

Life

Preface

The goal of *Life* has always been to engage the nonscientist or possible-scientist in understanding how life works. We try to do that in a way that is fun, meaningful, and valuable in making informed decisions on an ever-growing array of issues, from teaching evolution to human cloning. This new edition continues our presentation of **cutting-edge life science** and the technology that it spawns, with timely additions, such as coverage of stem cell biology and bacterial biofilms. At reviewer request, the new edition expands discussions of natural selection, classification of the basal eukaryotes, plant hybridization and grafting, and arthropods. **The genetics chapters have new, additional problem sets.**

Because review panels assured us that we were on track with the level and content of topics, for this fifth edition we focused on **improving accessibility**. Changes are simple yet striking. A **totally new design** is friendlier and less cluttered. **Figure and table references** appear in bold type so that students can easily find related discussion. **Scale bars** have been added to micrographs so that students can appreciate the relative size of structures and organisms. **New in-text cross-references** aid recall and catalyze the conceptual connections that underlie biology.

The popular features that make learning from *Life* an enjoyable experience have been retained. These include short summaries beneath major headings; Mastering Concepts questions at the end of each section; chapter-by-chapter lists of balanced, up-to-date, student friendly resources for further reference; and the clear and interesting narrative style.

Features of the Fifth Edition

The Writers—Teaching with Style

The fifth edition of *Life* reunites four biologists whose areas of expertise complement beautifully. Geneticist and science journalist Ricki Lewis originated the text, using a unique style that weaves solid biology content with intriguing tales of scientific discovery and real-life cases and applications. Veterans from the fourth edition of *Life* are Douglas Gaffin and Mariëlle Hoefnagels of the University of Oklahoma and Bruce Parker of Utah Valley State College. Ricki has taught a variety of courses and has provided genetic counseling to a private medical practice since 1984. Doug, Mariëlle, and Bruce are active instructors who use multimedia approaches to teach undergraduate biology to hundreds of majors and nonmajors each semester, and all have earned recognition on their campuses as outstanding teachers.

Devotion to, and passion about, teaching and communicating unite our team. We thoroughly enjoy telling those interesting stories that are so easy to find at all levels of biology, from molecules to ecology—the stories that, when told correctly, mesmerize even the most reluctant students, causing them to perk up and think, “Wow, I never knew that! So that’s why . . . !” We all love to watch students get excited about learning a subject they once viewed as too hard or too intimidating. Our areas of research expertise complement beautifully, including animal physiology and behavior, plant-microorganism interactions, genetics, developmental biology, molecular biology, and biochemistry.

Together, the *Life* authors cover the breadth of general biology and make it easy for you to present the latest information to your students, using the most accessible multimedia tools available. The unique mix of scientific expertise and journalistic experience results in a textbook that is not only substantial, but also accessible.

The Content— Today’s Science for Today’s Students

As a contributing editor to the magazine *The Scientist*, Ricki Lewis has a heads-up on much ongoing research, which finds its way into the pages of *Life*. Here are just some of the timely updates you will find in this edition:

- Adaptive immunity
- Antisense and knockout technologies
- Bacterial biofilms
- Bioweaponry
- COX-2 inhibitors
- Genome economy
- Human genome analysis
- Organ transplants
- Regeneration
- SNPs and DNA profiling
- Soil nutrients and fertilizers
- Somatic cell nuclear transfer
- Stem cell biology
- Therapeutic cloning
- Toll-like receptors

Unit 4, The Diversity of Life, is always a work-in-progress, as new data and new ways of looking at the living world reveal new classification possibilities. *Life*’s “tree of life” illustrations, developed by Douglas Gaffin and found in this unit and others, encapsulate

