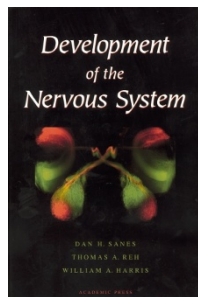




For the love of teaching



Development of the Nervous System

by Dan Harvey Sanes, Thomas A. Reh and William A. Harris
Academic Press, San Diego, 2000. \$84.95
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Reviewed by Sally Temple

I have a confession to make. I agreed to review this book without telling anyone that I already have a favorite textbook for teaching developmental neurobiology, Purves and Lichtman's *Principles of Neural Development*. I am fond of this textbook not just because it was the first gift my husband ever gave me, complete with love note, but also because it does such a wonderful job of both introducing the basic questions underlying developmental neuroscience, and bringing alive its history, including the fascinating personalities that shaped the discipline. Reluctantly though, I have to admit that students now tend to turn up their noses at a textbook that was published in 1985, however enthusiastic the course director; a tremendous molecular revolution in developmental neuroscience has occurred over the last 15 years. As I look at it now, that book no longer represents the state of the field, which is burgeoning with a new genetic language and laden with novel techniques that are dispelling with amazing speed the mysteries of how the nervous system forms.

These shortcomings were brought sharply into focus as I read *Development of the Nervous System*, by Sanes, Reh and Harris. This textbook is aimed at undergraduates, although I think it would be wholly appropriate for an introductory graduate course, and it is a wonderful summary of modern developmental neuroscience. It covers neural development from egg to behavior, an arrangement that seems *de rigueur* for

developmental textbooks. Each chapter in this ontogenetic sequence (which includes neural cell specification, birth and determination, axon growth, cell death, synapse formation, and the development of behaviors) covers the historical perspective, highlights key experiments that are milestones in the field, and describes salient current ideas. The book provides a scholarly review of the past and a carefully pruned view of the present. With relief, I can add that it is written in a clear, accessible style that students will appreciate.

A welcome aspect of the book is an introductory chapter describing and contrasting neural initiation in a number of the more popular experimental animals. I find that our neuroscience students are often alarmed by the fact that a developmental lecture might include references to grasshopper axon pathfinding, frog retinotectal maps and fly mutants called *repo*. This simple introduction to phylogeny helps make the subsequent recapitulation of neural ontogeny (my apologies to Haeckel) much more accessible.

Each chapter in the journey from egg to functioning nervous system is subdivided into small sections headed by key questions or statements. These are clear, easy-to-read segments, each filled with a huge amount of information. Experimentation is stressed at every opportunity. Technical methods are explained, experiments are described in detail, and their results are carefully interpreted. The breadth of information covered and the level of detail included is impressive—too many introductory textbooks leave the reader with a cursory view, and more questions than answers. The

authors have done a first-rate job of presenting a satisfying amount of detailed information, with additional references for the more persistent students.

Throughout the book, the text is liberally complemented with figures. Although not as “richly illustrated” as I was led to expect from the blurb, the diagrams are simple and clear, mostly artists’ renditions, and they do an excellent job of illuminating the more complex parts of the text. In general, whenever a diagram is needed, one is found.

The textbook is very even; each chapter is thorough, and I could find no major weaknesses in the information presented. My only criticism is that I felt the book lacked sufficient developmental biology perspective. Key terms and concepts such as cell determination, morphogens, commitment, positional information, asymmetric cell division, clonal relationships, and (to my horror) stem cells, were not explained clearly, nor was their significance brought to the fore. For this specific developmental language, a glossary would have helped enormously. Actually, my Purves and Lichtman textbook has a great developmental biology perspective and glossary, and wonderful vignettes of famous developmental neuroscientists. It seems there will still be a place for it in my teaching program.

Good teachers are essential for maintaining the life of a discipline. Their primary responsibility is to introduce the questions that inspired the discipline, as well as those that currently drive it, to convey key concepts and language, and to do this in a way that will enthuse the next generation of scientists. Most of us aim to be this sort of teacher, and certainly recognize how much a great textbook can help us achieve this goal. Despite a meteoric increase in the number of papers published on development of the nervous system, we have suffered long without an up-to-date textbook. This book, of handy dimensions, will fill a considerable void by providing an essential teaching resource.

Although it is impossible to say whether *Development of the Nervous System* by Sanes, Reh and Harris, like my copy of Purves and Lichtman, will make a suitable Valentine's Day gift, it is more than likely to help woo a number of ardent students into the marvelous field of nervous system development.

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