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Neuroimaging

MRI from A to Z

A Definitive Guide for Medical Professionals

Gary Liney

"I would clearly recommend the purchase of this book to anyone who wants to know what he is dealing with when ordering, acquiring, interpreting MRI images or MRI Spectrometry. It will be invaluable reading for each single individual of the MRI manufacturers' staff."

Assistance Publique-Hopitaux De Paris, Max Hassan, M.D.

This concise but comprehensive guide provides an effective and practical introduction to the full range of MRI terminology. It will be an invaluable source of reference for all students, trainees and medical professionals working with MRI. More than 800 terms commonly encountered in MR Imaging and Spectroscopy are clearly defined, explained and cross-referenced. Illustrations are used to enhance and explain many of the definitions, and references to further reading will point the reader to more in-depth coverage. As well as being a compendium of terms from A to Z, the volume concludes with a useful collection of appendices, which tabulate many of the key constants, properties and equations of relevance.

Contents:

Main Glossary (A-Z); Boxed Asides; Figures; Appendices (I - VIII).

2005/270 pp.

60638-1/Pb/List: \$39.99

Disc.: \$31.99

Computing Brain Activity Maps from fMRI Time-Series Images

Gordon Sarty

University of Saskatchewan

MRI is a very popular method for researchers and clinicians to image human brain activity in response to given mental tasks. This book presents a comprehensive review of the methods for computing activity maps, while providing an intuitive and mathematical outline of how each method works. The approaches include statistical parametric maps (SPM), hemodynamic response modeling and deconvolution, Bayesian, Fourier and nonparametric methods. The newest activity maps provide information on regional connectivity and include principal and independent component analysis, crisp and fuzzy clustering, structural equation modeling, and dynamic

causal modeling. Preprocessing and experimental design issues are discussed with references made to the software available for implementing the various methods. Aimed at graduate students and researchers, it will appeal to anyone with an interest in fMRI and who is looking to expand their perspectives of this technique.

Contents:

Preface; 1. Introduction; 2. Image preprocessing; 3. Experimental designs; 4. Univariate approaches: activation maps; 5. Multivariate approaches: connectivity maps; 6. Conclusion.

2006/c. 190 pp./18 line diagrams/11 half-tones/8 color plates

86826-2/Hb/List: \$90.00*

Neurology and Clinical Neuroscience

The Placenta and Neurodisability

Phillip Baker

St. Mary's Hospital, Manchester

Colin Sibley

University of Manchester

What are the interactions between altered placental function and neurodisability? In this book a team of experts give detailed accounts of placental lesions that affect normal structure and function to show how impaired placental function may contribute to deviant fetal growth and altered brain development. They outline the processes that lead to brain injury, and show the extent to which such early effects on brain development lead to disability in later childhood. Chapters focus on the specific transporter systems located in the placental syncytiotrophoblast that protect the fetus from drugs and xenobiotics in the maternal circulation. They also look at the animal models used to study causes of fetal brain damage, and the interactions between fetal genes and the uterine environment that predispose to the development of schizophrenia in adult life.

Contents and Contributors:

Authors' appointments; Foreword Martin Bax; Preface Philip Baker and Colin Sibley; 1. The placenta and neurological outcome in the child Karin Nelson; 2. Deficient trophoblast invasion, placental and fetal compromise Fiona Lyall; 3. The materno-fetal inflammatory response Mark Turner; 4. Cytokines, growth factors, placental insufficiency and infection Ian Crocker; 5. Placental lesions and neurological outcome Raymond Redline; 6. Placental pathology,

intrauterine growth restriction, and subsequent child development Paul Eunson; 7. Mdr-1 p-glycoprotein in the placenta: a protective role in neuro development? Diane Atkinson and Colin Sibley; 8. In-uteroimaging of the placenta Penny Gowland; 9. Animal models of fetal growth restriction and cerebral compromise Donald Peebles; 10. Placental programming leading to mental ill-health: fetal growth and schizophrenia Kathryn Abel and Matthew Allin; 11. Conclusions - the placenta and neurodisability Stephen D'Souza; Index.

Clinics in Developmental Medicine
(Mac Keith Press)

2006/168 pp./7 tables/18 figures/8 color figures
68344-1/Hb/List: \$67.50

Neurodegenerative Diseases

Neurobiology, Pathogenesis and Therapeutics

M. Flint Beal

Cornell University, New York

Anthony E. Lang

University of Toronto

Albert C. Ludolph

Universität Ulm, Germany

"Research in this area is a moving target, difficult to capture in a book, but Beal and colleagues have made a worthy effort...a weighty and comprehensive overview with an all-star list of contributors."
New England Journal of Medicine

Neurodegenerative diseases are major contributors to disability and disease, with Alzheimer's and Parkinson's diseases the most prevalent. This major reference reviews the rapidly advancing knowledge of pathogenesis and treatment of neurodegenerative diseases in the context of a comprehensive survey of each disease and its clinical features. The editors and contributors are among the leading experts in the field internationally. Covering basic science, diagnostic tools and therapeutic approaches, the book focuses on all aspects of neurodegenerative disease, including the normal aging process. The dementias, prion diseases, Parkinson's disease and atypical parkinsonisms, neurodegenerative ataxias, motor neuron diseases, degenerative diseases with chorea, iron and copper disorders, and mitochondrial diseases, are all methodically presented and discussed, with extensive illustrations. In each case the underlying genetics, neuropathological and clinical issues are fully reviewed, making this the most complete as well as the most authoritative reference available to clinicians and neuroscientists.

Contents and Contributors:

Part I. Basic Aspects of Neurodegeneration; Part II. Neuroimaging in Neurodegeneration; Part III. Therapeutic Approaches in Neurodegeneration; Part IV. Normal Aging; Part V. Alzheimer's Disease; Part VI. Other Dementias; Part VII. Parkinson's and Related Movement Disorders; Part VIII. Cerebellar Degenerations; Part IX. Motor Neuron Diseases; Part X. Other Neurodegenerative Diseases.

2005/1008 pp./45 line diagrams/
57 half-tones/80 tables/39 color figures

81166-X/Hb/List: \$400.00

Disc.: \$320.00

The Behavioral and Cognitive Neurology of Stroke

Editors

Julien Bogousslavsky

Université de Lausanne, Switzerland

Olivier Godefroy

Université de Picardie Jules Verne, Amiens

The care of stroke patients has changed dramatically in recent years. As well as improvements in the emergency care of the condition, there have been marked advances in our understanding, management and rehabilitation of residual deficits. This book is about the care of stroke patients, focusing on behavioral and cognitive problems. It provides a comprehensive review of the field covering the diagnostic value of these conditions, in the acute and later phases, their requirements in terms of treatment and management, and the likelihood and significance of long-term disability. This book will appeal to all clinicians involved in the care of stroke patients, as well as to neuropsychologists, other rehabilitation therapists and research scientists investigating the underlying neuroscience.

Contents and Contributors:

Introduction Olivier Godefroy and Julien Bogousslavsky; 1. Evaluation of cognitive and behavioral disorders in the stroke unit Asaid Khateb, Jean-Marie Annoni, Ursula Lopez, Françoise Bernasconi, Laurent Lavanchy and Julien Bogousslavsky; Motor and Gestural Disorders: 2. Abnormal movement and motor behavior Luc Defebvre and Pierre Kystokowiak; 3. Gestural apraxia F. Etcharry-Bouyx and M. Ceccaldi; Aphasia and Athric disorders: 4. Aphasia in stroke Andrew Kertesz; 5. Acute vascular aphasia Alexandre Croquelois, Olivier Godefroy and Julien Bogousslavsky; 6. Dysarthria Pascal Auou; 7. Alexia and agraphia Argye Hillis; 8. Acalculia and Gerstmann's Syndrome Laurent Cohen, Anna Wilson, Véronique Izard and Stanislas Dehaene; Hemineglect, Anton-Babinski and Right Hemisphere Syndromes: 9. Hemineglect Patrik Vuilleumier; 10. Anosognosia and denial after right hemisphere stroke Anne

Peskine and Philippe Azouvi; 11. Asomatognosia Sebastian Dieguez, Fabienne Staub and Julien Bogousslavsky; 12. Disorders of visuoconstructive ability Diane Dupuy and Olivier Godefroy; 13. Topographical disorientation Bertille Perin and Olivier Godefroy; Agnosia and Balint Syndrome: 14. Cortical blindness Alain Vighetto and Pierre Krolak-Salmon; 15. Balint's Syndrome Alain Vighetto and Pierre Krolak-Salmon; 16. Prosopagnosia Eugene Mayer and Bruno Rossion; 17. Object and colour agnosia Georg Goldenberg; 18. Auditory disorders related to strokes Bernard Lechevalier, Jany Lambert, Sylvain Moreau and Hervé Platel; Executive and Memory Disorders: 19. Dysexecutive syndromes Olivier Godefroy and Donald Stuss; 20. Disorders of episodic memory Chun Lim and Michael Alexander; 21. Working memory dysfunctions in stroke patients Martial Van der Linden, Martine Poncet and Steve Majerus; Behavioral and Mood Disorders: 22. Akinetic mutism and related disorders Didier Leys and Hilde Henon; 23. Alterations of level of consciousness related to stroke Marc Reichhart; 24. Delirium and confusional state in stroke patients Hilde Henon and Didier Leys.

2006/c. 576 pp./93 line diagrams/8 color plates/
120 tables

84261-1/Hb/List: \$150.00*

Central Pain Syndrome

Pathophysiology, Diagnosis and Management

Sergio Canavero

University of Turin, Molinette Hospital, Turin, Italy

Vincenzo Bonicalzi

Turin Advanced Neuromodulation Group, Turin, Italy

Central Pain Syndrome is a neurological condition caused by damage specifically to the central nervous system - brain, brainstem, or spinal cord. This is the only up-to-date book available on the clinical aspects (including diagnosis and therapy) of CPS management. The authors have developed a very complete reference source on central pain, which includes background material, pathophysiology, and diagnostic and therapeutic information. A medical mystery for 100 years with no effective cure, this book turns the concept of incurability of central pain on its head by providing a rational approach to therapy based on a rational theory.

2006/c. 435 pp./36 tables

86692-8/Hb/List: \$85.00*

The Brain and Behavior

An Introduction to Behavioral Neuroanatomy

2nd Edition

David Clark

Ohio State University

Nashaat Boutros

Yale University, Connecticut

Mario Mendez

University of California, Los Angeles

This new edition of a successful text retains the core aim of providing an accessible introduction to behavioral neuroanatomy. Human behavior directly reflects the anatomy of the central nervous system, and it is the goal of the behavioral neuroscientist to uncover the neuroanatomical basis of behavior. Recent developments in neuroimaging technologies have led to significant advances on this front. The text is presented in a highly structured and organized format to help the reader distinguish between issues of anatomical, behavioral and physiological relevance. Simplified and clear diagrams are provided throughout the chapters to illustrate key points.

Contents:

1. Introduction; 2. Gross anatomy of the brain; 3. Histology; 4. Occipital and parietal lobes; 5. Temporal lobe-neocortical structures; 6. Frontal lobe; 7. Basal ganglia; 8. Diencephalon: hypothalamus and epithalamus; 9. Diencephalon: thalamus; 10. Brainstem; 11. Limbic system: temporal lobe; 12. Limbic system: cingulate cortex; 13. Limbic system: overview; 14. Interhemispheric connections and laterality.

2005/278 pp./76 line diagrams/21 half-tones/
6 color plates

84050-3/Hb/List: \$120.00

Disc: \$96.00

54984-1/Pb/List: \$60.00

Disc: \$48.00

Central Nervous System

Tumours of Childhood

Edward Estlin

Royal Manchester Children's Hospital

Stephen Lewis

The Hospital for Sick Children, Bristol

Ranging from epidemiology and neuroimaging through the general principles of surgery and radiotherapy/chemotherapy to issues of palliative care and quality of life, this concise text covers all clinical aspects of central nervous system tumors in children. It provides an overview of current important issues in diagnosis and management, and focuses on important areas of research, with an emphasis on the areas likely to

impact on clinical practice. It will be essential reading for pediatric oncologists, medical and clinical oncologists, neurosurgeons, pediatricians, specialist nurses and paramedical staff.

Contents and Contributors:

Part I. Introduction to Paediatric CNS Tumours, and An Overview of Diagnosis, Biology and Therapy: 1. Overview of CNS tumours in children Eddy Estlin and Steven Lewis; 2. Epidemiology of CNS tumours Amos Burke; 3. Neuro-imaging Shelley Rowden; 4. Pathology and molecular oncology Lucy Rorke and Jaclyn Biegel; 5. Cell and tumour biology Richard Gilbertson; 6. General principles of surgery John Thorne; 7. General principles of radiotherapy Rao Gattamaneni; 8. General principles of chemotherapy Eddy Estlin and Steven Lewis; Part II. CNS Tumours of Childhood: 9. Low grade and high grade glioma Eddy Estlin; 10. Ependymoma Eric Bouffet; 11. Brain stem glioma Carolyn Freeman; 12. PNET Steven Lewis; 13. Germ cell tumours Steven Lewis; 14. Choroid plexus tumours Steven Lewis; 15. Craniopharyngioma Eddy Estlin; 16. Mixed neuronal tumours Eddy Estlin; 17. Spinal cord tumours Eddy Estlin; 18. Secondary/metastatic tumours Eddy Estlin; Part III. Late Effects, Rehabilitation and Palliative Care: 19. Late effects and quality of life Adam Glaser; 20. Neuro-rehabilitation and neuro-psychology A. L. Curran; 21. Palliative care Erica Mackie; Part IV. Summary and Conclusion: 22. Summary and conclusions Eddy Estlin and Steven Lewis.

Clinics in Developmental Medicine (Mac Keith Press)

2006/372 pp./20 half-tones/20 tables/10 figures
189868338-7/Hb/List: \$120.00

Stroke and Cerebrovascular Disease in Childhood

Editors

Vijeya Ganesan

Institute of Child Health, University College London

Fenella Kirkham

Institute of Child Health, University College

Stroke and cerebrovascular disease in children is an active research area leading to new clinical perspectives. This book, for the first time, summarizes the 'state of the art' in this field. A team of eminent clinicians, neurologists and researchers from Britain, Europe and Canada provide an up-to-the-minute account of all aspects of stroke and cerebrovascular disease in children. This book discusses topics ranging from an historical perspective to future directions, through epidemiology, the latest neuroimaging techniques, neurodevelopment, co-morbidities, diagnosis and treatment.

Contents and Contributors:

1. Historical perspective Andrew Williams; 2. Epidemiology Gabrielle de Veber; 3. Development of the cerebral circulation Pierre Lasjaunias; 4. Neuroimaging: clinical aspects Dawn Saunders and Kling Chong; 5. Recent advances in MR imaging Fernando Calamante and Alan Connolly; 6. Arterial Ischaemic stroke: clinical presentation and differential diagnosis: 6.1 Anterior circulation stroke Fenella Kirkham; 6.2 Posterior circulation stroke Bhuwan Garg; 6.3 Overview of aetiology Fenella Kirkham; 6.4 Cerebrovascular disease in children with AIS Vijeya Ganesan; 6.5 Moyamoya Vijeya Ganesan and Brian Neville; 6.6 Dissection Darius Hildebrand; 6.7 Cerebral vasculitis Russell Dale; 6.8 "Transient cerebral arteriopathy" Guillaume Sebire; 7. Stroke in children with underlying illness: 7.1 Sickle cell disease Fenella Kirkham; 7.2 Cardiac disease Vijeya Ganesan; 8. Risk Factors for Arteriopathy and Stroke: 8.1 Haematological Ulrike Nowak Gottl and Ronald Strater; 8.2 Infection Guillaume Sebire; 8.3 Other risk factors: Fenella Kirkham; 8.4 Diagnostic approach Vijeya Ganesan; 8.5 Acute management Fenella Kirkham; 8.6 Recurrence and prophylaxis Vijeya Ganesan; 8.7 Outcome and rehabilitation Anne Gordon, Lucinda Carr and Vijeya Ganesan; 8.8 Cognitive sequelae Faraneh Vargha Khadem; 9. Cerebral venous thrombosis Gabrielle de Veber; 10. Haemorrhagic stroke: 10.1 Epidemiology and clinical presentation Vijeya Ganesan; 10.2 Interventional Neuroradiology Pierre Lasjaunias; 10.3 Surgical treatment Joan Grievand Neil Kitchen; 10.4 Stereotactic radiosurgery Mathias Radatz and Andras Kemeny; 11. Neonatal stroke Eugenio Mercuri and Frances Cowan; 12. Metabolic stroke Robert Surtees; 13. Hemiplegic migraine Sarah Benton; 14. Alternating hemiplegia Jean Aicard; 15. Surge-Weber syndrome Sarah Aylett; 16. Vein of Galen malformation Pierre Lasjaunias; 17. Future directions Vijeya Ganesan and Fenella Kirkham; Index.

International Review of Child Neurology (Mac Keith Press)

2007/c. 180 pp.

189868334-4/Hb/List: \$75.00*

Carotid Disease*The Role of Imaging in Diagnosis and Management***Editors****Jonathan Gillard****Martin Graves**

University of Cambridge

Thomas Hatsukami**Chun Yuan**

University of Washington

Stroke is a major cause of morbidity and mortality, with carotid disease representing an important contributory risk factor. This book is about the pathogenesis and management of carotid disease with specific focus on the role imaging has to play in the early recognition of symptomatic and asymptomatic disease as well as the treatment of the developed condition.

Technological advances in imaging modalities now allow detailed analysis of the disease progression, the prediction of critical events leading to a stroke, as well as the identification of the most effective surgical or other interventional treatments. This book should be read by neurologists, cardiologists, vascular surgeons, neurosurgeons and radiologists involved in the care of patients with carotid disease, and also by researchers involved in the development of new therapeutic techniques and drugs.

Contents and Contributors:

Dedication; Abbreviations; Introduction Henry J. M. Barnett; 1. Pathology of carotid artery atherosclerotic disease Renu Virmani, Allen Burke, Elena Ladich and Frank Kolodgie; 2. Epidemiology of carotid artery atherosclerosis Christopher O'Donnell; 3. Genetics of carotid atherosclerosis Stephen Rich and Donna Arnett; 4. Haematological processes in emboli formation Alison Goodall and Greg McMahon; 5. Medical treatment for carotid stenosis Matthew Giles and Peter Rothwell; 6. Surgical management of symptomatic carotid disease: carotid endarterectomy and extracranial-intracranial bypass Jonathan Brisman and Marc Mayberg; 7. Surgery for asymptomatic carotid stenosis Stella Vig and Alison Halliday; 8. Interventional management of carotid disease Andrew Clifton; 9. Conventional carotid Doppler ultrasound Gregory Moneta; 10. Conventional digital subtraction angiography for carotid disease Jean Marie U-King-Im and Jonathan Gillard; 11. Magnetic resonance angiography of the carotid artery Martin Graves, Jean Marie U-King-Im and Jonathan Gillard; 12. Computed tomographic angiography of carotid artery stenosis Paul Nederkorn, Charles Majoie and J. Stam; 13. Cost-effectiveness analysis for carotid imaging Jean Marie U-King-Im, William Hollingworth and Jonathan Gillard; 14. Morphological plaque imaging Chun Yuan and Tom Hatsukami; 15. CT of the

plaque Thomas de Weert, Mohamed Ouhlous, Marc van Sambeek and Aad van der Lugt; 16. Assessment of carotid disease with ultrasound Stephen Meairs; 17. Intravascular ultrasound Gaston Rodriguez-Granillo and Patrick Serruys; 18. Image post-processing William Kerwin, Dongxiang Xu and Fei Liu; 19. Nuclear imaging for the assessment of patients with carotid artery atherosclerosis John Davies and Peter Weissberg; 20. USPIO - enhanced MR imaging of carotid atheroma Simon Howarth, Tjun Tang, Martin Graves, Rikin Trivedi, J. Harle and Jonathan Gillard; 21. Gadolinium enhanced plaque imaging William Kerwin; 22. Carotid magnetic resonance direct thrombus imaging Alan Moody; 23. The proximal carotid arteries - image-based computational modelling X. Xu and Nick Wood; 24. Mechanical image analysis using finite element method Tjun Tang, Chun Yang and Chun Yuan; 25. Transcranial Doppler monitoring Michael Gaunt; 26. MR and CT perfusion Jeroen van der Grond and Matthias van Osch; 27. Near infrared spectroscopy in carotid endarterectomy Pippa Al-Rawi and Peter Kirkpatrick; 28. Single photon emission computed tomography (SPECT) Kuniaki Ogasawara; 29. Monitoring carotid interventions with Xenon CT H. Yonas and A. Carlson; 30. Vascular imaging and the clinical development of new pharmaceuticals James Revkin and David Lester; 31. Monitoring pharmaceutical interventions with conventional ultrasound (IMT) John Crouse; 32. Monitoring pharmaceutical interventions with IVUS Stephen Nicholls, Steven Nissen and Murat Tuzcu; 33. Monitoring of pharmaceutical interventions: MR plaque imaging Tom Hatsukami; 34. Molecular imaging of carotid artery disease James Rudd, Michael Lipinski, Fabien Hyafil and Zahi Fayad; 35. Future technical developments Brian Rutt and John Ronald.

2006/c. 600 pp./68 half-tones/24 tables/
92 color figures

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The Pseudotumor Cerebri Syndrome

Pseudotumor Cerebri, Idiopathic Intracranial Hypertension, Benign Intracranial Hypertension and Related Conditions

Ian Johnston

Brian Owler

University of Sydney

John Pickard

University of Cambridge

The condition known most widely as pseudotumor cerebri syndrome is of diagnostic interest and clinical importance not just to neurosurgeons, but also to neurologists, ophthalmologists and headache specialists. Various called idiopathic intracranial hypertension, benign intracranial hypertension, and other names over the century or so since it was first recognized, the authors argue for the grouping of all these conditions under the name of pseudotumor cerebri syndrome on the basis of a common underlying mechanism—an impairment of CSF absorption due to abnormalities at the CSF/venous interface.

The book reviews the development of ideas around some of the more contentious issues and deals in depth with aetiology, investigative findings and strategies, treatment and outcome, and in the concluding chapter, considers the possibility of establishing an experimental model to facilitate analysis of the unresolved issues, and pointing the way to a more complete understanding of this controversial condition.

Contents and Contributors:

1. Introduction; 2. History of the Pseudotumor cerebri concept; 3. Disease mechanism; 4. Nosology, nomenclature, and classification; 5. Aetiology; 6. Clinical Features; 7. Clinical Investigations; 8. Treatment; 9. Outcome; 10. Experimental Studies; 11. Conclusions; 12. Bibliography

2007/c. 330 pp.

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Antiepileptic Drugs

Combination Therapy and Interactions

Editors

Jerzy Majkowski

Foundation of Epileptology, Warsaw

Blaise F. D. Bourgeois

Harvard University, Massachusetts

Philip N. Patsalos

Institute of Neurology, London

Richard H. Mattson

Yale University, Connecticut

This book reviews the use of antiepileptic drugs focusing on the interactions between these drugs and between antiepileptics and other drugs. These interactions can be beneficial or can cause harm. The aim of this book is to increase awareness of the possible impact of combination pharmacotherapies. Pharmacokinetic and pharmacodynamic interactions are discussed supported by clinical and experimental data. The book consists of five sections covering the general concepts and advantages of combination therapies, the principles of drug interactions, the mechanisms of interactions, drug interactions in specific populations or in patients with co-morbid health conditions, and concludes with a look at the future directions for this field of research. The book will be of interest to all who prescribe antiepileptics to epileptic and non-epileptic patients, including epileptologists, neurologists, neuro-pediatricians, psychiatrists and general practitioners.

Contents and Contributors:

1. Combination therapy of diseases: general concepts Emma Lam and Philip A. Routledge; 2. Combination therapy with antiepileptic drugs: potential advantages and problems Richard H. Mattson; 3. Pharmacogenetic aspects M. C. Walker, M. R. Johnson and Philip N. Patsalos; 4. Pharmacokinetic principles and mechanisms of drug interactions Philip N. Patsalos; 5. Predictability of metabolic antiepileptic drug interactions Edoardo Spina, Emilio Penucca and Rene Levy; 6. Influence of food and drugs on the bioavailability of antiepileptic drugs C. A. Fontes Ribeiro; 7. Interactions between antiepileptic drugs Bernhard Rambeck and Theodor W. May; 8. Interactions between antiepileptic and non-antiepileptic drugs Jerzy Majkowski and Philip N. Patsalos; 9. Pharmacodynamic principles and mechanisms of drug interactions Blaise F. D. Bourgeois; 10. Methods for assessing pharmacodynamic interactions Blaise F. D. Bourgeois; 11. Experimental studies of pharmacodynamic interactions Stanislaw J. Czuczwar; 12. Clinical studies of pharmacodynamic interactions John R. Pollard and Jacqueline French; 13. Clinical studies of pharmacodynamic interactions between antiepileptic agents and other drugs Gaetano Zaccara, Andrea Messori and

Massimo Cincotta; 14. Antiepileptic drug interactions in children Olivier Dulac, Elizabeth Rey and Catherine Chiron; 15. Antiepileptic drug interactions in the elderly James C. Cloyd and Jeannine M. Conway; 16. Antiepileptic drug interactions in pregnancy Mark S. Yerby; 17. Antiepileptic drug interactions in handicapped and mentally retarded patients Matti Sillanpaa; 18. Antiepileptic drugs and sex steroids Richard H. Mattson; 19. Antiepileptic drug interactions in patients requiring psychiatric drug treatment Michael R. Trimble and Marco Mula; 20. Antiepileptic drugs in non-epileptic health conditions - possible interactions Jerzy Majkowski; 21. Drug monitoring in combination therapy W. Froscher; 22. Cognitive side-effects due to antiepileptic drug combinations and interactions Albert P. Aldenkamp, Mark de Krom, I. Kotsopoulos and Jan Vermeulen; 23. Selection of drug combinations in clinical practice - current and future perspectives Jerzy Majkowski; 24. Future research - an experimental perspective R. A. Voskuyl, D. M. Jonker and R. H. Lopes da Silva; 25. Future research - a clinical perspective C. A. Fontes Ribeiro.

2005/514 pp./16 line diagrams

82219-X/Hb/List: \$150.00

Disc.: \$120.00

Shaking and Other Non-Accidental Head Injuries in Children

Editors

Robert Minns

University of Edinburgh

Keith Brown

Royal Hospital for Sick Children, Edinburgh

The Research Programme on Shaken Baby Syndrome in Edinburgh is internationally recognized for its prominent ongoing research into the epidemiology, biomechanics, primary and secondary brain insults, neuroradiological aspects, medical social aspects, and neurodevelopmental and neuropsychometric sequelae of shaking a baby. A highly distinguished team of experts from the program present the latest findings on the syndrome, covering both diagnosis and the long-term disability that results not only in psychological scars, but is also associated with a high degree of lifelong physical and intellectual disability.

Contents and Contributors:

Preface Martin Bax; 1. Epidemiology John Livingston; 2. Mechanisms and clinical presentation Robert Minns; 3. Haemorrhagic retinopathy of shaken injury: clinical and pathological aspects Andrew Parsons, Kristina May and Robert Doran; 4. Neuroimaging in acute and subacute non-accidental head injury: ultrasound and CT Tim Jaspas; 5. Initial and sequential MRI in

non-accidental injury Maeve McPhillips; 6. Skeletal injuries in non-accidental injury Stephanie McKenzie; 7. Secondary brain insults Peter Andrews; 8. Early post-traumatic seizures Karen Barlow and Robert Minns; 9. Mechanism and management of subdural haemorrhage Jonathan Punt; 10. Neurodevelopmental and neuropsychological outcome Karen Barlow; 11. Neuropathology of non-accidental head injury Jeanne Bell; 12. Child protection and prevention Jacqueline Mok; 13. Conclusions Robert Minns and Keith Brown; Glossary of terms Nina Punt; Index.

Clinics in Developmental Medicine
(Mac Keith Press)

2006/526 pp./80 half-tones

68335-2/Hb/List: \$170.00

The Clinical Neuropsychiatry of Stroke

Cognitive, Behavioral and Emotional Disorders following Vascular Brain Injury

2nd Edition

Robert G. Robinson

College of Medicine, University of Iowa

This fully revised new edition covers the range of neuropsychiatric syndromes associated with stroke, including cognitive, emotional and behavioral disorders such as depression, anxiety and psychosis. Since the last edition there has been an explosion of published literature on this topic and the book provides a comprehensive, systematic and cohesive review of this new material. There is growing recognition among a wide range of clinicians and allied healthcare staff that post-stroke neuropsychiatric syndromes are common and serious. Such complications can have a negative impact on recovery and even survival; however, there is now evidence suggesting that pre-emptive therapeutic intervention in high risk patient groups can prevent the initial onset of the conditions. This opportunity for primary prevention marks a huge advance in the management of this patient population. This book should be read by all those involved in the care of stroke patients, including psychiatrists, neurologists, rehabilitation specialists and nurses.

Contents:

1. Recent trends in the epidemiology of stroke; 2. Historical perspective; 3. Brain organization and cerebral basis of emotion; 4. Vascular anatomy and classification of stroke; 5. Diagnosis of depression; 6. Prevalence of depressive disorders; 7. Phenomenology and specificity of depressive disorders; 8. Natural course of depression; 9. Delayed-onset depression (proofed); 10. Relationship to lesion location; 11.

Relationship of depression to cerebral dominance and structural asymmetries; 12. Relationship of depression to bilateral hemisphere brain injury; 13. Relationship of depression to physical impairment; 14. Relationship to cognitive impairment and treatment; 15. Relationship of aphasia to depression; 16. Relationship of depression to social functioning; 17. Relationship to pre-morbid risk factors; 18. Mortality and treatment; 19. Suicidal thoughts and plans; 20. Biological markers; 21. Mechanisms of post-stroke depression; 22. Treatment of post-stroke depression; 23. Prevention of poststroke depression; 24. Prevalence and clinical symptoms; 25. Clinical and lesion correlates of poststroke mania; 26. Bipolar disorder following stroke; 27. Mechanism of mania following stroke; 28. Treatment of mania following stroke; 29. Prevalence and specificity of clinical symptoms; 30. Clinical and lesion correlates; 31. Longitudinal course; 32. Relationship of anxiety to outcome; 33. Mechanism and treatment of poststroke anxiety disorder; 34. Psychosis; 35. Anosognosia and denial of illness; 36. Catastrophic reaction; 37. Apathy; 38. Disturbance of prosody; 39. Irritability and aggression; 40. Pathological laughing and crying; 41. Summary and future directions.

2006/480 pp./140 figures

84007-4/Hb/List: \$150.00

Cannabis Dependence

Its Nature, Consequences and Treatment

Editors

Roger Roffman

University of Washington

Robert S. Stephens

Virginia Tech

Cannabis dependence is controversial. What are the health and behavioral risks of becoming cannabis-dependent? What counseling approaches have been tested with adults and adolescents, and how effective are they? What are the arguments for legalization, regulation, or prohibition? Looking back and toward the future, what do we know and what do we need to learn? This state-of-the-science review answers all such questions, beginning with an historical examination and moving into diagnosis, classification, epidemiology, public health, policy, issues relating to regulation and prohibition, and evidence-based interventions.

Contents and Contributors:

Foreword G. Alan Marlatt; Part I. The Nature of Cannabis Dependence: 1. Themes in the history of cannabis dependence Roger A. Roffman, Sam Schwartz and Robert S. Stephens; 2. The diagnosis of cannabis dependence Thomas F. Babor; 3. Understanding the pharmacology and physiology of cannabis dependence Aron H. Lichtman and Billy R. Martin; 4. The epidemiology of cannabis dependence James C. Anthony; 5. The adverse health and psychological consequences of cannabis dependence Wayne Hall and Nadia Solowij; Part II. Interventions with Cannabis-Dependent Adults: 6. Cognitive behavioral and motivational enhancement treatments Robert S. Stephens, Roger A. Roffman, Jan Copeland and Wendy Swift; 7. Contingency-management interventions for cannabis dependence Alan J. Budney, Brent Moore, Stacey C. Sigmon and Stephen T. Higgins; 8. The marijuana check-up Robert S. Stephens and Roger A. Roffman; 9. Guided self-change: a brief motivational intervention for cannabis abuse Linda Sobell, Mark B. Sobell, Eric Wagner, Sangeeta Agrawal and Timothy P. Ellingstad; 10. Supportive-expressive psychotherapy for cannabis dependence Brin Grenyer and Nadia Solowij; Part III. Interventions with Cannabis-Dependent Adolescents and Young Adults: 11. The cannabis youth treatment study: the treatment models and preliminary findings Guy Diamond, Jodi Leckrone, Michael L. Dennis and Susan H. Godley; 12. The teen cannabis check-up: exploring strategies for reaching young cannabis users James Berghuis, Wendy Swift, Roger A. Roffman, Robert S. Stephens and Jan Copeland; 13. Engaging young probation-referred cannabis-abusing individuals in treatment Kathleen Carroll, Rajita Sinha and Caroline Easton; Part IV. Policy: 14. The policy implications of cannabis dependence Wayne Hall and Wendy Swift; Part V. Conclusion: 15. The nature, consequences and treatment of cannabis dependence: implications for future research and policy Robert S. Stephens and Roger A. Roffman; Index.

International Research Monographs in the Addictions

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Textbook of Neural Repair and Rehabilitation

Editors

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University of Pennsylvania

Stephanie Clarke

Université de Lausanne, Switzerland

Leonardo Cohen

National Institute of Mental Health, Bethesda, Maryland

Pamela Duncan

University of Florida

Fred Gage

The Salk Institute, California

Volume 1, Neural Repair and Plasticity

In two freestanding volumes, *Textbook of Neural Repair and Rehabilitation* provides comprehensive coverage of the science and practice of neurological rehabilitation. This volume, *Neural Repair and Plasticity*, covers the basic sciences relevant to recovery of function following injury to the nervous system, reviewing anatomical and physiological plasticity in the normal CNS, mechanisms of neuronal death, axonal regeneration, stem cell biology, and neuron replacement. Edited and written by leading international authorities, it is an essential resource for neuroscientists and provides a foundation for the work of clinical rehabilitation professionals.

Contents and Contributors:

Preface; Neural repair and rehabilitation: an introduction; Part A. Neural plasticity: Part A1. Cellular and molecular mechanisms of neural plasticity: 1 Anatomical and biochemical plasticity of neurons: regenerative growth of axons, sprouting, pruning, and denervation; supersensitivity; 2 Learning and memory: basic principles and model systems; 3 Short-term plasticity: facilitation and post-tetanic potentiation; 4 Long-term potentiation and long-term depression; 5 Cellular and molecular mechanisms of associative and nonassociative learning; Part A2. Functional plasticity in CNS system; 6 Plasticity of mature and developing somatosensory systems; 7 Activity-dependent plasticity in the intact spinal cord; 8 Plasticity of cerebral motor functions: implications for repair and rehabilitation; 9 Plasticity in visual connections: retinal ganglion cell axonal development and regeneration; 10 Plasticity in auditory functions; 11 Cross-modal plasticity in sensory systems; 12 Attentional modulation of cortical plasticity; Section A3. Plasticity after injury to the CNS; 13 Plasticity in the injured spinal cord; 14 Plasticity after brain lesions; 15 From bench to bedside: influence of theories of plasticity on human neurorehabilitation; Part B. Neural Repair: Part B1. Basic cellular and molecular processes; 16 Neuronal death and rescue: neurotrophic factors and anti-

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This volume, *Medical Neurorehabilitation*, can stand alone as a clinical handbook for neurorehabilitation. It covers the practical applications of the basic science principles presented in volume 1, provides authoritative guidelines on the management of disabling symptoms, and describes comprehensive rehabilitation approaches for the major categories of disabling neurological disorders. Emphasizing the integration of basic and clinical knowledge, this book and its companion are edited and written by leading international authorities. Together they are an essential resource for neuroscientists and provide a foundation for the work of clinical neurorehabilitation professionals.

Contents and Contributors:

Preface; Neural repair and rehabilitation: an introduction; Part A: Technology of neurorehabilitation; Part A1: Outcomes measurement and diagnostic technology; 1. Outcomes measurement: basic principles and applications in stroke rehabilitation; 2. Human voluntary motor control and dysfunction; 3. Assessments, interventions, and outcome measures for walking; 4. Electromyography in neurorehabilitation; 5. Functional neuroimaging; Part A2: Therapeutic technology; 6. Cell transplantation therapy for Parkinson's disease; 7.

Conditions of task practice for individuals with neurologic impairments; 8. Balance training; 9. Functional electrical stimulation in neurorehabilitation; 10. Environmental control and assistive devices; 11. Wheelchair design and seating technology; 12. Rehabilitation robotics, orthotics, and prosthetics; 13. Virtual reality in neurorehabilitation; 14. Communication devices; Part B: Symptom-specific neurorehabilitation; Part B1: Sensory and motor dysfunctions; 15. Chronic pain; 16. Loss of somatic sensation; 17. Management of spasticity; 18. Arm and hand weakness; 19. Gait disorders and rehabilitation; 20. Balance, vestibular and oculomotor dysfunction; 21. Deconditioning and energy expenditure; Part B2: Vegetative and autonomic dysfunctions; 22. Rehabilitation of the comatose patient; 23. Plasticity in the neural pathways for swallowing; role in rehabilitation of dysphagia; 24. Autonomic dysfunction; 25. Sexual neurorehabilitation; Part B3: Cognitive neurorehabilitation; 26. Rehabilitation for aphasia; 27. Apraxia; 28. Unilateral neglect and anosognosia; 29. Memory dysfunction; 30. Neurorehabilitation of executive function; 31. Rehabilitation of dementia; Part C: Disease-specific; neurorehabilitation systems; 32. The organization of neurorehabilitation services: the rehabilitation team and the economics of neurorehabilitation; 33. Traumatic brain injury; 34. Neurorehabilitation in epilepsy; 35. Parkinson's disease and other movement disorders; 36. Neurorehabilitation of the stroke survivor; 37. Rehabilitation in spinal cord injury; 38. Multiple sclerosis; 39. Cerebral palsy and paediatric neurorehabilitation; 40. Neuromuscular rehabilitation: diseases of the motor neuron, peripheral nerve and neuromuscular junction; 41. Muscular dystrophy and other myopathies; Index.

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Essential Psychopharmacology of Depression and Bipolar Disorder

Stephen M. Stahl

University of California, San Diego

"This is an impressive book by an author who clearly knows how to communicate his subject in a clear and interesting way...It is beautifully illustrated in colour throughout...For those with clinical responsibility for prescribing anti-depressants and mood stabilisers, there is no other book quite like this to stimulate, inform and direct further inquiry."

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Contents:

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University of California, San Diego

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Stephen M. Stahl

University of California, San Diego

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Contents and Contributors:

Preface; Part I. Principles and General Methods: 1. Introduction: Animal modeling - a precious tool for developing remedies to neurological diseases Turgut Tatlisumak and Marc Fisher; 2. Ethical issues, welfare laws, and regulations David Whittaker; 3. Housing, feeding, and maintenance of rodents Robert W. Kemp; 4. Identification of individual animals Turgut Tatlisumak and Daniel Strbian; 5. Analgesia, anesthesia, and postoperative care in laboratory animals Naoya Masutomi and Makoto Shibutani; 6. Euthanasia in small animals Turgut Tatlisumak; 7. Various surgical procedures in rodents René Remie; 8. Genetically engineered animals Carolina M. Maier, Lilly Hsieh and Pak H. Chan; 9. Imaging in experimental neurology Marc Fisher, Eng H. Lo and Michael Lev; 10. Safety in animal facilities Tarja Kohila; 11. Behavioural testing in small animal models: ischemic stroke Larry B. Goldstein; 12. Methods for analysing brain tissue Poivi Liesi; 13. Targeting molecular constructs of cellular function and injury through in vitro and in vivo experimental models Zhao Zhong Chong, Faqi Li and Kenneth Maiese; 14. Neuroimmunology and immune-related neuropathologies Bao-Guo Xiao and Hans Link; 15. Animal models of sex differences in non-reproductive brain functions George T.

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Neurobiology

The Biology of Schwann Cells

Development, Differentiation and Immunomodulation

Editor

Patricia Armati

University of Sydney

Schwann cells are a diverse group of cells formed from neural crest cells. They are essential components of the peripheral nerves of both vertebrate and invertebrate nervous systems. The diversity of Schwann cell subsets and function is seen in those Schwann cells that form myelin - that uniquely specialized part of the plasma membrane that spirals around axonal lengths to myelinate the peripheral nerves. *The Biology of Schwann Cells* concentrates on the cells of mammals and in particular humans. It covers the distinction between compact and non-compact myelin in depth, along with the perisynaptic cells which form the partnership between nerve terminals and muscle fibre. Developmental aspects are discussed alongside differentiation, and the genetics of the cells in health and disease. With chapters from world-renowned experts, this book is aimed at postgraduates and researchers in neuroscience and neurology and anyone involved in the study of peripheral nerves.

Contents and Contributors:

Preface; Dedication; 1. Introduction to the Schwann Cell Emily Mathey and Patricia J Armati; 2. Early events in Schwann Cell Development Rhona Mirsky and Kristjan R Jessen; 3. The Molecular Organization of Myelinating Schwann Cells Edgardo J. Arroyo and Steven S. Scherer; 4. The role of the extracellular matrix in Schwann Cell Development and Myelination Maria Laura Feltri and Lawrence Wrabetz; 5. The Biology of Perisynaptic (Terminal) Schwann Cells Chien-Ping Ko, Yoshie Sugiura and Zhihua Feng; 6. Cytokine and Chemokine interactions with Schwann Cells: The Neuroimmunology of Schwann Cells Robert P. Lisak and Joyce A. Benjamins; 7. Schwann Cells as Immunomodulatory Cells Bernd C. Kieseier, Wei Hu, and Hans-Peter Hartung; 8. Mutations in Schwann Cell genes causing inherited neuropathies Michael E. Shy, John Kamholz and Jun Li; 9. Guillain-Barré Syndrome and the Schwann Cell Richard AC Hughes; 10. Chronic idiopathic demyelinating polyneuropathy and Schwann Cells John D. Pollard

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York University, Ontario

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The Thalamus

2nd Edition

Edward G. Jones

University of California, Davis

Edward G. Jones' *The Thalamus* is one of the most cited publications in neuroscience. Now more than 20 years after its first printing, the author has completely rewritten his landmark volume, incorporating the numerous developments in research and understanding of the mammalian thalamus. As a leading authority on thalamus biology and function, Edward G. Jones shows how knowledge of the thalamus has developed with the introduction of new technologies and ideas. The author's photo-

graphic skills are exhibited in brilliant preparations of thalamic structure in a wide range of common and uncommon species. *The Thalamus* is both an up-to-date scientific review of virtually all aspects of fore-brain function and a work of immense neuroscientific scholarship. It forms an essential reference for neuroanatomists, neurophysiologists, molecular neurobiologists, developmental neurobiologists and clinicians. Its deep historical perspective will be of value to historians of science.

Contents and Contributors:

Part I. History: 1. The history of the thalamus; Part II. Fundamental Principles: 2. Descriptions of the thalamus in representative mammals; 3. Principles of thalamic organization; 4. Thalamic neurons, synaptic organization and functional properties; 5. Chemistry of the thalamus; Part III. Development: 6. Development of the thalamus; Part IV. Individual Thalamic Nuclei: 7. Ventral nuclei; 8. Medial geniculate complex; 9. Lateral geniculate nucleus; 10. Lateral posterior and pulvinar nuclei; 11. Posterior complex of nuclei; 12. Intralaminar nuclei; 13. Medial nuclei; 14. Anterior nuclei and lateral dorsal nucleus; 15. Ventral thalamus; 16. Epithalamus; Part V. Comparative Structure: 17. Comparative anatomy of the thalamus; 18. The human thalamus; Part VI. Conclusions: 19. Concluding remarks; References; Index.

2006

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Behaviour and Neurodynamics for

Auditory Communication

Editors

Jagmeet Kanwal

Georgetown University, Washington DC

Günter Ehret

Universität Ulm, Germany

How do animals produce and process sounds for communication? How do their brains encode the large amounts of sensory information so rapidly and how do they use this to cope with their environment? These questions not only concern the evolution of sound communication systems but also aim to understand how arousal, motivation, emotion and behavioral contexts are vocally expressed and how important sound attributes are recognized and perceived. This book highlights auditory communication in several species from four perspectives: actual sound communication, audio-vocal adaptations, adaptations of sound processing and representation in higher auditory brain centers, and emotional and cognitive adaptations in signaling and processing. Broad in scope and

geared towards graduate students and researchers within the fields of auditory communication and cognition, this book will appeal to auditory neurobiologists, speech, hearing and communication scientists and engineers, students of animal behavior and neuroethologists.

Contents and Contributors:

Preface; Part I. Behavioral and Anatomical/Physiological Adaptations: 1. Vocal mechanisms for avian communication Roderick A. Suthers, Gabriël J. L. Beckers and Brian S. Nelson; 2. The blind mole rat: an example of seismic communication via acoustic channels Zvi Wollberg, Rony Rado and Ronen S. Sadka; 3. Audiovocal communication and social behavior in mustached bats Matthew J. Clement, Punita Gupta, Nicole Dietz and Jagmeet S. Kanwal; 4. Common rules of communication sound perception Günter Ehret; Behavioral and physiological adaptations: summary and discussion Günter Ehret and Jagmeet S. Kanwal; Part II. Neural Adaptations and Plasticity: 5. Neural mechanisms of vocal communication: interfacing with neuroendocrine mechanisms Andrew Bass; 6. Processing of species specific vocalizations in the auditory brainstem and midbrain of Mexican free tailed bats (*Tadarida brasiliensis*) Achim Klug, Eric E. Bauer, Joshua T. Hanson and George D. Pollak; 7. A distributed cortical representation of social communication calls Jagmeet S. Kanwal; 8. Spatiotemporal processing in the guinea pig auditory cortex Junsei Horikawa, Andreas Hess, Yutaka Hosokawa and Ikuo Taniguchi; 9. Hierarchical processing of communication sounds in primates Josef Rauschecker and Biao Tian; 10. Synaptic mechanisms and sensitive periods for song learning J. Matthew Kittelberger and Richard Mooney; 11. Neuronal substrates of sensory processing for song perception and learning in songbirds: lessons from the mormyrid electric fish Claudio V. Mello and Patrick D. Roberts; 12. Cortical plasticity and auditory communication Jun Yan and Jos Eggermont; 13. Mesoscopic neurodynamics in cortex during auditory concept learning Frank W. Ohl, Henning Scheich and Walter J. Freeman; Neural adaptations and plasticity: summary and discussion Jagmeet S. Kanwal and Günter Ehret; Appendix: Basics of acoustic signal processing.

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Neural Plasticity and Disorders of the Nervous System

Age Moller

University of Texas, Dallas

Neural Plasticity and Disorders of the Nervous System provides comprehensive coverage of the pathophysiology of neurological disorders emphasizing those disorders where expression of plasticity is evident. It includes the basis for the expression of neural plasticity; how reorganization of the nervous system can cause hyperactivity in sensory systems producing central neuropathic pain, tinnitus and paresthesia; the role of little-known non-classical pathways in pain and sensory disorders and their subcortical connections; hyper- and hypoactivity of motor systems after injury, and the role of spinal reflexes and internal processing in the spinal cord. Phantom symptoms and disorders of nerves and associated disorders are discussed, along with disorders that can be cured by microvascular decompression operations. A detailed and comprehensive description of the organization of pain circuits and sensory and motor nervous systems is also included. *Neural Plasticity and Disorders of the Nervous System* is aimed at students and graduates of neuroscience and medicine.

Contents:

Introduction; 1. Anatomical and physiological basis for neural plasticity; 2. Nerves; 3. Sensory systems; 4. Pain; 5. Movement disorders; 6. Cranial nerves and neurotology.

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Brain Norepinephrine

Neurobiology and Therapeutics

Editors

Gregory Ordway

University of Mississippi

Michael Schwartz

University of Hawaii, Manoa

Alan Frazer

University of Texas Health Science Center, San Antonio

Norepinephrine is a chemical neurotransmitter. Drugs that directly manipulate central nervous system (CNS) norepinephrine are being developed targeting noradrenergic neurons to deliver therapeutic effects. Noradrenergic drugs have been proven effective for depression and ADHD, and new disease indications are being identified. Recent discoveries about norepinephrine's contribution to health, disease, and therapy make this synthesis of evidence, practice and research very timely. A team of experts provides the reader with a thorough

understanding of the anatomy, physiology, molecular biology, pharmacology, and therapeutics of norepinephrine in the brain, including an extensive review of the role of norepinephrine in brain diseases. The book is divided into four sections: the basic biology of norepinephrine; the role that norepinephrine plays in behavior; evidence of norepinephrine's role in CNS diseases, and the pharmacology and therapeutics of noradrenergic drugs in the treatment of psychiatric and neurological disorders.

Contents and Contributors:

Introduction: Revision of an Old Transmitter Gregory A. Ordway; Part I. The Neurobiology of Norepinephrine: 1. Neuroanatomical and chemical organization of the locus coeruleus Kimberly L. Simpson and Rick C. S. Lin; 2. Interactions of norepinephrine with other neurotransmitter systems: anatomical basis and pharmacology Craig A. Stockmeier and Gregory A. Ordway; 3. Receptors for norepinephrine and signal transduction pathways David B. Bylund; 4. Regulation of gene transcription in the central nervous system by norepinephrine Ronald S. Duman and Samuel S. Newton; 5. The norepinephrine transporter and regulation of synaptic transmission Subbu Apparsundaram; Part II. Norepinephrine and Behavior: 6. Role of the locus coeruleus-norepinephrine system in arousal and circadian regulation of the sleep wake cycle Gary S. Aston-Jones, Monica Gonzalez and Scott Doran; 7. Locus coeruleus and regulation of behavioral flexibility and attention: clinical implications Gary S. Aston-Jones, Michiyo Iba, Edwin Clayton, Janusz Rajkowski and Jonathan Cohen; 8. Norepinephrine and long-term memory function Benno Rooszendaal; 9. Norepinephrine and stress David A. Morilak; Part III. The Biology of Norepinephrine in CNS Pathology: 10. Animal models of psychopathology: focus on norepinephrine Leonie A. M. Welberg and Paul Hotsky; 11. Neuropathology of central norepinephrine in psychiatric disorders: postmortem research Gregory A. Ordway; 12. Norepinephrine in mood disorders Pedro L. Delgado and Cristinel Coconcea; 13. Noradrenergic pathology and pain Antti Pertovaara; 14. Norepinephrine in cognitive disorders Amy F. T. Arnsten; 15. Norepinephrine in neurological disorders Francesco Fornai; 16. Genetics of noradrenergic neurobiology Inna Belfer and David Goldman; Part IV. Psychopharmacology of Norepinephrine: 17. Actions of antidepressants and other drugs on norepinephrine systems Elliott Richelson; 18. The clinical role of norepinephrine antidepressants in depression and anxiety disorders J. Craig Nelson; 19. Norepinephrine in attention deficit hyperactivity disorder Fred W. Riemhert, Michael A. Schwartz, B. K. Marchant and E. Higgins; 20. Psychopharmacology of norepinephrine in eating disorders Katherine A.

Halmi and Sun Young Yum; 21. Role of norepinephrine in substance abuse Susan L. Broom and Bryan K. Yamamoto.

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The Circuitry of the Human Spinal Cord

Its Role in Motor Control and Movement Disorders

Emmanuel Pierrot-Deseilligny

Groupe Hospitalier Pitié-Salpêtrière, Paris

David Burke

University of Sydney

"This is an excellent book to be purchased for major academic neuroscience libraries."

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"Emmanuel Pierrot-Deseilligny and David Burke's important new book represents a review of many recent developments in the workings of the human spinal cord. This book elegantly illuminates the fundamental circuits that provide the physiological underpinnings of that achievement."

Brain

Studies of human movement have proliferated in recent years, and there have been many studies of spinal pathways in humans, their role in movement, and their dysfunction in neurological disorders. This comprehensive reference surveys the literature related to the control of spinal cord circuits in human subjects, showing how they can be studied, their role in normal movement, and how they malfunction in disease states. Chapters are highly illustrated and consistently organized, reviewing, for each pathway, the experimental background, methodology, organization and control, role during motor tasks, and changes in patients with CNS lesions. Each chapter concludes with a helpful resume that can be used independently of the main text to provide practical guidance for clinical studies. This will be essential reading for research workers and clinicians involved in the study, treatment and rehabilitation of movement disorders.

Contents:

1. General methodology; 2. Monosynaptic Ia excitation and post-activation depression; 3. Muscle spindles and fusimotor drive: microneurography and other techniques; 4. Recurrent inhibition; 5. Reciprocal Ia inhibition; 6. Ib pathways; 7. Group I pathways; 8. Presynaptic inhibition of Ia terminals; 9. Cutaneous withdrawal and flexor reflex afferent responses; 10. Propriospinal relay for descending motor commands; 11. Involvement of spinal pathways in different motor tasks; 12. The pathophysiology of spasticity and Parkinsonian rigidity.

2005/664 pp./138 line diagrams/3 half-tones/10 tables/3 color figures

82581-4/Hb/List: \$190.00

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Retinal Development

Editors

Evelyne Sernagor

University of Newcastle

Stephen J. Eglén

University of Cambridge

William A. Harris

University of Cambridge

Rachel Wong

Washington University, St. Louis

This advanced text takes a developmental approach to the presentation of our current understanding of how vertebrates construct a retina. Written by experts in the field, each of the seventeen chapters covers a specific step in the process, focusing on the underlying molecular, cellular, and physiological mechanisms. There is also a special section on emerging technologies, including genomics, zebrafish genetics, and stem cell biology that are starting to yield important new insights into retinal development. Primarily aimed at professionals, both biologists and clinicians working with the retina, this book provides a concise and up-to-date view of what is known about vertebrate retinal development. Since the retina is "an approachable part of the brain," this book will also be attractive to all neuroscientists interested in development, as processes required to build this exquisitely organized system are ultimately relevant to all other parts of the central nervous system.

Contents and Contributors:

Foreword Alan Bird; Preface; 1. Introduction Rachel O. L. Wong; 2. Formation of the eye field Michael E. Zuber and William A. Harris; 3. Retinal neurogenesis David H. Rapaport; 4. Cell migration Leanne Godinho and Brian Link; 5. Cell determination Michalis Agathocleous and William A. Harris; 6. Neurotransmitters and neurotrophins Rachael A. Pearson; 7. Emergence of the fovea Anita Hendrickson and Jan M. Provis; 8. Optic nerve formation David W. Sretavan; 9. Glial cells in the developing retina Kathleen Zahs and Manuel Esguerra; 10. Retinal mosaics Stephen J. Eglén and Lucia Galli-Resta; 11. Programmed cell death Rafael Linden and Benjamin E Reese; 12. Dendritic growth Jeff S. Mumm and Christian Lohmann; 13. Synaptogenesis and early neural activity Evelyne Sernagor; 14. Emergence of light responses Evelyne Sernagor and Leo M. Chalupa; New Perspectives 15. Regeneration (and stem cells) Jennie Close and Thomas A. Reh; 16. Genomics Seth Black-

shaw; 17. Zebrafish models of retinal development and disease James M. Fadool and John E. Dowling.

2006/c. 400 pp./36 line diagrams/
21 half-tones/8 color plates/8 tables
83798-7/Hb/List: \$130.00

Gating in Neuronal Networks

Mircea Steriade

Université Laval, Québec

Denis Pare

Rutgers University, New Jersey

The correct functioning of the mammalian brain depends on the integrated activity of myriad neuronal and non-neuronal cells. Discrete areas serve discrete functions, and dispersed or distributed communities of cells serve others. Throughout, these networks of activity are under the control of neuromodulatory systems. One goal of current neuroscientific research is to elucidate the precise methods by which these systems operate, especially during normal conscious behaviors and processes. Mircea Steriade and Denis Pare describe the neuronal properties and networks that exist within and between the cortex and two important subcortical structures; the thalamus and amygdala. The authors explore the changes in these properties, covering topics including morphology, electrophysiology, architecture and gating; and comparing regions and systems in both normal and diseased states. Aimed at graduates and postdoctoral researchers in neuroscience.

Contents:

1. Morphology and properties of neurons in the thalamus; 2. Architecture and electrophysiology of neocortical cells; 3. Amygdala; 4. Rhinal and medial prefrontal cortices; 5. Neuromodulation and state-dependent activities in forebrain neuronal circuits; 6. Gating of signals in brain-disconnected slow-wave sleep; 7. Neuronal processes and cognitive functions in brain-active states of waking and REM sleep; 8. Comparison of state-dependent activity patterns in the thalamocortical, hippocampal and amygdalocortical systems; 9. Neuronal substrates of some mental disorders.

2006

85122-X/Hb/List: \$170.00*

Invertebrate Vision

Editors

Eric J. Warrant

Dan-E. Nilsson

Lunds Universitet, Sweden

Ten distinct eye designs have been identified in the animal kingdom. Whereas vertebrates possess only one, invertebrates possess all ten, from simple assemblies of photoreceptors to advanced compound and camera eyes, which support a sophisticated range of visual behaviors. Many invertebrates have exquisite sensitivity to light, can distinguish a broad spectrum of colors, detect subtle polarized light cues, and negotiate obstacles at high speed. The basic principles used to acquire and process such visual information are remarkably similar across the animal kingdom. In invertebrates, these principles frequently involve neural tricks and short cuts, some of which have been successfully exploited to create artificial visual systems for robots. *Invertebrate Vision* is a complete synthesis of our current knowledge concerning how invertebrates see, the principles used to process visual information and how vision is used in the daily struggle for survival. It will appeal to anyone interested in the vision sciences.

Contents and Contributors:

Foreword Adrian Horridge; Preface Eric Warrant and Dan-Eric Nilsson; 1. Invertebrate photoreceptor optics Døeke Stavenga; 2. Phototransduction in invertebrate photoreceptors Roger Hardie; 3. Invertebrate vision in dim light Eric Warrant; 4. Endogenous control of visual adaptation in invertebrates Gerta Fleissner and Günther Fleissner; 5. General purpose and special purpose visual systems Michael Land and Dan-Eric Nilsson; 6. Invertebrate vision in water Thomas Cronin; 7. Invertebrate colour vision Almut Kelber; 8. Polarization vision Rüdiger Wehner and Thomas Labhart; 9. Parallel processing in the optic lobes of flies and the occurrence of motion computing circuits Nicholas Strausfeld, John Douglass, Holly Campbell and Charles Higgins; 10. The neural computation of visual motion information Martin Egelhaaf; 11. Small brains, smart minds: vision, perception, navigation and "cognition" in insects Mandyam Srinivasan, Shaowu Zhang and Judith Reinhard; 12. Visual processing of pattern Adrian Horridge.

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17 color plates/9 tables

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Computational and Quantitative Neuroscience

The NEURON Book

Nicholas T. Carnevale
Michael L. Hines

Yale University, Connecticut

Assuming no previous knowledge of computer programming or numerical methods, *The NEURON Book* provides practical advice on how to get the most out of the NEURON software program. Although written primarily for neuroscientists, teachers and students, readers with a background in the physical sciences or mathematics and some knowledge about brain cells and circuits, will also find it helpful. Covering details of NEURON's inner workings, and practical considerations specifying anatomical and biophysical properties to be represented in models, this book uses a problem-solving approach that includes many examples to challenge readers.

Contents:

Preface; 1. A tour of the NEURON simulation environment; 2. Principles of neural modeling; 3. Expressing conceptual models in mathematical terms; 4. Essentials of numerical methods for neural modeling; 5. Representing neurons with a digital computer; 6. How to build and use models of individual cells; 7. How to control simulations; 8. How to initialize simulations; 9. How to expand NEURON's library of mechanisms; 10. Synaptic transmission and artificial spiking cells; 11. Modeling networks; 12. hoc, NEURON's interpreter; 13. Object-oriented programming; 14. How to modify NEURON itself; Appendix A1. Mathematical analysis of IntFire4; Appendix A2. NEURON's built-in editor.

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Extending Mechanics to Minds

*The Mechanical Foundations of
Psychology and Economics*

Jon Doyle

North Carolina State University

"This is an extraordinary treatise providing insight into a broad range of interrelated topics that have puzzled philosophers for millennia and occupied researchers in artificial intelligence, economics, cognitive science and psychology for as long as these disciplines have existed. Doyle has himself been studying these topics for over two decades and has probably done more than any other scholar to bring to bear the perspectives and insights offered by these disciplines and then to craft a new theory that borrows from the past but considerably expands the explanatory power of previous theories."

Thomas Dean, Brown University

This book deploys the mathematical axioms of modern rational mechanics to understand minds as mechanical systems that exhibit actual, not metaphorical, forces, inertia, and motion. Using precise mental models developed in artificial intelligence, the author analyzes motivation, attention, reasoning, learning, and communication in mechanical terms. These analyses provide psychology and economics with new characterizations of bounded rationality; provide mechanics with new types of materials exhibiting the constitutive kinematic and dynamic properties characteristic of different kinds of minds; and provide philosophy with a rigorous theory of hybrid systems combining discrete and continuous mechanical quantities. The resulting mechanical reintegration of the physical sciences that characterize human bodies and the mental sciences that characterize human minds opens traditional philosophical and modern computational questions to new paths of technical analysis.

Contents:

Part I. Reconciling Natural and Mental Philosophy; Part II. Reconstructing Rational Mechanics; Part III. Mechanical Minds; Part IV. The Metaphysics of Mechanics; Part V. Conclusion of the Matter.

2006/480 pp.
86197-7/Hb/List: \$95.00

Multivariable Analysis*A Practical Guide for Clinicians
2nd Edition***Mitchell H. Katz**

University of California, San Francisco

This new edition has been fully revised to build on the enormous success of its popular predecessor. It now includes new features introduced by readers' requests including a new chapter on propensity score, more detail on clustered data and Poisson regression and a new section on analysis of variance. As before, it describes how to perform and interpret multivariable analysis, using plain language rather than complex derivations and mathematical formulae. It prepares the reader to perform and interpret multivariable models. Numerous tables, graphs and tips help to simplify and explain the process of performing multivariable analysis.

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CALL:**1-800-872-7423****FAX ORDERS TO:****(845) 353-4141****LOG ON TO:****www.us.cambridge.org****Systems Neuroscience****Olfaction and the Brain****Editors****Warrick Brewer**Mental Health Research Institute of Victoria,
Melbourne**David Castle**

University of Melbourne

Christos Pantelis

Olfaction and its relation to mental health is an area of growing interest, evidenced by the 2004 Nobel Prize in Physiology or Medicine being awarded for discoveries relating to odorant receptors and the organization of the olfactory system. Olfaction is of particular interest to specialists seeking a fuller understanding of schizophrenia. Clear deficits in the sense of smell could predict schizophrenia in apparently unaffected individuals. In this timely book, Warrick Brewer and his team of experts set out our current understanding of olfaction and mental health, relating it to broader principles of neural development and processing as a foundation for understanding psychopathology. The neuropathological, neuropsychological and neuropsychiatric aspects of olfactory function and dysfunction are all covered (drawing on the latest neuroimaging techniques where appropriate), and indications for future research and applications are discussed. This volume will be a source of state-of-the-art information and inspiration to all mental health professionals.

Contents and Contributors:

Forward Peter Doherty; Preface Warrick Brewer, David Castle and Christos Pantelis; Part I. Neurology, Neurophysiology and Neuropsychology - Olfactory Clues to Brain Development and Disorder: 1. Structure and function of the olfactory system Alan Mackay-Sim and Jean-Pierre Royet; 2. Olfaction and the temporal lobes Jelena Djordjevic and Marilyn Jones-Gotman; 3. Role of the insula in smell and disgust Mary Phillips and Maïke Heining; 4. Memory of smells past Mikisha Doop, Christine Mohr, Bradley Folley, Warrick Brewer and Sohee Park; 5. Olfactory neurogenesis: a window on brain development François Fénel, Richard McCurdy, John McGrath, Alan Mackay-Sim; 6. Olfactory processing and brain maturation Warrick Brewer, Stephen Wood, Cinzia De Luca and Christos Pantelis; 7. Probing behavior regulation: role for olfaction in addiction? Dan Lubman, Warrick Brewer and Murat Yücel; Part II. Social Functioning: Role of Evolution, Genetics and Gender: 8. Primate evolution: anatomy and olfaction Timothy Smith and James Rossie; 9. Genetics and family influ-

ences on olfaction Raquelle Mesholam-Gately and Larry Seidman; 10. Sex differences and olfactory function Kim Good and Lili Kopala; 11. Role of pheromones and chemistry lessons from comparative anatomy Michael Stoddart; 12. The impact of olfaction on human social functioning Dolores Malaspina, Cheryl Corcoran and Nora Goudsmit; Part III. Assessment and Disorders of Olfaction: 13. Assessment of olfaction Richard Doty; 14. Olfaction and neuropsychiatric disorders: what can deficits tell us? Christos Pantelis and Warrick Brewer; 15. Olfaction in Parkinsonian syndromes: early prediction? Christopher Hawkes; 16. Olfaction in psychosis Paul Moberg and Bruce Turetsky; 17. Olfactory hallucinations Dennis Velakoulis; 18. Delusions of body malodour: the olfactory reference syndrome Katherine Phillips, Graig Gunderson, Uschi Gruber and David Castle.

2006/c. 336 pp./44 line diagrams/48 figures/
4 color figures

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The Integrative Action of the Autonomic Nervous System

Neurobiology of Homeostasis

Wilfrid Janig

Christian-Albrechts Universität zu Kiel, Germany

Almost all bodily functions are dependent on the functioning of the autonomic nervous system—from the cardiovascular system, the gastrointestinal tract, the evacuative and sexual organs, to the regulation of temperature, metabolism and tissue defence. Balanced functioning of this system is an important basis of our life and well-being. This book gives a detailed description of the cellular and integrative organization of the autonomic nervous system, covering both peripheral and central aspects. It brings to light modern neurobiological concepts that allow understanding of why the healthy system runs so smoothly and why its deterioration has such disastrous consequences. This academic reference volume will appeal to advanced undergraduate and graduate students studying the neurobiology of the autonomic nervous system within the various biological and medical sciences and will give access to ideas propagated in psychosomatic and alternative medicines.

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peripheral sympathetic and parasympathetic pathways; 5. The enteric nervous system; Part III. Transmission of Signals in the Peripheral Autonomic Nervous System: 6. Impulse transmission through autonomic ganglia; 7. Mechanisms of neuroeffector transmission; Part IV. Central Representation of the Autonomic Nervous System: 8. Anatomy of central autonomic systems; 9. Spinal autonomic systems; 10. Regulation of organ systems by the lower brain stem; 11. Integration of homeostatic regulations in upper brain stem and limbic-hypothalamic centres a summary.

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Cognitive Neuroscience

Lifespan Development and the Brain

The Perspective of Biocultural Co-Constructivism

Editors

Paul Baltes

Max-Planck-Institut für Bildungsforschung, Berlin

Patricia Reuter-Lorenz

University of Michigan, Ann Arbor

Frank Rosler

Philipps-Universität Marburg, Germany

This book focuses on the developmental analysis of brain-culture-environment dynamics and argues that this dynamic is interactive and reciprocal. Brain and culture co-determine each other. As a whole, this book refutes any unidirectional conception of the brain-culture dynamic. Each is influenced by and modifies the other. To capture the ubiquitous reach and significance of the mutually dependent brain-culture system, the metaphor of biocultural co-constructivism is invoked. Distinguished researchers from cognitive neuroscience, cognitive psychology, and developmental psychology review the evidence in their respective fields. A special focus of the book is its coverage of the entire human lifespan from infancy to old age.

2006/448 pp./9 tables
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Handbook of Psychophysiology*3rd Edition***Editors****John T. Cacioppo****Gary Berntson**

Ohio State University

The *Handbook of Psychophysiology*, 3rd Edition, is an essential reference for students, researchers, and professionals in the behavioral, cognitive, and biological sciences. Psychophysiological methods, paradigms, and theories offer entry to a biological cosmos that does not stop at skin's edge, and this essential reference is designed as a road map for explorers of this cosmos. The scope and coverage in the *Handbook* have expanded to include both a context for and coverage of the biological bases of cognitive, affective, social, and developmental processes and behavior. In addition to updated coverage of the traditional areas of psychophysiology, coverage of the brain and central nervous system has been expanded to include functional neuroimaging, event-related brain potentials, electrophysiological source dipole localization, lesion methods, and transcranial magnetic stimulation. It also includes a section on cellular and humoral systems with attention to the communication across and interactions among cellular, immunological, endocrinological, and neural processes.

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