

Preface

The new series *Methods in Molecular Genetics* provides practical experimental procedures for use in the laboratory. Because the introduction of molecular genetic techniques and related methodology has revolutionized biological research, a wide range of methods are covered. The power and applicability of these techniques have led to detailed molecular answers to important biological questions and have changed the emphasis of biological research, including medical research, from the isolation and characterization of cellular material to studies of genes and their protein products.

Molecular genetics and related fields are concerned with genes: DNA sequences of genes, regulation of gene expression, and the proteins encoded by genes. The consequences of gene activity at the cellular and developmental levels are also investigated. In medical research, knowledge of the causes of human disease is reaching an increasingly sophisticated level now that disease genes and their products can be studied. The techniques of molecular genetics are also being widely applied to other biological systems, including viruses, bacteria, and plants, and the utilization of gene cloning methodology for the commercial production of proteins for medicine and industry is the foundation of biotechnology. The revolution in biology that began with the introduction of DNA sequencing and cloning techniques will continue as new procedures of increasing usefulness and convenience are developed.

In addition to the basic DNA methods, instrumentation and cell biology innovations are contributing to the advances in molecular genetics. Important examples include gel electrophoresis and DNA sequencing instrumentation, *in situ* hybridization, and transgenic animal technology. Such related methodology must be considered along with the DNA procedures.

The chapters of *Viral Gene Techniques*, are organized into four sections: Viral Vectors; DNA Viruses; Human Immunodeficiency Virus/Retroviruses; and RNA Viruses. Procedures are given for laboratory studies of the fundamental molecular processes of virus infection. In addition, methods related to human gene therapy are presented. The gene therapy vectors that are described include adenovirus and adeno-associated virus. Among other DNA viruses discussed in the volume are herpes simplex virus and hepatitis virus. Methods for HIV research are described, as well as protocols for investigating RNA viruses such as poliovirus and influenza virus.

Methods in Molecular Genetics will be of value to researchers, as well as to students and technicians, in a number of biological disciplines because of the wide applicability of the procedures and the range of topics covered.

KENNETH W. ADOLPH