THE NEUROBIOLOGY OF AUTISM

SECOND EDITION

EDITED BY

Margaret L. Bauman, M.D.

Associate Clinical Professor, Department of Neurology, Harvard Medical School, and Departments of Pediatrics and Neurology, Massachusetts General Hospital; Adjunct Associate Clinical Professor, Department of Pathology and Laboratory Medicine, Boston University School of Medicine, Boston, Massachusetts

AND

Thomas L. Kemper, M.D.

Professor, Departments of Neurology, Anatomy and Neurobiology, and Pathology,

Boston University School of Medicine, Boston, Massachusetts

CONTENTS

List of Contributors			
Preface	xiii		

I CLINICAL OBSERVATIONS

- 1 The Epidemiology of Pervasive Developmental Disorders 3

 Eric Fombonne
- Size of the Head and Brain in Autism:Clue to Underlying Biologic Mechanisms? 23Karin B. Nelson and Philip G. Nelson
- **3** The Autistic Mind 34 Susan E. Bryson
- 4 Language and Communication Disorders in Autism Spectrum Disorders 45 Helen Tager-Flusberg
- Memory and Executive Functions in Autism 59

 Ronald J. Killiany, Tara L. Moore, Lucio Rehbein, and Mark B. Moss
- 6 The Vagus: A Mediator of Behavioral and Physiologic Features Associated with Autism 65 Stephen W. Porges
- **7** Approaches to Psychopharmacology 79 *Ronald J. Steingard, Daniel F. Connor*, and *TrangAu*
- **8** Gastrointestinal Issues Encountered in Autism 103 *Timothy M. Buie*

II NEUROANATOMIC INVESTIGATIONS

- 9 Structural Brain Anatomy in Autism: What Is the Evidence? 121 Margaret L. Bauman and Thomas L. Kemper
- 10 The Brainstem in Autism 136

 Patricia M. Rodier and Tara L Arndt
- 11 Myelin and Autism 150 Omanand Koul
- 12 Positron Emission Tomography Studies of Autism 164 Diane C. Chugani
- 13 The Orbitofrontal-Amygdala System in Nonhuman Primates: Function, Development, and Early Insult 177 Jocelyne Bachevalier
- 14 An Animal Model of Virus-Induced Autism: Borna Disease Virus Infection of the Neonatal Rat 190 Mikhail V. Pletnikov and Kathryn M. Carbone

III GENETIC INITIATIVES

- 15 Gene Expression in Autism 207 Jonathan Pevsner
- 16 Candidate Susceptibility Genes for Autism 217
 Irina N. Bespalova, Jennifer Reichert, and Joseph D. Buxbaum
- 17 Chromosome 15 and Autism 233 Edwin H. Cook, Jr.
- 18 Chromosome 7 242

 Beth Rosen-Sheidley and Susan E. Folstein
- 19 Fragile X Syndrome 251 Randi Jenssen Hagerman
- 20 Autism and Tuberous Sclerosis Complex 265 Susan L. Smalley and Elizabeth Petri Henske
- 21 The Roles of Dopamine and Norepinephrine in Autism: From Behavior and Pharmacotherapy to Genetics 276

 Jeanette J. A. Holden and Xudong Liu

IV	NEU	JROBIOL	OGIC.	RESEARCH
----	-----	---------	-------	----------

- 22 Serotonin in Autism 303 George M. Anderson
- 23 The GABAergic System in Autism 319 GeneJ.Blatt
- 24 The Cholinergic System in Autism 331 Elaine Perry and Mandy Lee
- 25 The Role of Reelin in Autism 349 5. Hossein Fatemi
- Brain-Derived Neurotrophic Factor and Dopamine in Autism 362GaryL. Wenk
- 27 The Immune System 371

 Andrew W. Zimmerman

Epilogue 387
Thomas L Kemper and Margaret L. Bauman

Index 393