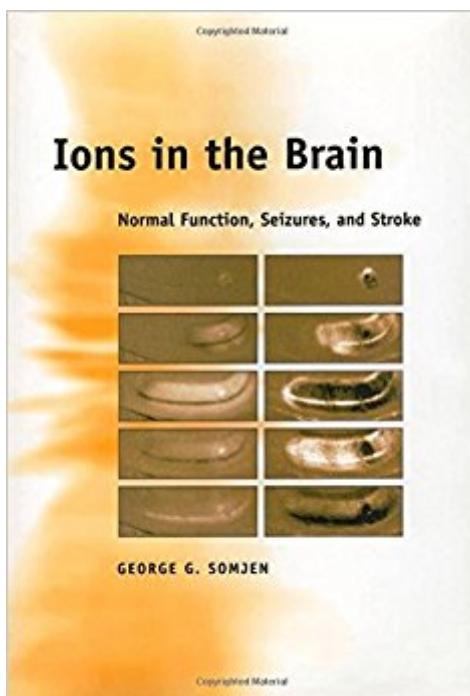


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Ions In The Brain: Normal Function, Seizures, And Stroke



Synopsis

Ions, their transport across membranes, and their flow through specialized ion channels are central to the understanding of brain function, normal and pathological. The first part of this book deals with the regulation of ions in brain extra- and intracellular fluids. Regulation is effected by the blood-brain barrier, and by membrane ion pumps and other transport mechanisms of neurons and glial cells. Normally adjusted for optimal neural function, ion levels can change and alter the excitability of neurons and influence synaptic transmission in healthy and diseased brains. After an introduction to the electrophysiology of epilepsy, and a description of experimental seizure "models," the second part discusses the roles of the faulty regulation of ions and of the diseases of ion channels in generating epileptic seizures. The mechanisms of action of various anticonvulsant drugs are also considered. The third part is devoted to the phenomenon of spreading depression and its likely role in human diseases. The final chapters of the book deal with the role of ions in the devastation caused by lack of oxygen and by insufficient blood flow to brain tissue, and the reasons for the exceptional vulnerability of certain classes of central neurons in hypoxia and stroke. The book will be of interest to neuroscientists, neurobiologists, neurophysiologists, neurologists, neurosurgeons, and to their students and trainees.

Book Information

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Customer Reviews

... a major contribution to our current knowledge of ions physiological and pathological states of the brain...well written, with many informative subheadings, graphs and figures. It will be of interest

to neuroscientists, neurobiologists, clinicians, and their trainees..."--European Journal of Neurology"Dr. Somjen has succeeded in producing a text that spans the divide between laboratory neurophysiology and clinical experience . . . Well written and readable . . . an excellent resource."--Archives of Neurology"An excellent overview of the different types of interactions involving ions in the brain . . . highly recommended to the researcher or clinician . . ." --Clinical Neurophysiology". . . an excellent book which is a must read for all interested in the fields covered. While not claiming to tell us how the brain works, Somjen sticks with the facts and describes in exquisite detail what happens when the brain malfunctions . . . A worthy testament to an exemplary scientific career."--Angus Brown in Physiology News"This book quite extensively covers the biophysical mechanisms underlying the regulation of ion concentrations, the various ionic fluxes, and their impact on various physiological mechanisms and pathological conditions."--Clinical Neurophysiology"The present book, written by a well-known Professor Emeritus of Physiology, a cell biologist and neurobiologist from the Duke University Medical Center, is a major contribution to our current knowledge of ions in physiological and pathological states of the brain."--European Journal of Neurology"The book is well-written, with many informative sub-headings, graphs, and figures. It will be of interest to neuroscientists, neurobiologists, neurophysiologists, clinicians, and their trainees who are engaged in brain ions, their transport, regulation and function in healthy and disease conditions."--European Journal of Neurology"Understanding pathological situations such as seizures, edema, hypoxia, ischemia, and even channelopathies, does require a detailed understanding of the underlying ionic process. So this book should be highly recommended to the researcher or clinician who wants to master the details of the basic physiological mechanisms underlying these pathologies."--Clinical Neurophysiology"As the book is the work of a sole author it has a pleasing consistency of style that is lacking in the usual edited chapter format."--Angus Brown"This is an excellent book, which is a must read for all interested in the fields covered. Somjen sticks with the facts and describes in exquisite detail what happens when the brain malfunctions, which is surely how successful strategies for combating devastating neurological conditions will ultimately be devised. A worthy testament to an exemplary scientific career."--Angus Brown"ions in the Brain offers an excellent resource for those interested in a detailed review of the electrophysiology of commonly encountered clinical phenomena."--Arch Neurol"...Stylishly speaking I read your book as if they were thrillers- I [couldn't] let them out of the hand before the end, and then I'm sorry it's over...I rarely witnessed so much fairplay with respect to others work and so much modesty towards its own. This comes accompanied by an encyclopedic culture of the literature that makes your writings true handbooks and even more so for uncultivated people like me who think

that neuroscience started when they opened their eyes. I like very much the balance between opinions, known to create controversy nowadays, but this is far from emerging from your writing. And finally, your book made me happy because I had the feelings of learning without effort." --Prof. Dr. Florin Amzica, Centre de recherche Robert-Giffard, Quebec

George C. Somjen is at Duke University Medical Center.

An excellent book which describes in detail the ions movements across membranes in brain, and what happens when it has pathological situations such as seizures and hypoxia.

I've been doing some shamefully overdue reading lately and the reason of this review is to let others know about the delight I experienced in reading George Somjen's book on ions. I have no reserve in saying that the author is, at least for me, the most accomplished writer of the neuroscientific community. And this is why: stylishly speaking I read this book as if it was a thriller, I couldn't let it out of the hand before the end, and then I was sorry that it was over. Secondly, I rarely witnessed so much fairplay with respect to others' work and so much modesty towards its own. This comes accompanied by an encyclopedic culture of the literature that makes Somjen's writings true handbooks and even more so for poorly cultivated young scientists who think that neuroscience started when they opened their eyes. I like very much the balance between concepts known to create controversy nowadays, but this is far from emerging from Somjen's writing. And finally this book made me happy because I had the feeling of learning without effort.

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