT Fermentation allows the production of a small amount of ATP without oxygen.

MAIN IDEAS

- Fermentation allows glycolysis to continue.
- Fermentation and its products are important in several ways.

Connect to Your World

Think about a time when you worked or exercised hard. Maybe you moved heavy boxes or furniture. Maybe, playing basketball, you found yourself repeatedly running up and down the court. Your arms and legs began to feel heavy, and they seemed to lose strength. Your muscles became sore, and even when you rested you kept breathing hard. Your muscles were using fermentation.

MAIN IDEA
Fermentation allows glycolysis to continue.

The cells in your body cannot store large amounts of oxygen for cellular respiration. The amount of oxygen that is provided by breathing is enough for your cells during normal activities. When you are reading or talking to friends, your body can maintain its oxygen levels. When you are doing high levels of activity, as the sprinter in **FIGURE 6.1**, your body cannot bring in enough oxygen for your cells, even though you breathe faster. How do your cells function without enough oxygen to keep cellular respiration going?

Recall that glycolysis yields two ATP molecules when it splits glucose into two molecules of pyruvate. Glycolysis is always occurring and does not require oxygen. If oxygen is available, the products of glycolysis—pyruvate and the electron carrier NADH—are used in cellular respiration. Then, oxygen picks up electrons at the end of the electron transport chain in cellular respiration. But what happens when oxygen is not there to pick up electrons? The production of ATP without oxygen continues through the anaerobic processes of glycolysis and fermentation.

Fermentation does not make ATP, but it allows glycolysis to continue. Fermentation removes electrons from NADH molecules and recycles NAD⁺ molecules for glycolysis. Why is this process important? Because glycolysis, just like cellular respiration, needs a molecule that picks up electrons. It needs molecules of NAD⁺.

VISUAL VOCAB

Fermentation is an anaerobic process that allows glycolysis to continue.

glycolysis

with O₂

without O₂

cellular respiration

fermentation



FIGURE 6.1 Muscle cells use anaerobic processes during hard exercise.

READING TOOLBOX

TAKING NOTES

Use a mind map to take notes on the processes involved in fermentation.

glycolysis

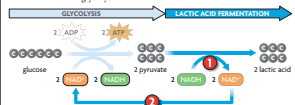
2 ATP

fermentation

Without NAD⁺ to pick up high-energy electrons from the splitting of glucose, glycolysis would stop. When the high-energy electrons are picked up, though, a eukaryotic cell can continue breaking down glucose and other simple sugars to make a small amount of ATP.

Suppose that a molecule of glucose has just been split by glycolysis in one of your muscle cells, but oxygen is unavailable. A process called lactic acid fermentation takes place. Lactic acid fermentation occurs in your muscle cells, the cells of other vertebrates, and in some microorganisms. **Lactic acid**, C₃H₇O₃, is what causes your muscles to “burn” during hard exercise.

- Pyruvate and NADH from glycolysis enter the fermentation process. Two NADH molecules provide energy to convert pyruvate into lactic acid. As the NADH is used, it is converted back into NAD⁺.
- Two molecules of NAD⁺ are recycled back to glycolysis. The recycling of NAD⁺ allows glycolysis to continue.



As you can see, the role of fermentation is simply to provide glycolysis with a steady supply of NAD⁺. By itself, fermentation does not produce ATP. Instead, it allows glycolysis to continue to produce ATP. However, fermentation does produce the lactic acid waste product that builds up in muscle cells and causes a burning feeling. Once oxygen is available again, your cells return to using cellular respiration. The lactic acid is quickly broken down and removed from the cells. This is why you continue to breathe hard for several minutes after you stop exercising. Your body is making up for the oxygen deficit in your cells, which allows the breakdown of lactic acid in your muscles.

Sequence Which process must happen first, fermentation or glycolysis? Explain.

MAIN IDEA
Fermentation and its products are important in several ways.

How would your diet change without cheese, bread, and yogurt? How would pizza exist without cheese and bread? Without fermentation, a pizza crust would not rise and there would be no mozzarella cheese as a pizza topping. Cheese, bread, and yogurt are just a few of the foods made by fermentation. Milk is changed into different cheeses by fermentation processes carried out by different types of bacteria and molds. Waste products of their fermentation processes give cheeses their different flavors and textures. Additionally, some types of bacteria that use lactic acid fermentation sour the milk in yogurt.

READING TOOLBOX

TAKING NOTES

Use a mind map to take notes on the processes involved in fermentation.

glycolysis

2 ATP

fermentation

CONNECT TO

HUMAN BIOLOGY

Muscle cells need ATP to contract. You will learn how muscles produce your movements in **Protection, Support, and Movement**.

WebQuest

PREMIUM CONTENT

Energy and Athletic Training

VISUAL VOCAB

Fermentation is an anaerobic process that allows glycolysis to continue.

glycolysis

with O₂

without O₂

cellular respiration

fermentation

Sequence Which process must happen first, fermentation or glycolysis? Explain.

It's the **vocabulary and reading support** that sets **HMH Biology** apart. Throughout the Student Edition pages, numerous reading and comprehension support tools enable students to build understanding.

Interactive Reader

This write-in worktext presents all the vocabulary and essential content from the textbook in a lower-level, **easy-to-read** text, with instructional visuals and frequent comprehension checks. This unique component is a great tool for all students—the core content for struggling students and a useful **study guide** for others.

SECTION 8.2 Structure of DNA

KEY CONCEPT DNA structure is the same in all organisms.

DNA is composed of four types of nucleotides.

Since the 1920s scientists have known the chemical parts of the DNA molecule. DNA is a very long polymer, or chain, of repeating units. The units, or monomers, that make up DNA are called **nucleotides** (NOO-klee-oh-vree). Each nucleotide has three parts: a phosphate group, a base, and a sugar.

There are four different types of DNA nucleotides: cytosine (C), thymine (T), adenine (A), and guanine (G). All of the nucleotides contain a phosphate group and a deoxyribose sugar. They differ in their nitrogen-containing bases, as shown in the table below.

Notice that thymine (T) and cytosine (C) have nitrogen-containing bases with a single-ring structure. Adenine (A) and guanine (G) are bases with a double-ring structure. A single molecule of human DNA is made of billions of nucleotides.

THE FOUR NITROGEN-CONTAINING BASES OF DNA

PYRIMIDINES - SINGLE RING			PURINES - DOUBLE RING		
Name of Base	Structural Formula	Model	Name of Base	Structural Formula	Model
thymine		T	adenine		A
cytosine		C	guanine		G

Visual VOCAB

The small units, or monomers, that make up a strand of DNA are called **nucleotides**. Nucleotides have three parts:

- phosphate group: one phosphate with four oxygens
- deoxyribose ring-shaped sugar
- nitrogen-containing base: a single or double ring built around nitrogen atoms and carbon atoms

Circle the names of the four nucleotides shown in the table above.

BASE PAIRING RULES

The base pairing rules describe how nucleotides form pairs in DNA. T always pairs with A, and G always pairs with C.

Visual VOCAB

The ribbons part represents the phosphate groups and deoxyribose sugar molecules that make up DNA "backbone".

The nitrogen-containing bases bond in the middle to form the rungs of the DNA ladder.

What sequence of bases would pair with GTACCT?

8.2 Vocabulary Check

nucleotide base pairing rules double helix

Mark It Up

Go back and highlight each sentence that has a vocabulary word in bold.

8.2 The Big Picture

- Label the drawing at the right with the terms nucleotide, base pairing rules, and double helix. Write each term and draw a line that connects the term to the appropriate part of the drawing.
- What are the three different parts of a nucleotide?
- What are the names of the four nucleotides?
- Use the base pairing rules to write the sequence that would pair with the following sequence: TCACCGTA.

Interactive Concept Maps

Each chapter includes an interactive, advanced **graphic organizer** that shows the relationships among concepts covered and helps students develop logical thinking and study skills.

Editable!

Vocabulary Practice

3

Word Origins Circle the Greek and Latin word parts in each vocabulary term. Then use the Greek and Latin meanings to construct a very basic definition of the vocabulary word.

Word	Definition
1. endoplasmic	
2. mitochondrion	
3. photosynthesis	
4. cytoplasm	
5. nucleus	
6. chloroplast	

Vocabulary Practice

Multiple-page vocabulary worksheets support **review and reinforcement** of all the vocabulary terms introduced in the chapter through a wide variety of lower-level to higher-order thinking skill strategies—vector vocabulary, word origin, word categorizing, word relationships, and crossword puzzle.

Active Reading Worksheets

Discovery of DNA

ACTIVE READING WORKSHEETS

DNA, RNA, AND PROTEIN SYNTHESIS

Discovery of DNA

Read the passage below, which covers topics from your textbook. Answer the questions below.

In the early 1940s, Oswald Avery and his colleagues set out to test whether the transforming agent in Griffith's experiment was protein, RNA, or DNA. The scientists used enzymes to separately destroy each of the three molecules in heat-killed cells. They used a proteinase enzyme to destroy protein in heat-killed cells. In the first experiment, an enzyme called *DNase* to destroy RNA in the second experiment, and an enzyme called *RNase* to destroy DNA in the third experiment. Then they separately mixed the three experimental batches of heat-killed cells with live R cells and injected mice with the mixtures. The cells missing protein and RNA were able to transform R cells into T cells and kill the mice. However, cells missing DNA did not transform R cells into T cells, and the mice survived.

Read each question and write your answer in the space provided.

SKILL: Recognizing Cause-and-Effect Relationships

Use a cause-and-effect relationship, one event, or cause, triggers a second event, or effect to answer.

- What enzyme destroys protein?
- What enzyme destroys RNA?
- What experimental batch of heat-killed T cells and live R cells resulted in the mice surviving?

Circle the letter of the word or phrase that best completes the statement.

4. In Avery's experiment, T cells were transformed into a protein. a. DNA. b. RNA.

Editable!

Active Reading Worksheets

Nearly 150 topical reading excerpts help boost students' science **reading comprehension** with questions that promote deeper thinking.

Convenient Access to Labs, Data Analysis, and STEM

How do students really *understand* science without *doing* science? HMH Florida **Biology** includes the most comprehensive lab resources with its wide variety of print and digital lab options for every classroom, along with the most robust data-analysis strand to help students develop these critical skills.

Laboratory Experiments

Over 200
Editable Labs!

Wide variety of labs located at point of use on **HMHSite.com**:

- Editable lab sheets
- Teacher notes and answer keys
- Referenced on Instruction and Intervention pages in Teacher Edition

Quick Labs

Designed for reinforcement of key concepts using easy-to-obtain materials

Standard

Focus on experimental skills and application of chapter concepts through the use of scientific methods

STEM

Science, Technology, Engineering, and Mathematics problem-based labs that emphasize inquiry and the engineering design process

Open Inquiry

Short project-based labs that encourage students to collaborate, strategize, construct, and evaluate a lab challenge of their own creation

Biotechnology

Provide blending of technology and biological concepts

Forensic

Blend popularity of crime shows on television and concepts students are learning in the classroom

Challenge

Two labs per unit extend concepts presented in the unit chapters for students in advanced, accelerated, or honors biology classes

Probeware

Labs that integrate technology and biology concepts



Labeled Labs

Lab activities are labeled online by **class time**, **prep time**, **difficulty**, and **materials** to help teachers choose appropriate activities to fit their classroom needs.

Virtual Investigations

Twenty-two **multimedia lessons**, each approximately 30 minutes in length. The engaging presentations, interactive activities, and simulated scientific investigations reinforce students' understanding of biology and science skills while strengthening inquiry and lab skills.



Virtual Labs

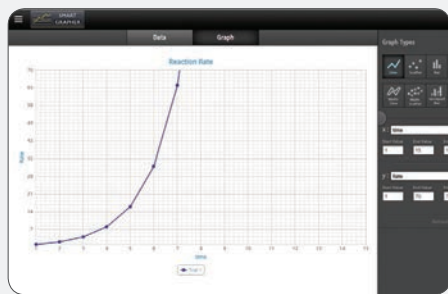
Fourteen virtual labs enable students to conduct **meaningful experiments** in a lab or field setting without the expense, time, or risk of traditional lab settings.

S.T.E.M. in the Student Edition

Each chapter now includes a STEM feature in the Student Edition. This feature **relates content to everyday life** and encourages students to **think in an innovative way**.

Data Analysis Support for Students

To help students develop the data analysis skills necessary to collect, graph, and analyze data like scientists, **HMHScience.com** includes resources to support the data analysis lesson in every chapter.



Smart Grapher

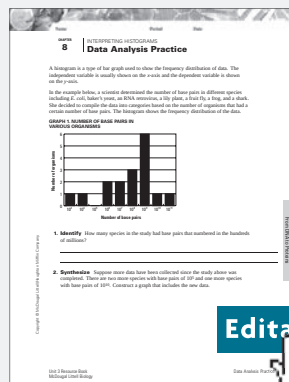
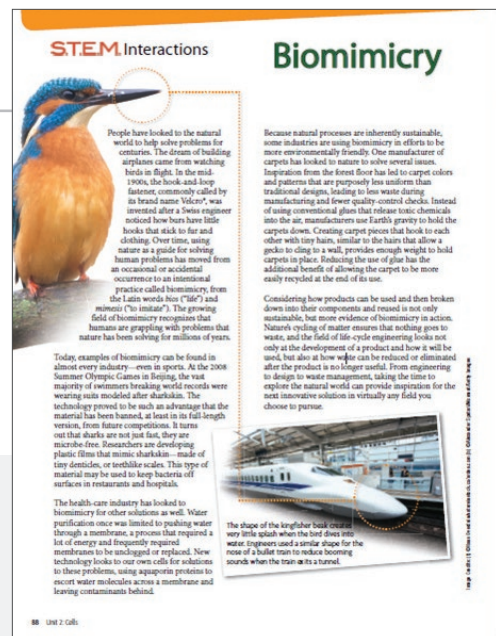
A powerful, easy-to-use **online graphing tool** that encourages students to use their own data to create line graphs, circle graphs, and more.

Graphing Calculator Activities

HMH has partnered with Texas Instruments® to present nine **graphing activities** for use with the TI-Nspire® graphing calculator.

Scientific Reasoning Skill Builder

Over **100 exercises** that strengthen students' scientific-reasoning skills. Sample topics include classifying and categorizing; cause-and-effect relationships; hypotheses, generalizations, and analogies; and summarizing and reviewing.



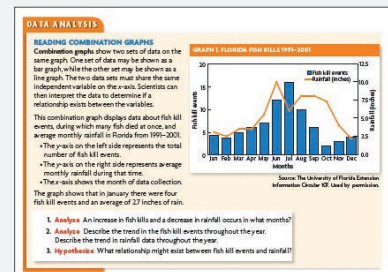
Editable!

Data Analysis Practice

These practice skill sheets, which reinforce the data analysis lesson in each chapter, help students build the skills necessary to understand different types of data, to graph data, and to **analyze and interpret** the meaning behind the data.

Data Analysis in the Student Edition

The Data Analysis feature in the print Student Edition addresses practice of critical data-analysis skills in every chapter. Students learn to **analyze, calculate, interpret, and hypothesize** about various forms of data, including models, graphs, and charts.



1. **Analyze** An increase in fish kills and a decrease in rainfall occurs in what month?
2. **Analyze** Describe the trend in the fish kill events throughout the year. Describe the trend in rainfall data throughout the year.
3. **Hypothesize** What relationship might exist between fish kill events and rainfall?



That's Amazing! Video-Based Inquiry

The lab datasheets that accompany this resource include activities that engage students and **promote the use of data analysis skills**.

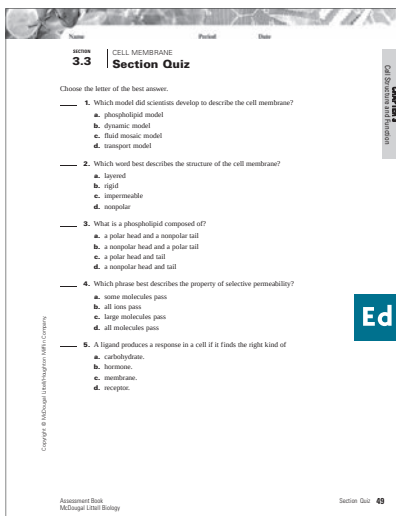
Flexible Assessment Tools to Track Student Progress

The comprehensive assessment options located on HMHSite.com bring together all HMH *Biology* assessment tools into one convenient place, giving you many choices for the best way to assess your students' learning.



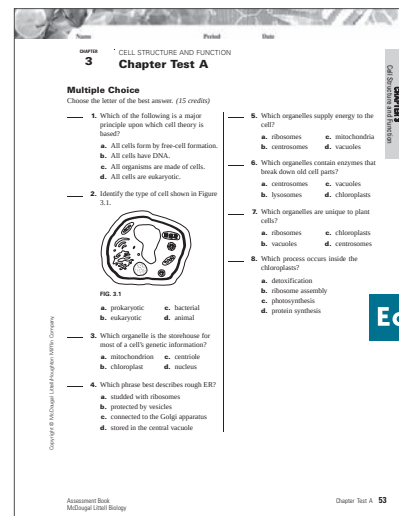
ExamView® Banks

A complete ExamView Assessment Suite includes all assessment questions for the program and more than **2,300 additional questions** in **Bonus Banks**.



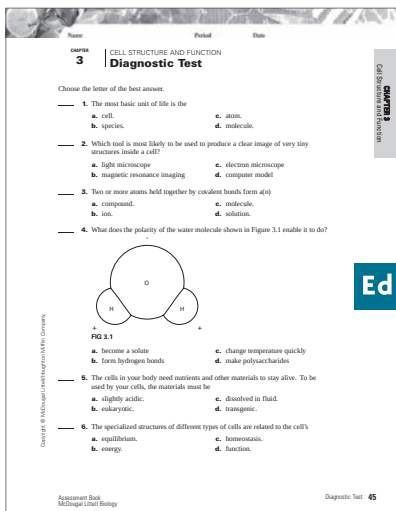
Section Quizzes

A five-question multiple-choice quiz for each section of the textbook is designed for student **formative assessment** to aid in remediation.



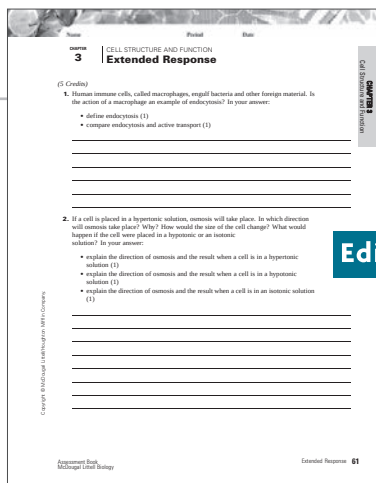
Chapter Tests A & B

Two **full-length** chapter tests include multiple-choice and short-answer questions. Test B is an on-level test, while Test A is a lower-level test of the same content.

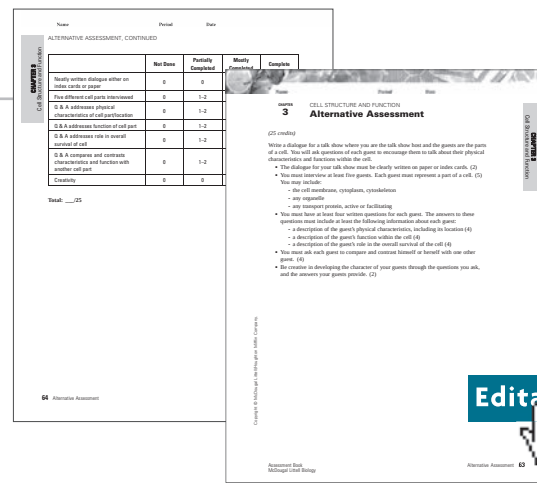


Diagnostic Tests

Diagnostic tests are designed to be given at the beginning of a topic to **determine students' existing knowledge** and help teachers customize the lesson plan.



Editable!



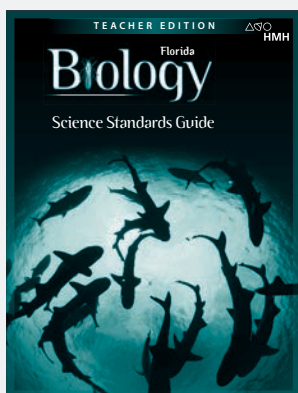
Editable!

Extended Response Tests

This type of assessment strategy encourages students to think in **short essay format** as they respond to chapter-specific writing prompts.

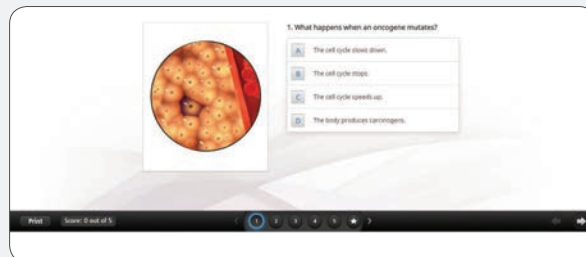
Alternative Assessments

For students who benefit from **non-traditional assessments**, these tests provide another way of determining their understanding of biological facts, concepts, and principles.



Florida Science Standards Guide (Student and Teacher Editions)

A two-page **Challenge Activity** for every biology standard, the **Florida Science Standards Guide** includes teacher notes and evaluation guidelines for each challenge as students perform a lab, an investigation, a research project, or another activity.

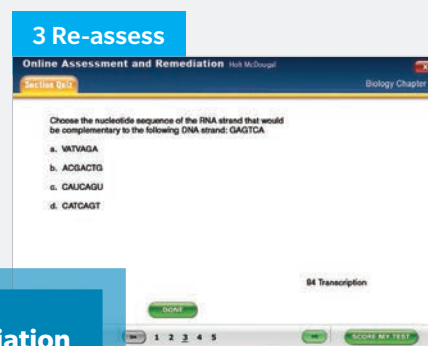
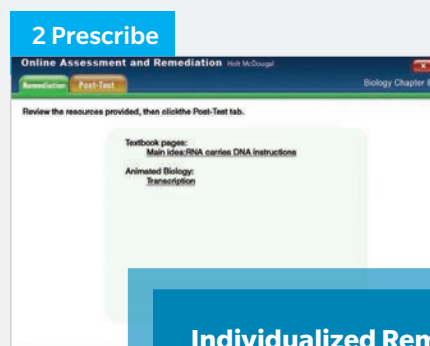
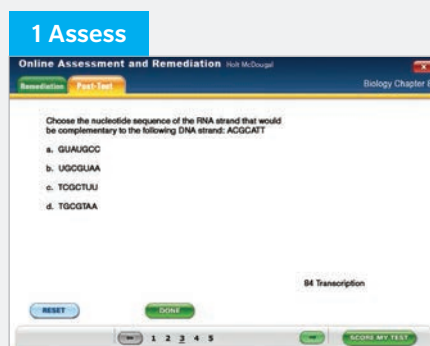


Section Self-Checks

A five-question, multiple-choice **interactive online quiz** for each section of the textbook provides immediate feedback for student self-evaluation.

Online Assessment and Remediation

Teachers use an advanced, automated assessment and remediation engine to assign section quizzes to students. The assessments are automatically graded, and remediation that uses materials from the program is prescribed. A post-test is offered to determine student mastery. Critical student performance data are recorded and made readily available to the teacher. Additionally, the standard section quizzes and chapter tests that are available online are also available for teachers to assign to students through this system. These types of assignments do not include remediation.

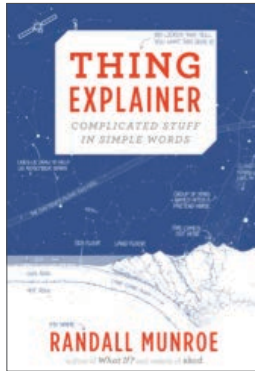


Individualized Remediation

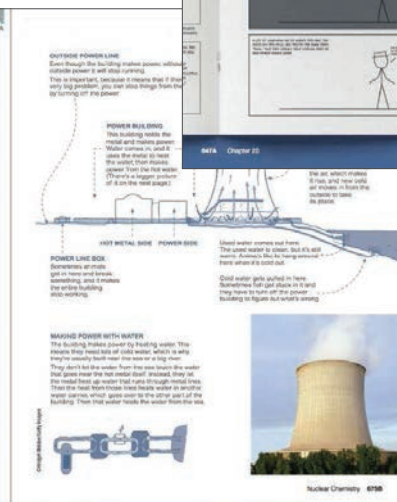
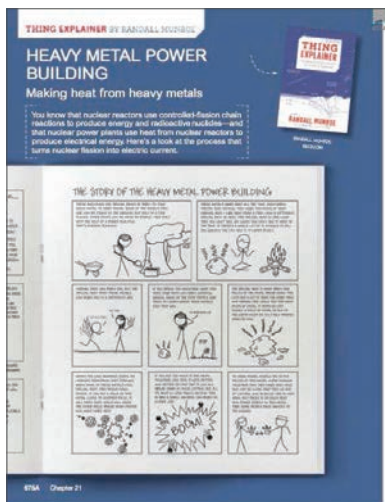
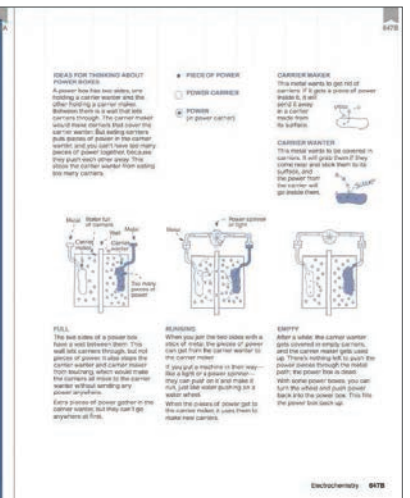
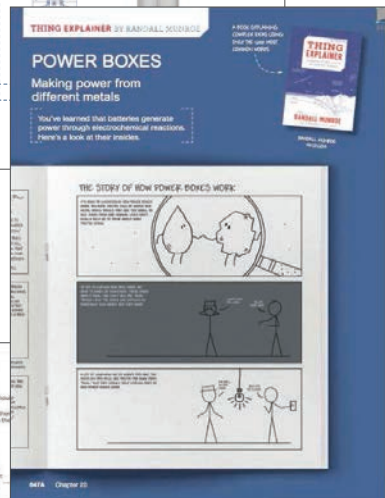
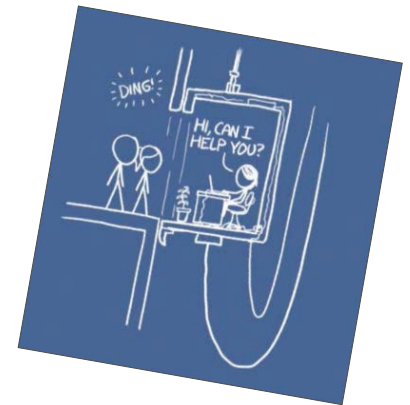
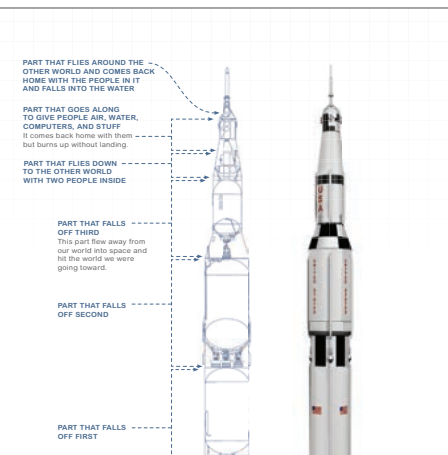
Thing Explainer

Enriches **HMH Biology**

and Simplifies Concepts



Through an exclusive partnership with former NASA roboticist **Randall Munroe**, author of the popular webcomic **xkcd.com** and *The New York Times* best-selling author of *What If?*, HMH has included blueprints from Munroe's new book, **Thing Explainer**, in the print and digital editions of **Biology**. Students will have access to Munroe's clear and engaging artwork and explanations as they delve into the mechanics of the scientific world. Aligned to the curriculum and integrated at point of use, Munroe's drawings humorously explain complex topics in easy-to-understand language.



Florida *Biology* Components

Student Resources

Florida Student Edition

Student Edition eTextbook ePub

Downloadable Student Edition PDF

Interactive Online Student Edition

Biology Interactive Reader

Biology Engineering Design Guide Student Edition

Biology Florida Science Standards Guide

Teacher Resources

Florida Teacher Edition

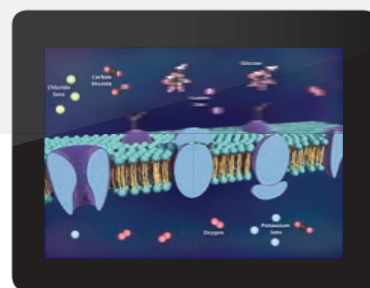
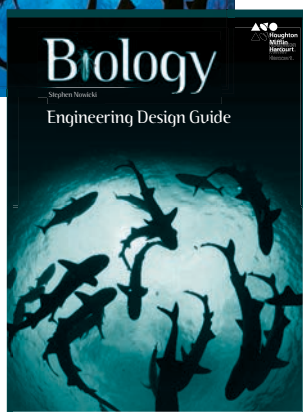
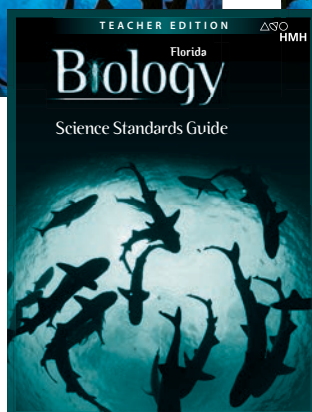
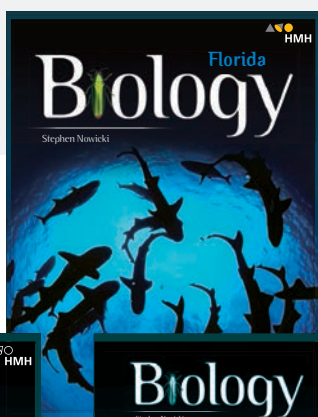
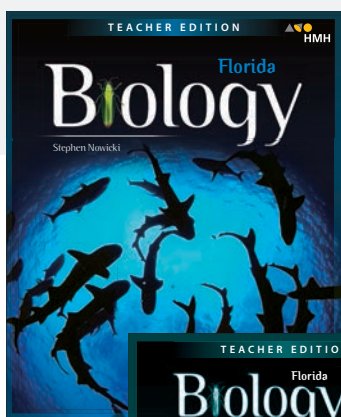
Biology Interactive Reader Answer Key

Biology Engineering Design Guide Teacher Edition

Biology Florida Science Standards Guide Teacher Edition

Online Teacher Management Center

Downloadable Teacher Resource Tool



Why **HMH Biology?**

Aligned to the Florida Next Generation Sunshine State Standards



Engaged Student Learning

- Concept Maps
- Virtual Labs
- Teacher Guide for Google Expeditions
- Animated Biology
- PhET Simulations
- STEM Labs and STEM Features
- Engineering Design Guide
- Florida Science Standards Guide

The Best Connection to the Real World

- Interactive Demonstrations
- *That's Amazing!* Videos
- Google Expeditions
- BioZine
- *Thing Explainer*
- *On the Job* STEM Videos

Strongest Differentiated Instruction

- Online Assessment with Remediation
- Leveled Chapter Assessments
- Strategies for English Learners, Inclusion, Pre-AP, and Below-level Students

**Contact your Account Executive
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