

Preface

We are honored to present the Tenth Edition of *CAMPBELL BIOLOGY*. For the last quarter century, *CAMPBELL BIOLOGY* has been the leading college text in the biological sciences. It has been translated into more than a dozen languages and has provided millions of students with a solid foundation in college-level biology. This success is a testament not only to Neil Campbell's original vision but also to the dedication of thousands of reviewers, who, together with editors, artists, and contributors, have shaped and inspired this work. Although this Tenth Edition represents a milestone, science and pedagogy are not static—as they evolve, so does *CAMPBELL BIOLOGY*.

Our goals for the Tenth Edition include:

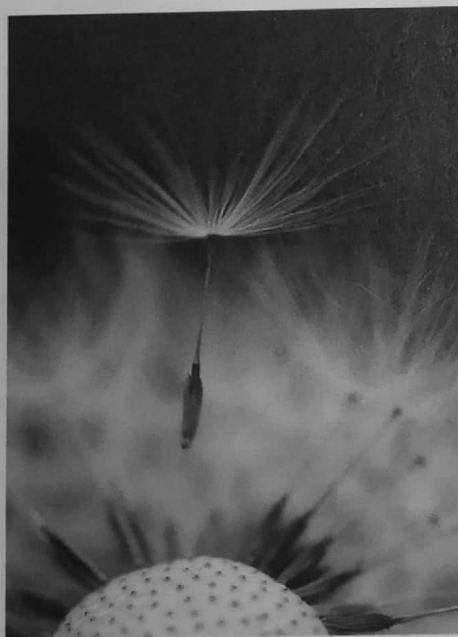
- helping students **make connections visually** across the diverse topics of biology
- giving students a strong foundation in **scientific thinking and quantitative reasoning skills**
- inspiring students with the excitement and relevance of modern biology, particularly in the realm of **genomics**

Our starting point, as always, is our commitment to crafting text and visuals that are accurate, are current, and reflect our passion for teaching and learning about biology.

New to This Edition

Here we provide an overview of the new features that we have developed for the Tenth Edition; we invite you to explore pages x–xxvi for more information and examples.

- **Make Connections Figures** draw together topics from different chapters to show how they are all related in the “big picture.” By reinforcing fundamental conceptual connections throughout biology, these figures help overcome students’ tendencies to compartmentalize information.
- **Scientific Skills Exercises** in every chapter use real data and guide students in learning and practicing data interpretation, graphing, experimental design, and math skills. All 56 Scientific Skills Exercises have assignable, automatically graded versions in **MasteringBiology**®.



- **Interpret the Data Questions** throughout the text engage students in scientific inquiry by asking them to interpret data presented in a graph, figure, or table. The Interpret the Data Questions can be assigned and automatically graded in **MasteringBiology**.
- The impact of **genomics** across biology is explored throughout the Tenth Edition with examples that reveal how our ability to rapidly sequence DNA and proteins is transforming all areas of biology, from molecular and cell biology to phylogenetics, physiology, and ecology. Chapter 5 provides a launching point for this feature in a new Key Concept, “Genomics and proteomics have transformed biological inquiry and applications.” Illustrative examples are distributed throughout later chapters.
- **Synthesize Your Knowledge Questions** at the end of each chapter ask students to synthesize the material in the chapter and demonstrate their big-picture understanding. A striking photograph with a thought-provoking question helps students see how material they learned in the chapter connects to their world and provides insight into natural phenomena.
- The Tenth Edition provides a range of new practice and assessment opportunities in **MasteringBiology**. Besides the Scientific Skills Exercises and Interpret the Data Questions, **Solve It Tutorials** in MasteringBiology engage students in a multistep investigation of a “mystery” or open question. Acting as scientists, students must analyze real data and work through a simulated investigation.

In addition, **Adaptive Follow-Up Assignments** provide coaching and practice that continually adapt to each student's needs, making efficient use of study time. Students can use the **Dynamic Study Modules** to study anytime and anywhere with their smartphones, tablets, or computers.

- **Learning Catalytics**™ allows students to use their smartphones, tablets, or laptops to respond to questions in class.
- As in each new edition of *CAMPBELL BIOLOGY*, the Tenth Edition incorporates **new content** and **organizational improvements**. These are summarized on pp. viii–ix, following this Preface.

Our Hallmark Features

Teachers of general biology face a daunting challenge: to help students acquire a conceptual framework for organizing an ever-expanding amount of information. The hallmark features of *CAMPBELL BIOLOGY* provide such a framework, while promoting a deeper understanding of biology and the process of science.

To help students distinguish the “forest from the trees,” each chapter is organized around a framework of three to seven carefully chosen **Key Concepts**. The text, Concept Check Questions, Summary of Key Concepts, and MasteringBiology all reinforce these main ideas and essential facts.

CAMPBELL BIOLOGY also helps students organize and make sense of what they learn by emphasizing **evolution and other unifying themes** that pervade biology. These themes are introduced in Chapter 1 and are integrated throughout the book. Each chapter includes at least one Evolution section that explicitly focuses on evolutionary aspects of the chapter material, and each chapter ends with an Evolution Connection Question and a Write About a Theme Question.

Because text and illustrations are equally important for learning biology, **integration of text and figures** has been a hallmark of this text since the First Edition. In addition to the new Make Connections Figures, our popular Exploring Figures on selected topics epitomize this approach: Each is a learning unit of core content that brings together related illustrations and text. Another example is our Guided Tour Figures, which use descriptions in blue type to walk students through complex figures as an instructor would. Visual Organizer Figures highlight the main parts of a figure, helping students see key categories at a glance. And Summary Figures visually recap information from the chapter.

To encourage **active reading** of the text, *CAMPBELL BIOLOGY* includes numerous opportunities for students to stop and think about what they are reading, often by putting pencil to paper to draw a sketch, annotate a figure, or graph data. Active learning questions include Make Connections Questions, What If? Questions, Figure Legend Questions, Draw It Questions, Summary Questions, and the new Synthesize Your Knowledge and Interpret the Data Questions.

Finally, *CAMPBELL BIOLOGY* has always featured **scientific inquiry**, an essential component of any biology course. Complementing stories of scientific discovery in the text narrative and the unit-opening interviews, our standard-setting Inquiry Figures deepen the ability of students to understand how we know what we know. Scientific Inquiry Questions give students opportunities to practice scientific thinking, along with the new Scientific Skills Exercises and Interpret the Data Questions.

MasteringBiology®

MasteringBiology, the most widely used online assessment and tutorial program for biology, provides an extensive library of homework assignments that are graded automatically. In addition to the new Scientific Skills Exercises, Interpret the Data Questions, Solve It Tutorials, Adaptive Follow-Up Assignments, and Dynamic Study Modules, MasteringBiology offers BioFlix® Tutorials with 3-D Animations, Experimental Inquiry Tutorials, Interpreting Data Tutorials, BLAST Tutorials, Make Connections Tutorials, Video Tutor Sessions, Get Ready for Biology, Activities, Reading Quiz Questions, Student Misconception Questions, 4,500 Test Bank Questions, and MasteringBiology Virtual Labs. MasteringBiology also includes the *CAMPBELL BIOLOGY* eText, Study Area, and Instructor Resources. See pages xviii–xxi and www.masteringbiology.com for more details.

Our Partnership with Instructors and Students

A core value underlying our work is our belief in the importance of a partnership with instructors and students. One primary way of serving instructors and students, of course, is providing a text that teaches biology well. In addition, Pearson Education offers a rich variety of instructor and student resources, in both print and electronic form (see pp. xviii–xxiii). In our continuing efforts to improve the book and its supplements, we benefit tremendously from instructor and student feedback, not only in formal reviews from hundreds of scientists, but also via e-mail and other avenues of informal communication.

The real test of any textbook is how well it helps instructors teach and students learn. We welcome comments from both students and instructors. Please address your suggestions to any of us:

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