

Contents

List of Contributors ix
Preface xiii

Hypo- and Hyperkinetic, Dyscoordinative and Otherwise Inappropriate Motor and Behavioral Movement Disorders 1

Section 1 Basic Introduction

- 1 **Behavior: Basic Principles and Behavioral Movement Disorders** 5
Mark Hallett
- 2 **The Basal Ganglia** 11
Henk Groenewegen
- 3 **The Role of the Cerebellum** 35
Tom J. H. Ruigrok
- 4 **Neuropathological Overview of Neurodegenerative Disorders** 53
Erik Ch. Wolters
- 5 **Genetic Models of Movement Disorders** 74
Jing-Han Ng and Eng-King Tan
- 6 **Mitochondrial Movement Disorders** 85
Hans H Jung and Erik Ch. Wolters
- 7 **Metabolic Movement Disorders** 92
Alessio Di Fonzo and Alessandro Di Maio
- 8 **Autoimmune Movement Disorders** 103
Bettina Balint and Kailash Bhatia
- 9 **Pediatric Movement Disorders** 115
Joanna Blackburn
- 10 **Neuro-Ophthalmology in Movement Disorders** 122
Grace F. Crotty and Bart K. Chwalisz

-
- 11 **Parkinson's Disease** 132
Erik Ch. Wolters

Section 2 Hypokinetic Movement Disorders

- 12 **Autonomic Dysfunction in Parkinson's Disease** 145
Alexandra Boogers, Valentina Leta, Vanessa Raeder, and K. Ray Chaudhuri
- 13 **Neuropsychiatric Manifestations in Parkinson Disease** 155
Daniel Weintraub, Julia Gallagher, and Matthew Stern
- 14 **Sleep–Wake Disorders in Parkinson's Disease** 166
Alex Iranzo and Christian R. Baumann
- 15 **Neuronal Activity in the Basal Ganglia and Thalamus in Patients with Parkinson's Disease** 181
Ping Zhuang, Mark Hallett, Yuqing Zhang, Jianyu Li, Yongsheng Hu, and Yongjie Li
- 16 **Pathology in Parkinson's Disease** 194
Glenda Halliday and Yuhong Fu
- 17 **Diagnosis of Parkinson's Disease: A Critical Reappraisal of UK Brain Bank and MDS Diagnostic Criteria** 202
Christian R. Baumann, Kathrin Brockmann, and Daniela Berg
- 18 **Prodromal Manifestations of Parkinson's Disease** 212
Heinz Reichmann and Wolfgang H. Jost
- 19 **Biomarkers in Parkinson's Disease** 221
Hao Deng, Tianbai Li, Xinyao Liu, Yaping Shao, Zhaofei Yang, Song Li, and Weidong Le

Contents

- | | |
|---|--|
| <p>20 Physical Rehabilitation of Patients with Parkinson's Disease 238
 Erwin E.H. van Wegen, Marc B. Rietberg,
 Tim Vanbellingen, and Mark A. Hirsch</p> <p>21 Regenerative Strategies in Parkinson's Disease 252
 Thomas Stoker and Daniela Noain</p> <p>22 Conventional Pharmacotherapy in Parkinson's Disease 264
 Erik Ch. Wolters</p> <p>23 Continuous Dopaminergic Stimulation in Parkinson's Disease 280
 Angelo Antonini</p> <p>24 Pipeline of Pharmacotherapy in Parkinson's Disease: Upcoming New Molecules in the Treatment of Parkinson's Disease 290
 Florian Brugger and Stefan Hägele-Link</p> <p>25 Non-Invasive Brain Stimulation for the Treatment of Parkinson's Disease 306
 Zhen Ni and Mark Hallett</p> <p>26 Deep Brain Stimulation in Parkinson's Disease 316
 Andres Lozano, Alfonso Fasano, and Lennart H. Stieglitz</p> <p>27 Focused Ultrasound in Parkinson's Disease 328
 Ann-Kristin Helmers, Lennart H. Stieglitz, and Beat Werner</p> <p>28 Dementia with Lewy Bodies 339
 Calum A. Hamilton and Alan J. Thomas</p> <p>29 Genetic Parkinsonisms 347
 Jaroslaw Dulski, Shinsuke Fujioka, and Zbigniew K. Wszolek</p> <p>30 Multiple System Atrophy 368
 Evdokia Efthymiou</p> <p>31 Progressive Supranuclear Palsy 380
 Christian R. Baumann</p> <p>32 Corticobasal Degeneration and Corticobasal Syndrome 390
 Gerard Saranza, Melissa J. Armstrong, and Anthony E. Lang</p> <p>33 Other Tau-Related Parkinsonisms 403
 Marina Buciu and Keith A. Josephs</p> | <p>34 Vascular Parkinsonism 414
 Erik Ch. Wolters</p> <p>35 Illicit Drug-Induced Parkinsonism 423
 Natalia Madetko and Andrzej Friedman</p> <p style="text-align: center;">Section 3 Hyperkinetic Movement Disorders</p> <p>36 Primary Dystonia 431
 Karen Frei and Daniel Truong</p> <p>37 Secondary Dystonia 445
 Vassilena Iankaova and Susanne A. Schneider</p> <p>38 Treatment of Dystonia 462
 Alain Kaelin-Lang</p> <p>39 Primary and Secondary Tremors 476
 Fabian Büchele</p> <p>40 The Pathophysiology of Tremor 499
 Rick Helmich, Michiel F. Dirkx, and Ming-Kai Pan</p> <p>41 Treatment of Tremor 513
 Shweta Prasad and Pramod Kumar Pal</p> <p>42 Myoclonus 523
 Ashley B. Peña</p> <p>43 Chorea 540
 Jan Roth</p> <p>44 Ballism 557
 Daniel Waldvogel</p> <p>45 Gilles de la Tourette Syndrome and Other Tics 559
 Andreas Hartmann</p> <p style="text-align: center;">Section 4 Dyscoordinative and Otherwise Inappropriate Motor Behaviors</p> <p>46 Ataxia 568
 Berry Kremer and Alexander A. Tarnutzer</p> <p>47 Treatable Hereditary Cerebellar Ataxias 592
 Mitesh Chandarana and Asha Kishore</p> <p>48 Gait and Balance Disorders 600
 Fabian Büchele</p> |
|---|--|

- | | |
|---|--|
| <p>49 Episodic/Paroxysmal Movement Disorders 617
Georg Kâgi</p> <p>50 Sleep-Related Movement Disorders and Disturbances of Motor Control 628
Claudio L. Bassetti and Panagiotis Bargiotas</p> <p>51 Drug-Induced Movement Disorders 642
Umer Akbar and Joseph H. Friedman</p> <p>52 Psychiatric Movement Disorders 651
Heide Baumann-Vogel, Wolfram Kawohl, and Erik Ch. Wolters</p> <p>53 Functional Movement Disorders 665
Heide Baumann-Vogel</p> | <p>55 Motor and Functional Scales for Movement Disorders 687
Carmen Rodríguez-Blázquez and Monica M. Kurtis</p> <p>56 Wearables 699
Sujitha Mahendran and Lukas L. Imbach</p> <p>57 Clinical Neurophysiology in Movement Disorders 704
John N. Caviness</p> <p>58 Structural Imaging 716
Kay Engellandt</p> <p>59 Functional Imaging 724
Simon J. Schreiner, Martin W. Hüllner, and David J. Brooks</p> |
|---|--|

Section 5 Objectifying Movement Disorders

- 54 **The Art of Phenotyping** 683
Daniel Waldvogel

Movement Disorders in Vivo: Video Fragments 743
Acronyms and Abbreviations 751
Index 763

Supplementary videos are available at
www.cambridge.org/movement-disorders