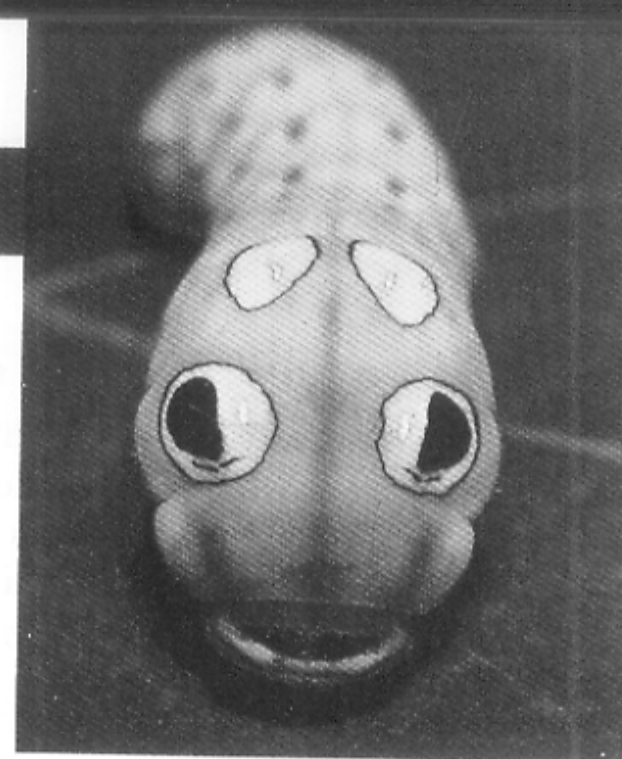


Preface



A decade ago in his popular book, *Megatrends 2000*, futurist John Naisbitt predicted the coming of the Age of Biology. It was a safe forecast. Biology was already emerging as the new millennium's central science—the concourse where all the natural sciences meet and intersect with the humanities and social sciences. But the *scale* of biology's impact is probably more surprising to most scientists. In addition to illuminating life more brightly than ever, modern biology is remodeling medicine, agriculture, forensics, conservation science, anthropology, psychology, sociology, and almost every other “-ology” that's paying attention. This is the best time ever to take a biology course!

It is a privilege for us to be able to help instructors share the story of life with students during this golden age of biology. 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. And because biology and society are so interwoven today, we believe that non-majors courses are the most important classes biology departments teach. Many of our colleagues around the country apparently agree, for the most enthusiastic and innovative among them are drawn to the adventure of teaching non-majors. It's among the liveliest and most creative communities in all of science education.

As important and inspirational as modern biology is, these are also the most challenging times to teach and learn the subject. The same discovery explosion that makes biology exhilarating today also threatens to suffocate our 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, we have no choice but to make our courses less encyclopedic. Leading the way in this movement are the many thoughtful instructors who have opted to cover fewer main biology topics rather than compromise depth in the most important areas. To support this trend, we have created this new biology textbook, which we call *Essential Biology*. 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. By explor-

ing these four areas and fitting them together, students can synthesize a coherent view of life. 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—and, well, *essential*—without being superficial in the areas we chose to cover. We take the “less is more” mantra in education today to mean fewer topics, not more dilute explanations.

Even with a decision to cover fewer major topics, there is still the potential for biology to collapse into a formless pile of terms and factoids. An integrated view of life depends on a theme that cuts across all topics, and that theme is evolution. Understanding how evolution accounts for both the unity and diversity of life makes biology whole. Evolution will continue to provide this form no matter how big and complex biology becomes. Every chapter of *Essential Biology* connects to this evolutionary theme of life.

We named our new book *Essential Biology* partly because this look at life 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 certain 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 we've tried to spotlight this central place of biology in modern culture.

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, and its supporting media, 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*.

Neil Campbell
Department of Botany
and Plant Sciences
University of California
Riverside, CA 92521

Jane Reece
Benjamin Cummings Publishing
1301 Sansome St.
San Francisco, CA 94111