Preface

Recombinant DNA technology touches many aspects of our lives. From drought-tolerant crops to biofuels to pharmaceuticals, genetically modified organisms surround us. Throughout its history, biotechnology has relied heavily on DNA cloning to produce protein products more efficiently or to make modified genes or combinations of genes. *Escherichia coli* or other hosts serve as cellular "factories" to churn out large amounts of protein. Human insulin, for example, is produced recombinantly using many of the same techniques described in this book.

In the eight years since the third edition of *Molecular Biology Techniques* was published, molecular biology research and its tools have undergone major transformations and continue to evolve.

Modulating gene expression has become a mainstay in many laboratories. RNAi and CRISPR, especially, have revolutionized the way scientists study gene function, as well as design selective therapies for various disease states. As these technologies are becoming a cornerstone in all facets of modern medicine and biotechnology, students will benefit from a working knowledge of their theory and methods. Therefore, this expanded classroom laboratory manual now includes laboratory sessions on mammalian cell culture, RNAi, and CRISPR for use as a stand-alone, semester-long project for an advanced course or in conjunction with the previous sessions as a two-semester sequence.

What will we learn in the next eight years? Students taking this course right now will be at the leading edge of exciting new discoveries. We can't wait to find out!