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Altri autori (Persone)	ShulmanR. G (Robert Gerson) RothmanD. L (Douglas L.)
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Nota di contenuto	Brain Energetics and Neuronal Activity; Contents; Contributors; Foreword; Section A: Background; 1 Introduction; 2 Energy Metabolism in Neural Tissues in vivo at Rest and in Functionally Altered States; 3 Techniques-MRS, fMRI, (13)C NMR, Indirect Detection of (13)C; 4 Metabolic Modeling Analysis of Brain Metabolism; Section B: Neuroenergetics and Activity; 5 Cerebral Energetics and Neurotransmitter Fluxes; 6 NMR Studies of the Metabolism and Energetics of GABA Neurotransmitter Pathways; 7 Neural Energy Consumption and the Representation of Mental Events 8 Imaging Cerebral Metabolic Rate of Oxygen Consumption (CMRO(2)) using (17)O NMR Approach at Ultrahigh Field9 Deriving Changes in CMR(O2) from Calibrated fMRI; 10 Relationship between CMR(O2) and Neuronal Activity; Section C: Clinical Beginnings; 11 NMR Studies of Bioenergetic Impairment in Human Epilepsy; 12 MRS Studies of the Role of Altered Glutamate and GABA Neurotransmitter Metabolism in the

Pathophysiology of Epilepsy; 13 The Role of Altered Energetics of Neurotransmitter Systems in Psychiatric Disease; Section D: Brain and Mind

14 Long-term Memory: Do Incremental Signals Reflect Engagement of Cognitive Processes? 15 Using fMRI to Study the Mind and Brain; 16 Brain and Mind: an NMR Perspective; 17 The Role of the NMR Baseline Signal in the Study of Consciousness: the Restless Brain; Index

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Sommario/riassunto

This book is unique in linking in vivo  $^{13}\text{C}$  NMR measurements of neuronal activity and energetics with applications to functional imaging and certain disease states. It provides a fundamental neurochemical explanation of brain activity applicable to functional imaging, theories of neuronal activity and disease states, e.g. epilepsy, psychiatric diseases and developmental disorders. Novel and potentially controversial. Will inspire future research directions.

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