

investigation, treatment and prognosis of specific tumours including low grade gliomas, pituitary tumours, meningiomas and primary central nervous system lymphomas, among others. Where there is no recognized treatment for a particular type of tumour, the authors suggest an approach to treatment. This section is well illustrated and replete with highlighted boxes, particularly boxes containing "Special Considerations" pertaining to the tumour under discussion.

Although there is clearly great potential for overlap between the general chapters concerning surgery, radiotherapy, etc and the chapters concerning specific tumours, the authors have done an excellent job of limiting this overlap by confining detailed discussions of each topic to the general chapters and mentioning only those details pertaining to specific tumours in the chapters concerning specific tumours. In my opinion the book could be improved in future editions by including more cross-references between the general and specific chapters to better integrate the theoretical material with the clinical material.

In general the text is well illustrated with examples of MRI images and diagrams. Each chapter includes a comprehensive list of the most important references for those who would like to explore the material in greater depth.

In summary, I would highly recommend this textbook of Neuro-oncology as an excellent reference for residents in Neurology, Neurosurgery, Radiation Oncology or Medical Oncology and for practicing physicians for whom Neuro-oncology is not their primary focus or area of specialty.

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TOPICS IN INTEGRATIVE NEUROSCIENCE FROM CELLS TO COGNITION. 2008. Edited by James R. Pomerantz. Published by Cambridge University Press. 427 pages. Price C\$140.

The goal of this 427-page book is to discuss four important problems in neuroscience in terms of recent discoveries and advances. The book has chosen, as chapter authors, researchers who are well recognized and accomplished in the specific fields.

Patricia Churchland, a Canadian-American philosopher who has focused on the interface between neuroscience and philosophy, writes the first chapter. She is associated with a school of thought called "eliminative materialism" which argues that folk psychology concepts such as belief, free will and consciousness will likely need to be revised as science understands more about the nature of brain function. Her recent work focuses on neuroethics, which makes for an interesting and though provoking introductory chapter entitled "Neuroscience, choice and responsibility".

The first section addressing higher order perception, predominantly related to the visual system, includes three chapters. The section begins with an overview followed by chapters on attention, visual perception and visual spatial attention. The three chapters provide different levels of analysis that are closely related to the methods used by the authors. The first chapter deals primarily with imaging, cellular, and genetic mechanisms as they relate to behavior. The second chapter discusses inter-cellular communication related to visual input. The third concentrates on the

imaging of the human brain in visual perception to develop links to cellular levels.

The second section discussing language includes an introduction and four chapters. The introductory overview is followed by the first chapter which deals with plasticity, the second which addresses the functional architecture of speech perception; the third discusses the impact of neuro-degenerative disease on language and the last presents data on why language is unique to humans. The first chapter provides a developmental perspective on the relative roles of intrinsic constraints and the role of experience in the differentiation of the language systems. The second chapter describes the neural and functional architecture of speech perception. The third chapter discusses the impact of neuro-degenerative diseases on language with a particular focus on neuro-imaging. The last chapter addresses the question of how the language systems are acquired by the young infant by combining behavioral and imaging techniques.

The third section addresses memory and includes an introduction and four chapters. The overview is followed by the first chapter discussing memory systems, the second chapter describing declarative memory, the third reviewing the role of the amygdala in auditory fear conditioning and the fourth discussing the roles of the hippocampal NMDA receptors in acquisition and recall of associative memory. The section considers the anatomy and animal of declarative memory and the structural organization of non-declarative memory. The last chapter in the section focuses on molecular basis of memory in the mouse model and specific roles of specific subunits within the NMDA receptor.

The final section discusses sensory processing and includes an introduction and two chapters. The overview is followed by a chapter discussing song selectivity in songbirds and a chapter discussing the role of voltage-dependent sodium currents in hair cells of the inner ear.

Overall this is a well-written, organized and thought-out book. The target audience for the book would include basic neuroscientist and trainees and neurologist or neurosurgeons interested in or involved in the study of vision, language and cognition.

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NEUROPATHOLOGY REVIEW. SECOND EDITION. 2008. By Richard Prayson. Published by Humana Press. 252 pages. Price C\$90.

With the advent of improved imaging techniques and sophisticated diagnostic tests, neuropathology receives less attention in training new residents than in years past. For example, while biopsy was required for many years in order to diagnose herpes encephalitis, molecular diagnostics have made this practice obsolete. Nonetheless, a thorough understanding of neurologic disease is not possible without adequate training in neuropathology, and many illnesses still depend on pathologic description for diagnosis. It is therefore of some concern that many neurology and neurosurgery residents will have little to no exposure to the brain cutting sessions of the recent past, and less hands on experience as medical school class sizes continue to grow. These trainees are therefore at the

mercy of teaching provided by their local neuropathologists, and available resources that can effectively involve the reader and provide some form of assessment. This latter requirement is effectively addressed with Richard Prayson's second edition work entitled *Neuropathology Review*.

This book is clearly not intended to cover all of neuropathology, but rather serves as a quick reference and study guide for residents preparing for 'board level' examinations. Its approach is unique among neuropathology references. There is a single chapter covering normal histology, followed by ten chapters covering the most important pathologic features of the major categories of neurologic disease. Each chapter is written in point form, and aims to cover only the essential points for each topic. No images are included in this first section of the book. Despite the point form layout, the book is surprisingly readable, and the content can be efficiently reviewed.

By far the most useful part of the book, however, is the second half, which contains a lengthy self-assessment. Chapter 12 contains no less than 300 questions with associated images (black and white only), and brief explanations are provided in Chapter 13. Chapter 14 provides an additional 250 multiple choice questions without images, again with a separate chapter follows to provide answers. Even more helpful than these sections is the accompanying CD, which contains all of the questions with images, but in full color, and is presented using an intuitive and attractive interface that works seamlessly with either Macintosh or PC systems.

While this book does serve a unique and valuable role for the resident reviewing for examination purposes, it is likely of little utility for the practicing neurologist, and too advanced for those without prior exposure to neuropathology. Other shortcomings include the lack of adequate explanations for the multiple choice questions provided on CD, which would have made this section invaluable for study purposes. In addition, the references provided after these short explanations occasionally led the reader to a different topic altogether. These minor problems are most certainly outweighed by the benefits offered by this book, most notably in its abundance of self-assessment questions which are challenging and relevant. Any senior resident in clinical neurosciences would do well to consider this book for study purposes.

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THE GLUTAMATE RECEPTORS. 2008. Edited by Robert W. Gereau IV, Geoffrey Swanson. Published by Humana Press. 574 pages. Price C\$149.

Glutamatergic excitatory neurotransmission is arguably one of the most important systems in the brain. Glutamate and its receptors are key components of this system and are important in normal function of the brain and are also involved in a number of disease states. Glutamate exerts its effect via two broad classes of receptors, namely ionotropic receptors and metabotropic receptors. Recently, there has been a considerable explosion of knowledge in this field

and Dr. Gereau and Dr. Swanson have assembled an impressive array of experts to provide an update in this burgeoning field. The book has fourteen chapters. The first eight are devoted to ionotropic glutamate receptors. The first four of these chapters provide a detailed account of what is known about ionotropic receptors. This treatment of the receptors, includes their genes, topology, basic structure and *in vitro* and *in vivo* data on the function of these receptors. There is also a description of the expression, trafficking and targeting of these receptors and sections on the interactions of these receptors with other proteins and small molecules. Finally, the pharmacology of these receptors is discussed and what each of the contributors considers to be the future direction of research in this area. Following the description of each of these ionotropic receptors, namely AMPA, NMDA, Kainate and Delta receptors, there is a chapter on synaptic plasticity and another on the structural correlates ionotropic glutamate receptors in general. Chapter 6 deals predominately with structure activity relationship of ionotropic glutamate receptors and Chapter 7 deals with modulators of AMPA glutamate receptors. Chapter 8 reviews the contribution of NMDA receptors to neuronal damage in acute hypoxic ischemic injury and in neurodegenerative disorder such as Alzheimer's disease, Parkinson's disease, Huntington's disease, HIV associated dementia, Multiple Sclerosis, Glaucoma and ALS. They review drugs such as memantine that are thought to be antagonists of the NMDA receptors and that are used to treat some of these disorders.

Chapters 9-14 are dedicated to the review of metabotropic glutamate receptors. Chapter 9 provides an overview of the structure of these receptors. The rest of the chapters are divided into Group 1 (mGlu1 and mGlu5), Group 2 (mGlu2 and mGlu3), and Group 3 (mGlu4, mGlu6, mGlu7 and mGlu8) metabotropic glutamate receptors. This detail is followed by a chapter on glutamate receptor ligands as therapeutic agents for diseases such as anxiety disorders, Parkinson's disease, schizophrenia, drug abuse and pain.

This book contains a significant amount of detail with respect to all aspects of glutamate receptors, their function in normal neurotransmission and their involvement in disease. It is certainly not a book for a casual reader. The editors rightly point out in their preface that "this collection will serve as valuable resource for scientists and students". This book is undoubtedly a very important contribution to the field of glutamate receptors and I would highly recommend it to laboratories engaged in neuroscience research.

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REVIEW OF HANDBOOK OF PARKINSON'S DISEASE. FOURTH EDITION. 2007. Edited by Rajesh Pahwa, Kelly E. Lyons. Published by Informa Health Care. 500 pages. Price C\$245.

The fourth edition of the *Handbook of Parkinson's Disease* is edited by Rajesh Pahwa and Kelly Lyons who were colleagues of the late original editor William C. Koller in Kansas and who co-edited the previous edition. The first *Handbook of Parkinson's Disease* was the first book in this handbook series, with the current edition being