

---

# Contents

<i>Preface</i> .....	<i>v</i>
<i>Contributors</i> .....	<i>ix</i>
1 Contemporary Approaches to Alzheimer's Disease and Frontotemporal Dementia .....	1
<i>Erik D. Roberson</i>	
PART I WORKING WITH AD- AND FTD-RELATED MOLECULES	
2 Preparing Synthetic A $\beta$ in Different Aggregation States. ....	13
<i>W. Blaine Stine, Lisa Jungbauer, Chunjiang Yu, and Mary Jo LaDu</i>	
3 Isolation of Low-n Amyloid $\beta$ -Protein Oligomers from Cultured Cells, CSF, and Brain. ....	33
<i>Ganesh M. Shankar, Alfred T. Welzel, Jessica M. McDonald, Dennis J. Selkoe, and Dominic M. Walsh</i>	
4 Detecting A $\beta$ *56 Oligomers in Brain Tissues .....	45
<i>Mathew A. Sherman and Sylvain E. Lesné</i>	
5 Assessing A $\beta$ Aggregation State by Atomic Force Microscopy .....	57
<i>Justin Legleiter</i>	
6 Measuring APP Carboxy-Terminal Fragments. ....	71
<i>Luke A. Esposito</i>	
7 Detection of APP Intracellular Domain in Brain Tissue .....	85
<i>Sanjay W. Pimplikar and Anupama Suryanarayana</i>	
8 Cell-Based Assays for Regulators of Tau Biology .....	93
<i>Umesh K. Jinwal and Chad A. Dickey</i>	
9 Split GFP Complementation Assay for Quantitative Measurement of Tau Aggregation In Situ .....	109
<i>Wanjoo Chun, Geoffrey S. Waldo, and Gail V.W. Johnson</i>	
10 Apolipoprotein E Expression and Purification .....	125
<i>Yvonne Newhouse and Karl H. Weisgraber</i>	
PART II MODEL SYSTEMS AND OUTCOME MEASURES	
11 A $\beta$ Toxicity in Primary Cultured Neurons. ....	141
<i>Adriana Ferreira, Roxana C. Sinjoanu, Alexandra Nicholson, and Sara Kleinschmidt</i>	
12 Manipulation of Gene Expression in the Central Nervous System with Lentiviral Vectors .....	155
<i>Binggui Sun and Li Gan</i>	

13	Selecting a Mouse Model of Alzheimer's Disease . . . . .	169
	<i>Jeannie Chin</i>	
14	Monitoring Spatial Learning and Memory in Alzheimer's Disease Mouse Models Using the Morris Water Maze . . . . .	191
	<i>Kimberly Searce-Levie</i>	
15	Step-by-Step In Situ Hybridization Method for Localizing Gene Expression Changes in the Brain . . . . .	207
	<i>Jorge J. Palop, Erik D. Roberson, and Inma Cobos</i>	
16	Real-Time Visualization of Axonal Transport in Neurons . . . . .	231
	<i>Yasuko Osakada and Bianxiao Cui</i>	
17	Quantifying Biomarkers of Cognitive Dysfunction and Neuronal Network Hyperexcitability in Mouse Models of Alzheimer's Disease: Depletion of Calcium-Dependent Proteins and Inhibitory Hippocampal Remodeling . . . . .	245
	<i>Jorge J. Palop, Lennart Mucke, and Erik D. Roberson</i>	
18	Epigenetic Changes in the Brain: Measuring Global Histone Modifications. . . . .	263
	<i>Gavin Rumbaugh and Courtney A. Miller</i>	
	<i>Index</i> . . . . .	275

Alzheimer's Disease and Frontotemporal Dementia

Methods and Protocols

Roberson, E.D. (Ed.)

2011, X, 270 p., Hardcover

ISBN: 978-1-60761-743-3

A product of Humana Press