

Neurobiology of Attention

Edited by Laurent Itti, Geraint Rees, and John K. Tsotsos
New York, Elsevier Academic Press, 2005
744 pp, illustrated, \$149.95

Neurobiology of Attention is comprised of 109 chapters covering a wide array of topics within the field of attention. The chapters are essentially stand-alone reviews written by world-class scientists conducting research in a given area. Core topics (many of which are covered in multiple chapters) include spatial attention, object-based attention, feature-based attention, feature binding, attentional capture, crossmodal attention, attentional control, visual search, inhibition of return, and extinction, along with “hot” topics (e.g., change blindness, attentional blink), and other more specialized topics. Although some topics were omitted or not adequately covered (e.g., attentional load, attentional inhibition, object-based neglect), *Neurobiology of Attention* is impressively comprehensive. Overall, the editors have done an excellent job, as each chapter is up-to-date, clearly written, and well organized, with helpful headings and relevant figures.

The inclusion of the term *neurobiology* in the title of this volume suggests chapters focusing on neurons, synapses, and neurotransmitters. To the contrary, numerous chapters are strictly cognitive/behavioral, including many chapters on computational models of attention, with the majority of chapters focusing on activity in neuronal populations (typically assessed using event-related potentials or functional magnetic resonance imaging). As such, *Neurobiology of Attention* can be more accurately described as reflecting the *cognitive psychology* and *cognitive neuroscience* of attention (with a light treatment of *neuropsychology*). There are four sections: Foundations, Functions, Mechanisms, and Systems. Although this seems like a reasonable organizational idea, it does not have any apparent functional utility. For instance, there is at least one chapter on visual search in each of the four sections, and it is not clear why any particular chapter has been placed in any given section. Still, these are issues of classification, and they do not detract from the quality of the individual entries.

The one significant shortcoming of the volume, which might be considered a feature by some, is that the chapters are usually just a few pages in length (ranging from about 1 to 10 pages). This generally results in a somewhat abbreviated treatment of any given topic and tends to yield chapters that focus on the respective authors’ work. Furthermore, this often produces chapters that are not written for readers unfamiliar with the specialized terms or experimental protocols in this field. That said, the editors are fully aware that their volume consists of a large number of short chapters, writing in the Preface: “this phenomenal encyclopedic text provides concise yet comprehensive coverage.” This is a perfect description.

As an encyclopedia of attention, *Neurobiology of Attention* shines as an excellent reference text. It will surely prove invaluable to graduate students and researchers conducting attention research in cognitive psychology and cognitive neuroscience as well as others (including cognitive neurologists, neuropsychologists, and psychiatrists) interested in up-to-

date summaries of topics in attention from the perspective of cognitive psychology and cognitive neuroscience.

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Pathological Pain: From Molecular to Clinical Aspects

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Pathological Pain is a compilation of the lectures presented in the Symposium on Pathological Pain that took place in Tsukuba, Japan, in fall 2003. The symposium, organized by Dr Chadwick and edited in collaboration with Dr Goode, covered topics on the basic science of pathological pain and its implications for clinical practice. For the publication of *Pathological Pain*, all the lectures were updated with the most current literature. *Pathological Pain* has been divided in five sections of three to four presentations each. All presentations and sections are accompanied by a short and a more comprehensive discussion, respectively. Sections one and two discuss the molecular bases of the changes that occur in ion channels, receptors, and chemical messengers in the genesis and perpetuation of neuropathic pain. Although clinicians without basic science experience may find electrophysiology and molecular pharmacology unappealing and arid, the authors succeeded in presenting the data in a comprehensive and easy-to-follow format. It is not clear, however, why a lecture on vallinoid receptors was included in this chapter. The lecture “Neurotrophic Influences in Neuropathic Pain” is of particular interest. It begins with a general discussion of the most common animal models to study neuropathic pain as a background to later move to deeper concepts in electrophysiology, molecular pharmacology, and genetics of this hot topic in pain pathophysiology. Section three discusses the changes in plasticity that occur in the central nervous system secondary to neuropathic pain and to tolerance of morphine. The “antiopioid” hypothesis will satisfy those readers who are in search of an overview of the current thinking in the underlying mechanisms of opioid tolerance. The fourth chapter explores the physiopathology of four common presentations of chronic and neuropathic pain with the objective of providing data for “mechanism-based medicine.” The review on bone cancer pain is very stimulating. This is a topic that normally is not explored at this level in textbooks. The lecture and discussion on complex regional pain syndrome is relatively superficial compared with the rest of the topics and does not contribute to the overall understanding of the syndrome. This is probably the weakest section of *Pathological Pain*. This section seems disconnected from the rest of the book, perhaps as an unintended remainder of the poor dialogue that still exists between basic and clinical science, ironically a gap intended to be filled by *Pathological Pain*. The discussions of electrophysiology and molecular pharmacology of pathological pain are the center, whereas the clinical aspects are more scattered and only touched tangentially. In this regard, *Pathological Pain* falls short of the expectations. The last chapter is a discussion about translational research in pathological pain.

Overall, *Pathological Pain* is an excellent book to review