

Preface

Assembling *Glutamate and Addiction* was a two-and-a-half year labor of love. As editors, we all had the same goal in mind and pursued this with a fierce dedication. We felt that it was now time for a volume clarifying for the first time the relationship between glutamatergic systems and addiction. The past decade has seen a steady and escalating progression of scientific advances that have implicated a pivotal role of glutamatergic systems in cocaine, opiate, and alcohol dependence—both the etiology of these disorders and their treatment. As editors, we met as a group several times a year to discuss the progress and the ever emerging direction of the book. As senior editor, I am personally indebted to the superb job of the coeditors attracting the very best scientists in this field to contribute their important papers to this book.

To Philip H. Sheridan, MD of the Food and Drug Administration (FDA), for his marvelous ability to attract internationally known scientists to contribute to the first section of the book on the basic physiology and pharmacology of glutamate. The five stellar chapters in this section include ones by Borges and Dingledine; Witkin, Kaminski and Rogawski; Choi and Snider; Sanchez and Jensen; and Kaul and Lipton. A special thank you to Michael A. Rogawski, MD, PhD, Epilepsy Research Section, NINDS, NIH for being an early and avid supporter of this effort and bringing to our attention valuable contributors to this book. It is our hope that these five introductory chapters will provide a level playing field for all readers of this book to upgrade their basic understanding of glutamate before proceeding to the other research chapters focused on the relationship between glutamate and various addictive disorders.

To Jerry Frankenheim, PhD of the National Institute on Drug Abuse, the National Institutes of Health (NIH) for his wonderful role, as senior editor of Section II, in illustrating the role of glutamatergic systems in stimulant drugs of abuse including cocaine, amphetamine, and methamphetamine. Dr. Frankenheim displayed considerable care in editing this section. In addition, I am personally indebted to Dr. Frankenheim for his seamless job in serving as Acting Senior Editor of this volume for a two-month period when I was unavailable for this task. Section II is a truly remarkable part of the book in its thoroughness in covering virtually every aspect of the role of glutamate in stimulant drugs of abuse, with outstanding chapters by Pert, Post, and Weiss; Karler, Thai, and Calder; Wolf; Baker, Cornish, and Kalivas; Wang, Mao, and Lau; Pulvirenti; Vezina and Suto; Cadet; Burrows and Yamamoto; Itzhak, Martin, and Ali; Matsumoto and Pouw; Bisaga and Fischman; and Epping-Jordan. As we state in our dedication of this book, this effort also coincided with the tragic death of one of our beloved colleagues in the addiction field, Marian Fischman, PhD of Columbia University School of Medicine. Dr. Fischman was a vibrant human being, and one of the most vital forces in the research field of addiction medicine. A personal thank you to Adam Bisaga, MD who took over the task of writing and editing this chapter with Dr. Fischman in an extremely gracious and responsible fashion in the face of tragic circumstances.

We are extremely grateful to the authors who contributed to the valued third section of the book on glutamate and opiate drugs of abuse including heroin. The world-renown scientists in this section included Mao; Trujillo; Popik; and Rasmussen. An overview of this important topic is provided by Jianren Mao, MD, PhD of Harvard University School

of Medicine. It is of interest to note that the researchers in this section were some of the first to provide evidence of a relationship between glutamate and various aspects of the addiction process.

In the final section, the relationship between glutamate and alcohol abuse and alcoholism is explored. Our superb editors of Section IV are Forrest F. Weight, MD and Raye Litten, PhD, both of the National Institute of Alcohol Abuse and Alcoholism (NIAAA). Personally, I am particularly grateful for the continuous role provided by Dr. Litten, who managed to come to virtually every editorial meeting across building lines and to quickly get his section collated into a deliverable form to our publisher, Humana Press.

I would like to thank Craig Adams and Elyse O'Grady of Humana Press for their superb editorial and publishing skills and their tireless efforts in cheering this effort on to its completion. Craig and Elyse supported this effort from the beginning and until its completion, with a compassion and expertise that I will forever admire.

Finally, I would like to thank my institute, the National Institute on Drug Abuse, NIH, for being supremely generous in allowing me the time to pursue this effort for the last two and a half years. Particular thanks goes to Alan Leshner, Ph.D., former Director, NIDA, Glen R. Hanson, PhD, DDS, current and Acting Director, NIAA, Frank Vocci, PhD, Director, Division of Treatment Research and Development (DTR&D), NIDA and Ahmed Elkashef, MD, Chief, Clinical Medical Branch (CMB), DTR&D, NIDA for permitting this effort to occur. We also thank the institute directors of NIAAA, Enoch Gordis, MD (former director) and the present top official of the FDA Bernard A. Schwertz, DVM, PhD, Acting Principal Deputy Commissioner and the past commissioner of the FDA, Jane E. Henney, MD for enabling the participation of individuals from their respective institutions.

I am personally touched by the numerous cards, letters and flowers that I received from family, friends, professional colleagues, and folks from Humana while in the hospital.

Our interest in glutamatergic systems and drug abuse disorders stems back to at least 1991, when the first preclinical evidence was presented for a role of this system in the development of opiate tolerance and withdrawal (cf. 1, 2). Indeed, a few years earlier, research in the late 1980s suggested a role of glutamate in stimulant drug addiction (3). From there, we as a group launched several efforts to try to synthesize the knowledge base that was quickly accumulating in this exciting area. Thanks to the efforts of the National Institutes of Health (NIH) and the Food and Drug Administration (FDA), approaches to understanding the biological and behavioral basis of drug addiction and developing new modalities for the treatment of drug addiction are now attaining some level of consistency across the world. A highlight in this trend for unification in theory and practice, is illustrated by the conceptual writings of Alan I. Leshner, PhD former Director, National Institute on Drug Abuse, who has tirelessly pioneered to increase the research and scientific basis for understanding drug addiction as a disorder of the brain (e.g., 4, 5). A similar emphasis on drug abuse as a brain disorder is noted in the very basic preclinical research of Stephen E. Hyman, MD, former Director, National Institute on Mental Health (e.g., 6, 7). Similarly, in a monthly letter developed by the National Institute on Alcohol Abuse and Treatment (NIAAA), Enoch Gordis, MD, former Director, NIAAA has describe numerous scientific advances detailing the role of various biochemical systems in alcohol dependence and the role of medication treatment in alcohol dependence (cf., 8, 9). An esteemed partner in this endeavor is Jane Henney, MD, former Commissioner, FDA whose institute is responsible for making certain that the medications that are developed for this indication are both efficacious and safe. We very

much value the superb contributions of the authors in Section IV on glutamate and alcohol, who include Peoples; Crew, Rudolph, and Chandler; Becker and Redmond; Krystal, Petrakis, D'Souza, Mason, and Trevisan; Zieglgänsberger, Rammes, Spanagel, Danysz, and Parsons; Pasternak and Kolesnikov; and Potgieter. We all work together with these institutes and with the creative and brilliant scientists who undertake both the preclinical and clinical research to develop a rigorous science of drug addiction. It is our hope that this research will result in innovative treatments for drug abuse and addiction, and for understanding the basis of these disorders in the central nervous system.

The job of characterizing the role of glutamatergic systems in addiction disorders is now off to a solid beginning. With the recent advance and approval of glutamatergic antagonists for the indication of alcohol abuse and addiction in a variety of European countries, we have already started to witness some clinical payoff for the superbly innovative and thorough research of both preclinical and clinical sciences. We hope that this effort will launch a new decade starting in the year 2001, that will see yet even further advances in the glutamatergic field, both in the etiology and treatment of addiction disorders.

Barbara H. Herman, PhD

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