PRINCIPLES OF COGNITIVE NEUROSCIENCE. 2008. By Dale Purves, Elizabeth M. Brannon, Roberto Cabeza, Scott A. Huettel, Kevin S. LaBar, Michael L. Platt, Marty G. Woldorff. Published by Sinauer Associates Inc, USA. 757 pages. C$105 approx.

The field of cognitive neurology is rapidly becoming a central focus to neurologists, particularly as degenerative brain diseases of the elderly continue to increase in number and new therapies become available. Cognitive neuroscience, the multidisciplinary background science underpinning cognitive neurology, has simply exploded exponentially in terms of techniques, imaging, and understanding of the molecular, cellular, and system basis for cognitive disorders such as memory loss. Hence a new comprehensive textbook of cognitive neuroscience, such as the present volume by a multidisciplinary group at Duke University, deserves attention in this journal.

This is a beautiful textbook for an undergraduate course in cognitive neuroscience. It is well-illustrated, extensive (757 pages), and comes with a cd-rom companion website on neuroanatomy. Their stated goal was not simply to summarize the received wisdom in "this rapidly evolving field", but also to point towards directions for future research and development by presenting current controversies and areas of uncertainty.

The first section is an outstanding review of general ideas underlying this field, along with a review of current techniques such as fMRI and transcranial magnetic stimulation, which are being used to advance our understanding of brain-behaviour relationships. After proceeding through all the domains of cognition (sensory, motor, attention, memory, emotions, language, executive function), the book finishes with a stunning review of current ideas on the evolution of cognition and human consciousness.

In recently preparing a lecture for neurology residents on Memory Function, I relied heavily on the book's section on Memory. This provided a detailed but readable review of current thoughts on the molecular basis of memory, different theories of declarative and non-declarative memory, along with the present understanding of working memory, and it was all done within 100 pages. It was up-to-date, comprehensive, and I can't think of a single important research theme in the field which was not addressed.

The only problem then, is the level of detail (and by extension, the recommended readership). I could not cover all of the detail provided in this text in my lecture to residents. And covering this detail would still have left them without information on clinical skills such as how to assess memory. Furthermore, it is even debatable whether residents must really understand controversies in memory theory (such as the standard model of consolidation, vs. the more Canadian multiple trace theory). In other words, there was far more background knowledge and information here than we would usually demand of our residents or neurologists. The general question has really become – with the explosion of the background neurosciences (including cognitive ones), how much detail does the practicing physician need? It would be even the rare cognitive neurologist who would read this entire volume!

In summary, this is a terrific background reference on cognitive neuroscience for any neurologist's bookshelf. My suspicion is that, given the time demands on all of us, it might remain largely unread on that bookshelf!

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PINEAL REGION TUMORS. DIAGNOSIS AND TREATMENT OPTIONS. PROGRESS IN NEUROLOGICAL SURGERY. VOLUME 23. 2009. Edited by Tatsuya Kobayashi, L. Dade Lunsford. Published by Karger (Basel, Switzerland). 144 pages. C$170 approx.

Tumors affecting the pineal region are relatively rare and have traditionally been viewed as intricate and challenging because of the difficulties associated with establishing a pathological diagnosis and the complexities and uncertainties associated with defining the most appropriate surgical treatment or adjuvant treatment. Over the past 20 years: neuropathological classifications have become more standardized; surgical approaches have been refined; neuro-endoscopy has been added to the surgical armamentarium; radiotherapy and chemotherapy techniques have significantly improved; and finally clinical experience with these new modalities has expanded to allow reasonable assessment of treatment efficacy. We are in a new era concerning our understanding of what is best management for patients with pineal tumors.

Kobayashi and Lunsford bring to us a monograph that reviews pineal region tumors, capitalizing on the vast experience of the authors. The book starts with a fascinating chapter reviewing the epidemiology of 1,188 cases of pineal tumors identified from the Brain Tumor Registry of Japan. Germ cell tumors are undoubtedly more common in Japan than in the United States and Europe: 2.7% of all primary tumors in Japan, yet only 0.6% in the United States. The remainder of the book is divided into two sections: 1) Tumors of Pineal Cell Origin, and 2) Tumors of Germ Cell Origin. This is a pragmatic and intuitively useful organizational scheme. Each section starts with a review of pathological characteristics by Kazufumi Sato, and follows with chapters that discuss specific diagnostic and treatment issues: a chapter devoted to surgical approaches (Itaru Tsumanuma, Ryuichi Tanaka, and Yukihiko Fujii), and a group of chapters reviewing chemotherapy, conventional radiotherapy, and stereotactic radiotherapy (including a stereotactic radiotherapy chapter authored by Dade Lunsford).

The final chapter in the monograph by Kazuhiko Sugiyama deals with quality of life (QOL) issues in 52 long-term (>15 years) survivors of germinoma treated primarily with radiotherapy between 1968 and 1995. This chapter is an important finale for the book. However, while the authors report an impressive patient experience, it unfortunately represents QOL data for barely 4% of germ cell tumor patients identified by the Japanese registry in Chapter 1 and uses a very limited number of QOL indices. Twelve of these 52 patients died and 6 developed new secondary tumors. Just under half of 32 patients did not graduate from high school, and 28 of 32 (88%) were unable to hold a regular job. Success in care for patients with pineal region tumors has previously been defined

as survival outcome. As survival improves, it becomes essential to establish other outcome parameters to assess the potential complications of treatment. With this information, refinement of treatment paradigms can be attempted when necessary. These authors discuss the changes in radiotherapy techniques that have already occurred to address the recognized risk to cognitive function. More studies addressing QOL issues are underway, and more are needed.

This monograph provides a well-balanced concise review of the current state of diagnosis and treatment issues for patients with pineal region tumors. The authors provide us the benefits of their vast experience with a relatively uncommon, yet extremely difficult and deadly disease. This book is highly readable and will be of interest to neurosurgeons, neuro-oncologists and radiation oncologists.

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references provided at the ends of each of the chapters are appropriate and current. As well, suggested readings are also provided at the end of each chapter.

In the last chapter the authors discuss the future of fMRI, with regard to practical and ethical issues, discussing confidentiality, and interacting with the public. The Glossary at the end is alphabetically arranged, and is a good summary of acronyms and words used in MRI, as well as various words seen in electrophysiology and statistics. The Index is well-organized and comprehensive.

In summary, this second edition is an excellent, comprehensive introductory text for the clinician or the student interested in fMRI. It would benefit individuals performing clinical fMRI, as well as researchers in fMRI. The authors have, in my opinion, achieved their goals with this book, and I highly recommend it.

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FUNCTIONAL MAGNETIC RESONANCE IMAGING. SECOND EDITION. 2009. By Scott A. Huettel, Allen W. Song, Gregory McCarthy. Published by Sinauer Associates Inc. USA. 542 pages. C$100 approx.

This reviewer did not read the first edition of this book, but the book has been extensively rewritten according to web discussions. The aims of the second edition, according to the preface are "to provide a broad, comprehensive and rigorous introduction to fMRI research". The book is written by researchers working at Duke and Yale Universities. They acknowledge the need to incorporate foundations in physics and biology of fMRI, and not to sacrifice accuracy.

The reader is introduced progressively to how fMRI came about, then exposed to basic and more advanced MRI physics in the first chapters, including scanner design and technology. These chapters are followed by information about data processing and statistical methods used to obtain images using BOLD imaging to assess for brain activation. In addition to the book itself, there is a website linked to the book, which has study questions and web links. As well, during the course of the book, multiple questions are asked of the reader, and there are highlighted areas, which make it interesting to read, not just a purely didactic text. All the important topics in fMRI are covered, as well as its limitations, artifacts and potential sources of error at all stages of image acquisition and processing. The issue of noise and signal and the complex interrelationship between them, in particular in reference to field strength, are extremely well dealt with. As well, the use of spatial filters to improve signal to noise is also well covered. The authors are successful in explaining the many difficult concepts of fMRI.

The authors reference well known fMRI experiments in the course of the book. Experimental design is also well-described. The authors also provide readers with all the well-known statistical processing software packages known, though do not go into detail in the advantages or disadvantages of one over the other. Illustrations, schematic, graphic and actual images are of good quality, produced in both colour and black and white. The