

Contents

Part I Clinical and Genetic Considerations of LRRK2 Associated Parkinson's Disease

- 1 Leucine-Rich Repeat Kinase (*LRRK2*) Genetics and Parkinson's Disease** 3
Edoardo Monfrini and Alessio Di Fonzo
- 2 Clinical Features of *LRRK2* Carriers with Parkinson's Disease**..... 31
Meir Kestenbaum and Roy N. Alcalay

Part II Fundamentals of LRRK2 Biology

- 3 LRRK2 Phosphorylation**..... 51
R. Jeremy Nichols
- 4 Understanding the GTPase Activity of LRRK2: Regulation, Function, and Neurotoxicity** 71
An Phu Tran Nguyen and Darren J. Moore
- 5 LRRK2 and Autophagy**..... 89
Claudia Manzoni and Patrick A. Lewis
- 6 Molecular Insights and Functional Implication of LRRK2 Dimerization** 107
Laura Civiero, Isabella Russo, Luigi Bubacco, and Elisa Greggio
- 7 LRRK2 and the Immune System**..... 123
Nicolas L. Dzamko
- 8 Regulation of LRRK2 by Phosphatases**..... 145
Jean-Marc Taymans

**Part III LRRK2 Neurodegeneration, Modeling,
and Therapeutic Options**

9 Models of LRRK2-Associated Parkinson's Disease.....	163
Yulan Xiong, Ted M. Dawson, and Valina L. Dawson	
10 LRRK2 and the "LRRKtosome" at the Crossroads of Programmed Cell Death: Clues from RIP Kinase Relatives	193
Hardy J. Rideout and Diane B. Re	
11 Interaction of LRRK2 and α-Synuclein in Parkinson's Disease	209
João Paulo Lima Daher	
12 Mechanisms of Mutant LRRK2 Neurodegeneration.....	227
Mark R. Cookson	
13 Small-Molecule Inhibitors of LRRK2	241
John M. Hatcher, Hwan Geun Choi, Dario R. Alessi, and Nathanael S. Gray	
Index.....	265

Leucine-Rich Repeat Kinase 2 (LRRK2)

Rideout, H.J. (Ed.)

2017, XVII, 271 p. 27 illus., 17 illus. in color., Hardcover

ISBN: 978-3-319-49967-3