

Preface

Gene Control is a significant expansion and reorganization of my previous book *Gene Regulation: A Eukaryotic Perspective* which went through five editions between 1990–2005. Gene control is of vital importance in both normal development and the proper functioning of the adult organism as well as playing a critical role in the development of different human diseases. This book will therefore continue to be of value to students, scientists, and clinicians interested in the topic of gene control.

The first edition of *Gene Regulation* was based on the fact that at that time sufficient information had become available to justify a book which dealt with the topic of eukaryotic gene regulation in its own right rather than simply as an adjunct to the much better understood prokaryotic systems.

Since that time information on eukaryotic gene regulation has continued to accumulate at an ever-increasing rate. Topics such as the modification of histones, which were mentioned only briefly in the first edition, have emerged as being of central importance. Similarly, other aspects of gene regulation were completely unknown at that time, such as the key role of small inhibitory RNAs. These topics and many others have been progressively incorporated into the subsequent editions, each of which was significantly revised and updated.

However, in preparing a sixth edition it was clear that a more radical revision to the work was required. The continuing major advances in our understanding of gene regulation now allow both a mechanistic understanding of the processes involved and an analysis of how they operate in specific biological systems.

To reflect this, the much expanded and revised work now has a new title, *Gene Control*, and is organized into two parts. The first part provides a detailed mechanistic analysis of the processes involved in controlling gene expression. After an introductory chapter, three pairs of chapters cover the fundamental processes involved in gene regulation. In each pair of chapters, the first chapter deals with the basic process itself and the second deals with the manner in which it is involved in regulating gene expression. Thus, Chapters 2 and 3 are about chromatin structure and its role in gene regulation, Chapters 4 and 5 cover the process of transcription itself and the manner in which it is regulated, and Chapters 6 and 7 explain post-transcriptional processes and their role in the regulation of gene expression.

In contrast, the second part of the book deals with specific biological processes and the role played by gene control in their regulation. Thus, Chapter 8 is on cellular signaling processes, Chapter 9 covers the regulation of gene expression in development, and Chapter 10 discusses the key role played by gene-regulatory processes in the specification of individual differentiated cell types. Finally, Chapters 11 and 12 cover the alterations in gene expression which can cause specific human diseases. Thus, Chapter 11 discusses the role of gene regulation in cancer while Chapter 12 deals with gene regulation in inherited and infectious diseases of humans, as well as discussing the manner in which advances in our understanding of gene regulatory processes may lead to improved therapies for human diseases.

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David S. Latchman

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