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4; Animal Models of Age-Related Macular Degeneration: Subretinal Inflammation; 4.1 Introduction; 4.2 Inflammation and Age-Related Macular Degeneration; 4.3 Subretinal Inflammation in AMD Animal Models ; 4.3.1 AMD-Associated Risk Factors and Inflammation; 4.3.1.1 Genetic Risk Factors; 4.3.1.2 AMD-Associated Environmental Risk Factors and Inflammation; 4.3.2.1 Suppression of Tonic Anti-Inflammatory Signals; 4.3.2.2 Defective Immunosuppressive Environment
4.3.2.3 Autoimmune Reaction4.3.3 "Secondary inflammation" AMD Models; 4.4 Conclusion; References; Commentary; Commentary; Chapter-5; Animal Models of Diabetic Retinopathy; 5.1 Introduction and Clinical Context; 5.2 The Need for Animal Models to Understand the Pathophysiology of DR; 5.3 Rodent Models of DR; 5.3.1 Chemically Induced Diabetes in Mice and Rats; 5.3.2 Spontaneous Diabetic Rodents as Models of DR; 5.3.3 Diet-Induced DR in Rodents; 5.4 Dog Models of DR; 5.5 Other Large Animals of DR; 5.6 Non-mammalian Models of DR; 5.7 Models of PDR; 5.7.1 VEGF Overexpression
5.7.2 Oxygen-Induced Retinopathy5.8 Techniques to Detect Retinal Lesion in Animal Models of Diabetes; 5.8.1 Fundus Colour Imaging; 5.8.2 Confocal Scanning Laser Ophthalmoscope (cSLO); 5.8.3 Optical Coherence Tomography (OCT); 5.8.4 Electroretinogarphy (ERG); 5.9 Conclusion; References; Commentary; Chapter-6; Animal Models of autoimmune uveitis; 6.1 Introduction; 6.2 Why Do We Need Animal Models to Study Human Uveitis?; 6.3 Animal Models of Uveitis Exhibit Clinical Heterogeneity, Similar to Human Uveitis; 6.4 Induced Animal Models of Uveitis; 6.4.1 Experimental Autoimmune Uveitis (EAU)
6.4.2 Different Uveitogenic Antigens Induce Different Variants of Uveitis

Sommario/riassunto

This book describes experimental animal models that mimic common human ocular diseases: herpetic keratitis, cataract, glaucoma, age-related macular degeneration, diabetic retinopathy, uveitis, retinitis pigmentosa, Graves' disease, and intraocular tumors. In conjunction, these models reflect the diversity and utility of tools used to study human disease. World expert clinicians discuss each model based on their clinical experience, and the text is supported by numerous photos and diagrams. Development of suitable experimental models is critical in identifying risk factors for disease, elucidating fundamental molecular mechanisms in disease progression, and providing guidance as to whether or not a particular treatment is safe and effective for humans. Like other forms of medical research, ophthalmology and vision research focuses on the investigation of disease pathogenesis and the discovery of novel therapies through in vitro and in vivo methodology. The in vivo experiments employ animal models including vertebrates (zebrafish, rodents, rabbits, and primates) and invertebrates (fruit flies and nematodes) for drug screening. In describing the most pertinent animal models of ophthalmic diseases, this book will be of interest to ophthalmologists, vision researchers, fellows, residents, and medical students.