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Climate Change and Island and Coastal  
VulnerabilityMatrix MetalloproteasesChemical Rocket  
PropulsionYour Body on GlutenAdvances in Enzyme  
BiotechnologyPlant Adaptation and  
PhytoremediationThe Student's Guide to Cognitive  
NeuroscienceAdvanced Energy Efficiency  
Technologies for Solar Heating, Cooling and Power  
GenerationGlobal Waves of DebtHandbook of  
Automated Essay EvaluationCreep-Resistant  
SteelsYour Body on CarbohydratesA Systems Biology  
Approach to Study Metabolic SyndromeMarine Diesel  
Basics 1Energy Efficiency and the Demand for Energy  
ServicesHandbook of Farm, Dairy and Food Machinery  
EngineeringA Guide to Obesity and the Metabolic  
SyndromeBone and CancerHerbalism, Phytochemistry  
and EthnopharmacologyCell Cycle ControlGenome  
Mapping and Genomics in Animal-Associated  
MicrobesRecycling of Solid Waste for Biofuels and Bio-  
chemicalsMen's Health EquityPower EngineeringI  
Love Fishing, Any Kind of FishingAdvances in  
Wastewater TreatmentCurrent Research Topics in  
Plant VirologyTechnological Developments in  
Education and AutomationNatural ZeolitesIntelligent  
Media Technology for Communicative  
IntelligenceMechanobiology Handbook, Second  
EditionHot Line Farm Equipment Guide Quick  
Reference GuideEcology, Systematics, and the  
Natural History of Predaceous Diving Beetles  
(Coleoptera: Dytiscidae)Fundamentals of Microfluidics  
and Lab on a Chip for Biological Analysis and  
DiscoveryMuscle Contraction and Cell

Motility Beneficial Microorganisms in Medical and Health Applications Sustainable Vernacular Architecture Genomics, Proteomics and Metabolomics in Nutraceuticals and Functional Foods Proteases: Structure and Function Biotechnology for Odor and Air Pollution Control

## **Climate Change and Island and Coastal Vulnerability**

This book presents the latest advances in and current research perspectives on the field of urban/industrial solid waste recycling for bio-energy and bio-fuel recovery. It chiefly focuses on five main thematic areas, namely bioreactor landfills coupled with energy and nutrient recovery; microbial insights into anaerobic digestion; greenhouse emission assessment; pyrolysis techniques for special waste treatment; and industrial waste stabilization options. In addition, it compiles the results of case studies and solid waste management perspectives from different countries.

## **Matrix Metalloproteases**

Traditionally, power engineering has been a subfield of energy engineering and electrical engineering which deals with the generation, transmission, distribution and utilization of electric power and the electrical devices connected to such systems including generators, motors and transformers. Implicitly this perception is associated with the

generation of power in large hydraulic, thermal and nuclear plants and distributed consumption. Faced with the climate change phenomena, humanity has had to now contend with changes in attitudes in respect of environment protection and depletion of classical energy resources. These have had consequences in the power production sector, already faced with negative public opinions on nuclear energy and favorable perception of renewable energy resources and about distributed power generation. The objective of this edited book is to review all these changes and to present solutions for future power generation. Future energy systems must factor in the changes and developments in technology like improvements of natural gas combined cycles and clean coal technologies, carbon dioxide capture and storage, advancements in nuclear reactors and hydropower, renewable energy engineering, power-to-gas conversion and fuel cells, energy crops, new energy vectors biomass-hydrogen, thermal energy storage, new storage systems diffusion, modern substations, high voltage engineering equipment and compatibility, HVDC transmission with FACTS, advanced optimization in a liberalized market environment, active grids and smart grids, power system resilience, power quality and cost of supply, plug-in electric vehicles, smart metering, control and communication technologies, new key actors as prosumers, smart cities. The emerging research will enhance the security of energy systems, safety in operation, protection of environment, improve energy efficiency, reliability and sustainability. The book reviews current literature in the advances, innovative options and solutions in power engineering. It has

been written for researchers, engineers, technicians and graduate and doctorate students interested in power engineering.

### **Chemical Rocket Propulsion**

Creep-resistant steels are widely used in the petroleum, chemical and power generation industries. Creep-resistant steels must be reliable over very long periods of time at high temperatures and in severe environments. Understanding and improving long-term creep strength is essential for safe operation of plant and equipment. This book provides an authoritative summary of key research in this important area. The first part of the book describes the specifications and manufacture of creep-resistant steels. Part two covers the behaviour of creep-resistant steels and methods for strengthening them. The final group of chapters analyses applications in such areas as turbines and nuclear reactors. With its distinguished editors and international team of contributors, Creep-resistant steels is a valuable reference for the power generation, petrochemical and other industries which use high strength steels at elevated temperatures. Describes the specifications and manufacture of creep-resistant steels Strengthening methods are discussed in detail Different applications are analysed including turbines and nuclear reactors

### **Your Body on Gluten**

The 2nd Workshop on Intelligent Media Technology

for Communicative Intelligence commemorating the 10th anniversary of the Polish-Japanese Institute of Information Technology in Warsaw aimed to explore the current research topics in the field of intelligent media technologies for communicative intelligence. Communicative intelligence represents a new challenge towards building a super-intelligence on the ubiquitous global network by accumulating a huge amount of human and knowledge resources. The term "communicative intelligence" reflects the view that communication is at the very core of intelligence and its creation. Communication permits novel ideas to emerge from intimate interactions by multiple agents, ranging from collaboration to competition. The recent advance of information and communication technologies has established an information infrastructure that allows humans and artifacts to communicate with each other beyond space and time. It enables us to advance a step further to realize a communicative intelligence with many fruitful applications. Intelligent media technologies attempt to capture and augment people's communicative activities by embedding computers into the environment to enhance interactions in an unobtrusive manner. The introduction of embodied conversational agents that might mediate conversations among people in a social context is the next step in the process. The scope of intelligent media technologies includes design and development of intelligent supports for content production, distribution, and utilization, since rich content is crucial for communication in many applications. The promising applications of intelligence media technologies include e-learning, knowledge management systems, e-democracy, and

other communication-intensive subject domains.

## **Advances in Enzyme Biotechnology**

"Climate Change and Island and Coastal Vulnerability" is the outcome of a selection of peer reviewed edited papers presented at the International Workshop on Climate Change and Island Vulnerability (IWCCI) held at Kadmat Island, Lakshadweep, India in October 2010. Marine and coastal biodiversity, sea level rise vulnerability, fisheries, climate change impact on livelihood options, water and sanitation in island ecosystem and mitigation, adaptation and governance are the focal themes. The basic concept conveyed in the book is that biodiversity of islands is to be protected as a natural mechanism to mitigate climate change. Probability recurrence of mass coral bleaching and the management of coral reefs and their future protection are discussed in this book. Marine productivity and climate change for the last ten thousand years in the Arabian Sea have been examined with core records. Green technology is suggested as an important tool for mitigation and adaptation programmes in climate change. Measures taken to project biomass utilisation of islands as an energy source is delineated. Climate change may pose a potential threat on human health. Improved sanitation packages and models that are cost effective and environment-friendly for islands are uniquely presented in this book.

## **Plant Adaptation and Phytoremediation**

Topics covered in this book include RNA silencing and its suppression in plant virus infection, virus replication mechanisms, the association of cellular membranes with virus replication and movement, plant genetic resistance to viruses, viral cell-to-cell spread, long distance movement in plants, virus induced ER stress, virus diversity and evolution, virus-vector interactions, cross protection, geminiviruses, negative strand RNA viruses, viroids, and the diagnosis of plant viral diseases using next generation sequencing. This book was anticipated to help plant pathologists, scholars, professors, teachers and advanced students in the field with a comprehensive state-of-the-art knowledge of the subject.

## **The Student's Guide to Cognitive Neuroscience**

Reflecting recent changes in the way cognition and the brain are studied, this thoroughly updated third edition of the best-selling textbook provides a comprehensive and student-friendly guide to cognitive neuroscience. Jamie Ward provides an easy-to-follow introduction to neural structure and function, as well as all the key methods and procedures of cognitive neuroscience, with a view to helping students understand how they can be used to shed light on the neural basis of cognition. The book presents an up-to-date overview of the latest theories and findings in all the key topics in cognitive neuroscience, including vision, memory, speech and language, hearing, numeracy, executive function, social and emotional behaviour and developmental

neuroscience, as well as a new chapter on attention. Throughout, case studies, newspaper reports and everyday examples are used to help students understand the more challenging ideas that underpin the subject. In addition each chapter includes: Summaries of key terms and points Example essay questions Recommended further reading Feature boxes exploring interesting and popular questions and their implications for the subject. Written in an engaging style by a leading researcher in the field, and presented in full-color including numerous illustrative materials, this book will be invaluable as a core text for undergraduate modules in cognitive neuroscience. It can also be used as a key text on courses in cognition, cognitive neuropsychology, biopsychology or brain and behavior. Those embarking on research will find it an invaluable starting point and reference. The Student's Guide to Cognitive Neuroscience, 3rd Edition is supported by a companion website, featuring helpful resources for both students and instructors.

## **Advanced Energy Efficiency Technologies for Solar Heating, Cooling and Power Generation**

Functional foods and nutraceuticals have received considerable interest in the past decade largely due to increasing consumer awareness of the health benefits associated with food. Diet in human health is no longer a matter of simple nutrition: consumers are more proactive and increasingly interested in the health benefits of functional foods and their role in

the prevention of illness and chronic conditions. This, combined with an aging population that focuses not only on longevity but also quality of life, has created a market for functional foods and nutraceuticals. A fully updated and revised second edition, *Genomics, Proteomics and Metabolomics in Nutraceuticals and Functional Foods* reflects the recent upsurge in "omics" technologies and features 48 chapters that cover topics including genomics, proteomics, metabolomics, epigenetics, peptidomics, nutrigenomics and human health, transcriptomics, nutriethics and nanotechnology. This cutting-edge volume, written by a panel of experts from around the globe reviews the latest developments in the field with an emphasis on the application of these novel technologies to functional foods and nutraceuticals.

### **Global Waves of Debt**

Worldwide, men have more opportunities, privileges, and power, yet they also have shorter life expectancies than women. Why is this? Why are there stark differences in the burden of disease, quality of life, and length of life amongst men, by race, ethnicity, (dis)ability status, sexual orientation, gender identity, rurality, and national context? Why is this a largely unexplored area of research? *Men's Health Equity* is the first volume to describe men's health equity as a field of study that emerged from gaps in and between research on men's health and health inequities. This handbook provides a comprehensive review of foundations of the field; summarizes the issues unique to different

populations; discusses key frameworks for studying and exploring issues that cut across populations in the United States, Australia, Canada, the United Kingdom, Central America, and South America; and offers strategies for improving the health of key population groups and achieving men's health equity overall. This book systematically explores the underlying causes of these differences, describes the specific challenges faced by particular groups of men, and offers policy and programmatic strategies to improve the health and well-being of men and pursue men's health equity. Men's Health Equity will be the first collection to present the state of the science in this field, its progress, its breadth, and its future. This book is an invaluable resource for scholars, researchers, students, and professionals interested in men's health equity, men's health, psychology of men's health, gender studies, public health, and global health.

### **Handbook of Automated Essay Evaluation**

Achievements and progress in genome mapping and the genomics of microbes supersede by far those for higher plants and animals, in part due to their enormous economic implication but also smaller genome size. In the post-genomic era, whole genome sequences of animal-associated microbes are providing clues to depicting the genetic basis of the complex host-pathogen relationships and the evolution of parasitism; and to improving methods of controlling pathogens. This volume focuses on a

globally important group of intracellular prokaryotic pathogens which affect livestock animals. These include Brucella, Mycobacterium, Anaplasma and Ehrlichia, as well as the protozoan pathogens Cryptosporidium and Theileria, for which genome sequence data is available. Insights from comparative genomics of the microbes described provide clues to the adaptation involved in host-microbe interactions, as well as resources potentially useful for application in future research and product development.

### **Creep-Resistant Steels**

Proteolysis is an irreversible posttranslational modification affecting each and every protein from its biosynthesis to its degradation. Limited proteolysis regulates targeting and activity throughout the lifetime of proteins. Balancing proteolysis is therefore crucial for physiological homeostasis. Control mechanisms include proteolytic maturation of zymogens resulting in active proteases and the shut down of proteolysis by counteracting endogenous protease inhibitors. Beyond the protein level, proteolytic enzymes are involved in key decisions during development that determine life and death – from single cells to adult individuals. In particular, we are becoming aware of the subtle role that proteases play in signaling events within proteolysis networks, in which the enzymes act synergistically and form alliances in a web-like fashion. Proteases come in different flavors. At least five families of mechanistically distinct enzymes and even more inhibitor families are known to date, many family

members are still to be studied in detail. We have learned a lot about the diversity of the about 600 proteases in the human genome and begin to understand their physiological roles in the degradome. However, there are still many open questions regarding their actions in pathophysiology. It is in this area where the development of small molecule inhibitors as therapeutic agents is extremely promising. Approaching proteolysis as the most important, irreversible post-translational protein modification essentially requires an integrated effort of complementary research disciplines. In fact, proteolytic enzymes seem as diverse as the scientists working with these intriguing proteins. This book reflects the efforts of many in this exciting field of research where team and network formations are essential to move ahead.

### **Your Body on Carbohydrates**

Advances in Wastewater Treatment presents a compendium of the key topics surrounding wastewater treatment, assembled by looking at the future technologies, and provides future perspectives in wastewater treatment and modelling. It covers the fundamentals and innovative wastewater treatment processes (such as membrane bioreactors and granular process). Furthermore, it focuses attention on mathematical modelling aspects in the field of wastewater treatments by highlighting the key role of models in process design, operation and control. Other topics include: • Anaerobic digestion • Biological nutrient removal • Instrumentation, control

and automation • Computational fluid dynamics in wastewater • IFAS systems • New frontiers in wastewater treatment • Greenhouse gas emissions from wastewater treatment Each topic is addressed by discussing past, present and future trends. *Advances in Wastewater Treatment* is a valid support for researchers, practitioners and also students to have a frame of the frontiers in wastewater treatment and modelling.

### **A Systems Biology Approach to Study Metabolic Syndrome**

*Handbook of Agricultural and Farm Machinery, Third Edition*, is the essential reference for understanding the food industry, from farm machinery, to dairy processing, food storage facilities and the machinery that processes and packages foods. Effective and efficient food delivery systems are built around processes that maximize efforts while minimizing cost and time. This comprehensive reference is for engineers who design and build machinery and processing equipment, shipping containers, and packaging and storage equipment. It includes coverage of microwave vacuum applications in grain processing, cacao processing, fruit and vegetable processing, ohmic heating of meat, facility design, closures for glass containers, double seaming, and more. The book's chapters include an excellent overview of food engineering, but also regulation and safety information, machinery design for the various stages of food production, from tillage, to processing and packaging. Each chapter includes the state-of-the

art in technology for each subject and numerous illustrations, tables and references to guide the reader through key concepts. Describes the latest breakthroughs in food production machinery Features new chapters on engineering properties of food materials, UAS applications, and microwave processing of foods Provides efficient access to fundamental information and presents real-world applications Includes design of machinery and facilities as well as theoretical bases for determining and predicting behavior of foods as they are handled and processed

### **Marine Diesel Basics 1**

Here is the first book on biotechnological processes for controlling odor and air pollution emanating from industrial and municipal airstreams. Authors from academia and industry describe biotechnological methods ranging from those in laboratory stages to pilot evaluation to full-scale process implementation. In addition to the basic microbiology and engineering, the design, modeling, and control of bioreactors are discussed in detail.

### **Energy Efficiency and the Demand for Energy Services**

This book discusses applying vernacular strategies to modern architectural design to adhere to basic green principles of energy efficiency and materials utilization. Written from an international perspective, chapters present the perspectives and experiences of

architects and engineers from across the globe. Historically successful approaches are integrated with modern design concepts to create novel, sustainable, and resource conscious solutions. The scope of topics covered include natural ventilation, cooling and heating, daylight and shading devices, and green micro-climate and functional facades, making this a useful reference for a wide range of researchers and workers in the built environment. Covers the most up-to-date research developments, best practices, and innovations from countries all over the globe; Presents the latest research in vernacular architecture and sustainable building; Contains case studies and examples to enhance practical application of the technologies presented.

### **Handbook of Farm, Dairy and Food Machinery Engineering**

### **A Guide to Obesity and the Metabolic Syndrome**

This comprehensive, interdisciplinary handbook reviews the latest methods and technologies used in automated essay evaluation (AEE) methods and technologies. Highlights include the latest in the evaluation of performance-based writing assessments and recent advances in the teaching of writing, language testing, cognitive psychology, and computational linguistics. This greatly expanded follow-up to Automated Essay Scoring reflects the numerous advances that have taken place in the field

since 2003 including automated essay scoring and diagnostic feedback. Each chapter features a common structure including an introduction and a conclusion. Ideas for diagnostic and evaluative feedback are sprinkled throughout the book. Highlights of the book's coverage include: The latest research on automated essay evaluation. Descriptions of the major scoring engines including the E-rater®, the Intelligent Essay Assessor, the Intellimetric™ Engine, c-rater™, and LightSIDE. Applications of the uses of the technology including a large scale system used in West Virginia. A systematic framework for evaluating research and technological results. Descriptions of AEE methods that can be replicated for languages other than English as seen in the example from China. Chapters from key researchers in the field. The book opens with an introduction to AEEs and a review of the "best practices" of teaching writing along with tips on the use of automated analysis in the classroom. Next the book highlights the capabilities and applications of several scoring engines including the E-rater®, the Intelligent Essay Assessor, the Intellimetric™ engine, c-rater™, and LightSIDE. Here readers will find an actual application of the use of an AEE in West Virginia, psychometric issues related to AEEs such as validity, reliability, and scaling, and the use of automated scoring to detect reader drift, grammatical errors, discourse coherence quality, and the impact of human rating on AEEs. A review of the cognitive foundations underlying methods used in AEE is also provided. The book concludes with a comparison of the various AEE systems and speculation about the future of the field in light of current educational policy. Ideal for educators,

professionals, curriculum specialists, and administrators responsible for developing writing programs or distance learning curricula, those who teach using AEE technologies, policy makers, and researchers in education, writing, psychometrics, cognitive psychology, and computational linguistics, this book also serves as a reference for graduate courses on automated essay evaluation taught in education, computer science, language, linguistics, and cognitive psychology.

### **Bone and Cancer**

Since the identification of the first matrix metalloprotease (interstitial collagenase or MMP-1) more than 20 closely related and evolutionarily conserved vertebrate MMPs have been discovered. Chapters in this volume detail methods and protocols on recent advances in the expression and purification of MMPs, biophysical methods such as X-ray crystallography, NMR spectroscopy and small angle X-ray scattering, computational and experimental methods for determining MMP specificity, methods for detecting MMP activity in vitro and in vivo, and methods for the development and characterization of MMP-based inhibitors as potential therapeutics for the treatment of various diseases. Written in the highly successful *Methods in Molecular Biology* series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and practical,

Matrix Metalloproteases: Methods and Protocols aims to ensure successful results in the further study of this vital field.

### **Herbalism, Phytochemistry and Ethnopharmacology**

Developed and expanded from the work presented at the New Energetic Materials and Propulsion Techniques for Space Exploration workshop in June 2014, this book contains new scientific results, up-to-date reviews, and inspiring perspectives in a number of areas related to the energetic aspects of chemical rocket propulsion. This collection covers the entire life of energetic materials from their conceptual formulation to practical manufacturing; it includes coverage of theoretical and experimental ballistics, performance properties, as well as laboratory-scale and full system-scale, handling, hazards, environment, ageing, and disposal. Chemical Rocket Propulsion is a unique work, where a selection of accomplished experts from the pioneering era of space propulsion and current technologists from the most advanced international laboratories discuss the future of chemical rocket propulsion for access to, and exploration of, space. It will be of interest to both postgraduate and final-year undergraduate students in aerospace engineering, and practicing aeronautical engineers and designers, especially those with an interest in propulsion, as well as researchers in energetic materials.

### **Cell Cycle Control**

Volume 45 of Reviews in Mineralogy and Geochemistry is a new and expanded update of Volume 4 from 1977. Most of the material in this volume is entirely new, and *Natural Zeolites: Occurrence, Properties, Applications* presents a fresh and expanded look at many of the subjects contained in Volume 4. There has been an explosion in our knowledge of the crystal chemistry and structures of natural zeolites (Chapters 1 and 2), due in part to the now-common Rietveld method that allows treatment of powder diffraction data. Studies on the geochemistry of natural zeolites have also greatly increased, partly as a result of the interests related to the disposal of radioactive wastes, and Chapters 3, 4, 5, 13, and 14 detail the latest results in this important area. Until the latter part of the 20th century, zeolites were often looked upon as a geological curiosity, but they are now known to be widespread throughout the world in sedimentary and igneous deposits and in soils (Chapters 6-12). The application of natural zeolites has greatly expanded since the first zeolite volume. Chapter 15 details the use of natural zeolites for removal of ammonium ions, heavy metals, radioactive cations, and organic molecules from natural waters, wastewaters, and soils. Similarly, Chapter 16 describes the use of natural zeolites as building blocks and cements in the building industry, Chapter 17 outlines their use in solar energy storage, heating, and cooling applications, and Chapter 18 describes their use in a variety of agricultural applications, including as soil conditioners, slow-release fertilizers, soil-less substrates, carriers for insecticides and pesticides, and remediation agents in

contaminated soils.

## **Genome Mapping and Genomics in Animal-Associated Microbes**

Seeing is Understanding. The first VISUAL guide to marine diesel systems on recreational boats. Step-by-step instructions in clear, simple drawings explain how to maintain, winterize and recommission all parts of the system - fuel deck fill - engine - batteries - transmission - stern gland - propeller. Book one of a new series. Canadian author is a sailor and marine mechanic cruising aboard his 36-foot steel-hulled Chevrier sloop. Illustrations: 300+ drawings Pages: 222 pages Published: 2017 Format: softcover Category: Inboards, Gas & Diesel

## **Recycling of Solid Waste for Biofuels and Bio-chemicals**

The problems engendered by the conflicting imperatives of development and ecology show no sign of ending, and every day more locations are added to the list of landscapes poisoned by human activity. This vital book, featuring an international set of authors, is a key reference for researchers and environmental managers, as well as anyone involved in the mining industry or landscape remediation. The comprehensive coverage of current approaches to phytoremediation begins by examining the problem. It looks at natural and human-induced toxins, and their effects on natural vegetation as well as agricultural crops. Particular attention is paid to the

two largest challenges to remediation – heavy metals, and the salt stress that is impeding agricultural productivity worldwide. The text moves on to focus on the efficacy of different plant species in removing toxic pollutants from the environment. Along with analysis of a number of case studies, this section includes new and updated information on the mechanism of toxin-tolerance in plants.

### **Men's Health Equity**

Technological Developments in Education and Automation includes set of rigorously reviewed world-class manuscripts dealing with the increasing role of technology in daily lives including education and industrial automation Technological Developments in Education and Automation contains papers presented at the International Conference on Industrial Electronics, Technology & Automation and the International Conference on Engineering Education, Instructional Technology, Assessment, and E-learning which were part of the International Joint Conferences on Computer, Information and Systems Sciences and Engineering

### **Power Engineering**

### **I Love Fishing, Any Kind of Fishing**

This book, based on the research experience and outcomes of a group of international contributors, addresses a range of advanced energy efficiency

technologies and their applications in solar heating, cooling and power generation, while also providing solutions for tackling recurring low efficiency problems in today's systems. It highlights the latest technologies and methods, which can significantly improve the performance of solar systems, enabling readers to design, construct and apply high-performance solar systems in or for their own projects. The contributors provide a systematic introduction to state-of-the-art energy efficiency technologies that demonstrates how to implement innovative solar systems. These technologies include:

- heat pipes and loop heat pipes;
- phase change materials (PCMs) and PCM slurries;
- micro-channel panels;
- desiccant/adsorption cycling;
- ejector cooling and heat pumps; and
- solar concentration and thermoelectric units.

The book shows how innovative solar systems applicable to rural and urban buildings can be analysed and demonstrates the successful implementation of these advanced technologies. It delivers the design principles and associated energy performance assessment methods for a range of selected solar heating, cooling and power generation projects. This book offers a valuable source of information for final-year undergraduate students, as well as graduate students and academic lecturers, as it promotes the widespread deployment of advanced solar heating, cooling and power generation technologies applicable for buildings across the globe. The book is also a good point of reference for design engineers and energy consultants who wish to extend their knowledge of advanced technologies used to achieve energy efficiency.

## **Advances in Wastewater Treatment**

A collection of new reviews and protocols from leading experts in cell cycle regulation, *Cell Cycle Control: Mechanisms and Protocols, Second Edition* presents a comprehensive guide to recent technical and theoretical advancements in the field. Beginning with the overviews of various cell cycle regulations, this title presents the most current protocols and state-of-the-art techniques used to generate latest findings in cell cycle regulation, such as protocols to analyze cell cycle events and molecules. Written in the successful *Methods in Molecular Biology* series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible protocols, and notes on troubleshooting and avoiding known pitfalls. Authoritative and easily accessible, *Cell Cycle Control: Mechanisms and Protocols, Second Edition* will be a valuable resource for a wide audience, ranging from the experienced cell cycle researchers looking for new approaches to the junior graduate students giving their first steps in cell cycle research.

## **Current Research Topics in Plant Virology**

Carbohydrates give the body energy. They are in many foods people eat each day. But some carbohydrates are healthier than others. *Your Body on Carbohydrates* uncovers the nutritional benefits of carbohydrates, how they interact with the body, and how to include them as part of a balanced diet. Easy-

to-read text, vivid images, and helpful back matter give readers a clear look at this subject. Features include a table of contents, infographics, a glossary, additional resources, and an index. Aligned to Common Core Standards and correlated to state standards. Core Library is an imprint of Abdo Publishing, a division of ABDO.

### **Technological Developments in Education and Automation**

Bridging the gap between the ancient art of herbalism and the emerging sciences of ethnopharmacology and phytopharmacotherapy, this book highlights the major breakthroughs in the history of the field and focuses on future directions in the discovery and application of herb-derived medicines. Implementing the concept of reverse pharmacology, it inte

### **Natural Zeolites**

Mechanobiology—the study of the effects of mechanics on biological events—has evolved to answer numerous research questions. *Mechanobiology Handbook 2nd Edition* is a reference book for engineers, scientists, and clinicians who are interested in mechanobiology and a textbook for senior undergraduate to graduate level students of this growing field. Readers will gain a comprehensive review of recent research findings as well as elementary chapters on solid mechanics, fluid mechanics, and molecular analysis techniques. The new edition presents, in addition to the chapters of

the first edition, homework problem sets that are available online and reviews of research in uncovered areas. Moreover, the new edition includes chapters on statistical analysis, design of experiments and optical imaging. The editors of this book are researchers and educators in mechanobiology. They realized a need for a single volume to assist course instructors as a guide for didactic teaching of mechanobiology to a diverse student body. A mechanobiology course is frequently made up of both undergraduate and graduate students pursuing degrees in engineering, biology, or integrated engineering and biology. Their goal was to present both the elementary and cutting-edge aspects of mechanobiology in a manner that is accessible to students from many different academic levels and from various disciplinary backgrounds. Moreover, it is their hope that the readers of *Mechanobiology Handbook 2nd Edition* will find study questions at the end of each chapter useful for long-term learning and further discussion. Comprehensive collection of reviews of recent research Introductory materials in mechanics, biology, and statistics Discussion of pioneering and emerging mechanobiology concepts Presentation of cutting-edge mechanobiology research findings across various fields and organ systems End of chapter study questions, available online Considering the complexity of the mechanics and the biology of the human body, most of the world of mechanobiology remains to be studied. Since the field is still developing, the *Mechanobiology Handbook* raises many different viewpoints and approaches with the intention of stimulating further research endeavours.

## **Intelligent Media Technology for Communicative Intelligence**

In the historical record there is abundant evidence that obesity was a medical and health concern as long as medicine has been practiced. The idea of diet and exercise are bulwarks in the fight against obesity in history from the time of Hippocrates to the 16th century—a span of 2,000 years. However, our scientific understanding of this problem is only a little over 200 years old. An examination of the root cause of what many consider the obesity epidemic, *A Guide to Obesity and the Metabolic Syndrome* traces the origins and types of obesity and its treatment. Examining in detail the developing treatment for obesity, this book provides: A history of obesity, including treatment, proposed causes, and perceptions An examination of the causes and problems associated with obesity A discussion of lifestyle, diet, exercise, and treatment strategies A detailed look at the medications and surgeries available for obesity The fact that we have an epidemic of obesity today that is covering the globe suggests that the strategically simple ideas of eating less and exercising more, ideas that require commitment and personal involvement by the individual, have not been very successful. As we move forward in trying to understand this problem, we need to be alert to strategies and tactics that may not require individual motivation and commitment—history has shown that they do not work well. This book supplies guidance on developing and designing novel strategic interventions against

obesity and metabolic disorders.

## **Mechanobiology Handbook, Second Edition**

Gluten is found in wheat and some other grains. It's in foods people eat every day. Many people can eat it without problems. Others have a disease that makes gluten damage their bodies. *Your Body on Gluten* uncovers the nutritional benefits of foods containing gluten, how gluten interacts with the body, and how to include it as part of a balanced diet. Easy-to-read text, vivid images, and helpful back matter give readers a clear look at this subject. Features include a table of contents, infographics, a glossary, additional resources, and an index. Aligned to Common Core Standards and correlated to state standards. Core Library is an imprint of Abdo Publishing, a division of ABDO.

## **Hot Line Farm Equipment Guide Quick Reference Guide**

The fifth in a series of reviews, centered on a single major topic (vol. 1 Bone Formation, vol. 2 Bone Resorption, vol. 3 Engineering of Functional Skeletal Tissues, vol. 4 Osteoarthritis) written by acknowledged authorities in the field, and aimed at researchers, clinicians and others involved in the bone field.

## **Ecology, Systematics, and the Natural History of Predaceous Diving Beetles**

## **(Coleoptera: Dytiscidae)**

Enzyme Technology is one the most promising disciplines in modern biotechnology. In this book, the applications of a wide variety of enzymes are highlighted. Current studies in enzyme technology are focused towards the discovery of novel enzymes (termed “bio-discovery” or “bio-prospecting”) and the identification and elucidation of novel pathways of these novel enzymes with emphasis on their industrial relevance. With the development of molecular techniques and other bioinformatics tools, the time to integrate this subject with other fields in the life sciences has arrived. A rapid expansion of the knowledge base in the field of enzyme biotechnology has occurred over the past few years. Much of this expansion has been driven by the bio-discovery of many new enzymes from a wide range of environments, some extreme in nature, followed by subsequent protein (enzyme) engineering. These enzymes have found a wide range of applications, ranging from bioremediation, bio-monitoring, biosensor development, bioconversion to biofuels and other biotechnologically important value-added products. Hydrolases constitute a major component of the global annual revenue generated by industrial enzymes and the emphasis has therefore been placed on these enzymes and their applications. With the immense interest of researchers active in this area, this book will serve to provide information on current aspects in this field of study. In the current edition, the contributions of many diversified topics towards establishing new directions of research in the area of

enzyme biotechnology are described. This book serves to provide a unique source of information to undergraduates, post graduates and doctoral courses in microbiology and biotechnology along with allied life sciences. The present edition of the book covers all important areas of enzyme biotechnology i.e. the wide variety of enzymes in the field of enzyme biotechnology and their industrial applications, new methods and state-of-the-art information on modern methods of enzyme discovery. This book will act as good resource on most of the current facets of enzyme technology for all students engaged in bioengineering and biotechnology.

### **Fundamentals of Microfluidics and Lab on a Chip for Biological Analysis and Discovery**

I love fishing, any kind of fishing. Blank Lined Journal Notebook, 100 Pages, Soft Matte Cover, 6 x 9 In  
Details: Dimensions: 6 x 9 IN 1100 pages of Blank-Lined White Pages High-Quality Paper Soft Matte Cover

### **Muscle Contraction and Cell Motility**

The aim of this book is to provide the target audience, specifically students of Medicine, Biology, Systems Biology and Bioinformatics, as well as experienced researchers in research fields relevant to metabolic syndrome (MetS) with an overview of the challenges and opportunities in systems biology and how it can be used to tackle MetS. In particular, the aims are: (1)

to provide an introduction to the key biological processes involved in the pathophysiology of MetS; (2) through the use of specific examples, provide an introduction to the latest technologies that use a systems biology approach to study MetS; and (3) to give an overview of the mathematical modeling approaches for studying MetS. The clearly written chapters by leading experts in the field provides detailed descriptions crucial for the unique position of this book and its focus on the application of systems biology to tackle specific pathophysiologically relevant aspects of MetS and provides a valuable practical guide to this research community.

### **Beneficial Microorganisms in Medical and Health Applications**

This volume is devoted to the application of microorganisms in medical treatment and health protection. Topics discussed include the role of probiotics in immune modulation, in prevention of influenza, and in atopic dermatitis. Further chapters cover aspects such as the relation of the gut microbiome and stress, the immune system, the regulation of inflammation, the benefits of Bifidobacterium for infants, and bacteriocin in medical applications, as well as the use of in vitro models of the gastrointestinal tract, omics approaches for targeting microbial health potential and the production of hepatitis B vaccines. This volume will be of particular interest to scientists working in the fields of clinical medicine, applied microbiology, pharmacy and public health.

## **Sustainable Vernacular Architecture**

`From understanding the Carnot Cycle in power plants and electrochemical processes in fuel cells to examining waste heat recovery within industry, this is the "go to" book for those wanting to explore the many surprising opportunities for improving energy efficiency'. John A. `Skip' Laitner, Director of Economic and Social Analysis, American Council for an Energy-Efficient Economy, USA `Scientific understanding and technological options can provide a successful approach to energy for sustainable development. What are needed are political will, financial commitment and social readiness. This book is essential in today's debate.' Thomas B. Johansson, Professor, Lund University, Sweden `Energy Efficiency and the Demand for Energy Services is remarkable for the scope of its coverage - the whole problem, not just a slice - and its depth, clarity and approachability. It will serve as an excellent textbook for a wide range of energy-related university-level courses.' John Straube, Associate Professor, Department of Civil Engineering and School of Architecture, University of Waterloo, Canada Reducing and managing humanity's demand for energy is a fundamental part of the effort to mitigate climate change. In this, the most comprehensive textbook ever written on the subject, L. D. Danny Harvey lays out the theory and practice of how things must change if we are to meet our energy needs sustainably. The book begins with a succinct summary of the scientific basis for concern over global warming, then outlines energy basics and current patterns and trends in energy use. This is

followed by a discussion of current and advanced technologies for the generation of electricity from fossil fuels. The findings from these sector-by-sector assessments are then applied to generate scenarios of how global energy demand could evolve over the coming decades with full implementation of the economically feasible energy-saving potential. The book ends with a brief discussion of policies that can be used to reduce energy demand, but also addresses the limits of technologically based improvements in efficiency in moderating demand and of the need to rethink some of our underlying assumptions concerning what we really need. Along with its companion volume on carbon-free energy supply, and accompanied by extensive supplementary online material, this is an essential resource for students and practitioners in engineering, architecture, environment and energy-related fields.

### **Genomics, Proteomics and Metabolomics in Nutraceuticals and Functional Foods**

Lab-on-a-chip technology permits us to make many important discoveries that can only be observed at the microscale or the nanoscale. Using this technology, biological and biochemical analyses translate into greater sensitivity, more accurate results, and more valuable findings. Authored by one of the field's pioneering researchers, *Fundamentals of Microfluidics and Lab on a Chip for Biological Analysis and Discovery* focuses on all key aspects of microfluidic lab-on-a-chip technologies to offer an exceptionally cohesive overview of the science, its

limitations, breakthroughs made over the years, and currently emerging advances. The book emphasizes analytical applications of microfluidic technology and offers in-depth coverage of micromachining methods, microfluidic operations, chemical separations, sample preparation and injection methods, detection technology, and various chemical and biological analyses. Other topics of interest include the use of polymeric chips, fluid flow valve and control, single-cell analysis, DNA and RNA amplification techniques, DNA hybridization, immunoassays, and enzymatic assays. The book includes more than 300 figures that depict novel chip functions and breakthroughs and 16 tables summarize materials and refer readers to additional resources. An appendix compiles extensive analytical applications from emerging and established research groups. Beginners in the field will find the book useful for navigating the vast literature related to the technology, while experienced researchers will rely on the compiled information for easy comparison and references for further study. Derived from the highly popular *Microfluidic Lab-on-a-Chip for Chemical and Biological Analysis and Discovery* (2006), this volume is also readily adaptable for classroom use. Problem sets in each chapter help students test their assimilation of the material and clarify challenging concepts. The book contains a comprehensive glossary, a complete index, and extensive references. A solutions manual is available with qualifying course adoption.

### **Proteases: Structure and Function**

Predaceous diving beetles (Coleoptera: Dytiscidae) constitute one of the largest families of freshwater insects (~ 4,200 species). Although dytiscid adults and larvae are ubiquitous throughout a variety of aquatic habitats and are significant predators on other aquatic invertebrates and vertebrates, there are no compilations that have focused on summarizing the knowledge of their ecology, systematics, and biology. Such knowledge would benefit anyone working in aquatic systems where dytiscids are an important part of the food web. Moreover, this work will allow a greater appreciation of dytiscids as model organisms for investigations of fundamental principles derived from ecological and evolutionary theory. Contributed chapters are by authors who are actively engaged in studying dytiscids and each chapter offers a synthesis of the current knowledge of a variety of topics and will provide future directions for research.

### **Biotechnology for Odor and Air Pollution Control**

This book provides a comprehensive overview of the current progress in muscle contraction and cell motility research. It discusses structural, mechanical, and biochemical characteristics of skeletal, cardiac, and smooth muscles, and cell motility. The experimental objects of the studies described in this volume extend from humans to molecules. A distinct feature of this volume is that, in some chapters, evidence against the textbook view is presented, showing how well-established dogma can be denied by an unexpected discovery. This book is as

interesting as it is informative for general readers and young scientists alike, and it is sure to inspire both to challenge the enticing mysteries that still remain in this exciting research field.

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