Contents

Part I  Basic Processes: Development, Physiology and Function

1  Cell Type-Specific Epigenetic Signatures Accompany Late Stages of Mouse Retina Development ....................................................  3
   Evgenya Y. Popova, Colin J. Barnstable and Samuel Shao-Min Zhang

2  Programmed Cell Death During Retinal Development of the Mouse Eye .........................................................................................  9
   Barbara M. Braunger, Cora Demmer and Ernst R. Tamm

3  Spatial and Temporal Localization of Caveolin-1 Protein in the Developing Retina ...............................................................  15
   Xiaowu Gu, Alaina Reagan, Allen Yen, Faizah Bhatti, Alex W. Cohen and Michael H. Elliott

4  Glutathione S-Transferase Pi Isoform (GSTP1) Expression in Murine Retina Increases with Developmental Maturity ...............  23
   Wen-Hsiang Lee, Pratibha Joshi and Rong Wen

5  RETINA-Specific Expression of Kcnv2 Is Controlled by Cone-Rod Homeobox (Crx) and Neural Retina Leucine Zipper (Nrl) ........................................................................................................  31
   Alexander Aslanidis, Marcus Karlstetter, Yana Walczak, Herbert Jägle and Thomas Langmann

6  AIPL1 Protein and its Indispensable Role in Cone Photoreceptor Function and Survival ............................................................  43
   Saravanan Kolandaivelu and Visvanathan Ramamurthy

7  Primate Short-Wavelength Cones Share Molecular Markers with Rods .........................................................................................  49
   Cheryl M. Craft, Jing Huang, Daniel E. Possin and Anita Hendrickson
8 Exploration of Cone Cyclic Nucleotide-Gated Channel-Interacting Proteins Using Affinity Purification and Mass Spectrometry ................................................................. 57 Xi-Qin Ding, Alexander Matveev, Anil Singh, Naoka Komori and Hiroyuki Matsumoto

9 Electrophysiological Characterization of Rod and Cone Responses in the Baboon Nonhuman Primate Model .................. 67 Michael W. Stuck, Shannon M. Conley, Ryan A. Shaw, Roman Wolf and Muna I. Naash

Part II Basic Processes: RPE

10 Animal Models, in “The Quest to Decipher RPE Phagocytosis” .......... 77 Emeline F. Nandrot

11 In Vivo and in Vitro Monitoring of Phagosome Maturation in Retinal Pigment Epithelium Cells ............................................... 85 Julian Esteve-Rudd, Vanda S. Lopes, Mei Jiang and David S. Williams

12 Lack of Effect of Microfilament or Microtubule Cytoskeleton-Disrupting Agents on Restriction of Externalized Phosphatidylserine to Rod Photoreceptor Outer Segment Tips ............................................... 91 Linda Ruggiero and Silvia C. Finnemann

13 Vacuolar ATPases and Their Role in Vision .................................. 97 Lisa Shine, Claire Kilty, Jeffrey Gross and Breandan Kennedy

14 Rescue of Compromised Lysosomes Enhances Degradation of Photoreceptor Outer Segments and Reduces Lipofuscin-Like Autofluorescence in Retinal Pigmented Epithelial Cells ....... 105 Sonia Guha, Ji Liu, Gabe Baltazar, Alan M. Laties and Claire H. Mitchell

15 The Role of Bestrophin-1 in Intracellular Ca^{2+} Signaling ............ 113 Olaf Strauß, Claudia Müller, Nadine Reichhart, Ernst R. Tamm and Nestor Mas Gomez

Part III Basic Processes: Methodology

16 Application of Next-Generation Sequencing to Identify Genes and Mutations Causing Autosomal Dominant Retinitis Pigmentosa (adRP) .......................................................... 123 Stephen P. Daiger, Sara J. Bowne, Lori S. Sullivan, Susan H. Blanton, George M. Weinstock, Daniel C. Koboldt, Robert S. Fulton, David Larsen, Peter Humphries, Marian M. Humphries, Eric A. Pierce, Rui Chen and Yumei Li
17 Digital Quantification of Goldmann Visual Fields (GVFs) as a Means for Genotype–Phenotype Comparisons and Detection of Progression in Retinal Degenerations .................................. 131
Sarwar Zahid, Crandall Peeler, Naheed Khan, Joy Davis, Mahdi Mahmood, John R. Heckenlively and Thiran Jayasundera

18 Simplified System to Investigate Alteration of Retinal Neurons in Diabetes ............................................................................................................. 139
Shuqian Dong, Yan Liu, Meili Zhu, Xueliang Xu and Yun-Zheng Le

19 What Is the Nature of the RGC-5 Cell Line? ........................................ 145
C. Sippl and E. R. Tamm

Part IV Genetics in Retinal Disease

20 Modeling Retinal Dystrophies Using Patient-Derived Induced Pluripotent Stem Cells ................................................................. 157
Karl J. Wahlin, Julien Maruotti and Donald J. Zack

21 Mutation K42E in Dehydrodolichol Diphosphate Synthase (DHDDS) Causes Recessive Retinitis Pigmentosa ............................................. 165
Byron L. Lam, Stephan L. Züchner, Julia Dallman, Rong Wen, Eduardo C. Alfonso, Jeffery M. Vance and Margaret A. Peričak-Vance

22 IROme, a New High-Throughput Molecular Tool for the Diagnosis of Inherited Retinal Dystrophies—A Price Comparison with Sanger Sequencing .................................................. 171
Daniel F. Schorderet, Maude Bernasconi, Leila Tiab, Tatiana Favez and Pascal Escher

23 Genetic Heterogeneity and Clinical Outcome in a Swedish Family with Retinal Degeneration Caused by Mutations in CRB1 and ABCA4 Genes ................................................................. 177
Frida Jonsson, Marie S. Burstedt, Ola Sandgren, Anna Norberg and Irina Golovleva

24 FAM161A, a Novel Centrosomal-Ciliary Protein Implicated in Autosomal Recessive Retinitis Pigmentosa ............................................. 185
Frank Zach and Heidi Stöhr

Part V AMD: Novel Developments

25 Molecular Pathology of Macrophages and Interleukin-17 in Age-Related Macular Degeneration ................................................................. 193
Chi-Chao Chan and Daniel Ardeljan
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>The Role of Monocytes and Macrophages in Age-Related Macular Degeneration</td>
<td>Michelle Grunin, Shira Hagbi-Levi and Itay Chowers</td>
</tr>
<tr>
<td>27</td>
<td>Microglia in the Aging Retina</td>
<td>Marcus Karlstetter and Thomas Langmann</td>
</tr>
<tr>
<td>28</td>
<td>The Role of Complement Dysregulation in AMD Mouse Models</td>
<td>Jin-Dong Ding,Una Kelly, Marybeth Groelle, Joseph G. Christenbury, Wenlan Zhang and Catherine Bowes Rickman</td>
</tr>
<tr>
<td>29</td>
<td>Prolonged Src Kinase Activation, a Mechanism to Turn Transient, Sublytic Complement Activation into a Sustained Pathological Condition in Retinal Pigment Epithelium</td>
<td>Bärbel Rohrer, Kannan Kunchithapautham, Andreas Genewsky and Olaf Strauß</td>
</tr>
<tr>
<td>30</td>
<td>Inflammation in Age-Related Macular Degeneration</td>
<td>Ema Ozaki, Matthew Campbell, Anna-Sophia Kiang, Marian Humphries, Sarah Doyle and Peter Humphries</td>
</tr>
<tr>
<td>31</td>
<td>Impairment of the Ubiquitin-Proteasome Pathway in RPE Alters the Expression of Inflammation Related Genes</td>
<td>Zhenzhen Liu, Tingyu Qin, Jilin Zhou, Allen Taylor, Janet R. Sparrow and Fu Shang</td>
</tr>
<tr>
<td>32</td>
<td>Inflammatory Biomarkers for AMD</td>
<td>Chloe M. Stanton and Alan F. Wright</td>
</tr>
<tr>
<td>33</td>
<td>Oxidized Low-Density-Lipoprotein-Induced Injury in Retinal Pigment Epithelium Alters Expression of the Membrane Complement Regulatory Factors CD46 and CD59 through Exosomal and Apoptotic Bleb Release</td>
<td>Katayoon B. Ebrahimi, Natalia Fijalkowski, Marisol Cano and James T. Handa</td>
</tr>
<tr>
<td>34</td>
<td>Should I Stay or Should I Go? Trafficking of Sub-Lytic MAC in the Retinal Pigment Epithelium</td>
<td>Aparna Lakkaraju, Kimberly A. Toops and Jin Xu</td>
</tr>
<tr>
<td>35</td>
<td>Hypoxia-Inducible Factor (HIF)/Vascular Endothelial Growth Factor (VEGF) Signaling in the Retina</td>
<td>Toshihide Kurihara, Peter D. Westenskow and Martin Friedlander</td>
</tr>
</tbody>
</table>
36 Is Age-Related Macular Degeneration a Microvascular Disease? .... 283
Robert F. Mullins, Aditi Khanna, Desi P. Schoo, Budd A. Tucker,
Elliott H. Sohn, Arlene V. Drack and Edwin M. Stone

37 Genetic Risk Models in Age-Related Macular Degeneration .......... 291
Felix Grassmann, Iris M. Heid and Bernhard H. F. Weber

38 A Mechanistic Review of Cigarette Smoke and Age-Related
Macular Degeneration ................................................. 301
Alex Woodell and Bärbel Rohrer

39 Measuring Cone Density in a Japanese Macaque (Macaca
fuscata) Model of Age-Related Macular Degeneration with
Commercially Available Adaptive Optics ................................ 309
Mark E. Pennesi, Anupam K. Garg, Shu Feng, Keith V. Michaels,
Travis B. Smith, Jonathan D. Fay, Alison R. Weiss, Laurie M. Renner,
Sawan Hurst, Trevor J. McGill, Anda Cornea, Kay D. Rittenhouse,
Marvin Sperling, Joachim Fruebis and Martha Neuringer

40 Nuclear Receptors as Potential Therapeutic Targets for
Age-Related Macular Degeneration .................................. 317
Goldis Malek

41 Utilizing Stem Cell-Derived RPE Cells as A Therapeutic
Intervention for Age-Related Macular Degeneration .............. 323
Peter D. Westenskow, Toshihide Kurihara and Martin Friedlander

Part VI Müller Cells, Microglia, and Macrophages

42 Microglia-Müller Cell Interactions in the Retina ................. 333
Minhua Wang and Wai T. Wong

43 Isolation and Ex Vivo Characterization of the
Immunophenotype and Function of Microglia/Macrophage
Populations in Normal Dog Retina ....................................... 339
Sem Genini, William A. Beltran, Veronika M. Stein
and Gustavo D. Aguirre

44 Müller Cells and Microglia of the Mouse Eye React
Throughout the Entire Retina in Response to the Procedure
of an Intravitreal Injection ................................................. 347
Roswitha Seitz and Ernst R. Tamm

45 Subretinal Infiltration of Monocyte Derived Cells and
Complement Misregulation in Mice with AMD-Like Pathology .... 355
Joseph Fogerty and Joseph C. Besharse
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Author(s)</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>46</td>
<td>Ambiguous Role of Glucocorticoids on Survival of Retinal Neurons</td>
<td>Tembei K. Forkwa, Ernst R. Tamm and Andreas Ohlmann</td>
<td>365</td>
</tr>
<tr>
<td>47</td>
<td>Microglia-Müller Glia Crosstalk in the <em>rd10</em> Mouse Model of Retinitis Pigmentosa</td>
<td>Ana I. Arroba, Noemí Álvarez-Lindo, Nico van Rooijen and Enrique J. de la Rosa</td>
<td>373</td>
</tr>
<tr>
<td>48</td>
<td>The Neuroprotective Potential of Retinal Müller Glial Cells</td>
<td>Stefanie M. Hauck, Christine von Toerne and Marius Ueffing</td>
<td>381</td>
</tr>
<tr>
<td>49</td>
<td>Leukemia Inhibitory Factor Signaling in Degenerating Retinas</td>
<td>Cavit Agca and Christian Grimm</td>
<td>389</td>
</tr>
<tr>
<td>50</td>
<td>In Vivo Function of the ER-Golgi Transport Protein LMAN1 in Photoreceptor Homeostasis</td>
<td>Hong Hao, Janina Gregorski, Haohua Qian, Yichao Li, Chun Y Gao, Sana Idrees and Bin Zhang</td>
<td>395</td>
</tr>
<tr>
<td>51</td>
<td>Investigating the Role of Retinal Müller Cells with Approaches in Genetics and Cell Biology</td>
<td>Suhua Fu, Meili Zhu, John D. Ash, Yunchang Wang and Yun-Zheng Le</td>
<td>401</td>
</tr>
<tr>
<td></td>
<td><strong>Part VII</strong> Degenerative Processes: Immune-Related Mechanisms, Genes and Factors</td>
<td></td>
<td>-------</td>
</tr>
<tr>
<td>52</td>
<td>An Overview of the Involvement of Interleukin-18 in Degenerative Retinopathies</td>
<td>Matthew Campbell, Sarah L. Doyle, Ema Ozaki, Paul F. Kenna, Anna-Sophia Kiang, Marian M. Humphries and Peter Humphries</td>
<td>409</td>
</tr>
<tr>
<td>53</td>
<td>Chronic Intraocular Inflammation and Development of Retinal Degenerative Disease</td>
<td>Charles E. Egwuagu</td>
<td>417</td>
</tr>
<tr>
<td>54</td>
<td>The Relevance of Chemokine Signalling in Modulating Inherited and Age-Related Retinal Degenerations</td>
<td>Ulrich FO Luhmann, Scott J Robbie, James WB Bainbridge and Robin R Ali</td>
<td>427</td>
</tr>
<tr>
<td>55</td>
<td>The Complement Regulatory Protein CD59: Insights into Attenuation of Choroidal Neovascularization</td>
<td>Gloriane Schnabolk, Stephen Tomlinson and Bärbel Rohrer</td>
<td>435</td>
</tr>
</tbody>
</table>
56 Regeneration-Associated Genes on Optic Nerve Regeneration in Fish Retina .......................................................... 441
Kazuhiro Ogai, Maki Nishitani, Ayaka Kuwana, Kazuhiro Mawatari, Yoshiki Koriyama, Kayo Sugitani, Hiroshi Nakashima and Satoru Kato

57 Dominant Stargardt Macular Dystrophy (STGD3) and ELOVL4 ... 447
S. Logan and R. E. Anderson

58 Modulation of the Rate of Retinal Degeneration in T17M RHO Mice by Reprogramming the Unfolded Protein Response. ..... 455
Shreyasi Choudhury, Sonali Nashine, Yogesh Bhoitada, Mansi Motiwale Kunte, Oleg Gorbatyuk, Alfred S. Lewin and Marina Gorbatyuk

59 Expression of Poly(ADP-Ribose) Glycohydrolase in Wild-Type and PARG-110 Knock-Out Retina ............................................ 463
Ayse Sahaboglu, Sylvia Bolz, Hubert Löwenheim and Francois Paquet-Durand

60 Current Therapeutic Strategies for P23H RHO-Linked RP ........ 471
Anh T. H. Nguyen, Matthew Campbell, Anna-Sophia Kiang, Marian M. Humphries and Peter Humphries

61 Pathogenesis of X-linked RP3: Insights from Animal Models .... 477
Rakesh Kotapati Raghuapathy, Daphne L McCulloch, Saeed Akhtar, Turki M Al-Mubrad and Xinhua Shu

62 Unc119 Gene Deletion Partially Rescues the GRK1 Transport Defect of Pde6d<sup>−/−</sup> Cones ..................................................... 487
Houbin Zhang, Jeanne M. Frederick and Wolfgang Baehr

63 Retinal Function in Aging Homozygous Cln3<sup>Δex7/Δex8</sup> Knock-In Mice .. 495
Cornelia Volz, Myriam Mirza, Thomas Langmann and Herbert Jägle

64 Synergistic Interaction of Tubby and Tubby-Like Protein 1 (Tulp1) ................................................................. 503
Nora Blanca Cabrery

65 Interaction of Tubby-Like Protein-1 (Tulp1) and Microtubule-Associated Protein (MAP) 1A and MAP1B in the Mouse Retina ................................................................. 511
Gregory H. Grossman, Craig D. Beight, Lindsey A. Ebke, Gayle J.T. Pauer and Stephanie A. Hagstrom

66 CEP290 and the Primary Cilium .............................................. 519
Theodore G. Drivas and Jean Bennett
67 Usher Syndrome Protein Network Functions in the Retina and their Relation to Other Retinal Ciliopathies ........................................... 527 Nasrin Sorusch, Kirsten Wunderlich, Katharina Bauss, Kerstin Nagel-Wolfrum and Uwe Wolfrum

68 The Phenotype of the Good Effort Mutant Zebrafish is Retinal Degeneration by Cell Death and is Linked to the Chromosome Assembly Factor 1b Gene .................................................. 535 Travis J. Bailey and David R. Hyde

69 Knock-Down DHDDS Expression Induces Photoreceptor Degeneration in Zebrafish ............................................................. 543 Rong Wen, Julia E. Dallman, Yiwen Li, Stephan L. Züchner, Jeffery M. Vance, Margaret A. Perićak-Vance and Byron L. Lam

70 Spectral Domain Optical Coherence Tomography Findings in CNGB3-Associated Achromatopsia and Therapeutic Implications ........................................................................... 551 Michael McClintock, Marc C. Peden and Christine N. Kay

71 Photoreceptor Pathology in the X-Linked Retinoschisis (XLRS) Mouse Results in Delayed Rod Maturation and Impaired Light Driven Transducin Translocation .................................... 559 Lucia Ziccardi, Camasamudram Vijayararathy, Ronald A. Bush and Paul A. Sieving

72 Mouse Models for Cone Degeneration ........................................... 567 Marijana Samardzija and Christian Grimm


Part VIII Degenerative Processes: RPE and Fatty Acids

74 Endoplasmic Reticulum Stress in Vertebrate Mutant Rhodopsin Models of Retinal Degeneration ........................................ 585 Heike Kroeger, Matthew M. LaVail and Jonathan H. Lin

75 Bisretinoid Degradation and the Ubiquitin-Proteasome System ...... 593 Janet R. Sparrow, Jilin Zhou, Shanti Kaligotla Ghosh and Zhao Liu
76 Analysis of Mouse RPE Sheet Morphology Gives Discriminatory Categories ........................................... 601
Yi Jiang, X Qi, Micah A. Chrenek, Christopher Gardner, Nupur Dalal, Jeffrey H. Boatright, Hans E. Grossniklaus and John M. Nickerson

77 High Glucose Activates ChREBP-Mediated HIF-1α and VEGF Expression in Human RPE Cells Under Normoxia .......... 609
Min-Lee Chang, Chung-Jung Chiu, Fu Shang and Allen Taylor

78 Sphingolipids in Ocular Inflammation .................................... 623
Annie Y. Chan, Shivani N. Mann, Hui Chen, Donald U. Stone, Daniel J. J. Carr and Nawajes A. Mandal

79 Biosynthesis of Very Long-Chain Polyunsaturated Fatty Acids in Hepatocytes Expressing ELOVL4 .......................... 631
Martin-Paul Agbaga, Sreemathi Logan, Richard S. Brush and Robert E. Anderson

80 Very Long Chain Polyunsaturated Fatty Acids and Rod Cell Structure and Function ........................................ 637
L. D. Marchette, D. M Sherry, R. S Brush, M. Chan, Y. Wen, J. Wang, John D. Ash, R. E. Anderson and N. A. Mandal

Part IX Degenerative Processes: Immune-Related Mechanisms, Genes and Factors

81 Oxidative Stress Regulation by DJ-1 in the Retinal Pigment Epithelium ....................................................... 649
Vera L. Bonilha, Mary E. Rayborn, Xiaoping Yang, Chengan Xie and Huaibin Cai

82 The Role of Reactive Oxygen Species in Ocular Malignancy .......... 655
Kathryn E. Klump and James F. McGinnis

83 The Effects of IRE1, ATF6, and PERK Signaling on adRP-Linked Rhodopsins ................................................ 661
Wei-Chieh Jerry Chiang and Jonathan H. Lin

84 Role of Endothelial Cell and Pericyte Dysfunction in Diabetic Retinopathy: Review of Techniques in Rodent Models ...... 669
Jonathan Chou, Stuart Rollins and Amani A Fawzi
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>Autophagy Induction Does Not Protect Retina Against Apoptosis in Ischemia/Reperfusion Model</td>
<td>Nathalie Prodot-Zengaffinen, Constantin J. Pournaras and Daniel F. Schorderet</td>
<td>677</td>
</tr>
<tr>
<td>86</td>
<td>Advances in AAV Vector Development for Gene Therapy in the Retina</td>
<td>Timothy P. Day, Leah C. Byrne, David V. Schaffer and John G. Flannery</td>
<td>687</td>
</tr>
<tr>
<td>87</td>
<td>Cone Specific Promoter for Use in Gene Therapy of Retinal Degenerative Diseases</td>
<td>Frank M. Dyka, Sanford L. Boye, Renee C. Ryals, Vince A. Chiodo, Shannon E. Boye and William W. Hauswirth</td>
<td>695</td>
</tr>
<tr>
<td>88</td>
<td>Episomal Maintenance of S/MAR-Containing Non-Viral Vectors for RPE-Based Diseases</td>
<td>Adarsha Koirala, Shannon M Conley and Muna I. Naash</td>
<td>703</td>
</tr>
<tr>
<td>89</td>
<td>Gene Therapy in the Rd6 Mouse Model of Retinal Degeneration</td>
<td>Astra Dinculescu, Seok-Hong Min, Wen-Tao Deng, Qiuhong Li and William W. Hauswirth</td>
<td>711</td>
</tr>
<tr>
<td>90</td>
<td>Gene Therapy for Stargardt Disease Associated with ABCA4 Gene</td>
<td>Zongchao Han, Shannon M. Conley and Muna I. Naash</td>
<td>719</td>
</tr>
<tr>
<td>91</td>
<td>Assessment of Different Virus-Mediated Approaches for Retinal Gene Therapy of Usher 1B</td>
<td>Vanda S. Lopes, Tanja Diemer and David S. Williams</td>
<td>725</td>
</tr>
<tr>
<td>92</td>
<td>Gene Therapy Restores Vision and Delays Degeneration in the CNGB1− Mouse Model of Retinitis Pigmentosa</td>
<td>Stylianos Michalakis, Susanne Koch, Vithiyanjali Sothilingam, Marina Garcia Garrido, Naoyuki Tanimoto, Elisabeth Schulze, Elvir Becirovic, Fred Koch, Christina Seide, Susanne C. Beck, Mathias W. Seeliger, Regine Mühlfriedel and Martin Biel</td>
<td>733</td>
</tr>
<tr>
<td>93</td>
<td>Therapy Strategies for Usher Syndrome Type 1C in the Retina</td>
<td>Kerstin Nagel-Wolfrum, Timor Baasov and Uwe Wolfrum</td>
<td>741</td>
</tr>
</tbody>
</table>
Part XI  Therapy: Protection

94  Nipradilol Promotes Axon Regeneration Through S-Nitrosylation of PTEN in Retinal Ganglion Cells .......................... 751
Yoshiki Koriyama, Marie Kamiya, Kunizo Arai, Kayo Sugitani, Kazuhiro Ogai and Satoru Kato

95  Reciprocal Changes in Factor XIII and Retinal Transglutaminase Expressions in the Fish Retina During Optic Nerve Regeneration ........................................................................ 759
Kayo Sugitani, Kazuhiro Ogai, Yoshiki Koriyama and Satoru Kato

96  N-Acetylserotonin: Circadian Activation of the BDNF Receptor and Neuroprotection in the Retina and Brain .................. 765
P. Michael Iuvone, Jeffrey H. Boatright, Gianluca Tosini and Keqiang Ye

97  A High Content Screening Approach to Identify Molecules Neuroprotective for Photoreceptor Cells ........................................ 773
John A. Fuller, Gillian C. Shaw, Delphine Bonnet-Wersinger, Baranda S. Hansen, Cynthia A. Berlinicke, James Inglese and Donald J. Zack

98  Antioxidant Therapy for Retinal Disease ........................................ 783
Anna-Sophia Kiang, Marian M. Humphries, Matthew Campbell and Peter Humphries

99  Pathophysiological Mechanism and Treatment Strategies for Leber Congenital Amaurosis .................................................. 791
Yingbin Fu and Tao Zhang

100 Current and Emerging Therapies for Ocular Neovascularisation... 797
Alison L. Reynolds, David Kent and Breandán N. Kennedy

101 Targeting the PI3K/Akt/mTOR Pathway in Ocular Neovascularization ............................................................... 805
Temitope Sasore, Alison L. Reynolds and Breandán N. Kennedy

102 Pigment Epithelium-Derived Factor Protects Cone Photoreceptor-Derived 661W Cells from Light Damage Through Akt Activation ................................................................. 813
Matthew Rapp, Grace Woo, Muayyad R. Al-Ubaidi, S. Patricia Becerra and Preeti Subramanian

103 Nanoceria as Bona Fide Catalytic Antioxidants in Medicine: What We Know and What We Want to Know… ............ 821
Lily L. Wong and James F. McGinnis
104 Nanoceria and Thioredoxin Regulate a Common Antioxidative Gene Network in tubby Mice ................................. 829
Xue Cai, Junji Yodoi, Sudipta Seal and James F. McGinnis

105 Intrascleral Transplantation of a Collagen Sheet with Cultured Brain-Derived Neurotrophic Factor Expressing Cells Partially Rescues the Retina from Damage due to Acute High Intraocular Pressure ...................................................................................... 837
Toshiaki Abe, Yumi Tokita-Ishikawa, Hideyuki Onami, Yuki Katsukura, Hirokazu Kaji, Matsuhiko Nishizawa and Nobuhiro Nagai

106 Neuroprotective Effects of Low Level Electrical Stimulation Therapy on Retinal Degeneration ................................. 845
Machelle T. Pardue, Vincent T. Ciavatta and John R. Hetling

Index ......................................................................................................................... 853
Retinal Degenerative Diseases
Mechanisms and Experimental Therapy
Ash, J.; Grimm, C.; Hollyfield, J.G.; Anderson, R.E.; LaVail, M.M.; Rickman, C.B. (Eds.)
2014, LXI, 862 p. 188 illus., 187 illus. in color., Hardcover
ISBN: 978-1-4614-3208-1