



High School Florida Biology





WELCOME TO Florida Biology

Florida High School Biology is about connecting science content, rigor, engagement and adaptive instruction for student success.

As your trusted partner we deliver to you an effective, innovative and inspiring high school biology science curriculum that meets your Florida state standards.

With Florida Science you'll find the essential tools to support your classroom needs.

- LearnSmart® adaptive learning technology with integrated Smartbook®
- Robust Assessment Support
- PBL's & Rigorous student materials
- Inquiry-Based Learning
- Engaging student content
- Practical Professional Development

Florida Biology gives you the freedom, flexibility, and resources to create unique lessons that will prepare students for success in the classroom - and in STEM-related careers.

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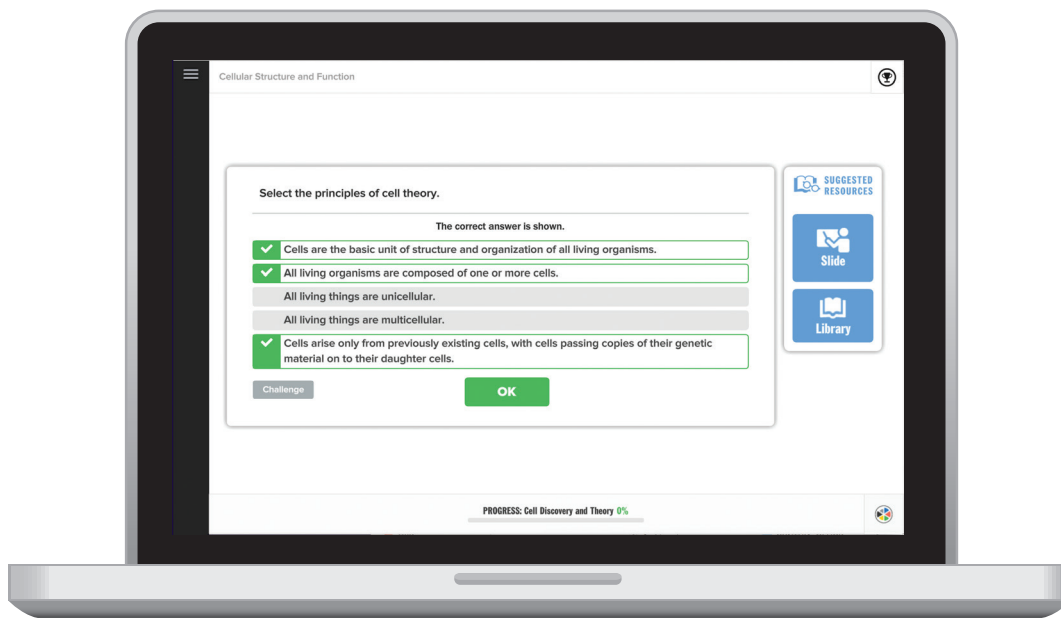
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Help students learn faster, study more efficiently, and retain more knowledge.

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 experience 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.

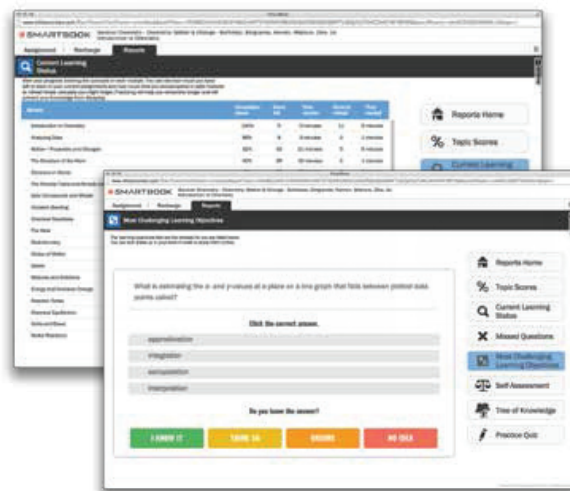
Support Each Student's Unique Needs

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: FL612SCIDEMO | Password: fl2018science

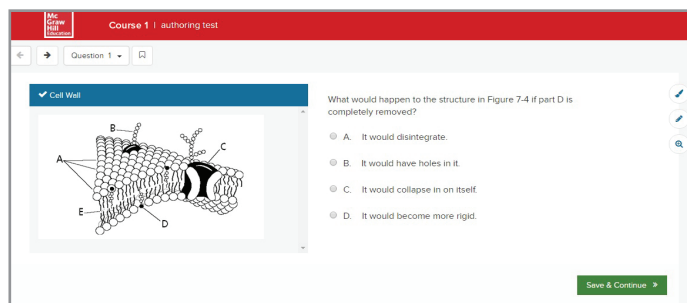
[Go to Course](#) > [Menu](#) > [Resources](#) > [Program Resources](#) > [LearnSmart](#)[®]

Robust Assessment Support

Take student achievement to the next level with Online Assessment

Online Assessment gives you the ability to monitor students' progress and make data-driven instructional decisions.

- Use Online Assessment to create tests and assignments.
- Access to Florida-specific Online Assessment questions available at each course level.
- Professional development resources include pertinent information on science standards and implementation best practices, available 24/7.



A screenshot of a LEARNSMART biology resource page. The page is titled "Compare and contrast eukaryotic and prokaryotic cells." It includes a "Get It?" section with a diagram of a cell, a "Review It!" section with a summary of the cell theory, and an "Understand Main Ideas" section with a list of key concepts and a "Think Critically" section with a math problem. The LEARNSMART logo is at the bottom.

Online Progress Checks

The built-in assessment strand keeps your students on track to pass the Biology EOC.

- Online Chapter Diagnostic Test worksheets
- In-text caption questions, Get It? reading checks, and lesson Review It!
- In-text Chapter Assessment
- In-text Cumulative Test Prep
- Online Section Quick Checks and Online Quizzes
- Online Chapter Test worksheets

Biology EOC Review and Practice

Print and online Florida Biology Science Notebook with End-of-Course Practice combines the powerful Cornell note-taking model with EOC practice questions.



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.

Science in Action

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. Which were the least helpful?


Launch Lab is found on the chapter opener.

Launch Lab

Why is observation important?

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For a lab worksheet, use your StudentWorks™ Plus Online.

 [Inquiry](#) [Launch Lab](#)

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.

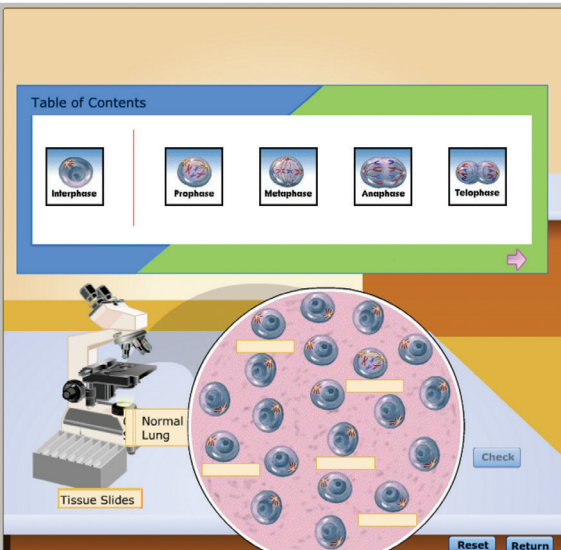
Objectives:

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

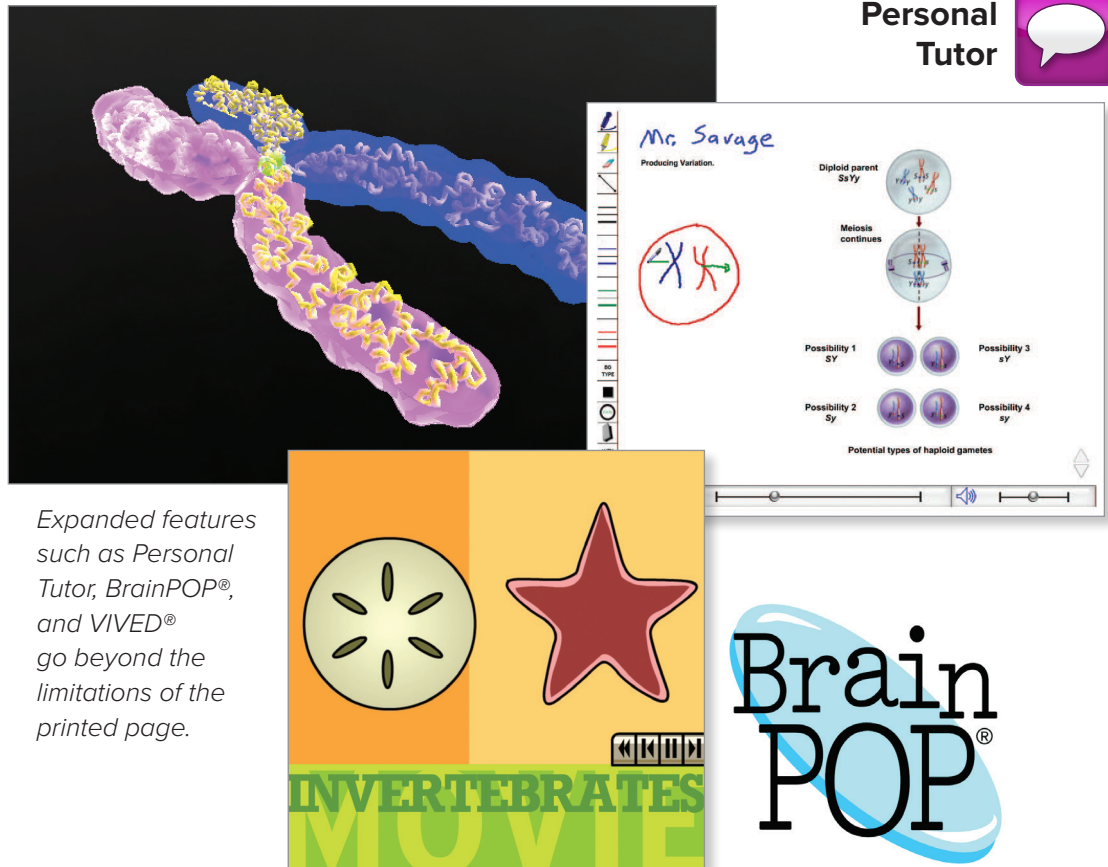
Procedure:

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](#)



The virtual lab interface features a 'Table of Contents' with five icons representing the stages of the cell cycle: Interphase, Prophase, Metaphase, Anaphase, and Telophase. Below this is a 'Normal Lung' tissue slide being viewed through a microscope. A large circular inset shows a detailed view of the cells in the slide, with yellow labels for identification. A 'Check' button is located next to the inset. At the bottom of the interface are 'Reset' and 'Return' buttons.



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

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.

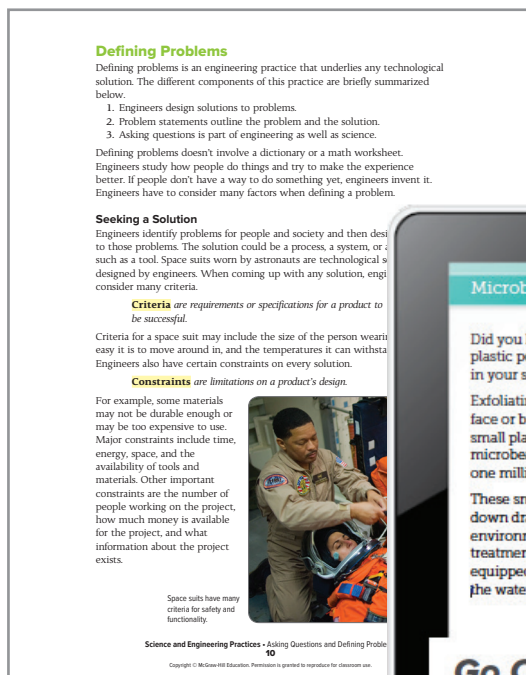
Project-Based Learning (PBLs) Activities

Integrate traditional science with science of learning.

- 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

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.

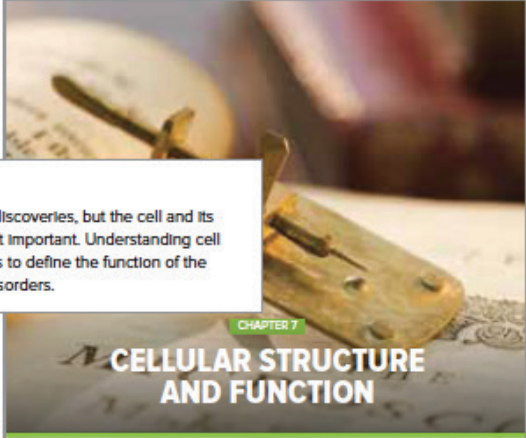
Go Online! PBL
To download the guidelines for the *Microbeads, Mega Problem* project.

Inquiry Based Learning

Activity Before Content

Start your students discussing what they know and what they want to learn using

- Real-world phenomena or applications
- Essential Questions
- Launch Labs
- Focus on Florida NGSSS



INQUIRY
Microscopes lead to many discoveries, but the cell and its structures is one of the most important. Understanding cell structures enables scientists to define the function of the cell and research various disorders.

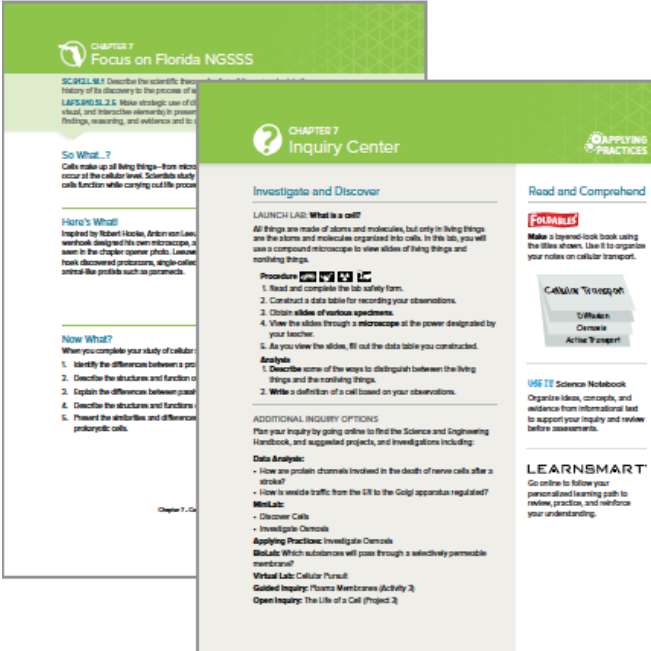
CHAPTER 7
CELLULAR STRUCTURE AND FUNCTION

INQUIRY
Microscopes lead to many discoveries, but the cell and its structures is one of the most important. Understanding cell structures enables scientists to define the function of the cell and research various disorders.

LESSONS
1 Cell Discovery and Theory
2 The Plasma Membrane
3 Cellular Transport
4 Structure and Organization

ESSENTIAL QUESTION
What are cells and why are they the most important units of all living organisms?

SC.912.L.14.1, SC.912.L.14.2, SC.912.L.14.3, SC.912.L.14.4, LAFS.910.RST.3.7, LAFS.910.WHST.2.4, MAFS.K12.MP4.1



CHAPTER 7
Focus on Florida NGSSS

SC.912.L.14.1 Describe the scientific theory of evolution, the history of its discovery to the process of natural selection.
LAFS.910.SI.2.6 Make strategic use of text, media, and interactive elements to present findings, reasoning, and evidence to support conclusions and claims.

So What...?
Cells make up all living things—from microorganisms to plants and animals. Scientists study cells to understand how they function while carrying out life processes.

Here's What!
Inspired by Robert Hooke, Anton van Leeuwenhoek designed his own microscope. In this lab, you will use a compound microscope to view slides of living things and nonliving things.

Now What?
When you complete your study of cellular structure and function, you will be able to:
1. Identify the differences between prokaryotic and eukaryotic cells.
2. Describe the structure and function of organelles.
3. Explain the differences between plant and animal cells.
4. Describe the structure and function of the cell membrane and other organelles.
5. Present the structure and function of a specific cell.

CHAPTER 7
Inquiry Center

Investigate and Discover

LAUNCH LAB: What is a cell?
All things are made of atoms and molecules, but only in living things are the atoms and molecules organized into cells. In this lab, you will use a compound microscope to view slides of living things and nonliving things.

Procedure

1. Read and complete the lab safety form.
2. Construct a data table for recording your observations.
3. Observe slides of various specimens.
4. View the slides through a microscope at the power designated by your teacher.
5. As you view the slides, fill out the data table you constructed.

Analysis

1. Describe some of the ways to distinguish between the living things and the nonliving things.
2. Write a definition of a cell based on your observations.

ADDITIONAL INQUIRY OPTIONS
Plan your inquiry by going online to find the Science and Engineering Handbook, and suggested projects, and investigations including:

Data Analysis:

- How are protein channels involved in the death of nerve cells after a stroke?
- How is waste traffic from the ER to the Golgi apparatus regulated?

MiniLab:

- Discover Cells
- Investigate Cells

Applying Practices: Investigate Cells
BiLab: Which substances will pass through a selectively permeable membrane?
Virtual Lab: Cellular Pinout
Guided Inquiry: Plasma Membranes (Activity 2)
Open Inquiry: The Life of a Cell (Project 2)

Read and Comprehend

FOCUS
Make a layered look book using the slide shown. Use it to organize your notes on cellular transport.

Cellular Transport
To Watch
Create
Active Transport

USE IT Science Notebook
Organize ideas, concepts, and evidence from informational text to support your inquiry and review before assessments.

LEARNSMART
Go online to follow your personalized learning path to review, practice, and reinforce your understanding.

Investigate and Discover

Spark ideas for students inquiry with numerous options.

- Data Analysis Labs
- MiniLabs
- Applying Practices activities
- PBLs
- BioLabs
- Virtual Labs
- WebQuests
- Guided Inquiry activities
- Open Inquiry activities
- *The Science and Engineering Practices Handbook*

Rigorous Differentiation Support

Improve students' reading skills will improve their success in the science classroom.

Differentiation Support

Address multiple learning styles using activities tailored for

- Approaching level
- On level
- Beyond level
- English Language Learner (ELL)

Develop Concepts Clarify a Misconception

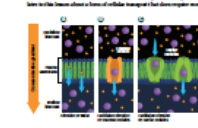
Ask Students: What processes allow substances to enter a cell?
Students may answer diffusion. Explain that diffusion is only one of the processes whereby molecules enter the cell. Tell students that as they read this section, they will learn about active transport and endocytosis as other ways by which materials get into cells. Diffusion is a very slow process; faster ways to let material into the cell are essential.

Develop Concepts
Clarify a Misconception
Ask students: What processes allow substances to enter a cell? Students may answer diffusion. Explain that diffusion is only one of the processes whereby molecules enter the cell. Tell students that as they read this section, they will learn about active transport and endocytosis as other ways by which materials get into cells. Diffusion is a very slow process; faster ways to let material into the cell are essential.

Diffusion across the plasma membrane
In addition to water, small molecules can pass through the plasma membrane. These include oxygen, carbon dioxide, and other small molecules. However, larger molecules and ions cannot pass through the plasma membrane. They must use transport proteins to enter the cell. This is called active transport. Active transport uses energy to move molecules across the plasma membrane. This is called active transport. Active transport uses energy to move molecules across the plasma membrane. This is called active transport.

Diffusion of water and bulk flow
Diffusion of water and bulk flow are two ways that substances can enter a cell. Water can enter a cell by diffusion through the plasma membrane. Bulk flow is the movement of fluids through a pipe or tube. Bulk flow is the movement of fluids through a pipe or tube.

Activity
Students learn up around the edges of the classroom. For the rest of the activity, ask students to stand in a line and hold hands. They are now acting as a cell membrane. They are now acting as a cell membrane.



How do hypotonic solutions and hypertonic solutions differ?
If a cell is placed in a solution of dissolved substances, the cell is to move water outside the cell than water into the cell.
As water moves into an animal cell, the cell will swell and burst. In a plant cell, the cell wall will limit the amount of swelling. The cell will become turgid and will not burst.

Active Transport
Substances might need to move across the cell membrane against the concentration gradient. This process requires energy and is called active transport.

Transport of Large Molecules
Some substances are too large to pass through the plasma membrane. They are transported into the cell by endocytosis. Endocytosis is the process by which large molecules are taken into the cell by the plasma membrane.

Endocytosis
Endocytosis is the process by which large molecules are taken into the cell by the plasma membrane. There are three types of endocytosis: phagocytosis, pinocytosis, and receptor-mediated endocytosis.

2 The Plasma Membrane

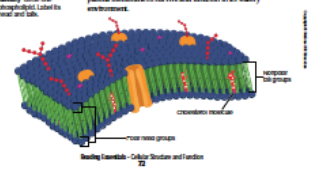
WHAT YOU'LL LEARN
• how the cell's plasma membrane functions
• the role of proteins, carbohydrates, and lipids in the plasma membrane

BEFORE YOU READ
A window screen in your house allows air to pass through while keeping insects out. In this section, you'll learn about a cell structure that has the same basic function. Can you think of some things that would be allowed to pass into a cell and some things that would be kept out?

FOCUS
Make a flash card for each question heading in this section. On the back of the flash card, write the answer to the question. Use the flash cards to review what you have learned.

GET IT?
1. Describe the benefit of the larger structure of the plasma membrane.
2. Identify the role of phospholipids, proteins, and carbohydrates in the plasma membrane.

READ TO LEARN
Structure of the Plasma Membrane
You have learned that lipids are large molecules made up of glycerol and three fatty acids. A phospholipid (pho-*lip* ID *lip*) is made up of glycerol, two fatty acids, and a phosphate group. The plasma membrane is made up of two layers of phospholipids arranged in a bilayer. The phosphate groups of one layer face the water outside the cell, and the fatty acid tails of the other layer face the water inside the cell. This structure is called the phospholipid bilayer. The phospholipid bilayer allows the plasma membrane to be both a barrier and a gateway for substances to enter and leave the cell.



English Language Learners

- Teacher Edition offers strategies to modify activities and lesson content.
- Science Usage v. Common Usage, Word Origins, and Academic Vocabulary features in each chapter reinforce English language development.
- Multilingual eGlossary with definitions for science vocabulary in 13 languages.

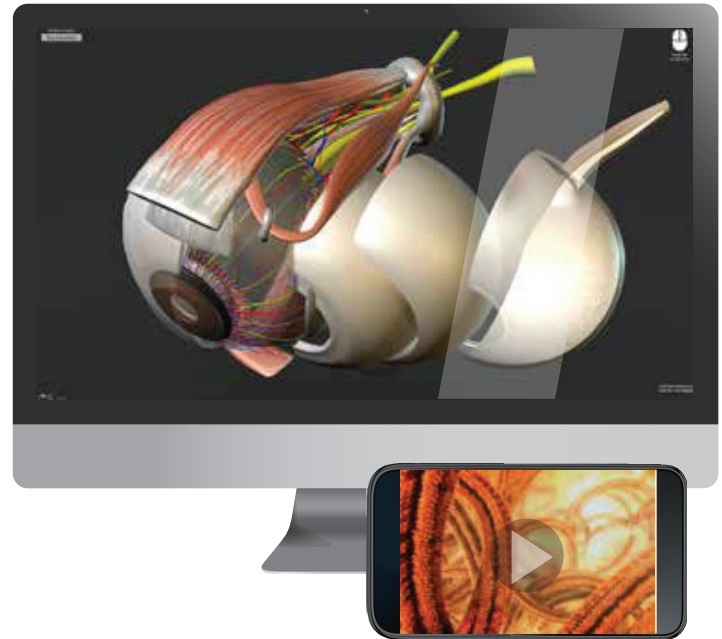
Student Engagement

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

Student Digital Resources

Your Florida Biology program offers a variety of digital assets and interactives that bring abstract concepts to life and make your presentations even more engaging.

- Florida Biology ebook
- Videos
- Animations and simulations
- Virtual Labs
- Personal Tutors
- BrainPOPs
- Vocabulary eGames



Practice 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

To learn more about the Florida Biology program,
visit mheducation.com/prek-12 or contact your
Florida Sales Representative.



mheducation.com/prek12Florida

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