Imaging the Eye from Front to Back with RTVue Fourier-Domain Optical Coherence Tomography

David Huang, MD, PhD
Center for Ophthalmic Optics and Lasers
Doheny Eye Institute
Keck School of Medicine
University of Southern California
Los Angeles, CA

Jay S. Duker, MD
Director, New England Eye Center
Professor and Chair, Department of Ophthalmology
Tufts Medical Center
Tufts University School of Medicine
Boston, MA

James G. Fujimoto, PhD
Department of Electrical Engineering and Computer Science
Research Laboratory of Electronics
Massachusetts Institute of Technology
Cambridge, MA

Bruno Lumbroso, MD
Professor Libero Docente
University of Rome
Rome Eye Hospital
Rome, Italy

Joel S. Schuman, MD, FACS
Eye and Ear Foundation Professor and Chair
Department of Ophthalmology
University of Pittsburgh School of Medicine
Director, UPMC Eye Center
Pittsburgh, PA

Robert N. Weinreb, MD
Distinguished Professor of Ophthalmology
Director, Hamilton Glaucoma Center
University of California, San Diego
La Jolla, CA
## CONTENTS

Dedication .................................................................................................................. v  
Acknowledgments ...................................................................................................... ix  
About the Editors .................................................................................................... xi  
Contributing Authors ............................................................................................... xiii  
Introduction ............................................................................................................... xv

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to Optical Coherence Tomography</td>
<td>James G. Fujimoto, PhD and David Huang, MD, PhD</td>
</tr>
<tr>
<td>2</td>
<td>Anterior Segment Scan Patterns</td>
<td>Yan Li, PhD and David Huang, MD, PhD</td>
</tr>
<tr>
<td>3</td>
<td>Anterior Segment Scan Procedures</td>
<td>Maolong Tang, PhD and David Huang, MD, PhD</td>
</tr>
<tr>
<td>4</td>
<td>Interpretation of Corneal Images</td>
<td>David Huang, MD, PhD; Yan Li, PhD; and Maolong Tang, PhD</td>
</tr>
<tr>
<td>5</td>
<td>Interpretation of Angle Images</td>
<td>Farnaz Memarzadeh, MD; Sheila Mahdaviani, MD; and Yan Li, PhD</td>
</tr>
<tr>
<td>6</td>
<td>Posterior Segment Scan Patterns</td>
<td>Ou Tan, PhD and David Huang, MD, PhD</td>
</tr>
<tr>
<td>7</td>
<td>Posterior Segment Scan Procedures</td>
<td>William D. Dilworth</td>
</tr>
<tr>
<td>8</td>
<td>Interpretation of Retinal Images</td>
<td>Andre J. Witkin, MD and Jay S. Duker, MD</td>
</tr>
<tr>
<td>9</td>
<td>Retinal En Face Scan Analysis</td>
<td>Bruno Lumbruso, MD and Marco Rispoli, MD</td>
</tr>
<tr>
<td>10</td>
<td>Imaging of Retinal Blood Flow</td>
<td>Yimin Wang, PhD and David Huang, MD, PhD</td>
</tr>
<tr>
<td>11</td>
<td>Keratoconus Screening</td>
<td>Yan Li, PhD; Maolong Tang, PhD; and David Huang, MD, PhD</td>
</tr>
<tr>
<td>12</td>
<td>Refractive Surgery</td>
<td>Camila Haydee Rosas Salaroli, MD; Stephen L. Trokel, MD; Perry S. Binder, MD; Yan Li, PhD; and David Huang, MD, PhD</td>
</tr>
<tr>
<td>13</td>
<td>Corneal Pathologies and Surgeries</td>
<td>Martin Heur, MD, PhD; Maolong Tang, PhD; Stephen L. Trokel, MD; and David Huang, MD, PhD</td>
</tr>
<tr>
<td>14</td>
<td>Non-Exudative Age-Related Macular Degeneration</td>
<td>Leonardo C. Castro, MD</td>
</tr>
<tr>
<td>15</td>
<td>Exudative Age-Related Macular Degeneration</td>
<td>Leonardo C. Castro, MD</td>
</tr>
<tr>
<td>16</td>
<td>Pathologic Myopia</td>
<td>Kaori Sayanagi, MD</td>
</tr>
<tr>
<td>17</td>
<td>Central Serous Chorioretinopathy</td>
<td>Fumi Gomi, MD, PhD</td>
</tr>
<tr>
<td>18</td>
<td>Macular Hole</td>
<td>Yutaka Imamura, MD</td>
</tr>
</tbody>
</table>
Chapter 19. Epiretinal Membranes ............................................175
  Giovanni Staurenghi, MD; Alessandro Invernizzi, MD; and Marco Pellegrini, MD

Chapter 20. Inherited Retinal Diseases ....................................179
  Motokazu Tsujikawa, MD, PhD

Chapter 21. Cystoid Macular Edema ......................................185
  Bruno Lumbroso, MD; Marco Rispoli, MD; and Maria Cristina Savastano, MD

Chapter 22. Optical Coherence Tomography in Diabetic Retinopathy .........................................................195
  Tarek S. Hemeida, MD and Amani A. Fawzi, MD

Chapter 23. Vitreomacular Traction Syndrome .........................203
  Andre J. Witkin, MD and Jay S. Duker, MD

Chapter 24. Posterior Uveitis ................................................207
  Nobuyuki Ohguro, MD

Chapter 25. Diagnosis of Angle Closure ..................................213
  Hiroshi Ishikawa, MD

Chapter 26. Diagnosis of Glaucomatous Optic Neuropathy ........219
  Lindsey S. Folio; Gadi Wollstein, MD; Hiroshi Ishikawa, MD; Larry Kagemann, MS BME; and Joel S. Schuman, MD, FACS

Chapter 27. Detection of Glaucomatous Progression Using Spectral-Domain Optical Coherence Tomography ..........................245
  Gianmarco Vizzeri, MD; Linda M. Zangwill, PhD; and Robert N. Weinreb, MD

Chapter 28. Nonglaucomatous Optic Neuropathies ....................253
  Divya Aggarwal, MD; Ou Tan, PhD; and Alfredo A. Sadun, MD, PhD

Financial and Proprietary Disclosures .....................................261
Index ..................................................................................263