

Preface

RNA interference (RNAi) is a system within living cells that helps to regulate which genes need to be active at a point of time, and their level of activity. Two types of small RNA molecules—microRNA (miRNA) and small interfering RNA (siRNA)—are central to RNA interference. The discovery of RNAi was preceded first by observations of transcriptional inhibition by antisense RNA expressed in transgenic plants and more directly by reports of unexpected outcomes in experiments performed by plant scientists in USA and The Netherlands in the early 1990s. RNAi technology are used for large-scale screens that systematically shut down each gene in the cell, which can help identify the components necessary for a particular cellular process or an event such as cell division. Exploitation of the pathway is also a promising tool in biotechnology and medicine. We are including different approaches of gene silencing in a single book. The advent of RNA interference (RNAi) a decade ago has greatly enhanced the ease of studying gene function allowing us to develop hitherto unimaginable tools. As an example, it is today possible to use high-throughput platforms to perform multiparametric analysis of gene function after genome-wide RNAi in invertebrate and mammalian cells, which may soon become a standard approach for basic research and identification of possible therapeutic targets *in vitro*.

This book reviews the selective and robust effect of RNAi on gene expression which makes it a valuable research tool, both in cell culture and in living organisms because synthetic dsRNA introduced into cells can induce suppression of specific genes of interest. The book will introduce new technology in the study of RNA interference going on microorganisms, plant and animal.

Editors