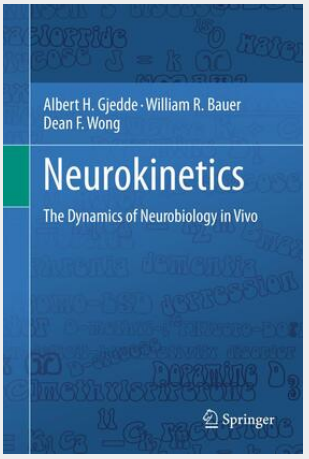
Gjedde / Wong / Bauer

Neurokinetics

The Dynamics of Neurobiology in Vivo



This book summarizes 20 years of work on the kinetics of blood-brain transfer and metabolism mechanisms in mammalian brain. The substances affiliated with these mechanisms include glucose, amino acids, monocarboxylic acids, and oxygen. These substances are important to energy metabolism and neurotransmission in the mammalian brain at rest and during activation. To understand the processes addressed by these mechanisms, the book examines the kinetics of compartmentation and compartmental analysis, particularly as they relate to transporter, enzyme, and receptor function. Compartments are subsets of substances separated by transporters and receptors in membranes, and enzymes in cells. This book is divided in six major chapters covering compartmental analysis, kinetic analysis of transport and metabolism, blood-brain transfer and metabolism of glucose, amino acids, and oxygen, and amino acid metabolism and interaction of amino acid metabolites with receptors.

Neurokinetics: The Dynamics of Neurobiology in Vivo summarizes 20 years of work on the kinetics of blood-brain transfer and metabolism mechanisms in mammalian brain. The substances affiliated with these mechanisms include glucose, amino acids, monocarboxylic acids, and oxygen. These substances are important to energy metabolism and neurotransmission in the mammalian brain at rest and during activation. Neurokinetics: The Dynamics of Neurobiology in Vivo is divided in eight major chapters covering compartmental analysis, kinetic analysis of transport and metabolism, blood-brain transfer and metabolism of glucose, amino acids and oxygen, and amino acid metabolism and interaction of amino acid metabolites with receptors. This book is suitable for neuroscientists, physiologists, physicists, and medical scientists involved in the study of dynamic brain functions by means of brain imaging techniques (PET and fMRI) involved in the study of blood flow, blood-brain transfer, and metabolism. About the Authors: Dr. Albert Gjedde is Professor and Chairman at the Department of Neuroscience and Pharmacology at the University of Copenhagen. He previously served as director of neuroimaging laboratories in Aarhus, Denmark, and Montreal, Canada. In Denmark, Albert Gjedde founded three brain research centers; the PET-center of Aarhus University Hospitals, the Center of Functionally Integrative Neuroscience of Aarhus University, and the Danish Neuroscience Center of Aarhus University. Dr. Gjedde holds adjunct professorships at McGill University, Aarhus University, and Johns Hopkins University. His research interest is the dynamics of neurotransmission and brain energy metabolism. Dr. William R. Bauer is a mathematician and analyst. His expertise is in applied mathematics and related disciplines. He is a consultant to the Department of Radiology at Johns Hopkins University, specializing in algorithm development and techniques for estimating physiological parameters from PET data. Dr. Dean F. Wong is Professor of Radiology, Psychiatry, Neuroscience and Environmental Health Sciences, Vice-Chair of Radiology Administration and Training at Johns Hopkins University, and Director of the Section of High Resolution Brain PET (HRRT) Imaging within Nuclear Medicine/Radiology. His research involves the design, development, quantification, and application of radiopharmaceuticals imaged by positron emission tomography (PET) and single photon emission computed tomography (SPECT) for the study of in vivo brain chemistry dedicated to the study of neuropsychiatric disorders and their treatment using psychopharmacology.

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