
Contents

<i>Preface</i>	<i>v</i>
<i>Contributors</i>	<i>xi</i>
PART I HUMAN GENETICS	
1 Identification and Analysis of Inherited Retinal Disease Genes <i>Kornelia Neveling, Anneke I. den Hollander, Frans P.M. Cremers, and Rob W.J. Collin</i>	3
PART II MOUSE MODELS	
2 Mouse Models for Studies of Retinal Degeneration and Diseases <i>Bo Chang</i>	27
3 Retinal Fundus Imaging in Mouse Models of Retinal Diseases <i>Anne F. Alex, Peter Heiduschka, and Nicole Eter</i>	41
4 Functional Phenotyping of Mouse Models with ERG <i>Naoyuki Tanimoto, Vithiyanjali Sothilingam, and Mathias W. Seeliger</i>	69
5 Phenotyping of Mouse Models with OCT <i>M. Dominik Fischer, Ahmad Zhour, and Christoph J. Kernstock</i>	79
6 Light Damage as a Model of Retinal Degeneration <i>Christian Grimm and Charlotte E. Remé</i>	87
7 N-Methyl-D-Aspartate (NMDA)-Mediated Excitotoxic Damage: A Mouse Model of Acute Retinal Ganglion Cell Damage <i>Roswitha Seitz and Ernst R. Tamm</i>	99
PART III OTHER ANIMAL MODELS	
8 Generation of Transgenic <i>X. laevis</i> Models of Retinal Degeneration <i>Beatrice M. Tam, Christine C.-L. Lai, Zusheng Zong, and Orson L. Moritz</i>	113
9 Analysis of Photoreceptor Degeneration in the Zebrafish <i>Danio rerio</i> <i>Holger Dill, Bastian Linder, Anja Hirmer, and Utz Fischer</i>	127
10 Analysis of Optokinetic Response in Zebrafish by Computer-Based Eye Tracking <i>Sabina P. Huber-Reggi, Kaspar P. Mueller, and Stephan C.F. Neuhauss</i>	139
11 Analysis of the <i>Drosophila</i> Compound Eye with Light and Electron Microscopy <i>Monalisa Mishra and Elisabeth Knust</i>	161

PART IV IN SITU ANALYSES

- 12 Cell-Specific Markers for the Identification of Retinal Cells
by Immunofluorescence Microscopy 185
Christiana L. Cheng, Hidayat Djajadi, and Robert S. Molday
- 13 A Method of Horizontally Sliced Preparation of the Retina 201
Ryosuke Enoki and Amane Koizumi
- 14 Detection of DNA Fragmentation in Retinal Apoptosis by TUNEL 207
Francesca Doonan and Thomas G. Cotter
- 15 High-Throughput RNA In Situ Hybridization in Mouse Retina 215
Seth Blackshaw
- 16 Assessment of Mitochondrial Damage in Retinal Cells and Tissues
Using Quantitative Polymerase Chain Reaction for Mitochondrial
DNA Damage and Extracellular Flux Assay for Mitochondrial
Respiration Activity. 227
*Stuart G. Jarrett, Bärbel Rohrer, Nathan R. Perron,
Craig Beeson, and Michael E. Boulton*
- 17 Analysis of Photoreceptor Rod Outer Segment Phagocytosis
by RPE Cells In Situ 245
Saumil Sethna and Silvia C. Finnemann

PART V TISSUE CULTURE AND CELL MODELS

- 18 Ca^{2+} Microfluorimetry in Retinal Müller Glial Cells 257
Antje Wurm, Thomas Pannicke, and Andreas Reichenbach
- 19 Functional Analysis of Retinal Microglia and Their Effects
on Progenitors 271
Debra A. Carter, Balini Balasubramaniam, and Andrew D. Dick
- 20 Analysis of Photoreceptor Outer Segment Phagocytosis
by RPE Cells in Culture 285
Yingyu Mao and Silvia C. Finnemann
- 21 Ca^{2+} -Imaging Techniques to Analyze Ca^{2+} Signaling in Cells
and to Monitor Neuronal Activity in the Retina 297
Olaf Strauß

PART VI GENE REGULATION

- 22 Double Chromatin Immunoprecipitation: Analysis of Target
Co-occupancy of Retinal Transcription Factors 311
Guang-Hua Peng and Shiming Chen
- 23 Quantifying the Activity of *cis*-Regulatory Elements in the Mouse Retina
by Explant Electroporation 329
Cynthia L. Montana, Connie A. Myers, and Joseph C. Corbo

PART VII THERAPY

24	Optimized Technique for Subretinal Injections in Mice	343
	<i>Regine Mühlfriedel, Stylianos Michalakis, Marina Garcia Garrido, Martin Biel, and Mathias W. Seeliger</i>	
25	Adeno-Associated Viral Vectors for Gene Therapy of Inherited Retinal Degenerations.	351
	<i>John G. Flannery and Meike Visel</i>	
26	Barrier Modulation in Drug Delivery to the Retina	371
	<i>Matthew Campbell, Marian M. Humphries, and Peter Humphries</i>	
	<i>Index.</i>	381

Retinal Degeneration

Methods and Protocols

Weber, B.; LANGMANN, T. (Eds.)

2013, XIV, 384 p. 98 illus., 48 illus. in color., Hardcover

ISBN: 978-1-62703-079-3

A product of Humana Press