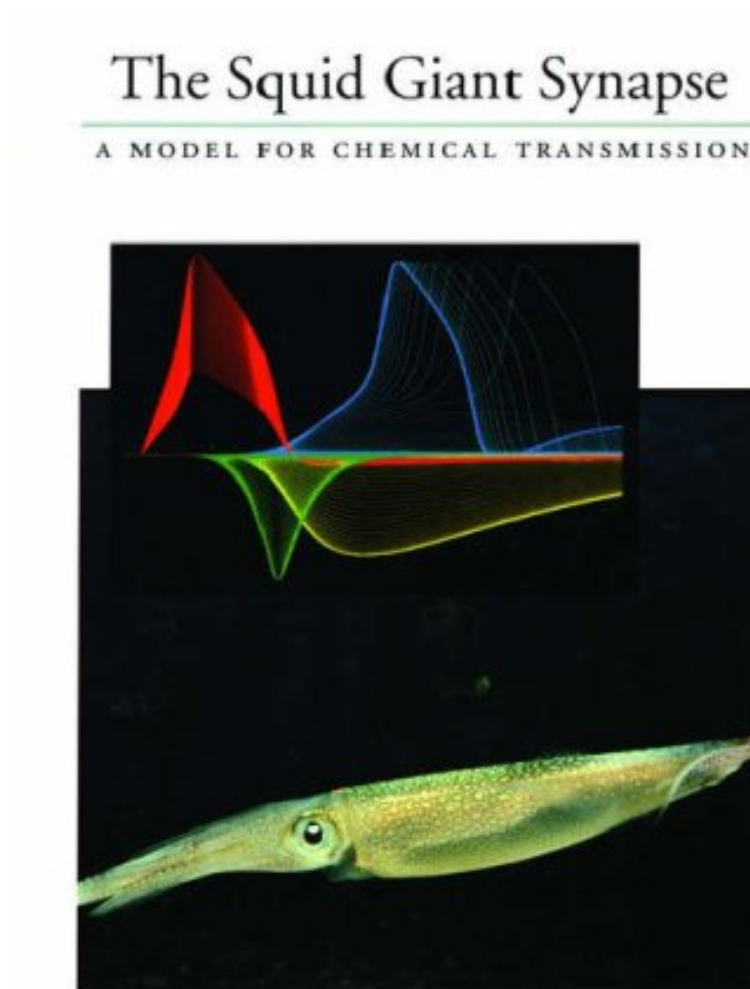


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# The Squid Giant Synapse: A Model for Chemical Transmission

*Rodolfo R. Llinas*

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**Rodolfo R. Llinas : The Squid Giant Synapse: A Model for Chemical Transmission** before purchasing it in order to gage whether or not it would be worth my time, and all praised The Squid Giant Synapse: A Model for Chemical Transmission:

5 of 5 people found the following review helpful. Synaptic TransmissionBy Dr. Mahlon E. KriebelReview of "The Squid Giant Synapse" a model for chemical transmission" by Rodolfo R. Llinas.It was a pleasure to read this small

book because Professor Llinas has managed to review his work and that of others within 160 pages. Llinas has written a very readable book that traces the history of transmission at the synapse. He has covered this difficult subject synthesizing ultrastructure, electrophysiology and molecular biology. The writer has been prominent in this field for 30 years and the book reflects his deep understanding of the subject. Dr. Llinas has managed to incorporate the major findings of some 500 papers into a working hypothesis of synaptic transmission. In spite of the complexity of the subject there are few errors. On page 65 microdomains should be in square microns and not square millimeters but this typographical error should be obvious when looking at Figure 3.2G and Plate 8. This little book is a must for graduate students and neuroscientists in general because it serves as both a starting reference and as a working text. The index is very helpful to find definitions used in the field (a glossary would be helpful). The software shows the relationship of the presynaptic calcium current and postsynaptic voltage. This program will be instructive to students in understanding the importance of calcium dependencies on transmitter release. The Squid Giant Synapse should be a companion with *Nerve, Muscle and Synapse* by B.Katz and *The Physiology of Synapses* by J.C. Eccles.

The squid giant synapse is the single most important model for investigating the transmitter release mechanism in chemical junctions. This unique book, by a leading expert in the field, gives a concise overview of all that has been learned about synaptic transmission in this superb model system. It covers in detail the biophysics of the voltage-dependent calcium currents, calcium concentration microdomains, and much of the molecular basis for the triggering of the secretory event. Ideal for graduate and undergraduate courses, the book includes PC and Macintosh versions of two programs for simulating and manipulating any aspect of synaptic transmission. One program is a modeling tool designed for working neuroscientists, and the other teaches the basic principles of synaptic transmission by allowing students to alter the parameters, essentially without limits, and see the effects on the action potential over time. Anyone studying this central topic of neuroscience will find this book an invaluable resource.

"Given that the brain consists of some 100 billion nerve cells, understanding how synapses allow these cells to communicate with each other has been a core question in neuroscience. The past 50 years have seen remarkable advances in this area, largely due to a small number of experimental systems--such as neuromuscular synapses and the squid giant synapse--whose great advantages for physiological analyses have illuminated the beauty of synaptic function. Thus a book, such as *The Squid Giant Synapse*, that concisely highlights the contributions of one such model system is a very good idea. An even better idea is to have the book written by Rodolfo Llinas, a distinguished synaptic physiologist. . . Llinas has done a good job of capturing the excitement that has kept the field of synaptic physiology energized. By its example, *The Squid Giant Synapse* offers a strong argument for the continued value of physiological analyses of brain function, even in these genomic times."--*Science*

"When it comes to contributing to our knowledge of neuronal function, no creature can surpass the squid. Its axon has enabled us to discover the ionic basis of electrical signalling, and its synapse has revealed the chemical signalling between neurons. Rodolfo Llinas' book summarizes what this invertebrate has told us about chemical synaptic transmission. . . . It should . . . attract a wide audience, particularly those interested in listening to nature directly rather than passively accepting current paradigms. Finally, the book comes with a CD-Rom containing an excellent program of a synaptic model. . . . This program will surely attract young students, as well as researchers, who are interested in computer simulations of neuronal function. This model also reminds us of the dynamic aspects of synaptic function and that individual neurons are not merely passive elements in neuronal networks, but actively influence brain function through synaptic modulation."--*Nature*

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