

PREFACE

We are privileged to help instructors share the story of life with students during this golden age of biology. It is an era of breathtaking progress in our understanding of life and a time when biology weaves into the fabric of our society as never before. Modern biology is remodeling medicine, agriculture, forensics, conservation science, anthropology, psychology, sociology, and even philosophy, including ethics. This is the best time ever to take a biology course!

This is also the most challenging time to teach and learn biology. The same discovery explosion that makes biology so much fun also threatens to suffocate students under an avalanche of information. With each of its many subfields bustling in research activity, biology grows larger every year, while the academic semester stays the same size. Something has to give.

In this era of ever-expanding biology, many instructors are opting to cover fewer main topics rather than compromise depth in the most important areas. We created *Essential Biology* to support this trend. Yes, it is a shorter biology text than most, but we did not achieve this brevity by trying to fit all of biology into less space. Instead, we focused on just four core topics: cells, genes, evolution, and ecology. In the context of these four main topics, students will encounter diverse organisms and their evolutionary adaptations. However, we have not included separate units on the anatomy and physiology of plants, animals, and other organisms. This enabled us to keep *Essential Biology* manageable in size without being superficial in developing the concepts that are most fundamental to understanding life. We take the “less is more” mantra in education today to mean fewer topics, not more diluted explanations.

The book's title, *Essential Biology*, partly reflects this look at life that is relatively brief, selective, and integrated. But the title has a second meaning. It announces an emphasis on concepts and applications that are essential for students to make biologically informed decisions throughout their lives—to evaluate various health and environmental issues, for example. From ethical and safety concerns surrounding genomics to debates about global warming, students will find biology in the news every day. Biology is more essential than ever in a general education, and *Essential Biology* spotlights this central place of biology in modern culture.

The success of the first edition of *Essential Biology* validated the book's counter-encyclopedia, culturally-connected approach. And with the help of reviewers and many other instructors and students who contributed suggestions, we found ways to make

this second edition work even better. Here are just a few of the improvements you'll find in *Essential Biology*, Second Edition:

- **“Biology and Society” Sections:** Each chapter now begins with a human-interest story that engages students in the chapter topic.
- **Visual Summaries:** We have replaced the traditional all-text chapter summary with a review that includes diagrams to help students synthesize relationships among the key concepts. Student focus groups were particularly helpful in helping us refine our idea for this new kind of chapter summary.
- **Campbell Image Presentation Library:** The breakthrough package of *Essential Biology* supplements is now even more robust with the addition of an extensive archive of digital content for lecture presentations. This image library gives instructors easy access to over 1,000 photos, all text art with and without labels, selected figures layered for step-by-step presentation, all text tables, 110 animations, and 85 video clips.
- **New Coauthor Eric Simon:** Bringing his award-winning gift for teaching non-majors, Eric played an especially important role in strengthening *Essential Biology's* connections to the social and personal issues that concern students.

We see our responsibility as science educators to be especially important in communicating with students who are not biology majors, because their attitudes about science and scientists are likely to be shaped by a single, required science course—this course. Long after students have forgotten most of the specific content of their college courses, they will be left with general impressions that will influence their interests, opinions, values, and actions. We hope this textbook will help students fold biological perspectives into their personal worldviews. Please let us know how we are doing and how we can improve the next edition of *Essential Biology*.

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