

Preface

The second edition has been revised and updated to reflect changes in the fields between 2010 and 2016, with references, suppliers, and software all brought up to date. The study questions at the back of each chapter have been thoroughly revised and expanded, and a solutions manual is available.

The book has also been restructured to make a clear distinction between the basic techniques and more advanced approaches that are usually not accessible to an undergraduate laboratory. The book can be used on two levels: as an introductory course with only the basic techniques covered or as a more advanced course that requires access to more sophisticated equipment. The advanced material may also be used for self-study.

The advanced material is included within selected chapters as callouts, as well as forming the basis of five entirely new chapters: advanced molecular biology techniques (Chapter 4), advanced light microscopy (Chapter 8), holographic microscopy (Chapter 9), biomedical applications of gold nanoparticles (Chapter 13), and microfabrication techniques (Chapter 17).

A large fraction of the basic course material provides the basis for a one-semester or summer course on introductory molecular biology techniques.

This textbook is bundled with a laboratory companion guide. It is structured according to the chapters in the book, although it refers to the first edition of this book. The series of 14 experiments presents a wide variety of techniques that may be performed during a semester-long, three-credit course or during a 1-month intensive.