
Preface

No modern molecular biologist needs convincing of the central importance of chromatin to gene regulation in eukaryotes. From large-scale domains to individual gene promoters, gene expression is regulated by histone modifications and histone variants, nucleosome positioning, and nucleosome stability. A panoply of approaches has evolved in the laboratory over the past three decades to study chromatin structure and its alterations, and methods of investigating chromatin remodeling – changes in nucleosome structure or position with respect to the incorporated DNA, or in histone modifications – have progressed rapidly over the past 10 years. Here are presented a wide array of protocols for studying chromatin remodeling. We include methods for investigating chromatin remodeling in vitro and in vivo, in yeast, plants, and mammalian cells, and at local and global levels. Both gene-specific and genome-wide approaches are covered, and in recognition of the increasing prevalence of the latter type of study, the final two chapters focus on bioinformatic/computational approaches to analyzing genome-wide data on chromatin structure.

We hope that this volume will be used by readers in more than way. The obvious utility is as a direct guide to a multitude of techniques, served up as recipes with introductions and special “Notes” sections. These latter sections, which provide extra tips and background for the user, have been an especially appreciated feature of these volumes over the years. We also hope the chapters may be read comparatively and have allowed some overlap among approaches to this end, to permit the reader to benefit from delving into differences as to how different authors approach similar problems. Finally, simply perusing the titles may refresh or illuminate readers as to the variety of methods available to study chromatin remodeling and perhaps invigorate their next grant application or project.

This volume has benefited from a group of authors with tremendous collective experience and authority, who have generously given time and effort to provide these detailed explications of protocols. I am grateful for their terrific cooperation in this project.

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