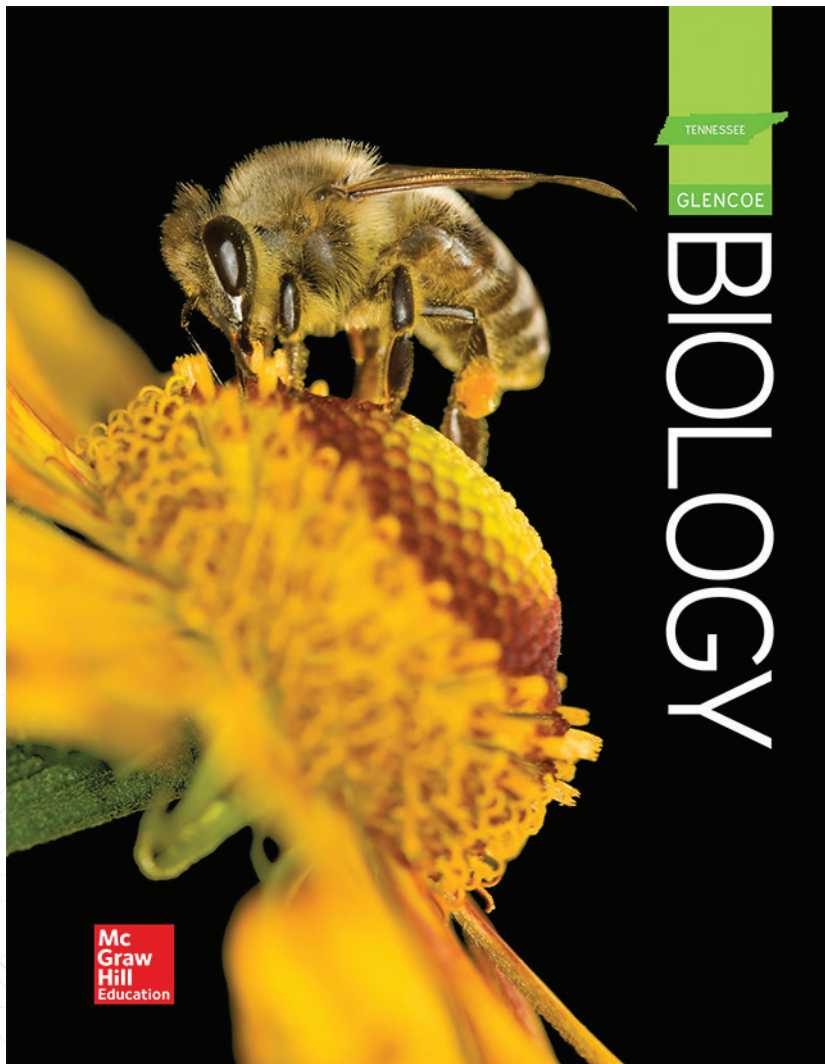


TENNESSEE

GLENCOE

BIOLOGY



Welcome to  TENNESSEE

GLENCOE BIOLOGY

We are your partner in learning by meeting your diverse 21st century needs. Designed for today’s tech-savvy high school students, the McGraw-Hill Education’s Tennessee Glencoe Biology program offers hands-on investigations, rigorous science content, and engaging, real-world applications to make science fun, exciting, and stimulating.

With Tennessee Biology you are equipped to:

- Meet science standards **Performance Expectations** (PEs).
- Integrate **Science and Engineering Practices** into your science classroom.
- Apply the **Disciplinary Core Ideas** (DCIs).
- Correlate your lessons to **Tennessee State Science Standards**.

Tennessee Biology: Leveraging technology to drive personalized student success while engaging and motivating students with hands-on, project-based activities and real-world applications.

CONTENTS

Welcome to Tennessee Biology.....	1	Project-Based Learning Activities (PBLs)	7
ConnectED	2	Student Engagement	8
<i>LearnSmart</i> [®]	3	eAssessment.....	9
Science in Action.....	5	My Notes	10



connectED is a time-saving online portal that has all of your digital program resources in one place.



ConnectED allows you to:

- Build lesson plans with easy-to-find print and digital resources.
- Search for activities to meet a variety of learning modalities.
- Teach with technology by providing virtual labs, lesson animations, whole-class presentations and more.
- Personalize instruction with print and digital resources.
- Provide students with anytime, anywhere access to student resources and tools, including eBooks, tutorials, animations, and the eGlossary.
- Access to Online Assessment, track student progress, generate reports, and differentiate instruction.

With ConnectEd Mobile you can browse your course content on the go.

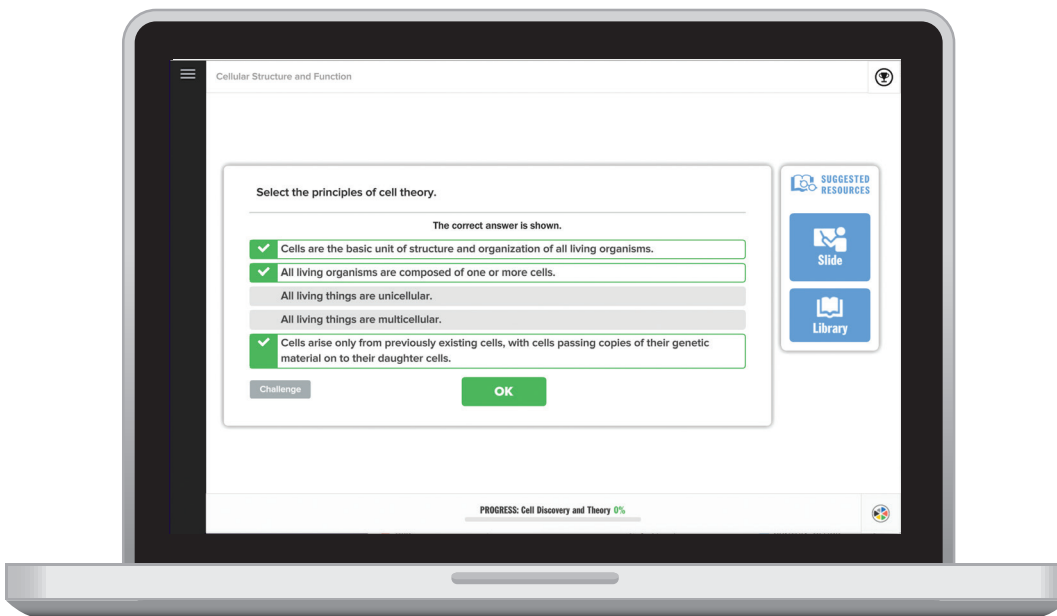
The app includes a powerful eBook engine where you can download, view, and interact with your books.

Help students learn faster, study more efficiently, and retain more knowledge.

The **LearnSmart®** adaptive learning engine with **SmartBook®** gives every student a unique learning path and every teacher the power to reach all students in class.

SmartBook® is an eBook whose text is fully integrated with **LearnSmart®** technology. As a student reads, this technology determines precisely which learning objectives each student understands or struggles with, highlighting the most critical content for the student to read next.

LEARNSMART®



Pinpoint knowledge gaps for individual students and across classes

Empower students to personalize their learning experiences with optimal learning paths so they spend more time on what they don't know with **LearnSmart®**.

- Practice of basic science concepts to improve recall and application before moving on.
- Additional exposure and increased practice to master new concepts.
- Presentation of concepts individual students struggle to master.

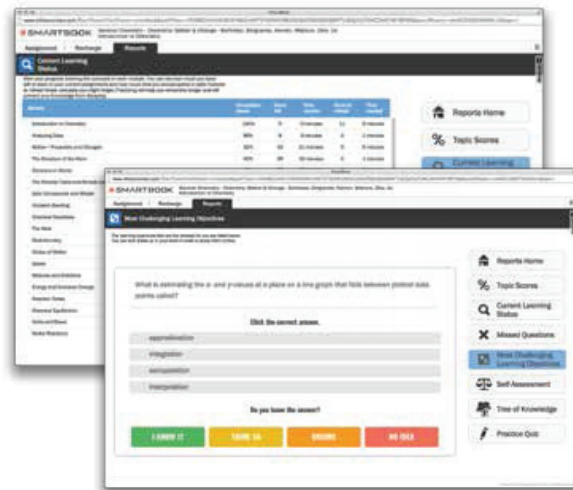
Support Each Student's Unique Needs

LearnSmart[®] is a proven adaptive learning program that helps students' success by providing a personalized learning path that's based on their responses to questions, as well as their confidence about the answers they provide.

Using revolutionary adaptive technology, **LearnSmart**[®] builds a learning experience unique to each student's individual needs.

LearnSmart[®] gives students an advantage - **improving learning outcomes** by ensuring every minute a student spends studying is the most productive minute possible.

SMARTBOOK[®]



Maximize Study Time

- Within **LearnSmart**[®], discover **Smartbook**[®], the only adaptive reading experience designed to transform the way students read.
- The interactive challenge format highlights content and helps each student identify content they know, don't know, and are most likely to forget.
- **Learning Resources** close knowledge gaps by immediately clarifying the concepts the student finds most challenging.
- Teachers receive detailed reports of student progress.

Access a **LearnSmart**[®] Demo at www.connected.mcgraw-hill.com

Username: TN612SCIDEMO | Password: tn2018science

Go to Course > Menu > Resources > Program Resources > **LearnSmart**[®]

Science in Action

Tennessee Glencoe Biology offers you diverse lab opportunities to deepen your students' understanding of science by experiencing it and experimenting with biology first-hand!

Use these lab activities included in every chapter to bring science to life for your students.

- Launch Labs
- MiniLabs
- Data Analysis Labs
- BioLabs

More lab resources are available to you through ConnectED, including:





- Lab Manual
- Forensic Labs
- Open Inquiry Labs
- Guided Inquiry Labs
- Probeware Labs
- Video Labs
- Virtual Labs

Name _____ Date _____ Class _____

Launch Lab

CHAPTER 1 Why is observation important?

Scientists use a planned, organized approach to solving problems. A key element of this approach is gathering information through detailed observations. Scientists extend their ability to observe by using scientific tools and techniques.

Procedure    

1. Read and complete the lab safety form.
2. Pick an unshelled **peanut** from the **container of peanuts**. Carefully observe the peanut using your senses and available tools. Record your observations.
3. Do not change or mark the peanut. Return your peanut to the container.
4. After the peanuts are mixed, locate your peanut based on your recorded observations.

Data and Observations

Analysis

1. List the observations that were the most helpful in identifying your peanut. Which were the least helpful?

Launch Lab is found on the chapter opener.

Launch Lab Why is observation important?

Scientists use a planned, organized approach to solving problems. A key element of this approach is gathering information through detailed observations. Scientists extend their ability to observe by using scientific tools and techniques.

VIRTUAL LABS

Cell Reproduction

How can cancer cells be recognized?

Purpose
In this Investigation you will explore the similarities and differences between the cell cycles of normal cells and cancer cells.

Objectives:

- Identify the various phases of the cell cycle.
- Compare and contrast the cell cycles of normal and cancer cells.

Procedure:

1. Click the TV to watch the video about the cell cycle.
2. Click Information to read about cancer statistics and risk factors.
3. On the biology laboratory navigation

[Journal](#) [Calculator](#) [Table](#)

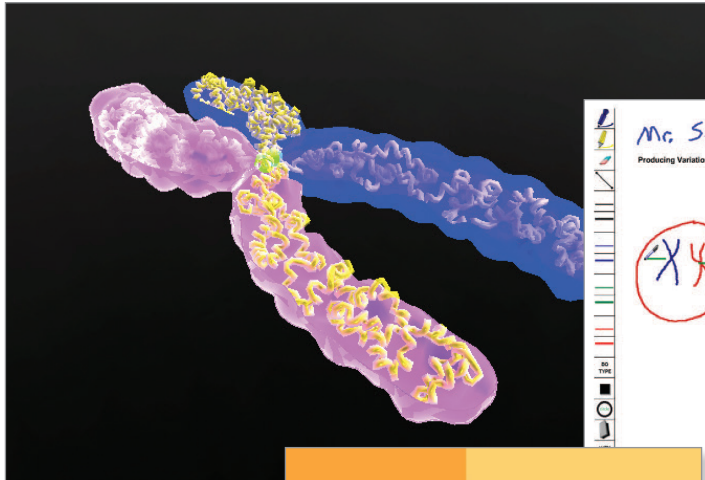
Table of Contents

- Interphase
- Prophase
- Metaphase
- Anaphase
- Telophase

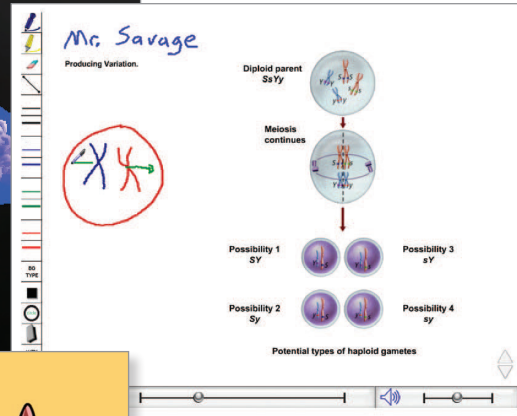
Normal Lung

Tissue Slides

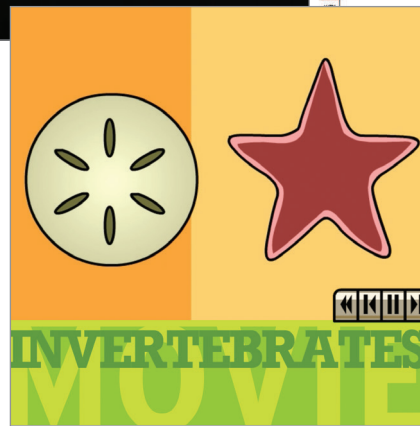
[Check](#) [Reset](#) [Return](#)



Personal
Tutor



Expanded features such as Personal Tutor, BrainPOP[®], and VIVED[®] go beyond the limitations of the printed page.



Brain
POP[®]

Apply Interactive Practice

Students have their own digital learning platform called the **ConnectED Student Center**, complete with student worksheets and digital resources. Assignments you create appear in their to-do lists. Students can message you directly and submit their work.

Use expanded **Student Center** features such as **Personal Tutor**, **BrainPOP[®]**, and **VIVED[®]** videos to go beyond the limitations of the printed page and bring science into your students' lives like never before.

Encourage students to see science all around them with Biology MiniGames. These fun MiniGames present key biology topics from course material using sci-fi themed games with their own style and plots.

Project-Based Learning Activities (PBLs)

Engage and motivate students with hands-on project based activities and real world applications.

Project-Based Learning (PBLs) Activities

- Student-driven projects
- Problem-based learning projects
- Applying Practices projects targeting specific science and engineering practices
- Design Your Own Labs

Science and Engineering Practices Handbook

- Support students in their scientific investigations and engineering projects
- Online reference book
- Provides students with background information, definitions, examples, and Quick Practice activities

Science and Engineering Practices Handbook

Defining Problems
Defining problems is an engineering practice that underlies any technological solution. The different components of this practice are briefly summarized below.

1. Engineers design solutions to problems.
2. Problem statements outline the problem and the solution.
3. Asking questions is part of engineering as well as science.

Defining problems doesn't involve a dictionary or a math worksheet. Engineers study how people do things and try to make the experience better. If people don't have a way to do something yet, engineers invent it. Engineers have to consider many factors when defining a problem.


Seeking a Solution
Engineers identify problems for people and society and then design solutions to those problems. The solution could be a process, a system, or an object, such as a tool. Space suits worn by astronauts are technological solutions designed by engineers. When coming up with any solution, engineers must consider many criteria.

Criteria are requirements or specifications for a product to be successful.

Criteria for a space suit may include the size of the person wearing it, how easy it is to move around in, and the temperatures it can withstand. Engineers also have certain constraints on every solution.

Constraints are limitations on a product's design.

For example, some materials may not be durable enough or may be too expensive to use. Major constraints include time, energy, space, and the availability of tools and materials. Other important constraints are the number of people working on the project, how much money is available for the project, and what information about the project exists.



Space suits have many criteria for safety and functionality.

Science and Engineering Practices • Asking Questions and Defining Problems
10
Copyright © McGraw-Hill Education. Permission is granted to reproduce for classroom use.

Microbeads, Mega-Problem



Did you know that a new form of plastic pollution might be lurking in your shower?

Exfoliating bath products like face or body wash often contain small plastic balls, called microbeads, which are less than one millimeter in diameter.

These small plastic particles wash down drains and out into aquatic environments – wastewater treatment plants are not equipped to remove them from the water.

Go Online! PBL
To download the guidelines for the *Microbeads, Mega Problem* project.

Student Engagement

Create a teaching environment in which students are curious and actively engaged in learning.

Real World STEM

Tennessee Glencoe Biology connects biology to your world. Throughout the text, find personal science connections, surprising examples of biology in careers, and how biologists are engaged in cutting-edge science research.

Section 2

Reading Preview

Essential Questions

- How is latitude related to the three major climate zones?
- What are the major abiotic factors that determine the location of a terrestrial biome?
- How are the terrestrial biomes distinguished based on climate and biotic factors?

Review Vocabulary

biome: a large group of ecosystems that share the same climate and have similar types of plant communities

New Vocabulary

weather
latitude
climate
tundra
boreal forest
temperate forest
woodland
grassland
desert
tropical savanna
tropical seasonal forest

REAL-WORLD READING LINK

at the beginning of each section connects biology content to your life.

Connection to Earth Science **Latitude** The distance of any point on the surface of Earth north or south from the equator is **latitude**. Latitudes range from 0° at the equator to 90° at the poles. Light from the Sun strikes Earth more directly at the equator than at the poles, as illustrated in Figure 5. As a result, Earth's surface is heated differently in different areas. Ecologists refer to these areas as polar, temperate,

CAREERS IN BIOLOGY

Conservation Biologist: Among other duties, a conservation biologist might tag and track animals in a community. Understanding the biotic and abiotic factors of the community can help explain changes in populations.

Throughout the book, **CAREERS IN BIOLOGY** demonstrate how the chapter content applies to everyday careers.

Practical Professional Development

Designed on the principles of effective professional development, Effective Professional Development

- Self-paced courses
- Foldables
- Science and Engineering Practice Videos
- On-demand webinars

Media

Dem
con

FOLDABLES

Fold a sheet of paper into a two-tab book. Label the tabs as shown. Use it to organize information about the different types of passive and active transport.

Passive transport

Active transport

0:34 / 1:33

Take Student Achievement to the Next Level with eAssessment

Assessment is a key element to teaching science. McGraw-Hill Education **eAssessment** supports you from diagnostic to summative evaluations, giving you the ability to monitor students' progress, make data-driven instructional decisions, and motivate your students' academic achievement.

Simplify Data-Informed Decision Making

Use **eAssessment** to create tests and other assignments that can be delivered to students digitally or in print.

Maximize eAssessment by generating reports and beneficial data

The **eAssessment** reporting feature gives you 24/7 access to valuable data on individual students and whole classes to help you differentiate and support students more effectively.

The screenshot displays the McGraw-Hill eAssessment interface. On the left, there are two panels: 'Question Sets' and 'Tests'. The 'Question Sets' panel shows a tree view of chapters (2-12) and assessment sets. The 'Tests' panel shows 'My Tests' and 'Shared Content' for 'Science Biology'. The main area shows a 'Chapter 8 Assessment (Ancillary)' with a 'Multiple Choice' question: '1. Which defines energy?' with options a. ability to do work, b. creation of heat, c. increase of disorder, and d. power to change. The answer is 'a'. Below this, questions 2, 3, 4, and 5 are visible. On the right, an 'Assignment Results' window is open, showing 'Assignment: Practice Homework', 'Student: Sample Student', 'Class: 2nd Period', 'School: SAMPLE SCHOOL', 'Term:', and 'Score: 13 / 87'. Below this, a table lists 17 questions with their types, points, and responses.

Question #	Question Type	Points	Response
X 1	True / False	0 / 1	T
X 2	True / False	0 / 1	F
3	True / False	1 / 1	T
4	True / False	1 / 1	T
X 5	True / False	0 / 1	T
6	True / False	1 / 1	F
7	True / False	1 / 1	T
8	True / False	1 / 1	F
9	True / False	1 / 1	F
X 10	True / False	0 / 1	F
11	True / False	1 / 1	T
12	True / False	1 / 1	F
X 13	True / False	0 / 1	T
14	True / False	1 / 1	T
X 15	True / False	0 / 1	T
16	True / False	1 / 1	T
X 17	True / False	0 / 1	T

Other features of iScience eAssessment include:

- Question sets with questions organized by chapter and lesson
- Assessment creation
- Report generation on proficiency and accuracy
- Assignment time restrictions and multiple attempts at assignment completion
- Access to ready-made assessments
- Assess using premade diagnostic and summative evaluations

To learn more about the Tennessee Biology program,
visit mheducation.com/prek12Tennessee or contact your
Tennessee Sales Representative.



mheducation.com/prek12Tennessee

SA.1015104