Houghton Mifflin Harcourt

Biology

Featuring connections to THING EXPLAINER &

Google Expeditions

"Education is the most powerful tool which you can use to change the world."

— Nelson Mandela

Houghton Mifflin Harcourt *Biology* empowers teachers to deliver effective, engaging, and motivating instruction with an abundance of print and digital resources, including rich multimedia, animations and simulations.

Try it now!

1	Go to:	preview.hrw.com
2	Enter Sample Word:	HSNASC17
3	Enter your registration information, select "Register" and follow the on-screen instructions to receive your credentials and get started	

Dashboard

#HMHScience

Everything you need—now in one convenient online location!

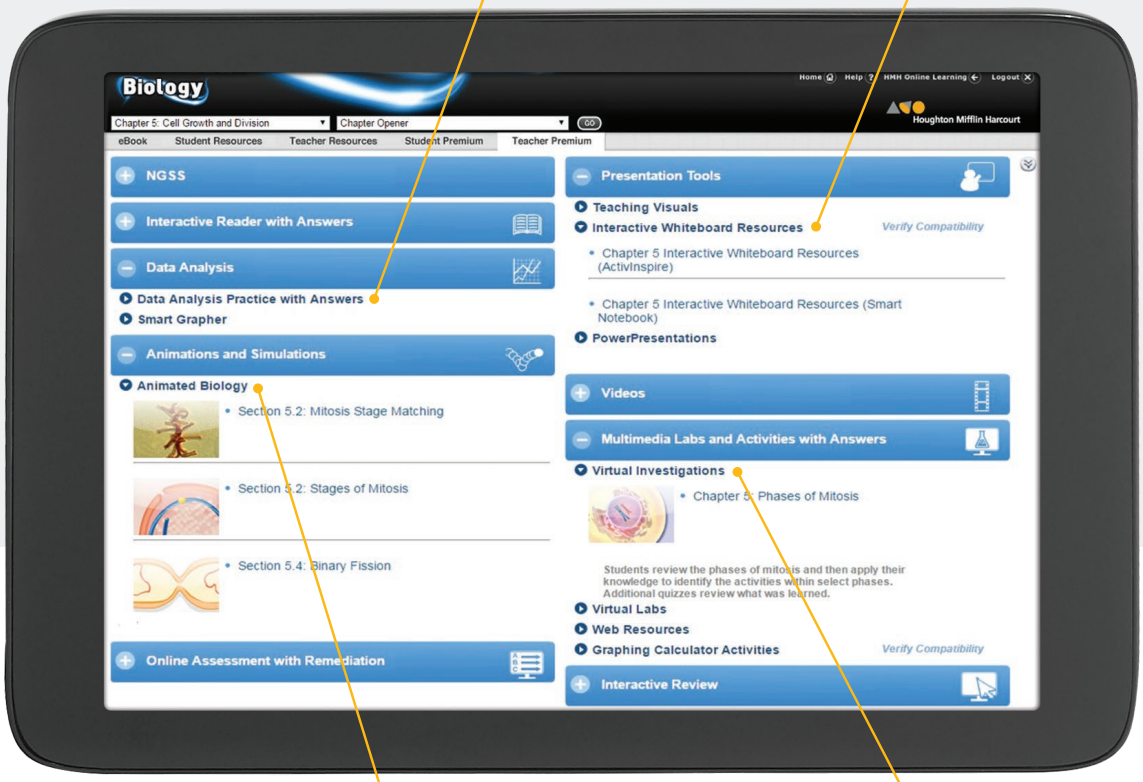
The Interactive Online Edition gives students and teachers 24/7 point-of-use access to all program components.

Data Analysis

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

Interactive Whiteboard Resources

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

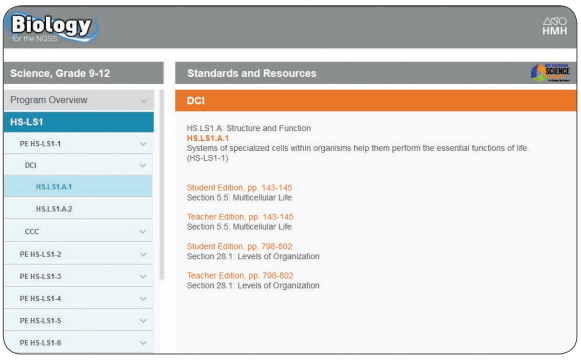


Animated Biology

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

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.



NGSS* Correlations

To make the standards more accessible, easy-to-use correlations are included in the Teacher Edition as well as online.

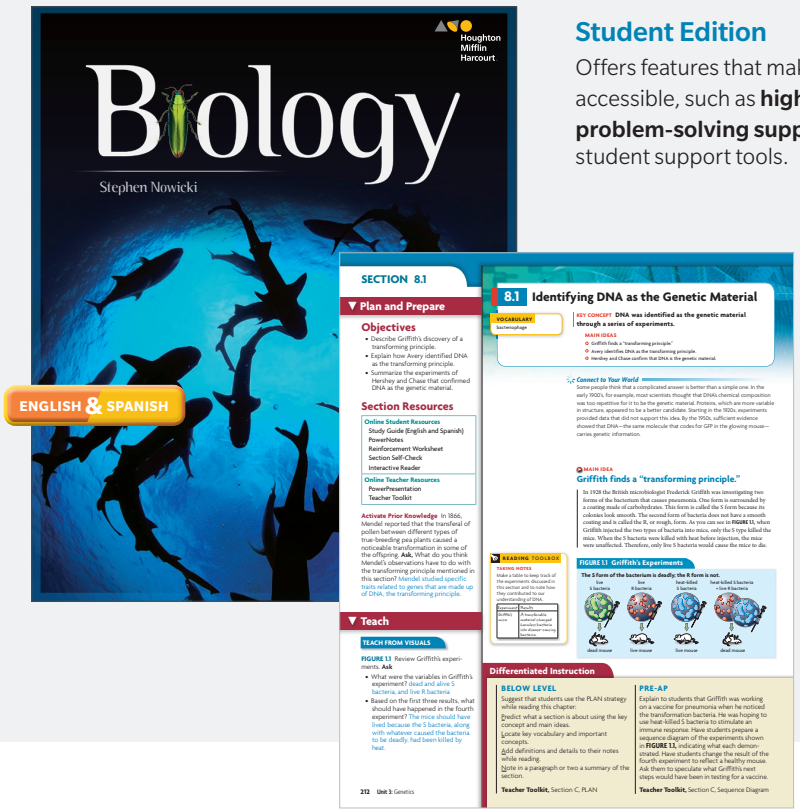
NEXT GENERATION SCIENCE STANDARDS

*Next Generation Science Standards and logo are registered trademarks of Achieve. Neither Achieve nor the lead states and partners that developed the Next Generation Science Standards was involved in the production of, and does not endorse, this product.

Print components **designed** and **aligned** for easy access

Nearly 300 pages lighter!

In an effort to align more closely with the scope of material typically covered in a biology classroom, we've removed less commonly taught topics from the print textbook. Students and teachers alike will find the smaller footprint to be much more manageable. Full chapters of these topics are still available in the online materials.



Student Edition

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

Teacher Edition

Packed with a wide variety of **strategies** to help all students master chemistry concepts, plus **extended learning** opportunities for advanced students.

Dr. Stephen Nowicki

*"Writing this textbook from scratch was important to me because I could include a **wide variety of teacher input** before writing. Many teachers and students have said they **love the readability** and the **real-world relevance**. An **important distinction** of this program is the **diversity of resources**, especially digital, that are available to teachers and their 'digital native' students."*

Video-Based Inquiry

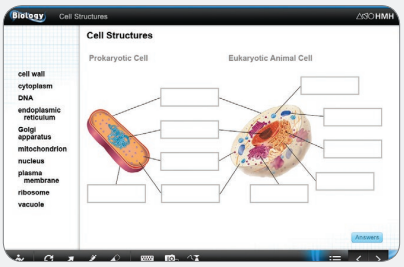
Online video-based inquiry activities engage students by offering a glimpse into the bizarre world of nature and the **application of the scientific method**. After being amazed by nature's wonders, students will apply the Data Analysis and Conclusion phases of the scientific method on editable lab datasheets.

Teaching Visuals

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

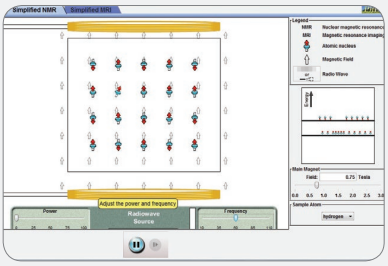
WebLinks

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.



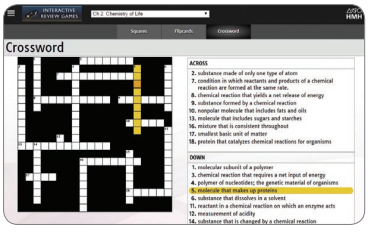
Interactive Whiteboard Resources

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.

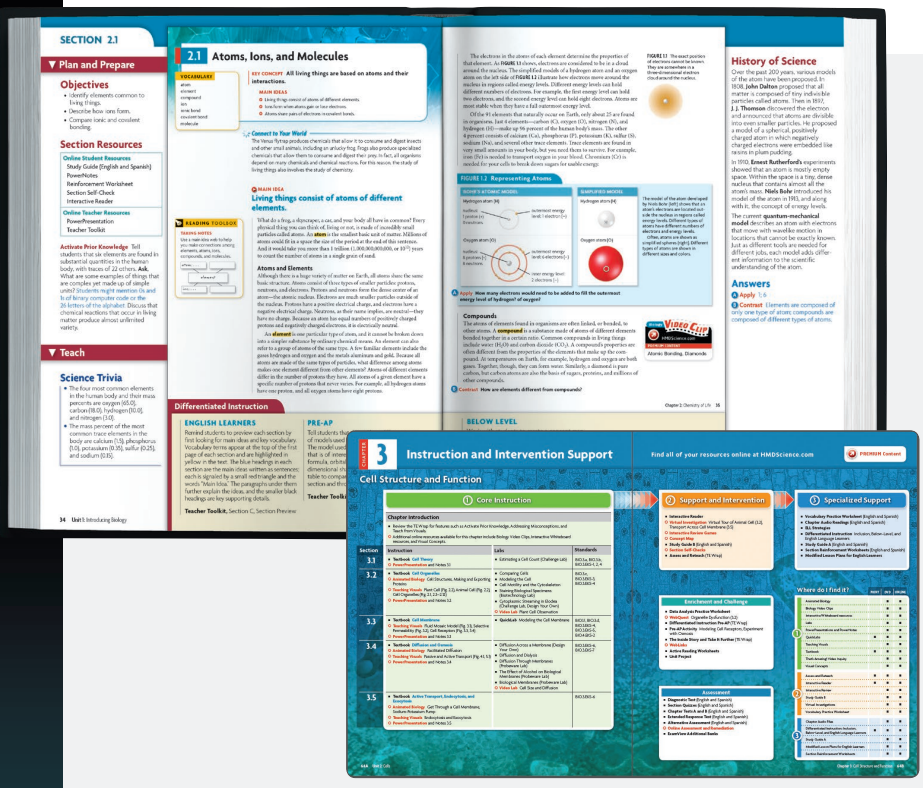
A&E® Biology Videos

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

NEW!

Unparalleled resources for
Differentiated Instruction

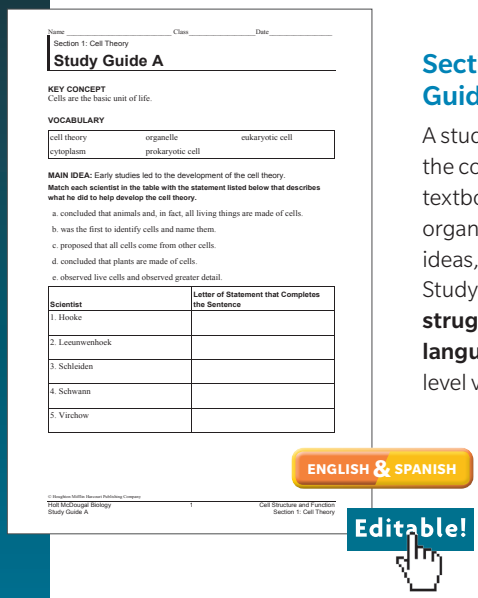
HMH *Biology* enables you to reach all learners by providing time-saving, easy-to-use resources to help students of all abilities achieve understanding and success.



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** 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.


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.

a. concluded that animals and, in fact, all living things are made of cells.
b. was the first to identify cells and name them.
c. proposed that all cells come from other cells.
d. concluded that plants are made of cells.
e. 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	

ENGLISH & SPANISH

Editable!

Section Study Guides A and B

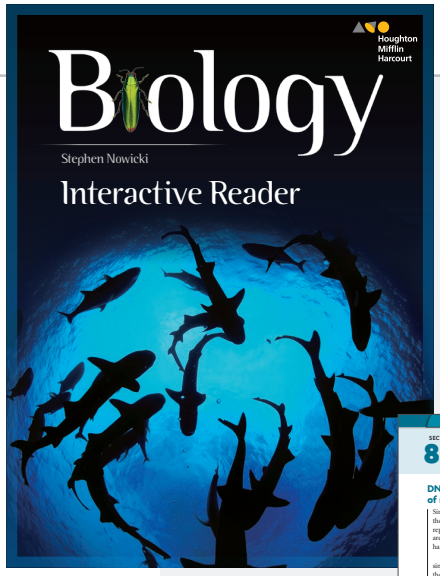
A student worksheet that covers the content in each section of the textbook. Each study guide is organized by key concepts, main ideas, and vocabulary checks. Study Guide A, designed for **struggling students** or **English language learners,** is a lower-level version of Study Guide B.

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.**

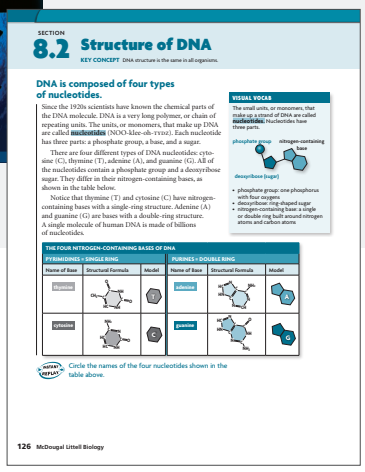
Spanish Support

Recognizing the growing number of Spanish-speaking students in the classroom, **HMH *Biology*** provides a complete suite of time-saving, targeted resources that will engage **English language learners**. Refer to the footnote on the components list on the back of this brochure for more information.



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-uh-tyzez). 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.

VISUAL VOCAB

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

phosphate group, nitrogen-containing base, deoxyribose (sugar)

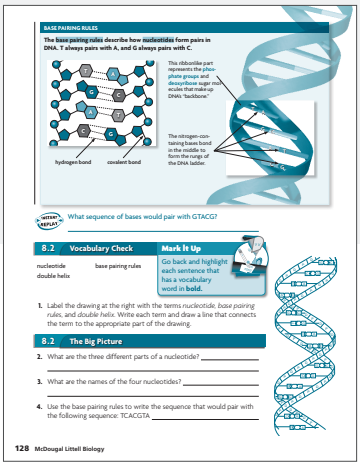
- phosphate group: one phosphorus with four oxygens
- deoxyribose: ring-shaped sugar
- nitrogen-containing base: a single or double ring built around nitrogen atoms and carbon atoms

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

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

126 McDougal Littell Biology


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.

This ribbonlike part represents the phosphate groups and deoxyribose sugar molecules that make up DNA's "backbone."

hydrogen bond, covalent bond

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

NATURE REPEATS What sequence of bases would pair with GTACG?

8.2 Vocabulary Check

nucleotide, base pairing rules, double helix

Mark It Up

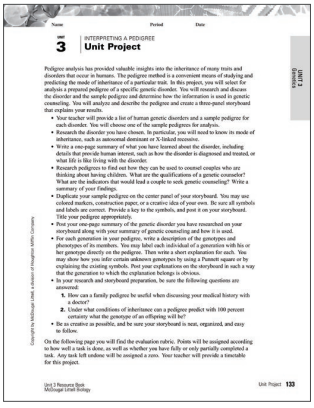
Go back and highlight each sentence that has a vocabulary word in bold.

1. 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.

8.2 The Big Picture

2. What are the three different parts of a nucleotide? _____
3. What are the names of the four nucleotides? _____
4. Use the base pairing rules to write the sequence that would pair with the following sequence: TCACGTA _____

128 McDougal Littell Biology


Name Period Date

UNIT 3 Genetics

3 INTERPRETING A PEDIGREE
Unit Project

Pedigree analysis has provided valuable insights into the inheritance of many traits and disorders that occur in humans. The pedigree method is a convenient means of studying and predicting the mode of inheritance of a particular trait. In this project, you will select for analysis a prepared pedigree of a specific genetic disorder. You will research and discuss the disorder and the sample pedigrees and determine how the information is used in genetic counseling. You will analyze and describe the pedigree and create a three-panel storyboard that explains your results.

- Your teacher will provide a list of human genetic disorders and a sample pedigree for each disorder. You will choose one of the sample pedigrees for analysis.
- Research the disorder you have chosen. In particular, you will need to know its mode of inheritance, such as autosomal dominant or X-linked recessive.
- Write a one-page summary of what you have learned about the disorder, including details that provide human interest, such as how the disorder is diagnosed and treated, or what life is like living with the disorder.
- Research pedigrees to find out how they can be used to counsel couples who are thinking about having children. What are the qualifications of a genetic counselor? What are the indicators that would lead a couple to seek genetic counseling? Write a summary of your findings.
- Duplicate your sample pedigree on the center panel of your storyboard. You may use colored markers, construction paper, or a creative idea of your own. Be sure all symbols and labels are correct. Provide a key to the symbols, and post it on your storyboard. Title your pedigree appropriately.
- Post your one-page summary of the genetic disorder you have researched on your storyboard along with your summary of genetic counseling and how it is used.
- For each generation in your pedigree, write a description of the genotypes and phenotypes of its members. You may label each individual of a generation with his or her genotype directly on the pedigree. Then write a short explanation for each. You may show how you infer certain unknown genotypes by using a Punnett square or by explaining the existing symbols. Post your explanations on the storyboard in such a way that the generation to which the explanation belongs is obvious.
- In your research and storyboard preparation, be sure the following questions are answered:
  1. How can a family pedigree be useful when discussing your medical history with a doctor?
  2. Under what conditions of inheritance can a pedigree predict with 100 percent certainty what the genotype of an offspring will be?
- Be as creative as possible, and be sure your storyboard is neat, organized, and easy to follow.

On the following page you will find the evaluation rubric. Points will be assigned according to how well a task is done, as well as whether you have fully or only partially completed a task. Any task left undone will be assigned a zero. Your teacher will provide a timetable for this project.

Unit 3 Resource Book
McDougal Littell Biology

Unit Project 133

Unit Projects

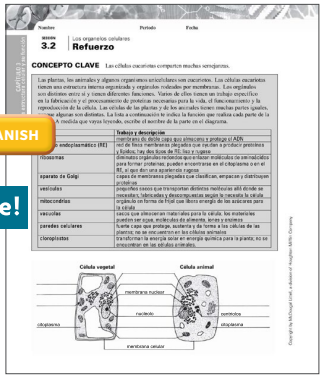
Long-term projects provide opportunities for **independent learning** during the course of the unit and involve **scientific writing**, creativity, and research. Each project includes a rubric as well as teacher notes, with strategies for project management and differentiated instruction.

Reinforcement

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

ENGLISH & SPANISH

Editable!


Nombre Período Fecha

SECCIÓN 3.2 Los organelos celulares
Refuerzo

CONCEPTO CLAVE Las células eucariotas comparten muchas semejanzas.

Las plantas, los animales y algunos organismos unicelulares son eucariotas. Las células eucariotas tienen una estructura interna organizada y orgánulos rodeados por membranas. Los orgánulos son distintos entre sí y tienen diferentes funciones. Varios de ellos toman un trabajo específico en la fabricación y el procesamiento de proteínas necesarias para la vida, el funcionamiento y la reproducción de la célula. Las células de las plantas y de los animales tienen muchas partes iguales, pero algunas son distintas. La lista a continuación te indica la función que realiza cada parte de la [illegible] a medida que vayas leyendo, escribe el nombre de la parte en el diagrama.

	Trabajo y descripción
retículo endoplasmático (RE)	membranas de doble capa que almacenan y protegen el ADN; red de finos membranas plegadas que ayudan a producir proteínas y lípidos; hay dos tipos de RE, liso y rugoso
ribosomas	diminutos orgánulos redondos que producen moléculas de aminoácidos para formar proteínas; pueden encontrarse en el citoplasma o en el RE, si que dan una apariencia rugosa
aparato de Golgi	pilares de membranas plegadas que clasifican, empacan y distribuyen proteínas
vesículas	pequeños sacos que transportan distintas moléculas allí donde se necesitan; fabricadas y desencapsuladas según la necesita la célula
mitocondrias	orgánulo en forma de frijol que libera energía de las azúcares para la célula
vacuolas	sacos que almacenan materiales para la célula; los materiales pueden ser agua, moléculas de alimento, iones y enzimas
paredes celulares	fuerte capa que protege, sustenta y da forma a las células de las plantas; no se encuentra en las células animales
cloroplastos	transforman la energía solar en energía química para la planta; no se encuentran en las células animales

Célula vegetal, Célula animal

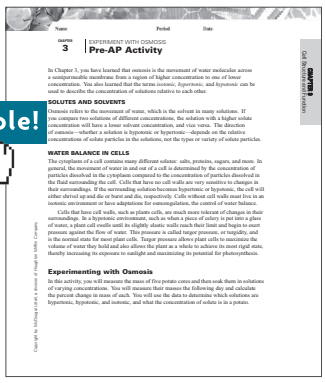
citoplasma, membrana nuclear, núcleo, vacuola, citoplasma, pared celular, membrana celular

Copyright by McDougal Littell, a division of Houghton Mifflin Company

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.

Editable!


Name Period Date

CHAPTER 3 EXPERIMENT WITH OSMOSIS
Pre-AP Activity

In Chapter 3, you have learned that osmosis is the movement of water molecules across a semipermeable membrane from a region of higher concentration to one of lower concentration. You also learned that the terms *isotonic*, *hypertonic*, and *hypotonic* can be used to describe the concentration of solutions relative to each other.

SOLUTES AND SOLVENTS

Osmosis refers to the movement of water, which is the solvent in many solutions. If you compare two solutions of different concentrations, the solution with a higher solute concentration will have a lower solvent concentration, and vice versa. The direction of osmosis—whether a solution is hypotonic or hypertonic—depends on the relative concentrations of solute particles in the solutions, not the types or variety of solute particles.

WATER BALANCE IN CELLS

The cytoplasm of a cell contains many different solutes: salts, proteins, sugars, and more. In general, the movement of water in and out of a cell is determined by the concentration of particles dissolved in the cytoplasm compared to the concentration of particles dissolved in the fluid surrounding the cell. Cells that have no cell walls are very sensitive to changes in their surroundings. If the surrounding solution becomes hypertonic or hypotonic, the cell will either shrivel up and die or burst and die, respectively. Cells without cell walls must live in an isotonic environment or have adaptations for osmoregulation, the control of water balance.

Cells that have cell walls, such as plants cells, are much more tolerant of changes in their surroundings. In a hypotonic environment, such as when a piece of celery is put into a glass of water, a plant cell swells until its slightly elastic walls reach their limit and begin to exert pressure against the flow of water. This pressure is called turgor pressure, or turgidity, and is the normal state for most plant cells. Turgor pressure allows plant cells to maximize the volume of water they hold and also allows the plant as a whole to achieve its most rigid state, thereby increasing its exposure to sunlight and maximizing its potential for photosynthesis.

Experimenting with Osmosis

In this activity, you will measure the mass of five potato cores and then soak them in solutions of varying concentrations. You will measure their masses the following day and calculate the percent change in mass of each. You will use the data to determine which solutions are hypertonic, hypotonic, and isotonic, and what the concentration of solute is in a potato.

Copyright by McDougal Littell, a division of Houghton Mifflin Company

Wide-ranging support for **Reading** and **Vocabulary**

Your students will get the most out of their reading with numerous student and teacher 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**

NEW!

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.**

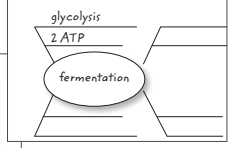
MAIN IDEAS

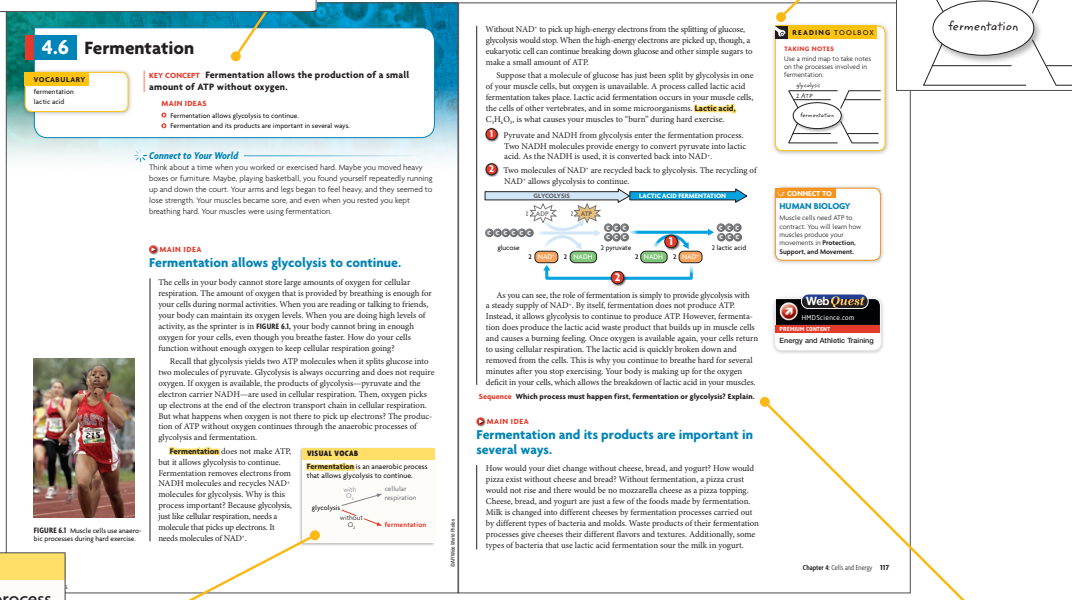
- Fermentation allows glycolysis to continue.
- Fermentation and its products are important in several ways.

READING TOOLBOX

TAKING NOTES

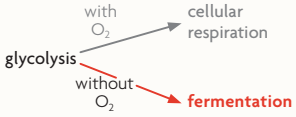
Use a mind map to take notes on the processes involved in fermentation.





VISUAL VOCAB

Fermentation is an anaerobic process that allows glycolysis to continue.



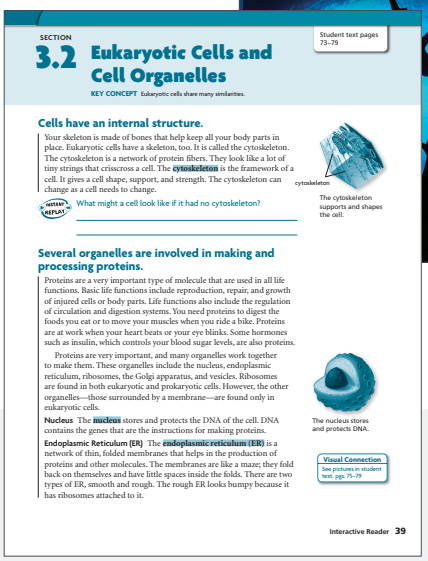
Sequence **Which process must happen first, fermentation or glycolysis? Explain.**

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.

Print Support for Reading and Vocabulary

The **Interactive Reader** 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 serves as a core instructional tool for struggling students and has twice the reading and vocabulary support as the Student Edition.


SECTION 3.2 Eukaryotic Cells and Cell Organelles

KEY CONCEPT Eukaryotic cells share many similarities.

Student text pages 73–79

Cells have an internal structure.

Your skeleton is made of bones that help keep all your body parts in place. Eukaryotic cells have a skeleton, too. It is called the cytoskeleton. The cytoskeleton is a network of protein fibers. They look like a lot of tiny strings that crisscross a cell. The cytoskeleton is the framework of a cell. It gives a cell shape, support, and strength. The cytoskeleton can change as a cell needs to change.

cytoskeleton

The cytoskeleton supports and shapes the cell.

INSTANT REPLAY What might a cell look like if it had no cytoskeleton?

Several organelles are involved in making and processing proteins.

Proteins are a very important type of molecule that are used in all life functions. Basic life functions include reproduction, repair, and growth of injured cells or body parts. Life functions also include the regulation of circulation and digestion systems. You need proteins to digest the foods you eat or to move your muscles when you ride a bike. Proteins are at work when your heart beats or your eye blinks. Some hormones such as insulin, which controls your blood sugar levels, are also proteins.

Proteins are very important, and many organelles work together to make them. These organelles include the nucleus, endoplasmic reticulum, ribosomes, the Golgi apparatus, and vesicles. Ribosomes are found in both eukaryotic and prokaryotic cells. However, the other organelles—those surrounded by a membrane—are found only in eukaryotic cells.

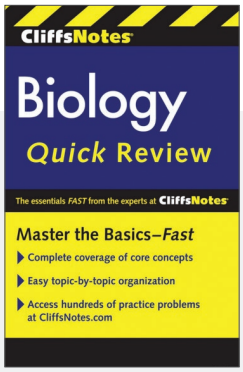
The nucleus stores and protects DNA.

Nucleus The nucleus stores and protects the DNA of the cell. DNA contains the genes that are the instructions for making proteins.

Endoplasmic Reticulum (ER) The endoplasmic reticulum (ER) is a network of thin, folded membranes that helps in the production of proteins and other molecules. The membranes are like a maze; they fold back on themselves and have little spaces inside the folds. There are two types of ER, smooth and rough. The rough ER looks bumpy because it has ribosomes attached to it.

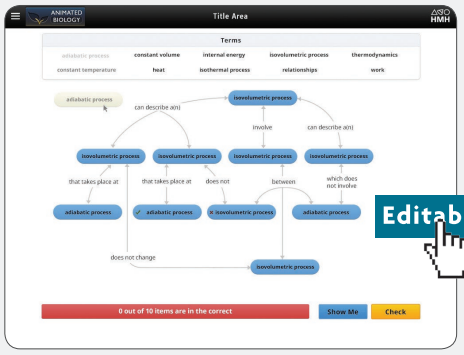
Visual Connection See pictures in student text, pgs. 75–79

Interactive Reader 39



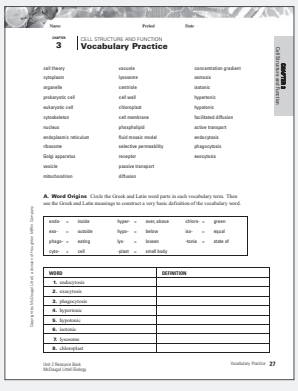
CliffsNotes® Biology Quick Review

With a Premium package purchase, a class set of these study guides provides **essential reinforcement of core concepts** in an easy-to-use format.



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.


CHAPTER 3 CELL STRUCTURE AND FUNCTION

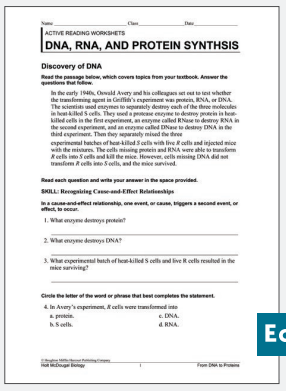
Vocabulary Practice

A. 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. endocytosis	
2. exocytosis	
3. phagocytosis	
4. hypertonic	
5. hypotonic	
6. isotonic	
7. lysosome	
8. 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

DNA, RNA, AND PROTEIN SYNTHSIS

Discovery of DNA

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

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 S cells. They used a protease enzyme to destroy protein in heat-killed cells in the first experiment, an enzyme called RNase to destroy RNA in the second experiment, and an enzyme called DNase to destroy DNA in the third experiment. Then they separately mixed the three experimental batches of heat-killed S cells with live *R* cells and injected mice with the mixtures. The cells missing protein and RNA were able to transform *R* cells into S cells and kill the mice. However, cells missing DNA did not transform *R* cells into *S* cells, and the mice survived.

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

SKILL: Recognizing Cause-and-Effect Relationships

In a cause-and-effect relationship, one event, or cause, triggers a second event, or effect, to occur.

1. What enzyme destroys protein?
2. What enzyme destroys DNA?
3. What experimental batch of heat-killed S 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, *R* cells were transformed into
   a. protein. c. DNA.
   b. S cells. d. RNA.

Editable!

Active Reading Worksheets

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

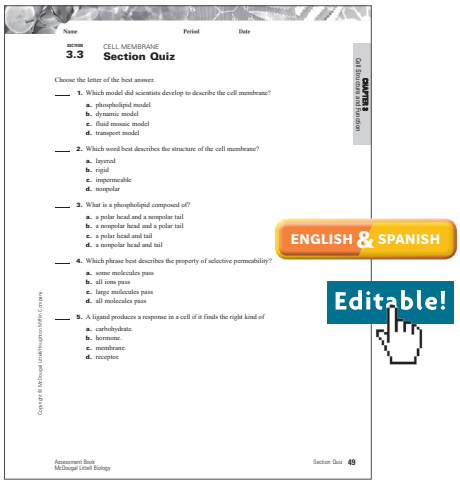
Flexible **Assessment Tools** to Track Student **Progress**

The comprehensive assessment options located on HMHScience.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® ASSESSMENT SUITE

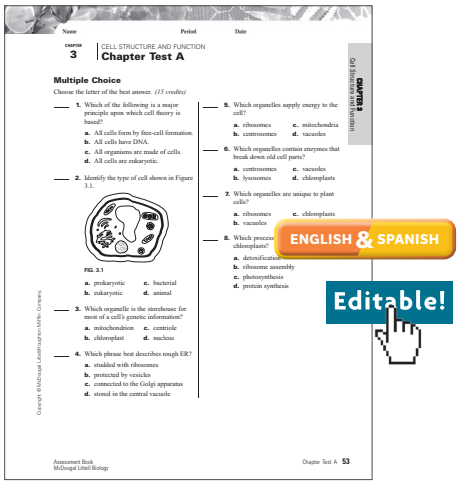
ExamView® Banks

A complete ExamView Assessment Suite includes all assessment questions for the program and more than **5,000 additional questions** in **Bonus Banks.**



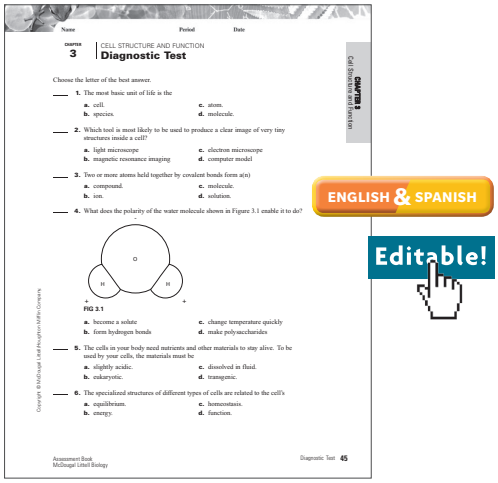
Section Quizzes

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



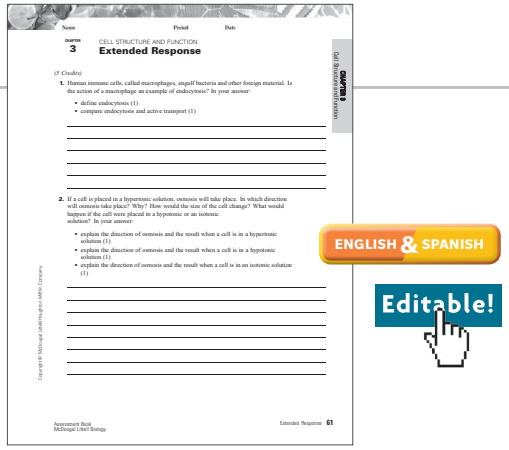
Chapter Tests A & B

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.



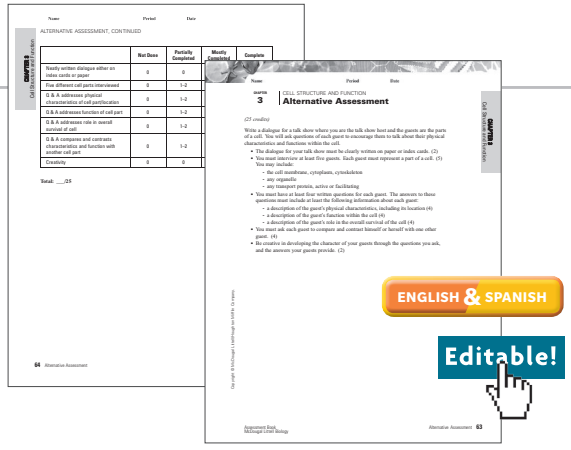
Diagnostic Tests

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.



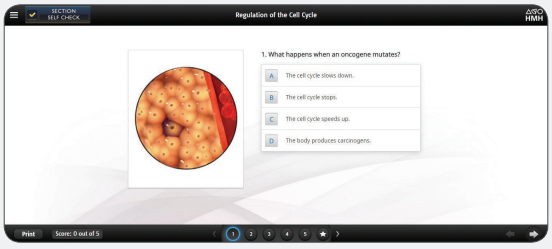
Extended Response Tests

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.



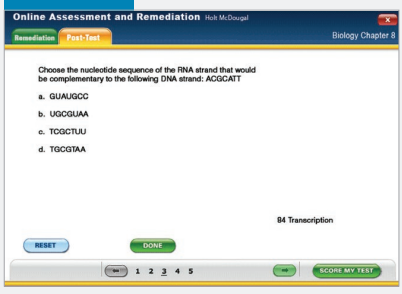
Section Self-Checks

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

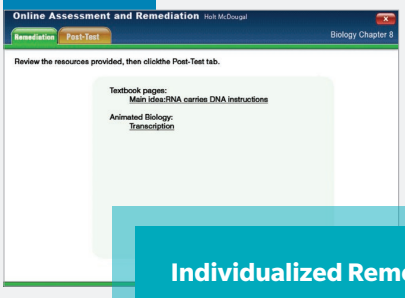
Online Assessment and Remediation

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.

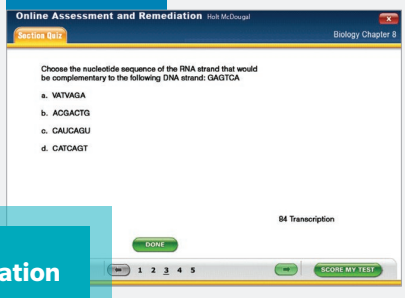
1 Assess



2 Prescribe



3 Re-assess



Individualized Remediation

Convenient access to Labs, Data Analysis, and STEM

HMH *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 **HMHScience.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

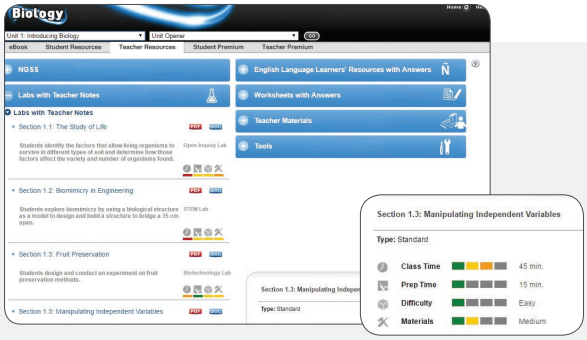
Blend popularity of crime shows on television and concepts students are learning in the classroom

Challenge

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

Probeware

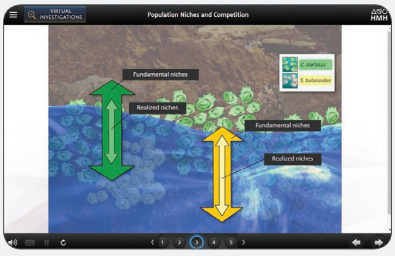
Labs that integrate technology and biology concepts



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

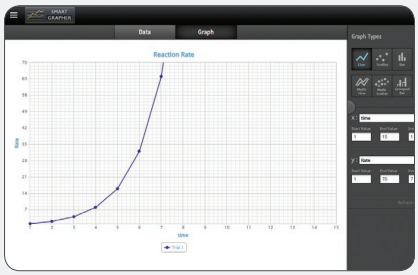
Fourteen virtual labs enable students to conduct **meaningful experiments** in a lab or field setting without the expense, time, or risk of traditional lab settings.

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

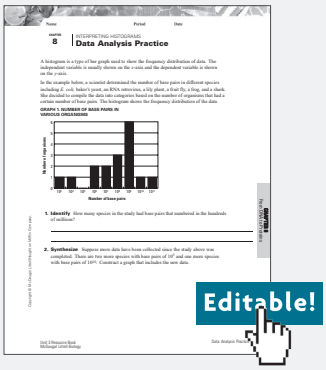
A powerful, easy-to-use **online graphing tool** that encourages students to use their own data to create line graphs, circle graphs, and more.

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.

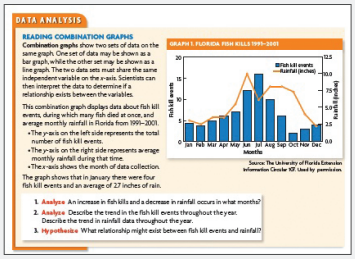


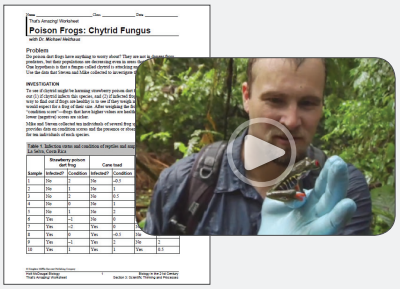
Data Analysis Practice

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.





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.**