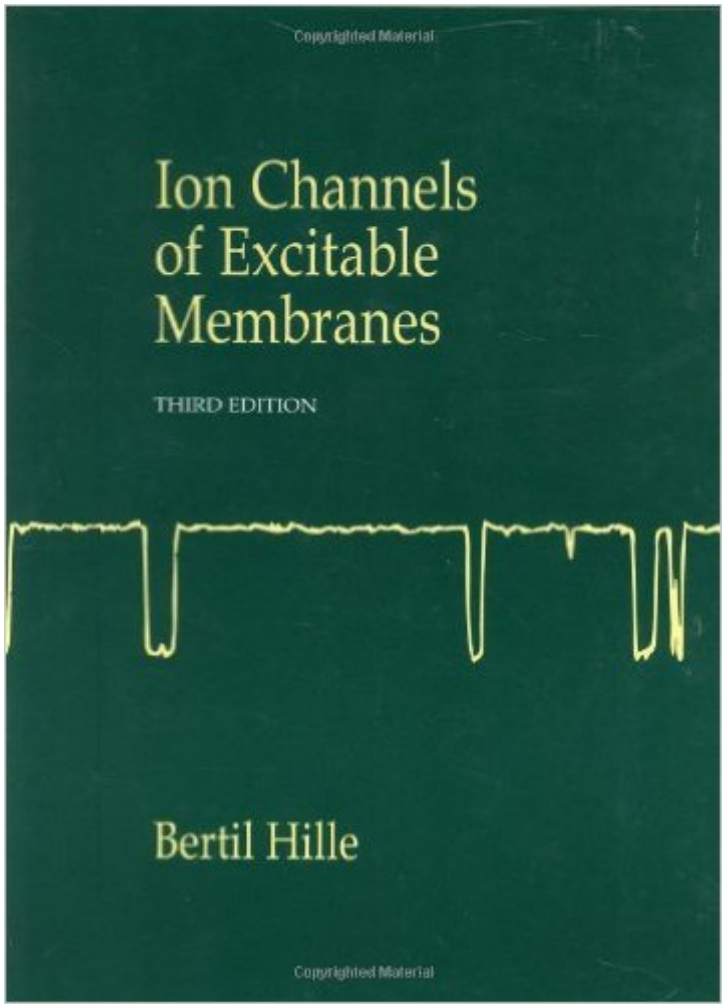
Ion Channels Of Excitable Membranes, Third Edition



Synopsis

Ion channels underlie a broad range of the most basic biological processes, from excitation and signaling to secretion and absorption. Like enzymes, they are diverse and ubiquitous macromolecular catalysts with high substrate specificity and subject to strong regulation. This fully revised and expanded Third Edition of Ion Channels of Excitable Membranes describes the known channels and their physiological functions, then develops the conceptual background needed to understand their architecture and molecular mechanisms of operation. It includes new chapters on calcium signaling, structural biology, and molecular biology and genomics. Ion Channels of Excitable Membranes begins with the classical biophysical work of Hodgkin and Huxley, continues with the roles of channels in cellular signaling, then develops the physical and molecular principles needed for explaining permeation, gating, pharmacological modification, and molecular diversity, and ends with a discussion of channel evolution. Ion Channels of Excitable Membranes is written to be accessible and interesting to life scientists and physical scientists of all kinds. It introduces all the concepts that a graduate student should be aware of but is also effective in advanced undergraduate courses. It has long been the recognized authoritative overview of this field used by all neuroscientists.

Book Information

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Customer Reviews

This book is a must-have for anyone working with excitable cells, be they experimentalists or modelers. It’s a great reference book; everything is clearly indexed and almost compulsively cited.

I’ve been using this book since its first edition, and it just keeps getting better each time.

Some books have opening sentences that grab you in an instant. "Call me Ishmael." "It was the best of times, it was the worst of times." And now, Hille joins the list of authors to reach out and grab us, with the awe-inspiring "Ion channels are macromolecular pores in cell membranes."Even after my fifth reading, that line still gives me the shivers.But it takes more than a brilliant opening to make a great book, and Hille delivers. From a distinctly jaunty derivation of the Nernst equation to the page-turning thrills of non-stationary fluctuation analysis, the book is hard to put down. It does bog down a little in Chapter 10, "Elementary Properties of Ions in Solution"--after all, is there anyone who isn’t already aware of the fundamentals of electrodiffusion? But this is really a minor trifle in an otherwise masterful work.It’s just a matter of time before Oprah gives this book a nod; buy it now and avoid the rush!

This is an authoritative textbook on ion channels that is often quoted in numerous textbooks in neurophysiology. Hille himself has contributed a lot in this field. The Hogkin-Huxley model is the de facto standard model in neurophysiology but certain things about neurons cannot be explained only with voltage-controlled sodium and potassium channels. With the patch-clamp technique, we have found a way to explore other interesting channles. To remind you, there are a world of ion channels! Hille’s textbook show there are indeed a variety of channels most of which are poorly understood. As a reviewer below has commented, it also gives a unique insight into the history of neural membrane research. Concepts are explained with clearity. Details measurement techniques.

com’mon man. its hille! Absolute necessity for any serious neurophysiologist. Although most people use this as a reference, I read cover to cover. Very readable for someone who has had intro to neuroscience and some Bio background.

If you’re thinking of learning about electrophysiology (not cardiac), this is THE resource. It discusses most of the known ion fluctuations and gives a great deal of background in the proper physics to aid understanding. The style is dry and dense; this is not a book that one reads multiple chapters at a time, but it will be helpful to have on the shelf to look up some information quickly. I took off a star because, as good and highly recommended a resource as this is, it’s less practical than other books on electrophysiology. This is a ’before the experiment’ book-it helps identify the channels you’re looking at, what kind of glass to choose, what drugs might be appropriate for your experiment. It is

less helpful with the 'during the experiment' questions than, say, Patch Clamping. It doesn't explain as well what a good seal looks like on your oscilloscope, for instance.To sum: great resource for electrophysiologists, pair with another book for the practical side of actually performing the experiment.

If you are interested in the science of electrophysiology, this is your textbook. Starts with basic, ground concepts and works it way up. Begin with an intro of Ohm's law, etc. and the history of electrophysiology and moves to more in depth material for each ion channel. The only drawback is that this is the most up to date version, so there has been some progress since then. But for anyone involved in patch clamping, this is a must read.

The scientist and researcher will find this book of much value as a resource and reference for those studying cellular action, function and response. The book cites many examples of high quality data that are currently pertinent to many avenues of advanced cellular research areas.

This is the best ion channel book in the world. It is good if you are a grad student or above working on ion channels or, if you are even just doing an honours project in them. If you are just doing a UG student project then its too expensive, so try Aidley and Standfield or use the library copy! It's not general beside reading for the rest of the world I guess. It is the very last word on the basic principles of ion channels and ion "channelomics". Slightly more accessible is David Aidley and Peter Stanfield's book on the same topic. It is also excellent, but... well, shorter.Why not get both if you are a grad student setting out on the wonderful world of channelomics and ion channel biophysics.

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