
Preface

Modern biomedical research is gradually tightening its grip on the genetic basis of common diseases by studying complete genomes, transcriptomes, and other complex biological components. Pivotal to this progress in building complex networks is the detailed knowledge of the individual components. Hence, functional studies of individual genes will remain crucial. To obtain this functional information, genetically modified mice are likely to stay at the center stage for the years to come. An important reason for this role is that mice are genetically very similar to man. Moreover, gene function studies in mice are in the context of a whole organism, and therefore provide information of gene–gene and gene–environment interaction. This information offers excellent insight in the contribution of individual genes to the system. Moreover, virtually all human genes are conserved in the mouse. The second edition of “Transgenic Mouse Methods and Protocols” covers the production and analysis of transgenic and knockout mice. Much progress has been made to facilitate the generation of genetically modified mice, and also to make the mouse models more precise. The latter improvement involves a superior control over the timing, level, and location of gene expression or gene disruption.

Many researchers played a crucial role in developing mouse technology to the excellent state of art that has now been achieved. Landmarks include the generation of (1) transgenic mice, (2) pluripotent embryonic stem (ES) cell cultures, (3) gene knockout mice, (4) tissue-specific knockouts, and (5) systems for inducible gene expression mice. Most of these landmarks have not been achieved in other mammalian systems with a comparable efficiency. In part, this is attributable to the availability of hundreds of different inbred mouse strains, which allowed researchers to choose from a wide range of strains while establishing these technologies. Transgenic Mouse Methods and Protocols have essentially the same format as previous volumes of the series *Methods in Molecular Biology*. Since mouse technology offers a wide range of possibilities, most chapters provide the rationale for choosing the given protocol, which is then described in step-by-step detail. The book can be roughly divided into three parts: a general introduction describing how to deal with mice and how to generate transgenic mouse models; a part describing the generation of conditional and induced knockout and transgenic mice, and a final section offering alternative routes to study gene function in mice. We would like to thank the authors for their excellent contributions and Ingrid van der Strate and Marijke Schreurs for editorial assistance. We are very grateful to Be Wieringa, Anton Berns, and Robin Lovell Badge for leading us into the world of gene-targeting and ES cell technology.

*Marten H. Hofker
Jan M. van Deursen*



<http://www.springer.com/978-1-60761-973-4>

Transgenic Mouse Methods and Protocols

Hofker, M.H.; Van Deursen, J. (Eds.)

2011, XI, 352 p., Hardcover

ISBN: 978-1-60761-973-4

A product of Humana Press