Welcome to AP Biology

The availability of AP courses has resulted in steady growth of the AP program nationally. It has also shone a spotlight on the needs of AP teachers. For you, these include the need to cultivate your students’ understanding – that is, teach them to “think like scientists” – while preparing them for success on the AP Biology exam.

At McGraw-Hill Education, we understand the challenge of aligning biology instruction to the AP College Board Curriculum Framework. Mader’s *Biology* helps you meet the challenge by providing a variety of resources.

- Mader’s *Biology* focuses on the four big ideas to provide a broad way of thinking about living organisms and biological systems.
- The AP Focus Review Guide workbook helps review and apply the essential AP content covered in each chapter.
- The AP Teacher’s Manual provides teaching strategies, suggested activities and labs.
- *The AP advantage*, an effective, easy-to-use solution for implementing your course with fidelity, providing personalized support for every student, and ensuring AP Biology Exam success.

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The AP advantage gives you 3 digital AP solutions on one powerful platform with a single sign-on. It’s all grounded in a core scientific curriculum you can trust.

Simply point and click to access diverse supplemental resources for teaching AP Biology your way while helping students develop the skills for tackling the AP Exam and college coursework.

Follow these 3 steps to help your students earn a 5:

**STEP 1**
Start with ONboard™
ONBoard for AP Biology helps students build and reinforce background knowledge and skills they need to master AP Biology content.

**STEP 2**
Support with Connect®
Connect is your solution for AP Biology course management, with program support, tools, and resources for ongoing teaching and learning in one convenient online location.

**STEP 3**
Succeed with SCOREboard™
SCOREboard is a two-part test prep program that includes adaptive content review and four complete AP Practice Exams. SCOREboard offers AP Exam preparation that truly adapts to student needs, creating a personalized learning path that leads to success.
Start with **ONboard**

Reinforce students’ background knowledge for more effective instruction from day one

**ONboard** for AP Biology presents students with a series of self-paced, interactive modules for refining and mastering the skills necessary for success in AP Biology coursework and the AP Biology Exam.

**ONboard** prepares students and informs teachers with:

- **A Pre-Test and Comprehensive Final Assessment** with robust reporting features that show growth and identify skill gaps.
- **Check Points and Quizzes** with immediate feedback for gauging student comprehension.
- **Animations and Interactivities** to engage students with diverse learning styles.

**What’s Covered**

Pre-Test
Introduction to ONboard for AP Biology
Module 1: Biology Big Ideas
Module 2: Experimental Design
Module 3: Math Skills
Module 4: Graphing and Data Analysis
Module 5: Chemistry Foundations
Comprehensive Assessment
Support with Connect

Manage your class your way with digital, print, or hybrid course management tools

Connect is your solution for AP Biology curriculum support and course management. It provides teachers with a range of useful resources, including an ebook, access to the AP Teacher’s Manual, and an AP-style Test Bank.

With its straightforward writing style, Biology is ideal for the AP Biology classroom. Chapter-opening Essential Questions help students pinpoint essential AP content, including the Big Ideas they will study later in the chapter.

Connect supports students as well as teachers!

Connect is the student’s portal to personalized learning with SmartBook, the first and only adaptive eBook. Powered by the proven LearnSmart engine, SmartBook identifies what each student does and does not know and adapts in real time to help that student learn faster and study more efficiently. LearnSmart features robust reporting tools, including meta-cognitive reports and most challenging learning objective reports. These tools enable teachers to identify areas where students are struggling and provide targeted remediation to enhance learning.
A Guided Tour of Mader’s Biology, AP Edition

Offer students an exciting inquiry-based text, coupled with precise writing, and engaging illustrations, images, and photographs with Mader’s Biology—a perfect solution for any AP Biology classroom.

Mader’s Biology provides superior pedagogical support with customizable digital and print resources, easy-to-use learning tools, alongside a focus on the application of the AP Big Ideas and science practices to help you confidently teach students AP Biology content.

Connecting Biology with the AP Curriculum

Biology’s focus on inquiry-based learning coupled with its precise writing style, hallmark art program, and integration of text and digital make it the perfect solution for today’s AP Biology classroom. In this AP edition we added tools, including Chapter 1 which focuses on the AP Big Ideas and science practices, to aid in the understanding of the AP Biology Curriculum.

Mader Learning System

The Mader text incorporates a variety of study aids to help students hone in on the essential AP chapter content.
Answering the Essential Questions reviews chapter concepts relevant to the AP Curriculum and helps to answer the Essential Questions presented at the beginning of the chapter.

The AP Focus Review Guide is a separate workbook that accompanies Biology. Designed around the AP Biology Curriculum, this workbook helps students to review and apply the AP content covered in each chapter.

The Assess section of the chapter review includes multiple choice questions to help students review chapter content.

The Applying the Big Ideas section challenges students with AP-style free-response questions based on chapter content. Each chapter has one question per Big Idea covered.

Applying the Science Practices activities provide students with the opportunity to improve their data analysis skills while applying the science practices. Each question provides a correlation to the science practices from the AP Curriculum.
**A Guided Tour of Mader’s Biology, AP Focus Review Guide**

The AP Focus Review Guide is written with the AP curriculum in mind. Developed under the guidance of an experienced AP teacher, it provides students with a great review tool for the AP course. Within each chapter of the workbook students can pinpoint content that is most important to the AP curriculum. The Review It, Use It, Summarize It format helps students to review and apply the content in each chapter essential to the AP course.

### Using Your AP Focus Review Guide

This review guide was developed with the AP student in mind. The activities within each chapter will help you to focus on and review the key content in the chapter as it relates to the AP Biology Curriculum.

#### Following the Big Ideas

The Following the Big Ideas boxes review the Big Ideas identified in your textbook.

#### Review It

Review It activities will help you to recall content that you should have mastered in earlier study.

#### Use It

Use It activities allow you to apply what you’ve learned in the chapter.

#### Summarize It

In the Summarize It section you will synthesize what you have learned by focusing in on the key content in the chapter.

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**Section 4.3 Introduction to Eukaryotic Cells (continued)**

**Vocabulary**

<table>
<thead>
<tr>
<th>Label</th>
<th>Definition</th>
<th>Structure</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nucleus</td>
<td>The command center of the cell</td>
<td>A network of strands in the nucleoplasm which contains DNA, chromosomes, and the nucleolus</td>
<td>Controls the cell's activities</td>
</tr>
<tr>
<td>Cytoplasm</td>
<td>The cytoplasm is the gel-like substance inside the cell membrane</td>
<td>The cytoplasm is the gel-like substance inside the cell membrane</td>
<td>Supports the organelles and transport materials</td>
</tr>
<tr>
<td>Cell membrane</td>
<td>The cell membrane is a double-layered membrane that surrounds the cell</td>
<td>The cell membrane is a double-layered membrane that surrounds the cell</td>
<td>Regulates the exchange of materials between the cell and its environment</td>
</tr>
</tbody>
</table>

**Using your AP Focus Review Guide**

1. **Follow the Big Ideas**
   - All cells are descended from existing cells, creating an unbroken lineage from the first cell formed that billions of years ago.
   - Eukaryotic cells contain multiple organelles and specialized organelles which produce the electricity and produce the energy necessary for the cell to function.
   - Focus cell contains DNA (in or out of nuclear cover) which allows for the regulation of all of its activities and essential processes.

2. **Review It**
   - Recall the Big Ideas identified in your textbook.
   - Use It activities will help you to recall content that you should have mastered in earlier study.

3. **Use It**
   - Use It activities allow you to apply what you’ve learned in the chapter.

4. **Summarize It**
   - In the Summarize It section you will synthesize what you have learned by focusing in on the key content in the chapter.
Different visual organizers help you to analyze and summarize information and remember content.

The AP Focus Review Guide gives you an opportunity to answer the Reviewing the Essential Questions from your textbook, providing an excellent final review of the chapter content.

Section content that is not a focus of the AP Biology Curriculum is identified as either Prerequisite Knowledge or Extending Knowledge.
Advance Your Teaching with These Tools

Connect Biology includes a robust collection of advanced teaching resources for customizing your course.

Teach students how to “think like scientists” by using your AP Teacher’s Manual, in the Connect Library. Within the AP Teacher’s Manual, you will find:

- A pacing guide to help ensure adequate coverage of AP Biology Curriculum content.
- AP-style multiple-choice, free-response, and grid-in questions for each chapter.
- Inquiry-based classroom activities to demonstrate and reinforce biology concepts.
- Instructional guide on tackling the challenges of AP Biology.
- Teaching strategies and lab suggestions to help navigate this complex course.

With Connect reporting, you can:

- Monitor progress of your entire class.
- Review individual student data over time.
- Identify any student’s additional content support needs in real-time.
Customize with AP Suggested Assignments

Our AP-style Test Bank helps you challenge your students every day

Familiarize your students with the rigor of multiple-choice, free-response and grid-in questions on the AP Biology Exam.
Succeed with **SCOREboard**

*Adaptive learning makes this the most valuable AP Exam preparation solution available*

**SCOREboard** uses a series of adaptive study sessions that review student content knowledge and identifies gaps in student learning. As learning research shows, students overcome these gaps best when immediate instructional support is given. Therefore, **SCOREboard** provides learning resources as instructional support reteaching and clarifying these difficult concepts at point of need. The adaptive engine makes note of the topics and concepts that challenge students and gives further practice to ensure mastery. After their content review, students work through 4 complete AP Practice Exams.

**SCOREboard** has many unique features to prepare students in the weeks and months leading up to the AP Exam.

- Students can track their progress and set short-term goals as they go.
- **SCOREboard** provides both students and teachers with multiple reports including student progress, performance summary, at-risk students, and more.
- **SCOREboard** empowers users to work at their own pace and adjust their study schedules at any time.

Which of the following supports the RNA-first hypothesis of chemical evolution?

- that RNA is a nucleic acid
- that RNA can encode genetic information
- that RNA can function as a catalyst
- that RNA occurs in three forms

**Check all that apply.**

- [ ] I know it
- [ ] Think so