Contents

Author biographies vii
Preface by Maneli Mozaffarieh ix
Preface by Josef Flammer xi
Acknowledgements xiii
Abbreviations xv

1 Introduction 1

2 Basic sciences relevant to glaucoma 5
   What is a redox reaction? 5
   What is the role of light? 6
   The oxygen molecule 7
   The concept of cellular stress 11
   Oxidative stress 13
   Assessment of ocular blood flow 15

3 What is glaucoma? 27
   Glaucomatous optic neuropathy 27
   Epidemiology of glaucoma 28
   Symptoms of chronic glaucoma 28
   Signs of glaucomatous optic neuropathy 30

4 Risk factors for glaucoma 35
   Risk factors for an increase in intraocular pressure 35
   Risk factors for glaucomatous optic neuropathy 36
   The role of ocular blood flow 40

5 Regulation of ocular blood flow 45
   Regulation of blood flow in the eye 45
   Endothelial-derived vasoactive factors 48
   Circulating hormones 50
6 Vascular dysregulation syndrome
   What is vascular dysregulation? 55
   Primary vascular dysregulation 55
   Primary vascular dysregulation and other risk factors for glaucomatous optic neuropathy 61
   Primary vascular dysregulation and eye circulation 63
   Primary vascular dysregulation and other eye diseases 64
   Secondary vascular dysregulation 66

7 Reperfusion damage
   What is reperfusion injury? 69
   What leads to reperfusion injury? 69
   Why does reperfusion injury induce glaucomatous optic neuropathy? 70
   Are there signs of oxidative stress in human glaucoma? 71

8 Pathogenesis of glaucomatous optic neuropathy 75

9 Treatment strategies
   Importance of reducing intraocular pressure 79
   Methods to reduce intraocular pressure 79
   Non-intraocular pressure lowering treatments 80

   Further reading 99
   Index 101
Ocular Blood Flow and Glaucomatous Optic Neuropathy
Mozaffarieh, M.; Flammer, J.
2009, XVII, 105 p., Hardcover
ISBN: 978-3-540-69442-7