

The Nervous System Introduction Spinal Cord And Spinal

Aging of the Autonomic Nervous System is the first book devoted to the aging of the autonomic nervous system. The book presents the most recent findings on topics such as general aspects of the autonomic nervous system, main neurotransmitter systems, age-dependent changes of neuroeffector mechanisms in target organs, and therapeutic perspectives. It also provides a comprehensive analysis of the possible consequences of these findings. Aging of the Autonomic Nervous System will be a useful volume for gerontologists and neuroscientists.

Essential Clinically Applied Anatomy of the Peripheral Nervous System in the Limbs is designed to combine the salient points of the anatomy of the PNS with typical pathologies affecting the nerves of the upper and lower limbs. The book is a quick reference guide for those studying and treating neuromuscular disease such as neurologists, neurosurgeons, neuroradiologists, and clinical neurophysiologists. Readers will find easy-to-access facts about the anatomy of the nerves in the limbs, coupled with clinically applied scenarios relevant to that area being discussed, as well as clinical findings on examination. The book's purpose is to provide the reader with a succinct presentation of the relevant anatomy of the PNS in the limbs and how it is directly applicable to day-to-day clinical scenarios. It presents the reader with an easily accessible format to clinically applied PNS anatomy that is perfect for quick reference. Chapters review the nerves of the upper and lower limbs, and the origins, course, distribution and relevant pathologies affecting each. These pathologies present typical injuries to the nerves of the PNS, as well as clinical findings on examination and treatments. Provides a resource on the anatomy of the PNS nerves in the limbs, including key facts and summary tables that are essential to clinical practice Reports on typical injuries to the nerves of the PNS, as well as clinical findings on examination and treatments Presents a succinct, yet comprehensive, format with quick and easy access facts for quick reference Includes comprehensive chapters on nerves of the upper and lower limbs, discussing origin, course, distribution, and relevant pathologies

Glutamate is the most pervasive neurotransmitter in the central nervous system (CNS). Despite this fact, no validated biological markers, or biomarkers, currently exist for measuring glutamate pathology in CNS disorders or injuries. Glutamate dysfunction has been associated with an extensive range of nervous system diseases and disorders. Problems with how the neurotransmitter glutamate functions in the brain have been linked to a wide variety of disorders, including schizophrenia, Alzheimer's, substance abuse, and traumatic brain injury. These conditions are widespread, affecting a large portion of the United States population, and remain difficult to treat. Efforts to understand, treat, and prevent glutamate-related disorders can be aided by the identification of valid biomarkers. The Institute of Medicine's Forum on Neuroscience and Nervous System Disorders held a workshop on June 21-22, 2010, to explore ways to accelerate the development, validation, and implementation of such biomarkers. Glutamate-Related Biomarkers in Drug Development for Disorders of the Nervous System: Workshop Summary investigates promising current and emerging technologies, and outlines strategies to procure resources and tools to advance drug development for associated nervous system disorders. Moreover, this report highlights presentations by expert panelists, and the open panel discussions that occurred during the workshop.

"Both teacher and reader will find here a careful presentation of both text and illustrations. The writing is clear, the organization is logical, and the illustrations are appropriate... this book is indeed good value." (TINS) "...the author has met his objective of whetting the appetite of his readers and encouraging the further pursuit of the subject." (Journal of Anatomy) "Brown argues (correctly in this reviewer's opinion) that neuroscience is primarily an experimental endeavor and therefore is taught best by presenting undergraduate students with the methods as well as the data of "classical" neurophysiological experiments. To this end, Brown has done a good job of supporting basic ideas with actual experimental methodology and results." (Choice)

A monograph on Neuroscience written to introduce the reader to the basic sciences of the Nervous System: Neurobiology and Behavioral Science. The text is conceptually illustrated and written in a familiar way to encourage the reader to participate to better understand him or her self. Further, encompassing the material contained within this monograph presented with tripartite logic in relation to the biologic and behavioral material will form a foundation for a more meaningful in depth study of the Nervous System and all of its ramifications. The Appendix contains a book of poetry written in concert with the creation of this monograph.

New edition building on the success of previous one. Retains core aim of providing an accessible introduction to behavioral neuroanatomy.

The peripheral nervous system is usually defined as the cranial nerves, spinal nerves, and peripheral ganglia which lie outside the brain and spinal cord. To describe the structure and function of this system in one book may have been possible last century. Today, only a judicious selection is possible. It may be fairly claimed that the title of this book is not misleading, for in keeping the text within bounds only accounts of olfaction, vision, audition, and vestibular function have been omitted, and as popularly understood these topics fall into the category of special senses. This book contains a comprehensive treatment of the structure and function of peripheral nerves (including axoplasmic flow and trophic functions); junctional regions in the autonomic and somatic divisions of the peripheral nervous system; receptors in skin, tongue, and deeper tissues; and the integrative role of ganglia. It is thus a handbook of the peripheral nervous system as it is usually understood for teaching purposes. The convenience of having this material inside one set of covers is already proven, for my colleagues were borrowing parts of the text even while the book was in manuscript. It is my belief that lecturers will find here the information they need, while graduate students will be able to get a sound yet easily read account of results of research in their area. JOHN 1. HUBBARD vii Contents SECTION I-PERIPHERAL NERVE Chapter 1 Peripheral Nerve Structure 3 Henry deF. Webster 3 1. Introduction .

In this work, the authors integrate three major basic themes of neuroscience to serve as an introduction and review of the subject.

An Introduction to the Study of the Nervous System covers topics about the minute structure and functions of the nervous system. The book discusses the minute and gross anatomy of the various parts of the nervous system; the degenerative and regenerative changes following section of the nerves; and the descending and ascending tracts of the spinal cord. The text then describes the cerebellar connections; the deep connections of the cranial nerves; and the microscopic structure of the cortex of the cerebellum and of the cerebrum. The distribution, source, circulation and absorption, pressure, and normal composition of the cerebrospinal fluid and the parts and functions of the autonomic nervous system are also considered. The book further tackles the normal physiology of the sensory and motor paths; the results of interference with the general sensory path at various levels; and the visual path and interference therewith. The text also discusses the cochlear and olfactory paths and the interference therewith and the levels of integration and mechanism of coordinated muscular movement. Students taking courses related to neurology will find the book useful.

Three distinct types of contractions perform colonic motility functions. Rhythmic phasic contractions (RPCs) cause slow net distal propulsion with extensive mixing/turning over. Infrequently occurring giant migrating contractions (GMCs) produce mass movements. Tonic contractions aid RPCs in their motor function. The spatiotemporal patterns of these contractions differ markedly. The amplitude and distance of propagation of a GMC are several-fold larger than those of an RPC. The enteric neurons and smooth muscle cells are the core regulators of all three types of contractions. The regulation of contractions by these mechanisms is modifiable by extrinsic factors: CNS, autonomic neurons, hormones, inflammatory mediators, and stress mediators. Only the GMCs produce descending inhibition, which accommodates the large bolus being propelled without increasing muscle tone. The strong compression of the colon wall generates afferent signals that are below nociceptive threshold in healthy subjects. However, these signals become nociceptive; if the amplitudes of GMCs increase, afferent nerves become hypersensitive, or descending inhibition is impaired. The GMCs also provide the force for rapid propulsion of feces and descending inhibition to relax the internal anal sphincter during defecation. The dysregulation of GMCs is a major factor in colonic motility disorders: irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), and diverticular disease (DD). Frequent mass movements by GMCs cause diarrhea in diarrhea predominant IBS, IBD, and DD, while a decrease in the frequency of GMCs causes constipation. The GMCs generate the afferent signals for intermittent short-lived episodes of abdominal cramping in these disorders. Epigenetic dysregulation due to adverse events in early life is one of the major factors in generating the symptoms of IBS in adulthood.

Essential Clinical Anatomy of the Nervous System Academic Press

Brain Facts is a primer on the brain and nervous system, published by the Society for Neuroscience. Brain Facts is a valuable resource for educators, students, and anyone interesting in learning about neuroscience. Download an audio recording of Brain Facts today, available on BrainFacts.org and through iTunes U. The brain is the most complex biological structure in the known universe. It is a topic rich with exciting new discoveries, continuing profound unknowns, and critical implications for individuals, families, and societies. Learn more about the brain and nervous system through articles, images, videos, and more on BrainFacts.org, a public information initiative of The Kavli Foundation, the Gatsby Charitable Foundation, and the Society for Neuroscience.

Covers all aspects of the structure, function, neurochemistry, transmitter identification and development of the enteric nervous system This book brings together extensive knowledge of the structure and cell physiology of the enteric nervous system and provides an up-to-date synthesis of the roles of the enteric nervous system in the control of motility, secretion and blood supply in the gastrointestinal tract. It includes sections on the enteric nervous system in disease, genetic abnormalities that affect enteric nervous system function, and targets for therapy in the enteric nervous system. It also includes many newly created explanatory diagrams and illustrations of the organization of enteric nerve circuits. This new book is ideal for gastroenterologists (including trainees/fellows), clinical physiologists and educators. It is invaluable for the many scientists in academia, research institutes and industry who have been drawn to work on the gastrointestinal innervation because of its intrinsic interest, its economic importance and its involvement in unsolved health problems. It also provides a valuable resource for undergraduate and graduate teaching.

Degeneration and Regeneration in the Nervous System brings together an international team of contributors to produce a series of critical reviews appraising key papers in the field. The pace of research on brain and spinal cord injury quickened considerably in the last ten years and there is much that is new and important that is covered in this book. However, there is still a long way to go before our knowledge will explain fully why the central nervous system has such a limited capacity for regeneration, and before experimental solutions can be applied to the patient. With emphasis on actual and therapeutic importance of the work reviewed, Degeneration and Regeneration in the Nervous System is a useful overview for graduate students, their teachers and researchers working in this field.

Crash Course – your effective every day study companion PLUS the perfect antidote for exam stress! Save time and be assured you have all the core information you need in one place to excel on your course and achieve exam success. A winning formula now for over 15 years, each series volume has been fine tuned and fully updated, with an improved layout tailored to make your life easier. Especially written by senior medical students or recent graduates – those who have just been in the exam situation – with all information thoroughly checked and quality assured by expert faculty advisers, the result are books which exactly meet your needs and you know you can trust. This highly accessible volume provides a strong foundation in understanding the essential basic neurosciences and the clinical investigation of the nervous system. Commencing with 'Learning Objectives', every chapter guides you succinctly through the topic, giving full coverage of the curriculum whilst avoiding unnecessary and often confusing detail. More than 160 illustrations present clinical, diagnostic and practical information in an easy-to-follow manner Friendly and accessible approach to the subject makes learning especially easy Written by students for students - authors who understand exam pressures Contains 'Hints and Tips' boxes, and other useful aide-mémoires Succinct coverage of the subject enables 'sharp focus' and efficient use of time during exam preparation Contains a fully updated self-assessment section - ideal for honing exam skills and self-testing Self-assessment section fully updated to reflect current exam requirements Contains 'common exam pitfalls' as advised by faculty Crash Courses also available electronically! Online self-assessment bank also available - content edited by Dan Horton-Szar! Now celebrating over 10 years of success - Crash Course has been specially devised to help you get through your exams with ease. Completely revised throughout, the new edition of Crash Course is perfectly tailored to meet your needs by providing everything you need to know in one place. Clearly presented in a tried and trusted, easy-to-use, format, each book in the series gives complete coverage of the subject in a no-nonsense, user-friendly fashion. Commencing with 'Learning Objectives', each chapter guides you succinctly through the topic, giving full coverage of the curriculum whilst avoiding unnecessary and often confusing detail. Each chapter is also supported by a full artwork programme, and features the ever popular 'Hints and Tips' boxes as well as other useful aide-mémoires. All volumes contain an up-to-date self-assessment section which allows you to test your knowledge and hone your exam skills. Authored by students or junior doctors - working under close faculty supervision - each volume has been prepared by someone who has recently been in the exam situation and so relates closely to your needs. So whether you need to get out of a fix or aim for distinction Crash Course is for you!! This book will provide all the basic details of neuroanaesthesia and how management of different neurosurgical cases may differ. Simple issues such as neurological examination of patient, understanding CT-scan and MRI scans along with anaesthetic management are discussed in simple language, making this book a ready-reckoner. The title provides an insight into all possible aspects of anesthetic management of neurosurgical and commonly encountered neurologic patients. The book also includes chapters related to allied specialities such as critical care, neurology and neuroradiology, making it a complete package.

"Provides an accessible overview of the latest developments in the science underpinning pain research"--

In this, the post-genomic age, our knowledge of biological systems continues to expand and progress. As the research becomes more focused, so too does the data. Genomic research progresses to proteomics and brings us to a deeper understanding of the behavior and function of protein clusters. And now proteomics gives way to neuroproteomics as we begin to unravel the complex mysteries of neurological diseases that less than a generation ago seemed opaque to our inquiries, if not altogether intractable. Edited by Dr. Oscar Alzate, Neuroproteomics is the newest volume in the CRC Press Frontiers of Neuroscience Series. With an extensive background in mathematics and physics, Dr. Alzate exemplifies the newest generation of biological systems researchers. He organizes research and data contributed from all across the world to present an overview of neuroproteomics that is practical and progressive. Bolstered by each new discovery, researchers employing multiple methods of inquiry gain a deeper understanding of the key biological problems related to brain function, brain structure, and the complexity of the nervous system. This in turn is leading to new understanding about diseases of neurological deficit such

as Parkinson's and Alzheimer's. Approaches discussed in the book include mass spectrometry, electrophoresis, chromatography, surface plasmon resonance, protein arrays, immunoblotting, computational proteomics, and molecular imaging. Writing about their own work, leading researchers detail the principles, approaches, and difficulties of the various techniques, demonstrating the questions that neuroproteomics can answer and those it raises. New challenges wait, not the least of which is the identification of potential methods to regulate the structures and functions of key protein interaction networks. Ultimately, those building on the foundation presented here will advance our understanding of the brain and show us ways to abate the suffering caused by neurological and mental diseases.

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Essential Clinical Anatomy of the Nervous System is designed to combine the salient points of anatomy with typical pathologies affecting each of the major pathways that are directly applicable in the clinical environment. In addition, this book highlights the relevant clinical examinations to perform when examining a patient's neurological system, to demonstrate pathology of a certain pathway or tract. Essential Clinical Anatomy of the Nervous System enables the reader to easily access the key features of the anatomy of the brain and main pathways which are relevant at the bedside or clinic. It also highlights the typical pathologies and reasoning behind clinical findings to enable the reader to aid deduction of not only what is wrong with the patient, but where in the nervous system that the pathology is. Anatomy of the brain and neurological pathways dealt with as key facts and summary tables essential to clinical practice. Succinct yet comprehensive format with quick and easy access facts in clearly laid out key regions, common throughout the different neurological pathways. Includes key features and hints and tips on clinical examination and related pathologies, featuring diagnostic summaries of potential clinical presentations.

This core text emphasizes the underlying neural structures and functions of sensory systems (pain, olfaction, gustation, audition, vision, etc.) and presents this complex material at a level comprehensible to undergraduates as well as beginning graduate students. The text begins with a review of the central nervous system and its sensory components and includes discussions of methodological techniques and procedures used to study sensory processes.

The primary objective of this text is to help medical and dental students gain a firm grounding in the fundamentals of neuroanatomy. The course, relations and distribution of the cranial nerves and most spinal nerves are included for integration between neuroanatomy and gross anatomy. Dental students should find descriptions of the trigeminal and facial nerves, which the book covers in some depth, particularly relevant. Extensive photographs and illustrations accompany the text.

This 2006 book examines the exciting discoveries in the study of marsupials of the last 20 years. These discoveries have led to significant developments in our understanding of this unique group of mammals. The impact of these developments have been such that marsupials are coming to be seen as model organisms in studies of life history evolution, ageing and senescence, sex determination and the development and regeneration of the nervous system. This volume brings together information scattered throughout the primary literature. Coverage includes evolutionary history and management strategies as well as all aspects of basic biology. A complete listing of known species and a comprehensive list of references make this a unique repository of information on this fascinating group of animals.

An introduction to the human brain discusses how the nervous system relates and processes information, and how its parts can be damaged and repaired.

The previous editions of The Rat Nervous System were indispensable guides for those working on the rat and mouse as experimental models. The fourth edition enhances this tradition, providing the latest information in the very active field of research on the brain, spinal cord, and peripheral nervous system. The structure, connections, and function are explained in exquisite detail, making this an essential book for any graduate student or scientist working on the rat or mouse nervous system. Completely revised and updated content throughout, with entirely new chapters added Beautifully illustrated so that even difficult concepts are rendered comprehensible Provides a fundamental analysis of the anatomy of all areas of the central and peripheral nervous systems, as well as an introduction to their functions Appeals to researchers working on other species, including humans

This book collates the contributions of a selected number of neuroscientists that are interested in the molecular, preclinical, and clinical aspects of neurotransmission research. The seven chapters in this book address the latest research/review data related to GABA/glutamate system's organization and function, the structure of receptors, subtypes and their ligands, as well as the translational approach and clinical implications. The book offers readers a rich collection of data regarding current and future applications of GABA and glutamate neurotransmission, including promising research strategies and potential clinical benefits.

Concepts of Biology is designed for the single-semester introduction to biology course for non-science majors, which for many students is their only college-level science course. As such, this course represents an important opportunity for students to develop the necessary knowledge, tools, and skills to make informed decisions as they continue with their lives. Rather than being mired down with facts and vocabulary, the typical non-science major student needs information presented in a way that is easy to read and understand. Even more importantly, the content should be meaningful. Students do much better when they understand why biology is relevant to their everyday lives. For these reasons, Concepts of Biology is grounded on an evolutionary basis and includes exciting features that highlight careers in the biological sciences and everyday applications of the concepts at hand. We also strive to show the interconnectedness of topics within this extremely broad discipline. In order to meet the needs of today's instructors and students, we maintain the overall organization and coverage found in most syllabi for this course. A strength of Concepts of Biology is that instructors can customize the book, adapting it to the approach that works best in their classroom. Concepts of Biology also includes an innovative art program that incorporates critical thinking and clicker questions to help students understand--and apply--key concepts.

Every year, an estimated 1.7 million Americans sustain brain injury. Long-term disabilities impact nearly half of moderate brain

injury survivors and nearly 50,000 of these cases result in death. *Brain Neurotrauma: Molecular, Neuropsychological, and Rehabilitation Aspects* provides a comprehensive and up-to-date account on the latest developments in the area of neurotrauma, including brain injury pathophysiology, biomarker research, experimental models of CNS injury, diagnostic methods, and neurotherapeutic interventions as well as neurorehabilitation strategies in the field of neurotrauma research. The book includes several sections on neurotrauma mechanisms, biomarker discovery, neurocognitive/neurobehavioral deficits, and neurorehabilitation and treatment approaches. It also contains a section devoted to models of mild CNS injury, including blast and sport-related injuries. Over the last decade, the field of neurotrauma has witnessed significant advances, especially at the molecular, cellular, and behavioral levels. This progress is largely due to the introduction of novel techniques, as well as the development of new animal models of central nervous system (CNS) injury. This book, with its diverse coherent content, gives you insight into the diverse and heterogeneous aspects of CNS pathology and/or rehabilitation needs.

The Human Nervous System is a definitive account of human neuroanatomy, with a comprehensive coverage of the brain, spinal cord, and peripheral nervous system. The cytoarchitecture, chemoarchitecture, connectivity, and major functions of neuronal structures are examined by acknowledged authorities in the field, such as: Alheid, Amaral, Armstrong, Beitz, Burke, de Olmos, DiFiglia, Garey, Gerrits, Gibbins, Holstege, Kaas, Martin, McKinley, Norgren, Ohye, Paxinos, Pearson, Piro, Price, Saper, Sasaki, Schoenen, Tadok, Voogd, Webster, Zilles, and their associates. Large, clearly designed 8-1/2" x 11" format 35 information-packed chapters 500 photomicrographs and diagrams 6,200 bibliographic entries Table of contents for every chapter Exceptionally cross-referenced Detailed subject index Substantial original research work Mini atlases of some brain regions

Many advances have been made in the last decade in the understanding of the computational principles underlying olfactory system functioning. *Neuromorphic Olfaction* is a collaboration among European researchers who, through NEUROCHEM (Fp7-Grant Agreement Number 216916)—a challenging and innovative European-funded project—introduce novel computing paradigms and biomimetic artifacts for chemical sensing. The implications of these findings are relevant to a wide audience, including researchers in artificial olfaction, neuroscientists, physiologists, and scientists working with chemical sensors. Developing neuromorphic olfaction from conceptual points of view to practical applications, this cross-disciplinary book examines: The biological components of vertebrate and invertebrate chemical sensing systems The early coding pathways in the biological olfactory system, showing how nonspecific receptor populations may have significant advantages in encoding odor intensity as well as odor identity The redundancy and the massive convergence of the olfactory receptor neurons to the olfactory bulb A neuromorphic approach to artificial olfaction in robots Reactive and cognitive search strategies for olfactory robots The implementation of a computational model of the mammalian olfactory system The book's primary focus is on translating aspects of olfaction into computationally practical algorithms. These algorithms can help us understand the underlying behavior of the chemical senses in biological systems. They can also be translated into practical applications, such as robotic navigation and systems for uniquely detecting chemical species in a complex background.

This text provides a description of the cytoarchitecture, chemoarchitecture, and connectivity of the rat nervous system. In addition it offers updated and supplemented information on the peripheral motor, peripheral somatosensor, vascular, central motor, pain, and additional neurotransmitter systems.

In this day where research grants are the primary focus, many young investigators are thrown into neurosciences courses without any prior preparation in neuroanatomy. This book is designed to help prepare them by introducing many of the fundamentals of the nervous system. It represents the essentials of an upper level biology course on the central nervous system. It is not designed to be a clinical approach to the nervous system, but rather it approaches the nervous system from a basic science perspective that intertwines both structure and function as an organizing teaching and learning model. Medical and dental examples are included but the main focus is on neuroscience.

Everyone knows that the brain is responsible for our smarts and the spinal cord holds us up, but students may be surprised to learn how much more these powerhouses are responsible for. Together they control the nervous system. Without them, we would not be able to think, remember, digest nutrients, breathe, blink, swallow, and so much more. Featuring clear and arresting 3D illustrations, this volume takes readers through the brain and spinal cord, covering their parts and functions, and serves as a comprehensive introduction to the human body.

The Theory of Endobiogeny Volume 1: Global Systems Thinking and Biological Modeling for Clinical Medicine offers researchers and clinicians a detailed introduction to the theory of Endobiogeny. The book presents a new approach to medicine that is at once scientific and humanistic, quantitative, and qualitative. The philosophical and experimental basis of a global complex systems approach to physiology is presented along with a mathematical approach to modeling the dynamism of the terrain. The importance of the history and physical examination are renewed as a source of "big data readily available to clinicians for greater insight into the patient's state. Expansion of the therapeutic compendium is proposed based on a rational, clinical approach correlated to mathematical indicators of the physiologic state. What is proposed in this work is a fundamental shift in scientific thinking with a resulting expansion of the boundaries of clinical medicine for the 21st century and beyond. Extends systems biology from the cellular to the integrative physiologic level Moves the functional medicine approach to a higher level of integration and true global systems thinking Presents mathematical tools and proofs of formulas related to the biology of functions: a biological modeling system based on the theory of endobiogeny. The biology of functions has assisted clinicians in conceptualizing, treating, and objectively monitoring the longitudinal effects of treatment through the evolution of the patient's unique phenotypic expression of terrain

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