PREFACE

In writing the sixth edition of *Molecular Cell Biology* we have incorporated many of the spectacular advances made over the past four years in biomedical science, driven in part by new experimental technologies that have revolutionized many fields. High-velocity techniques for sequencing DNA, for example, have generated the complete sequence of dozens of eukaryotic genomes; these in turn have led to important discoveries about the organization of the human genome and regulation of gene expression, as well as novel insights into the evolution of life-forms and the functions of individual members of multiprotein families. New imaging techniques have generated profound revelations about cell organization and movement, and new molecular structures have greatly increased our understanding of life processes such as cell-cell signaling, photosynthesis, gene transcription, and chromatin structure.

New Author Team

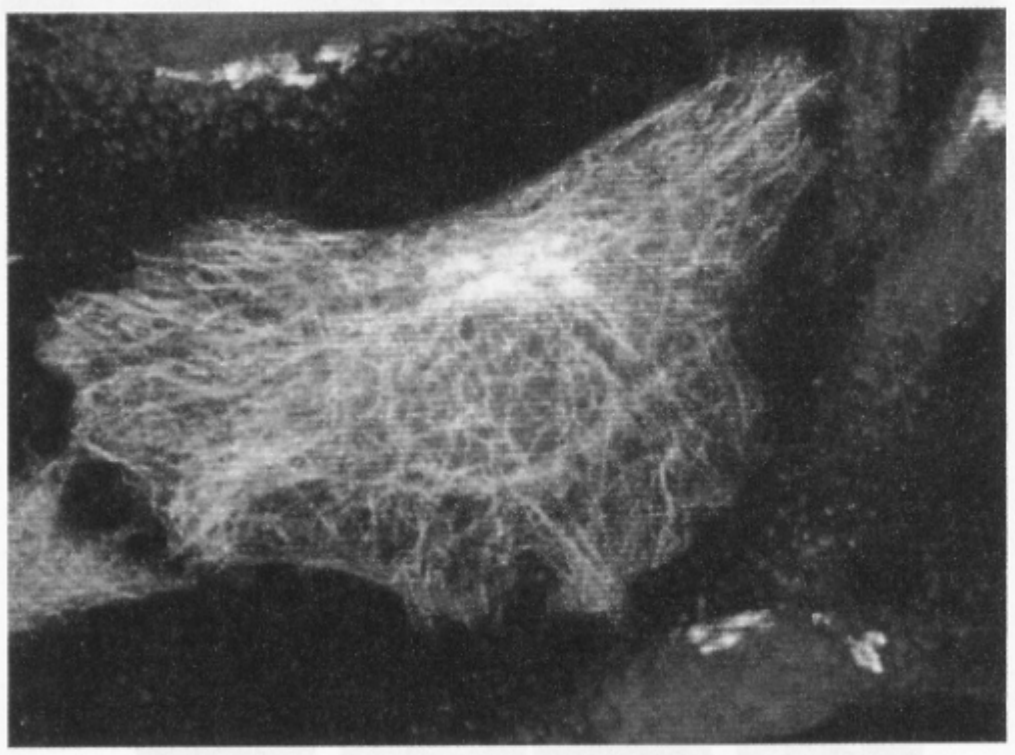
Two new authors have been instrumental in refocusing this book toward these exciting new developments. **Anthony Bretscher** of Cornell University is known for identifying and characterizing new components of the actin cytoskeleton and elucidating their biological functions in relation to cell polarity and membrane traffic. **Hidde Ploegh,** of the Massachusetts Institute of Technology, has made major contributions to our understanding of immune system behavior, particularly in regard to the various tactics that viruses employ to evade our immune responses and the ways our immune system responds. Both authors are widely recognized for their research as well as their classroom teaching abilities.

We are grateful to Paul Matsudaira, Jim Darnell, Larry Zipursky, and David Baltimore for their exceptional contributions to the previous editions of *Molecular Cell Biology*. Much of their vision and insight is apparent at many places in this book.

Experimental Emphasis

The hallmark of *Molecular Cell Biology* has always been the use of experiments to teach students how we have learned what we know. A number of experimental organisms, from yeasts to worms to mice, are used throughout so the student can see how discoveries made with a "lower organism" can lead directly to insights even about human biology and disease. This experimental approach, evident in the text itself, has also been thoroughly integrated into the pedagogical framework. For example:

- Experimental Figures lead students through important experimental results.
- Classic Experiments essays focus on historically important and Nobel Prize–winning experiments.
- New and revised Analyze the Data problems at the end of each chapter require the student to synthesize real experimental data to answer a series of questions.
- Updated Perspectives for the Future essays explore potential applications of future discoveries and unanswered questions that lie ahead in research.



Fluorescence microscopy shows the location of DNA and multiple proteins within the same cell. [From B.N.G. Giepmans et al., 2006, *Science* **312**:217.]