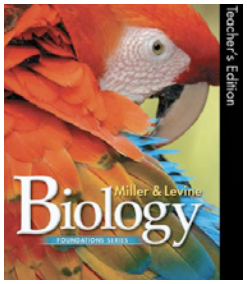
Foundations Teacher's Edition

Introduction

This guide explores various features in the Teacher's Edition of the Foundations Series version of Miller & Levine Biology.



It focuses on features that are unique to the Teacher's Edition. For information on the Student Edition for the Foundations Series, please visit the Foundations Series: Student Edition tutorial on myPearsonTraining.com.

This guide will help teachers navigate the content. The following is a quick preview of each section:

- The front pages of the book include explanations of key features, National Science Education Standards, and a quick lab materials list.
- Each chapter includes a chapter planner. Use it to plan instruction and target activities for differentiated instruction.
- When launching the chapter, help students connect with the Big Idea through prior knowledge, strategies, and activities.
- The teaching tools are located in the book margins and at the bottom of the pages. These include Getting Started, Pre-Reading, During-Reading, and Speed Bump.
- Teachers have many options for planning inquiry opportunities for class. Lessons include open-ended and guided inquiry activities.
- Use assessments at the end of each lesson, chapter, and unit to monitor student progress.

Front Matter

Teachers just beginning their implementation of the Miller & Levine Foundations Series may have many questions about the philosophy, support materials, and teaching tools. The front pages of the Teacher's Edition feature a wealth of information. With the book closed and spine held down, find these sections by looking for the purple pages at the beginning of the book.

Featured articles include the following:

- Explanations of Understanding by Design (UbD)
- Descriptions of how inquiry is addressed through the program

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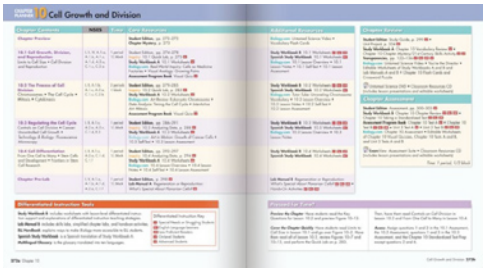
- Details on differentiated instruction and support for English learners summaries of assessment options
- An overview of the digital offerings available through Biology.com

For more information on these topics, view the other Miller & Levine tutorials on myPearsonTraining.com.

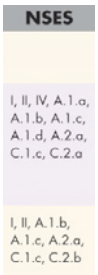
There are a few additional resources that will help teachers as they plan their school year. The National Science Education Standards section identifies and correlates each standard to the appropriate chapter, lesson, and activity.

Ordering lab materials for the entire school year can be a time consuming chore. Instead of sifting through all the chapters to make a list, teachers can simply view a handy list of Quick Lab materials that they will need throughout the year.

Next, take a look at a Chapter Planner. This guide will be using examples from Chapter 10.



The Chapter Planner outlines the Chapter Contents and identifies the National Science Education Standards addressed in the chapter.



Teachers can also use the planner as a pacing guide. In the Time column, note the two time intervals. The top duration identifies the number of traditional 45–50 minute school periods needed to cover the material. The bottom duration identifies the amount of time needed during a 90-minute instructional block.

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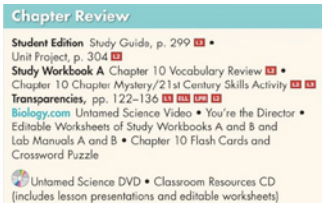
Also notice two additional columns—the Core Resources and the Additional Resources columns. The Core Resources column points out the main activities teachers use during the chapter. The Additional Resources column identifies activities that may be used to support instruction.

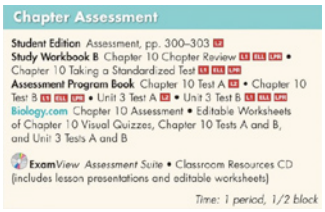
Notice the red boxes at the end of many activities. These boxes are keys to differentiated instruction. These appear throughout the chapter to assist teachers in planning for special populations.

In the Core Resources section, most of the activities are labeled L2 for on-level students. However, look at the Additional Resources section and notice Study Workbook B 10.1 Worksheets, which are labeled L1, for special needs or struggling students. The ELL label signifies English language learners, and LPR stands for less proficient readers.

The Chapter Review Section identifies activities that help teachers wrap–up the chapter and prepare their students for the chapter assessments. Some of these activities include workbook pages, text resources, and technology connections.



Note chapter assessments listed in the Chapter Assessment section. Use this information to administer differentiated assessment based on the individual needs of students.



At one point or another, teachers have probably been faced with the dilemma of being out of school for a week due to bad weather or a fire drill occurring during a biology class period. Both of these situations can impact the biology schedule. That's why the authors have included a Pressed for Time section. This section suggests ways to quickly cover the chapter material, while still addressing the key concepts.

Launching a Chapter

As an example, turn to Chapter 10, titled Cell Growth and Division.

Each chapter has a Big Idea and is accompanied by a Big Question. These concepts are the foundation of the chapter. In the left margin, see the Connect to the Big Idea section. This feature includes an activity for activating prior knowledge, introducing the big idea, and discussing the vocabulary. This particular launch activity uses a picture of the embryonic whitefish cells.

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Connect to the Big Idea

ACTIVATE PRIOR KNOWLEDGE Ask students what they already know about cells. If necessary, refer them to Chapter 7, Cell Structure and Function. Prompt students' recall with vocabulary from Chapter 7, such as nucleus.

Big Idea

Begin the chap r by inviting a volunteer to read aloud the chapter number and the chapter title. Read the Big Idea and question. Emphasize the question: How does a cell produce a new cell?

VOCABULARY STRATEGY

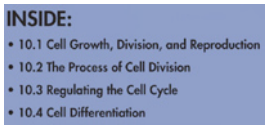
Ask What is the relationship between the word reproduction in the big idea and the word produce in the question?

Ask Prompt students by asking: Do you see parts of the words that are the same? (produ which means lead) What does the prefix re- mean? (again) What does the prefix pro- mean? (forward) (Sample answer: both words refer to creating. Produce means to bring forth or create and reproduce means to create again.)

Get the Picture

Tell students the picture is called a micrograph, which is a picture that is magnified. Guide students to see the prefix micro and ask what other words they know with the prefix micro. (microscope) Ask students, How would the real picture of cells compare to this micrograph? Be sure students understand that cells are actually much smaller. Have students describe aloud what they see, and then draw the center cell that is in metaphase in their notebooks.

To the right of the Big Idea, notice the main concepts for the chapter lessons.



INSIDE:

- 10.1 Cell Growth, Division, and Reproduction
- 10.2 The Process of Cell Division
- 10.3 Regulating the Cell Cycle
- 10.4 Cell Differentiation

Each chapter begins with a Chapter Mystery. This mystery aligns to the Big Idea and concepts introduced in the chapter lessons.

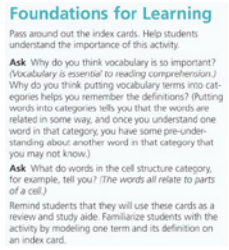
The Chapter Mystery for Chapter 10 is about Julia. She discovers that one of the limbs of a salamander has been eaten off. Concerned that the salamander might die, she places it in its own tank. She is surprised by the way the salamander's body reacts. In the Chapter Mystery, students are asked to determine how the body of the salamander might have reacted to the loss of a limb.

Throughout the chapter, students are directed back to the Chapter Mystery, and they are introduced to clues that can help them solve the mystery by the end of the chapter.

Use the Set the Purpose section at the bottom of the page to direct students through a preview and focus on the guiding questions of the chapter.

The right margin of the book has a What's Online section that lists the digital resources available online at Biology.com. Direct students to this section to view a video of the Chapter Mystery or Untamed Science. They may also visit Tutor Tube for extra help, or they can explore the chapter images in Art Review, Interactive Art, or Art in Motion. For more information on digital components, please view the other Miller & Levine modules on myPearsonTraining.com

In this chapter, teachers can use the Foundations for Learning section to introduce an activity to categorize vocabulary words. This activity continues throughout the chapter.



Foundations for Learning

Pass around out the index cards. Help students understand the importance of this activity.

Ask Why do you think vocabulary is so important? (*Vocabulary is essential to reading comprehension.*) Why do you think putting vocabulary terms into categories helps you remember the definitions? (Putting words into categories tells you that the words are related in some way, and once you understand one word in that category, you have some pre-understanding about another word in that category that you may not know.)

Ask What do words in the cell structure category, for example, tell you? (*The words all relate to parts of a cell.*)

Remind students that they will use these cards as a review and study aide. Familiarize students with the activity by modeling one term and its definition on an index card.

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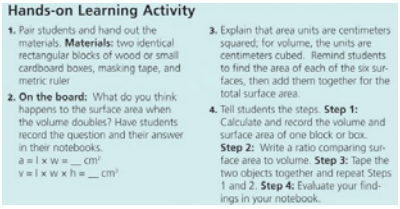
Lesson Features	Each lesson has five distinct features, which include the following components: • Getting Started • Pre-reading • During Reading • Speed Bump • Hands-on Learning Activity
Getting Started	Turn to Lesson 10.1, Cell Growth, Division, and Reproduction.
Pre-reading	In the left margin, find the lesson objectives and student resources, including connections to Biology.com.
During Reading	Struggling readers will benefit from the activities presented in the Pre-Reading section. Teachers can walk students through this chapter previewing and predicting as they go. Teachers have access to many other reading and learning strategies in the During-Reading Activity section. Objectives of these activities include ensuring understanding of the vocabulary, building self-monitoring and questioning strategies, and learning to make analogies.
Speed Bump	At the bottom of the page, note the Speed Bump section. This section alerts teachers to items that may be misunderstood by students. Use these questions to gauge their understanding. Teachers can also use these questions to reinforce the information that was just covered.
Hands-on Learning Activity	Sometimes students have trouble grasping a concept like surface area. The Hands-on Learning Activity is a way to make an abstract concept more concrete. In this activity, students determine the surface area and volume of blocks. They also write ratios comparing surface area to volume.  **Hands-on Learning Activity** **1.** Pair students and hand out the materials. **Materials:** two identical rectangular blocks of wood or small cardboard boxes, masking tape, and metric ruler **2. On the board:** What do you think happens to the surface area when the volume doubles? Have students record the question and their answer in their notebooks. $a = l \times w = \_\_ cm^2$ $v = l \times w \times h = \_\_ cm^3$ **3.** Explain that area units are centimeters squared; for volume, the units are centimeters cubed. Remind students to find the area of each of the six surfaces, then add them together for the total surface area. **4.** Tell students the steps. **Step 1:** Calculate and record the volume and surface area of one block or box. **Step 2:** Write a ratio comparing surface area to volume. **Step 3:** Tape the two objects together and repeat Steps 1 and 2. **Step 4:** Evaluate your findings in your notebook.
Inquiry Opportunities	The program also offers a variety of inquiry opportunities. These range from open-ended activities where students design their own labs to guided inquiry where teachers ask questions and provide specific directions. Lab explorations include pre-lab activities, lab procedures, and follow-up activities.
Assessment	At the end of each lesson there are section assessments that will help teachers monitor student understanding. These sections revisit the key concepts of the lesson. Use the Mystery Clue to initiate a class discussion that will help students connect the lesson content back to the Chapter Mystery.

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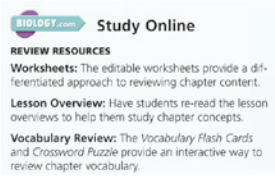
The Chapter Summary occurs at the end of the chapter and lists the main ideas and vocabulary of each lesson. It includes Performance Tasks that help students review and make connections to the chapter content. In this chapter, teachers will ask students to compare cells that regenerate in humans and in salamanders. The chapter summary also provides review resources that are available on Biology.com.



The Check Understanding section allows students to review key concepts and think critically about what they have learned. The Teacher's Edition provides teachers with alternative strategies to use with different types of learners. They may use visuals, models, or have students respond to alternate questions.

Each chapter ends with Standardized Test Prep.

These multiple-choice questions prepare students for state testing. Students having trouble answering questions may use the If You Have Trouble With section. This section directs them back to the lessons that address the problem. The Teacher's Edition provides test-taking tips in this section. Introduce students to strategies, such as eliminating the obvious wrong answers and interpreting visuals.

Review

This guide explored the following Teacher's Edition features:

- Front pages of the book
- Chapter planner
- Launching the chapter with the Big Idea and the Chapter Mystery
- Teaching tools, such as Getting Started, Pre-Reading, During-Reading, and Speed Bump
- Inquiry opportunities
- Assessments

For more information, please view the other Miller & Levine Biology tutorials on myPearsonTraining.com.

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