Contents

Preface ........................................................................................................................ vii
Contributors .................................................................................................................. xv

I. INTRODUCTION: PHYSIOLOGY AND PHARMACOLOGY OF GLUTAMATE

Philip H. Sheridan, Forrest F. Weight, and Barbara H. Herman
Section Editors

1 Molecular Pharmacology and Physiology of Glutamate Receptors ................................................. 3
   Karin Borges and Raymond Dingledine

2 Pharmacology of Glutamate Receptors ................................................................. 23
   Jeffrey M. Witkin, Rafal Kaminski, and Michael A. Rogawski

3 Glutamate and Neurotoxicity ................................................................................ 51
   B. Joy Snider and Dennis W. Choi

4 Maturational Regulation of Glutamate Receptors and Their Role in Neuroplasticity ........................... 63
   Russell M. Sanchez and Frances E. Jensen

5 Role of the NMDA Receptor in Neuronal Apoptosis and HIV-Associated Dementia ......................... 71
   Marcus Kaul and Stuart A. Lipton

II. GLUTAMATE: STIMULANT DRUGS OF ABUSE (COCAINE, AMPHETAMINE, METHAMPHETAMINE)

Jerry Frankenheim and Barbara H. Herman, Section Editors

6 Role of Glutamate and Nitric Oxide in the Acquisition and Expression of Cocaine-Induced Conditioned Increases in Locomotor Activity ................................................. 83
   Agu Pert, Robert M. Post, and Susan R. B. Weiss

7 Interactions of Dopamine, Glutamate, and GABA Systems in Mediating Amphetamine- and Cocaine-Induced Stereotypy and Behavioral Sensitization ................................. 107
   Ralph Karler, David K. Thai, and Larry D. Calder

8 Addiction and Glutamate-Dependent Plasticity ........................................................................... 127
   Marina E. Wolf

9 Glutamate and Dopamine Interactions in the Motive Circuit: Implications for Craving ...................... 143
   David A. Baker, Jennifer L. Cornish, and Peter W. Kalivas

10 Glutamate Cascade from Metabotropic Glutamate Receptors to Gene Expression in Striatal Neurons: Implications for Psychostimulant Dependence and Medication ................. 157
    John Q. Wang, Limin Mao, and Yuen-Sum Lau
11 Glutamate Neurotransmission in the Course of Cocaine Addiction ............................................................... 171

Luigi Pulvirenti

12 Glutamate and the Self-Administration of Psychomotor-Stimulant Drugs ................................................. 183

Paul Vezina and Nobuyoshi Suto

13 Roles of Glutamate, Nitric Oxide, Oxidative Stress, and Apoptosis in the Neurotoxicity of Methamphetamine .......... 201

Jean Lud Cadet

14 Methamphetamine Toxicity: Roles for Glutamate, Oxidative Processes, and Metabolic Stress ............................... 211

Kristan B. Burrows and Bryan K. Yamamoto

15 Nitric Oxide-Dependent Processes in the Action of Psychostimulants ............................................................ 229

Yossef Itzhak, Julio L. Martin, and Syed F. Ali

16 Effects of Novel NMDA/Glycine-Site Antagonists on the Blockade of Cocaine-Induced Behavioral Toxicity in Mice .................................................................................................................. 243

Rae R. Matsumoto and Buddy Pouw

17 Clinical Studies Using NMDA Receptor Antagonists in Cocaine and Opioid Dependence ..................................... 261

Adam Bisaga and Marian W. Fischman

18 The Role of mGluR5 in the Effects of Cocaine: Implications for Medication Development ........................................ 271

Mark P. Epping-Jordan

III. GLUTAMATE AND OPIATE DRUGS (HEROIN) OF ABUSE

Barbara H. Herman and Jerry Frankenheim, Section Editors

19 Role of the Glutamatergic System in Opioid Tolerance and Dependence: Effects of NMDA Receptor Antagonists ...... 281

Jianren Mao

20 The Role of NMDA Receptors in Opiate Tolerance, Sensitization, and Physical Dependence: A Review of the Research, A Cellular Model, and Implications for the Treatment of Pain and Addiction .......................................................... 295

Keith A. Trujillo

21 Modification of Conditioned Reward by N-Methyl-d-aspartate Receptor Antagonists ..................................... 323

Piotr Popik

22 Morphine Withdrawal as a State of Glutamate Hyperactivity: The Effects of Glutamate Receptor Subtype Ligands on Morphine Withdrawal Symptoms .................................................... 329

Kurt Rasmussen
IV. GLUTAMATE AND ALCOHOL ABUSE AND ALCOHOLISM

Forrest F. Weight and Raye Z. Litten, Section Editors

23 Alcohol Actions on Glutamate Receptors ........................................ 343
   Robert W. Peoples

24 Glutamate and Alcohol-Induced Neurotoxicity .......................... 357
   Fulton T. Crews, Joseph G. Rudolph,
   and L. Judson Chandler

25 Role of Glutamate in Alcohol Withdrawal Kindling .................. 375
   Howard C. Becker and Nicole Redmond

26 Alcohol and Glutamate Neurotransmission in Humans:
   Implications for Reward, Dependence, and Treatment ............ 389
   John H. Krystal, Ismene L. Petrakis, D. Cyril D'Souza,
   Graeme Mason, and Louis Trevisan

27 Mechanism of Action of Acamprosate Focusing
   on the Glutamatergic System ............................................. 399
   W. Zieglgänsberger, G. Rammes, R. Spanagel, W. Danysz,
   and Ch. Parsons

28 The NMDA/Nitric Oxide Synthase Cascade in Opioid
   Analgesia and Tolerance .................................................. 409
   Gavril W. Pasternak and Yuri Kolesnikov

29 Overview of Clinical Studies for Acamprosate ...................... 417
   Adriaan S. Potgieter

Index .......................................................................................................................... 427
Glutamate and Addiction
Herman, B.H. (Ed.)
2002, XVIII, 440 p., Hardcover
ISBN: 978-0-89603-879-0
A product of Humana Press