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Autoimmune Disorders Bioenergetics Traffic and Environment Physiological Assessment of Human Fitness [Biology of Earthworms](#) Cytochrome P450 2D6 [A Companion to Paleoanthropology](#) Organic Cation Transporters in the Central Nervous System [Yamaha XJ900F Fours Motorcycle Repair Manual](#) Metabolism and Functions of Bioactive Ether Lipids in the Brain Advanced Strength and Conditioning CHI 2006 Montr é aThe Microbial Regulation of Global Biogeochemical Cycles Close Binaries in the 21st Century: New Opportunities and Challenges Annales Geophysicae Earthquake and Volcano Deformation Noble Gas Chemistry [Avian Gut Function in Health and Disease](#) [Membrane Technology](#) Cellular and Molecular Biology of Metals Acetaldehyde-Related Pathology Climate Change, Air Pollution and Global Challenges [Economic Freedom of the World](#) Climate Change, Air Pollution and Global Challenges Handbook of Soil Sciences Nitrogen in Agricultural Systems Hurricane Risk in a Changing Climate Handbook of Soil Sciences (Two Volume Set) Exploring Thalamocortical Interactions Glutathione Neurobiological circuit function and computation of the serotonergic and related systems Fetal and Neonatal Neurology and Neurosurgery Clinical Pharmacy and Therapeutics E-Book Comprehensive Toxicology [Quantifying and Understanding Plant Nitrogen Uptake for Systems Modeling](#) Health and Environment in Aquaculture Plant Membrane and Vacuolar Transporters [Neurotransmitter Transporters](#) Allergy and Allergic Diseases Sodium Calcium Exchange: A Growing Spectrum of Pathophysiological Implications

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Comprehensive Toxicology Mar 05 2020 An explosive increase in the knowledge of the effects of chemical and physical agents on biological systems has led to an increased understanding of normal cellular functions and the consequences of their perturbations. The 14-volume Second Edition of Comprehensive Toxicology has been revised and updated to reflect new advances in toxicology research, including content by some of the leading researchers in the field. It remains the premier resource for toxicologists in academia, medicine, and corporations. Comprehensive Toxicology Second Edition provides a unique organ-systems structure that allows the user to explore the toxic effects of various substances on each human system, aiding in providing diagnoses and proving essential in situations where the toxic substance is unknown but its effects on a system are obvious. Comprehensive Toxicology Second Edition is the most complete and valuable toxicology work available to researchers today. Contents updated and revised to reflect developments in toxicology research Organized with a unique organ-system approach Features full color throughout Available electronically on sciencedirect.com, as well as in a limited-edition print version

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Allergy and Allergic Diseases Sep 30 2019 Reserve your copy now This two volume book is an outstanding reference source on all aspects of allergy and allergic diseases. Covering virtually every allergic condition, from the immunological and molecular basis of the allergic response to future trends in allergic disease prevention, this new international editorial team (A.B.Kay, Jean Bousquet, Pat Holt and Allen Kaplan) have completely revised and updated the text, from both a scientific and clinical perspective. References will continue to be added to the text until it goes to press making this the most up-to-date book available in the field. This second edition consists of more than 1,800 pages contained within 98 chapters. The price includes a fully searchable companion CD ROM with the complete text and over 300 images from the book in full colour.

Handbook of Soil Sciences (Two Volume Set) Sep 10 2020 An evolving, living organic/inorganic covering, soil is

in dynamic equilibrium with the atmosphere above, the biosphere within, and the geology below. It acts as an anchor for roots, a purveyor of water and nutrients, a residence for a vast community of microorganisms and animals, a sanitizer of the environment, and a source of raw materials for co

Membrane Technology Jun 19 2021 Membrane technology is a rapidly developing area, with key growth across the process sector, including biotech separation and biomedical applications (e.g. haemodialysis, artificial lungs), through to large scale industrial applications in the water and waste-water processing and the food and drink industries. As processes mature, and the cost of membranes continues to dramatically reduce, so their applications and use are set to expand. Process engineers need access to the latest information in this area to assist with their daily work and to help to develop and apply new and ever more efficient liquid processing solutions. This book covers the latest technologies and applications, with contributions from leading figures in the field. Throughout, the emphasis is on delivering solutions to practitioners. Real world case studies and data from leading organizations -- including Cargill, Lilly, Microbach, ITT -- mean this book delivers the latest solutions as well as a critical working reference to filtration and separation professionals. Covers the latest technologies and applications in this fast moving bioprocessing sector Presents a wide range of case studies that ensure readers benefit from the hard-won experience of others, saving time, money and effort World class author team headed up by the Chair of Chemical Engineering at Oxford University, UK and the VP of Plant Operations and Process Technology at Cargill Corp, the food services company and largest privately owned company in the US

Health and Environment in Aquaculture Jan 03 2020 Aquaculture has been expanding in a fast rate, and further development should rely on the assimilation of scientific knowledge of diverse areas such as molecular and cellular biology, and ecology. Understanding the relation between farmed species and their pathogens and parasites, and this relation to environment is a great challenge. Scientific community is involved in building a model for aquaculture that does not harm ecosystems and provides a reliable source of healthy seafood. This book features contributions from renowned international authors, presenting high quality scientific chapters addressing key issues for effective health management of cultured aquatic animals. Available for open internet access, this book is an effort to reach the broadest diffusion of knowledge useful for both academic and productive sector.

Economic Freedom of the World Feb 13 2021 The most comprehensive index of economic freedom in the world and the only one that uses reproducible measures appropriate for peer-reviewed research, this annual report ranks 142 countries according to the degree of personal choice, voluntary exchange, freedom to compete, and protection of person and property enjoyed by their citizens. Each year, the preparation of the report is overseen by the Fraser Institute of Canada and has been strongly supported by the legendary economist Milton Friedman, to whose memory the present year's edition is dedicated.

Advanced Strength and Conditioning Feb 25 2022 Becoming an effective strength and conditioning practitioner requires the development of a professional skills set and a thorough understanding of the scientific basis of best practice. Aimed at advanced students and novice-to-expert practitioners, in this book the authors explore the latest scientific evidence and apply it to exercise selection and programming choices across the full range of areas in strength and conditioning, from strength and power, speed and agility, to aerobic conditioning. Since the first edition of this text was written extensive research has expanded the supporting evidence base that provides the theoretical foundation for each chapter. In addition, some areas that were previously under-researched have now been expanded and some key concepts have been further challenged. Each chapter is written by experts with experience in a wide variety of sports, including both applied and research experience, ensuring this concise but sophisticated textbook is the perfect bridge from introductory study to effective professional practice. While advanced concepts are explored within the book, the coach must not forget that consistency in the application of the basic principles of strength and conditioning is the foundation of athletic development. Advanced Strength and Conditioning: An Evidence-based Approach is a valuable resource for all advanced students and practitioners of strength and conditioning and fitness training.

Plant Membrane and Vacuolar Transporters Dec 02 2019 This book contains 14 chapters that evaluate the current knowledge, state of art and future prospects of plant membrane and vacuolar transporters in relation to plant productivity and quality improvement. The role of transporters, the mechanisms of uptake, accumulation or transport of potassium, calcium, nitrate, ammonium, sulfate, phosphate, iron, manganese, silicon, heavy metals, sugars, polyols, amino acids and secondary metabolites, the proteomic analysis of vacuolar membrane, and the elemental biofortification of crop plants are emphasized. The book is intended for scientists, researchers, students, planners and industrialists working in the area of biotechnology, plant agriculture, agronomy, horticulture, plant physiology, molecular biology, nutritional biology, plant sciences and environmental sciences.

Metabolism and Functions of Bioactive Ether Lipids in the Brain Mar 29 2022 Information on bioactive ether lipids

and their involvement in neurological disorders is currently scattered throughout the literature. This book provides readers with a comprehensive description of metabolism of bioactive ether lipids in the brain, activities of enzymes involved in their metabolism, and their involvement in neurological disorders. It is the first book to describe the involvement of these lipids with abnormal signal transduction processes in neurological disorders.

Organic Cation Transporters in the Central Nervous System May 31 2022 Rapidly growing interest in the role of organic cation transporters (OCTs) and plasma membrane monoamine transporter (PMAT) in central monoamine homeostasis makes this book especially timely, given its thematic alignment with the role of OCTs and PMAT in CNS. This book discusses latest insights into the field laying an emphasis on health, disease and therapeutics. The chapter, "General Overview of Organic Cation Transporters in Brain", of this book is available open access under a CC BY 4.0 license at link.springer.com

Physiological Assessment of Human Fitness Oct 04 2022 This text summarises current scientific methods for the assessment of human physiological fitness. The authors provide a rationale for methods of assessment, examine the limitations of some methods and provide details of alternative techniques.

Acetaldehyde-Related Pathology Apr 17 2021 Part of the prestigious Novartis Foundation, this is the first book to review the pathology associated with acetaldehyde, a known toxic agent found in cigarette smoke and other pollutants and derived from ingested alcohol, amongst other sources. In the body, acetaldehyde affects several tissues, particularly the brain and liver, causing various diseases, including cancer, alcoholic liver disease and Alzheimer's. **Acetaldehyde-Related Pathology** describes the toxic effects of acetaldehyde at the tissue and cellular levels, reviewing enzyme biochemistry, transgenic mouse models of alcohol dehydrogenase mutants, and the cell-signalling pathways implicated in alcohol-related pathology. It explores the mechanisms of acetaldehyde-induced damage to tissues, often a first step in carcinogenesis, including the oral cavity, the human airway, and the GI tract. The book considers pharmacological strategies and treatments for reducing oral and intestinal acetaldehyde. **Acetaldehyde-Related Pathology** features in-depth, round-table discussions by an international array of scientists from major laboratories worldwide involved in studies of acetaldehyde-related pathology. This book is essential reading for anyone interested in the effects of this compound - pathologists, biochemists, toxicologists, cell and molecular biologists.

Bioenergetics Dec 06 2022 Cellular life depends upon energy storage, transformation, utilization, and exchange in order to optimally function and to stay-off death. The over 200-year-old study of how cells transform biological fuels into usable energy, a process broadly known as bioenergetics, has produced celebrated traditions in explaining origins of life, metabolism, ecological adaptation, homeostasis, biosynthesis, aging, disease, and numerous other life processes. InTech's edited volume, **Bioenergetics**, brings together some of these traditions for readers through a collection of chapters written by international authorities. Novice and expert will find this book bridges scientific revolutions in organismic biology, membrane physiology, and molecular biology to advance the discipline of bioenergetics toward solving contemporary and future problems in metabolic diseases, life transitions and longevity, and performance optimization.

Traffic and Environment Nov 05 2022 The automobile is one of the inventions that has made a decisive contribution to human mobility, and consequently it has become an inseparable part of modern human society. However, it is through this widespread use that its negative impacts on the environment have become so highly visible. Achievements in improving the ecological characteristics of the automobile are highly impressive: a modern car emits only a fraction of the amounts of noise and exhaust pollutants produced by its predecessors 30 years ago. The contributions to this book were written by experts, most of whom have been actively involved in the development of modern automobiles and their combustion engines for more than 30 years. They have participated in all phases of the ecological development of the automobile and summarize their experience and know-how in this book .

Exploring Thalamocortical Interactions Aug 10 2020 CELL TYPES IN THE THALAMUS AND CORTEX -- INTRINSIC MEMBRANE PROPERTIES -- SYNAPTIC PROPERTIES -- GLUTAMATERGIC DRIVERS AND MODULATORS -- FIRST AND HIGHER ORDER THALAMIC RELAYS -- THALAMIC CIRCUITRY -- BRIEF OVERVIEW OF CORTICAL ORGANIZATION -- CLASSIFICATION OF THALAMOCORTICAL AND CORTICOTHALAMIC MOTIFS -- SPIKE TIMING AND THALAMOCORTICAL INTERACTIONS -- PARALLEL PROCESSING OF SENSORY SIGNALS TO CORTEX -- THALAMOCORTICAL SUBSTRATES OF ATTENTION -- CORTICOTHALAMIC CIRCUITS LINKING SENSATION AND ACTION.

Clinical Pharmacy and Therapeutics E-Book Apr 05 2020 Now in its fifth edition, this best-selling, multidisciplinary textbook continues to draw on the skills of pharmacists and clinicians to present optimal drug regimens. The authors integrate an understanding of the disease processes with an appreciation of pathophysiological processes, clinical pharmacy and the evidence base. New to this edition: Stronger emphasis on understanding

both the prescribing process and the clinical pharmacy process. All chapters completely revised and updated. Thirty-eight leading new authors. Features: Key points boxes at the beginning of every chapter Case study tests at the end of every chapter Chapters co-authored by pharmacists and clinicians Organised by body system Consistent, clearly signposted chapter layout '...a unique and valuable support for all those involved or interested in drug therapy. This is a textbook that no university or pharmacy department, particularly those with employees studying at any level, and no pharmacist trying to develop their knowledge base should be without." Dr Chris Green and John Sexton, The Pharmaceutical Journal Now in its fifth edition, this best-selling, multidisciplinary textbook continues to draw on the skills of pharmacists and clinicians to present optimal drug regimens. The authors integrate an understanding of the disease processes with an appreciation of pathophysiological processes, clinical pharmacy and the evidence base. New to this edition: Stronger emphasis on understanding both the prescribing process and the clinical pharmacy process. All chapters completely revised and updated. Thirty-eight leading new authors. Features: Key points boxes at the beginning of every chapter Case study tests at the end of every chapter Chapters co-authored by pharmacists and clinicians Organised by body system Consistent, clearly signposted chapter layout '...a unique and valuable support for all those involved or interested in drug therapy. This is a textbook that no university or pharmacy department, particularly those with employees studying at any level, and no pharmacist trying to develop their knowledge base should be without." Dr Chris Green and John Sexton, The Pharmaceutical Journal Stronger emphasis on understanding both the prescribing process and the clinical pharmacy process. All chapters completely revised and updated. Thirty-eight leading new authors.

Annales Geophysicae Oct 24 2021

Neurotransmitter Transporters Oct 31 2019 This book is a representative survey of the current status of the structure, function, regulation and molecular pharmacology of Neurotransmitter Transporters. It provides an overview of insights generated in the past five years. The volume serves as a useful compendium of current concepts and an inspiring starting point. It is a source for students interested in this emerging field as well as for experienced scientists looking for an update.

Cellular and Molecular Biology of Metals May 19 2021 With chapter contributions from more than 30 metal biology experts, Cellular and Molecular Biology of Metals explains the role of key divalent metal ions involved in the molecular and cellular biology of various target cell populations. Although it primarily focuses on homeostatic metals, such as nickel, zinc, and chromium, the text also discusses a few environmentally pertinent, toxic divalent cations, including mercury, cadmium, and arsenic. This authoritative resource reviews the physiological mechanisms underlying the handling of essential and toxic metal ions, including metal ion homeostasis, metals and enzyme activity, metals and transcriptional regulation, and metal ion transport. It also analyzes other functions designed to avoid metal-induced toxicity and mediate the metal enhancement of cellular function. The role of metal ions and their effect on mammalian cells and organs are only beginning to be truly defined. Cellular and Molecular Biology of Metals arms metals toxicologists and cellular and molecular biologists with the necessary knowledge they need to take the research effort to the next level.

Glutathione Jul 09 2020 This is the first serious attempt to synthesize all that became known of glutathione over the last three decades. The book contains an update of glutathione biosynthesis with special emphasis on its regulation in adaptive stress responses. Other chapters review glutathione transport systems and glutathione peroxidases and their differences in substrate specificities and localization. Further contributions center on the diversified roles of different glutathione-S-transferases and the roles of nitrosogluthione and glutaredoxins - a subfamily of redoxins. The book closes with discussions of the analogous or homologous thiol metabolism in pathogens and the potential suitability of involved enzymes as drug targets. Key selling features: Summarizing the way glutathione is involved in stress responses Compiling the multiple ways glutathione affects inflammatory responses Disclosing how glutathione dampens programmed cell death such as ferroptosis Exploring the enigma of how enzymes accelerate glutathione-dependent processes Discussing how detoxification and redox regulation is mediated by glutathionylation Reviewing the ways glutaredoxins catalyze protein disulfide reduction Highlighting the medical impact of glutathione-related metabolic pathways Illustrating the role thiol metabolism of pathogens might play in drug discovery

Autoimmune Disorders Jan 07 2023 The present edition entitled "Autoimmune disorders - Pathogenetic aspects" aims to present the current available evidence of etiopathogenetic insights of both systemic and organ specific autoimmune disorders, the crossover interactions among autoimmunity, cardiovascular morbidity and malignancy as well as novel findings in the exciting fields of osteoimmunology and immunology of pregnancy.

Yamaha XJ900F Fours Motorcycle Repair Manual Apr 29 2022 With a Haynes manual, you can do-it-yourself...from simple maintenance to basic repairs. Haynes writes every book based on a complete teardown of

the vehicle, where we learn the best ways to do a job and that makes it quicker, easier and cheaper for you. Haynes books have clear instructions and hundreds of photographs that show each step. Whether you are a beginner or a pro, you can save big with a Haynes manual! This manual features complete coverage for your Yamaha XJ900F Fours, covering: Routine maintenance Tune-up procedures Engine repair Cooling and heating Air conditioning Fuel and exhaust Emissions control Ignition Brakes Suspension and steering Electrical systems, and Wiring diagrams The manual covers model XJ900F with an 853cc engine built from 1983-84 and with an 891cc engine built from 1985-94.

Sodium Calcium Exchange: A Growing Spectrum of Pathophysiological Implications Aug 29 2019 This book reports the text of the lectures of the 6th International Conference on Sodium Calcium Exchange held in Lacco Ameno in the Island of Ischia in the Gulf of Naples, Italy, from October 1 to October 5, 2011. The present book uncovers the most striking new findings on NCX that emerged since the previous Conference on Sodium Calcium Exchange, such as the structural dissection of the molecular determinants of Ca^{2+} sensitivity of the exchanger, the epigenetic regulation of *ncx1* gene, the molecular identification of the mitochondrial Sodium Calcium Exchanger, and the discovery of NCX in unexpected anatomical locations such as the female reproductive tract. The book is organized into 11 parts covering NCX structural aspects, genetic and epigenetic regulation, regulatory mechanisms, subcellular localization in mitochondria, involvement in neurodegenerative diseases and in immune regulation, and the role of the cardiovascular and endocrine systems, as well as diabetes in physiology and pathophysiology. Selected chapters of the book are also devoted to the interaction of NCKX and other ion channels and transporters with NCX, like ASICs, TRPM, and NHE.

Noble Gas Chemistry Aug 22 2021 Authored by one of the world's leading experts in the chemistry of lighter noble gases, this comprehensive monograph fills the need for an up-to-date review of the diverse experimental techniques and theoretical methods currently in practice. After reviewing the experiments breaking the paradigm of "non-reactive" noble gases, the physico-chemical background is introduced. Besides the emphasis on gas phase reactions, the author presents other relevant systems, such as chemistry in the bulk phase, under high pressure, and cold matrices. The discussion of gas-phase chemistry of the noble gases covers neutral and ionic compounds, diatomic molecules, complexes with small molecules and metal compounds, up to large clusters.

Climate Change, Air Pollution and Global Challenges Mar 17 2021 There are significant pressures from climate change and air pollution that forests currently face. This book aims to increase understanding of the state and potential of forest ecosystems to mitigate and adapt to climate change in a polluted environment. It reconciles process-oriented research, long-term monitoring and applied modeling through comprehensive forest ecosystem research. Furthermore, it introduces "forest super sites for research for integrating soil, plant and atmospheric sciences and monitoring. It also provides mechanistic and policy-oriented modeling with scientifically sound risk indications regarding atmospheric changes and ecosystem services. Identifies current knowledge gaps and emerging research needs Highlights novel methodologies and integrated research concepts Assesses ecological meaning of investigations and prioritizing research need

Earthquake and Volcano Deformation Sep 22 2021 Earthquake and Volcano Deformation is the first textbook to present the mechanical models of earthquake and volcanic processes, emphasizing earth-surface deformations that can be compared with observations from Global Positioning System (GPS) receivers, Interferometric Radar (InSAR), and borehole strain- and tiltmeters. Paul Segall provides the physical and mathematical fundamentals for the models used to interpret deformation measurements near active faults and volcanic centers. Segall highlights analytical methods of continuum mechanics applied to problems of active crustal deformation. Topics include elastic dislocation theory in homogeneous and layered half-spaces, crack models of faults and planar intrusions, elastic fields due to pressurized spherical and ellipsoidal magma chambers, time-dependent deformation resulting from faulting in an elastic layer overlying a viscoelastic half-space and related earthquake cycle models, poroelastic effects due to faulting and magma chamber inflation in a fluid-saturated crust, and the effects of gravity on deformation. He also explains changes in the gravitational field due to faulting and magmatic intrusion, effects of irregular surface topography and earth curvature, and modern concepts in rate- and state-dependent fault friction. This textbook presents sample calculations and compares model predictions against field data from seismic and volcanic settings from around the world. Earthquake and Volcano Deformation requires working knowledge of stress and strain, and advanced calculus. It is appropriate for advanced undergraduates and graduate students in geophysics, geology, and engineering. Professors: A supplementary Instructor's Manual is available for this book. It is restricted to teachers using the text in courses. For information on how to obtain a copy, refer to: <http://press.princeton.edu/classuse/solutions.html>

Nitrogen in Agricultural Systems Nov 12 2020 Review of the principles and management implications related to nitrogen in the soil-plant-water system.

Avian Gut Function in Health and Disease Jul 21 2021 This book contains conference proceedings of the 28th Poultry Science Symposium of the World's Poultry Science Association held in Bristol, UK, in September 2005. It focuses on the discontinued use of antibiotics in poultry and on the interactions between the birds, dietary factors and pathogens. The 23 chapters include the history, current use and legislative aspects of feed additives in the European Union; poultry nutrition without antibiotics; early development of the small intestinal function; absorptive function of the small intestine; epithelial structure and function of the hen intestine; immunological development of the gut; molecular approaches to the analysis of the gastrointestinal microbial ecosystems; microbial flora of the chicken digestive tract; mechanisms of pathogen control in the digestive tract; effect of nonstarch polysaccharidases on gastrointestinal function; effects of amino acid and protein supply on nutrition and health; the role of feed processing on gastrointestinal function and health in poultry; the causes, prevention and the role of nutrition in the production of wet litter; influence of gut health and immunity on micronutrient supply; virus-induced gastrointestinal diseases of chickens and turkeys; the digestive tract as an entry point for bacterial infections; *Eimeria* spp. genetics, protection and antigen identification; developments and constraints of feed acidification in controlling gut pathogens in poultry, with an emphasis on *Salmonella* spp., competitive exclusion in poultry production; *Campylobacter* spp. and their bacteriophages in poultry; breeding for disease resistance; The EU perspective on the monitoring of zoonoses and zoonotic agents and the significance of gastrointestinal problems to poultry farmers. This book will be of interest to researchers in food science and veterinary medicine, decision makers and poultry farmers.

Fetal and Neonatal Neurology and Neurosurgery May 07 2020 The definitive reference work on the developing brain from conception through the first year of life, this book provides specialists involved in the management of the fetus and the neonate with the latest information on the developmental neurology and pathology of the developing central nervous system.

A Companion to Paleoanthropology Jul 01 2022 A Companion to Paleoanthropology presents a compendium of readings from leading scholars in the field that define our current knowledge of the major discoveries and developments in human origins and human evolution, tracing the fossil record from primate and hominid origins to the dispersal of modern humans across the globe. Represents an accessible state-of-the-art summary of the entire field of paleoanthropology, with an overview of hominid taxonomy Features articles on the key discoveries in ape and human evolution, in cranial, postcranial and brain evolution, growth and development Surveys the breadth of the paleontological record from primate origins to modern humans Highlights the unique methods and techniques of paleoanthropology, including dating and ecological methods, and use of living primate data to reconstruct behavior in fossil apes and humans

Quantifying and Understanding Plant Nitrogen Uptake for Systems Modeling Feb 02 2020 Discusses New Advancements to Improve Existing Simulations of Plant NitrogenWritten by research pioneers and leading scientists in the area of agricultural systems, Quantifying and Understanding Plant Nitrogen Uptake for Systems Modeling comprehensively covers plant N uptake in agricultural system models, especially for building soil-plant system m

Cytochrome P450 2D6 Aug 02 2022 Cytochromes are proteins that catalyze electron transfer reactions of well-known metabolic pathways and are classified in various superfamilies. The CYP, or P450, superfamily accounts for 90% of the oxidative metabolism of clinical drugs. One member of this superfamily, P450 2D6 (or CYP2D6), singlehandedly metabolizes about 25% of all medications in the human liver. Cytochrome P450 2D6: Structure, Function, Regulation, and Polymorphism reviews the current knowledge of CYP2D6 as well as the maturing body of evidence indicating its significance to clinical and pharmacological researchers and practitioners. This book focuses on the critical role CYP2D6 plays in the human liver. It examines the genetic, epigenetic, physiological, pathological, and structural factors of the gene that govern the highly variable metabolism of a number of drugs in clinical use. It highlights the impact of the functional roles of CYP2D6 on clinical practice and drug development and also discusses implications for precise medicine, strategies to avoid adverse drug reactions, and paths for future research. Cytochrome P450 2D6 is a unique, valuable book focusing on a single but immensely powerful human gene. It provides the first single source of comprehensive information on CYP2D6 that serves as an important reference for medical, biomedical, pharmaceutical, and nursing researchers, practitioners, and students.

The Microbial Regulation of Global Biogeochemical Cycles Dec 26 2021 Global biogeochemical cycles of carbon and nutrients are increasingly affected by human activities. So far, modeling has been central for our understanding of how this will affect ecosystem functioning and the biogeochemical cycling of carbon and nutrients. These models have been forced to adopt a reductive approach built on the flow of carbon and nutrients between pools that are difficult or even impossible to verify with empirical evidence. Furthermore, while some of these models include the response in physiology, ecology and biogeography of primary producers to

environmental change, the microbial part of the ecosystem is generally poorly represented or lacking altogether. The principal pool of carbon and nutrients in soil is the organic matter. The turnover of this reservoir is governed by microorganisms that act as catalytic converters of environmental conditions into biogeochemical cycling of carbon and nutrients. The dependency of this conversion activity on individual environmental conditions such as pH, moisture and temperature has been frequently studied. On the contrary, only rarely have the microorganisms involved in carrying out the processes been identified, and one of the biggest challenges for advancing our understanding of biogeochemical processes is to identify the microorganisms carrying out a specific set of metabolic processes and how they partition their carbon and nutrient use. We also need to identify the factors governing these activities and if they result in feedback mechanisms that alter the growth, activity and interaction between primary producers and microorganisms. By determining how different groups of microorganisms respond to individual environmental conditions by allocating carbon and nutrients to production of biomass, CO₂ and other products, a mechanistic as well as quantitative understanding of formation and decomposition of organic matter, and the production and consumption of greenhouse gases, can be achieved. In this Research Topic, supported by the Swedish research councils' programme "Biodiversity and Ecosystem Services in a Changing Landscape" (BECC), we intend to promote this alternative framework to address how cycling of carbon and nutrients will be altered in a changing environment from the first-principle mechanisms that drive them - namely the ecology, physiology and biogeography of microorganisms - and on up to emerging global biogeochemical patterns. This novel and unconventional approach has the potential to generate fresh insights that can open up new horizons and stimulate rapid conceptual development in our basic understanding of the regulating factors for global biogeochemical cycles. The vision for the research topic is to facilitate such progress by bringing together leading scientists as proponents of several disciplines. By bridging Microbial Ecology and Biogeochemistry, connecting microbial activities at the micro-scale to carbon fluxes at the ecosystem-scale, and linking above- and belowground ecosystem functioning, we can leap forward from the current understanding of the global biogeochemical cycles.

Close Binaries in the 21st Century: New Opportunities and Challenges Nov 24 2021 This book is the proceedings of an international conference entitled "Close Binaries in the 21st Century: New Opportunities and Challenges", held in Syros island, Greece, June 27-30, 2005. The papers collected in this volume detail the latest achievements in the field and reflect the state of the art of the dynamically evolving area of binary star research.

Neurobiological circuit function and computation of the serotonergic and related systems Jun 07 2020 Serotonin is one of the oldest neurotransmitters in evolutionary terms, and the serotonergic system is complex and multifaceted. Serotonin-producing neurons in the raphe nuclei provide serotonin innervations throughout various parts of the brain, modulating cellular excitability and network properties of targeted brain areas, and regulating mood, cognition and behavior. Dysfunctions of the serotonergic system are implicated in neuropsychiatric disorders including depression, schizophrenia, and drug abuse. Although the system has been studied for many years, an integrative account of its functions and computational principles remains elusive. This is partly attributed to the high variability and heterogeneity in terms of neuronal properties and receptor types, and its extensive connections with other brain regions. This Frontiers Research Topic e-book is a collection of recent experimental and computational work and approaches at multiple scales that provide the latest information regarding the integrated functions of the serotonergic system. The contributed papers include a variety of experimental and computational work, and human clinical studies.

Climate Change, Air Pollution and Global Challenges Jan 15 2021 Climate change will likely affect the carbon balance of terrestrial soils via shifts in photosynthetic carbon input relative to soil respiratory CO₂ loss. This review is focused on the effects of enhanced temperature and altered precipitation on soil respiration—that is, the sum of autotrophic root and heterotrophic microbial respiration. We highlight key processes that determine the substrate supply for the microbial decomposer community. These processes include (i) root exudation of low-molecular carbon compounds, (ii) enzymatic degradation of labile and recalcitrant soil organic matter (SOM) and (iii) physicochemical protection of SOM. The sensitivities of these processes to soil temperature and moisture differ, aggravating mechanistic interpretation of bulk soil respiration in response to global change. Variation in soil respiration can also result from acclimation of autotrophic root respiration, or shifts in microbial carbon use efficiency. On the basis of such key processes, we evaluate the apparent flexibility of instantaneous temperature responses of soil respiration.

Biology of Earthworms Sep 03 2022 Earthworms, which belong to the order Oligochaeta, comprise roughly 3,000 species grouped into five families. Earthworms have been called 'ecosystem engineers'; much like human engineers, they change the structure of their environments. Earthworms are very versatile and are found in nearly all terrestrial ecosystems. They play an important role in forest and agricultural ecosystems. This Soil Biology

volume describes the various facets of earthworms, such as their role in soil improvement, soil structure, and the biocontrol of soil-borne plant fungal diseases. Reviews discuss earthworms' innate immune system, molecular markers to address various issues of earthworm ecology, earthworm population dynamics, and the influences of organic farming systems and tillage. Further topics include the characteristics of vermicompost, relationships between soil earthworms and enzymes, the role of spermathecae, copulatory behavior, and adjustment of the donated sperm volume.

Handbook of Soil Sciences Dec 14 2020 An evolving, living organic/inorganic covering, soil is in dynamic equilibrium with the atmosphere above, the biosphere within, and the geology below. It acts as an anchor for roots, a purveyor of water and nutrients, a residence for a vast community of microorganisms and animals, a sanitizer of the environment, and a source of raw materials for construction and manufacturing. To develop lasting solutions to the challenges of balanced use and stewardship of the Earth, we require a fundamental understanding of soil—from its elastic, porous three-phase system to its components, processes, and reactions. Handbook of Soil Sciences: Resource Management and Environmental Impacts, Second Edition is the second of two volumes that form a comprehensive reference on the discipline of soil science. Completely revised and updated to reflect the current state of knowledge, this volume covers interfacial interactions between the physical, chemical, and biological regimes within the soil; the factors that control the availability of plant nutrients and microelements; interdisciplinary aspects of soil science, including salinity, sodicity, and soil erosion; and soil databases for assessing worldwide soil resources. Critical elements addressed in each section include: Descriptions of concepts and theories Definitions, approaches, methodologies, and procedures Data in tabular and figure format Extensive references This cohesive handbook provides a thorough understanding of soil science principles and practices based on a rigorous, complete, and up-to-date treatment of the subject matter compiled by leading scientists. It is a resource rich in data, offering professional soil scientists, agronomists, engineers, ecologists, biologists, naturalists, and students their first point of entry into a particular aspect of the soil sciences.

Hurricane Risk in a Changing Climate Oct 12 2020 How is a changing climate affecting hurricanes, and how are these changes intersecting with our changing exposure and vulnerability in ways that affect tropical cyclone risk? Crucially, how should this understanding be incorporated into risk management practice? This book takes a cross-sectoral look at how damaging tropical cyclone characteristics are changing and presents novel approaches to integrate science with risk assessment. In this new era of tropical cyclone impacts, understanding effective risk management practice in a changing climate is more important than ever. This book details the outcomes of new research focusing on climate risk related to hurricanes in a changing climate. Topics include characteristics of tropical cyclone risk, perspectives on hurricane risk management strategies in the built environment, and implications for commercial risk. Inspired by the Symposium on Hurricane Risk in a Changing Climate, this book brings together leading international academics and researchers, and provides a source reference for both risk managers and climate scientists for research on the interface between tropical cyclones, climate, and risk. 8 chapters are available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.