



GABA and Glutamate – New Developments in Neurotransmission Research

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The book “GABA And Glutamate - New Developments In Neurotransmission Research”, edited by Dr. Janko Samardzic, collates the significant contributions of a selected number of neuroscientists that are experienced in the molecular, preclinical, and clinical aspects of neurotransmission research. The seven chapters in this book address the latest research/review data related to GABA/glutamate system’s organization and function, the structure of receptors, subtypes and their ligands, as well as the translational approach and clinical implications.

The introductory chapter “GABA/glutamate balance: a key for normal brain functioning” describes the basic function and relevance of GABA/glutamate balance in normal brain, focusing on the role of their receptors. The second chapter, titled “Early life experience: maternal separation, involvement of GABA and glutamate transporters”, summarizes scientific data and opinion regarding maternal separation as a model of early life experience of postnatal stress, with focus on the involvement of GABA and glutamate transporters. The third chapter, “Notch signaling in the astro-

glial phenotype: relevance to glutamatergic transmission”, addresses issues related to the role of notch signaling in radial glia, with emphasis on glial glutamate transporter regulation as a key element in the molecular mechanisms that support glutamatergic neurotransmission. “Pharmacological studies with specific agonist and antagonist of animal iGluR on root growth in Arabidopsis thaliana” presents original data from a pharmacology-based functional study of ionotropic glutamate receptors (iGluRs) in plants, suggesting a correlation between the putative iGluR-like channel function and the modification of root growth and development in the Arabidopsis roots. This is followed by a very up-to-date review titled “GABA and glutamate: their transmitter role in the CNS and pancreatic islets”, in which the authors address not only the role of both neurotransmitters during development, but also extra-neuronal glutamatergic and GABAergic signaling in pancreatic islets of Langerhans, and possible associations with type 1 diabetes mellitus. Further clinical implications are discussed in the sixth chapter titled “Antagonists of ionotropic receptors for the inhibitory neurotransmitter

GABA: therapeutic indications”. The authors examine the antagonism of ionotropic GABA receptors, reflecting on the use of GABA receptor antagonists in the last 10 years and their possible therapeutic potential. Finally, the chapter “Clinical applications of MR spectroscopy (MRS) in neurosciences” delivers a detailed description of the methodology and relevance of MRS as an important diagnostic and research tool in clinical neuroscience.

The key to most complex brain processes lies indeed in the adequate balance between inhibitory and excitatory actions of amino acid neurotransmitters. Furthermore, increases and decreases in their activity are associated with a number of neurological and psychiatric diseases. Therefore, this up-to-date book offers readers a valuable collection of data regarding current and future applications of GABA and glutamate neurotransmission, including promising research strategies and potential clinical benefits.

In addition to the print edition, the book is also freely available online:

<https://www.intechopen.com/books/gaba-and-glutamate-new-developments-in-neurotransmission-research>

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