

New & Bestselling titles in Bioinformatics, Computational Biology and Biomathematics 2011

:: Textbook

A GENTLE INTRODUCTION TO SUPPORT VECTOR MACHINES IN BIOMEDICINE

Volume 1: Theory and Methods

by **Alexander Statnikov**, **Constantin F Aliferis**
(New York University, USA), **Douglas P Hardin**
(Vanderbilt University, USA), & **Isabelle Guyon**
(ClopNet, USA)

Support Vector Machines (SVMs) are among the most important recent developments in pattern recognition and statistical machine learning. They have found a great range of applications in various fields including biology and medicine. However, biomedical researchers often experience difficulties grasping both the theory and applications of these important methods because of lack of technical background. The purpose of this book is to introduce SVMs and their extensions and allow biomedical researchers to understand and apply them in real-life research in a very easy manner. The book is to consist of two volumes: theory and methods (Volume 1) and case studies (Volume 2).

Readership: Biomedical researchers and healthcare professionals who would like to learn about SVMs and relevant bioinformatics tools but do not have the necessary technical background.

200pp Feb 2011
978-981-4324-38-0 US\$78 £48

:: Textbook

A GENTLE INTRODUCTION TO SUPPORT VECTOR MACHINES IN BIOMEDICINE

Volume 2: Case Studies

by **Alexander Statnikov**, **Constantin F Aliferis**
(New York University, USA), **Douglas P Hardin**
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200pp Dec 2011
978-981-4324-39-7 US\$78 £48



:: Textbook

Science, Engineering, and Biology Informatics - Vol. 5 BIODATA MINING AND VISUALIZATION

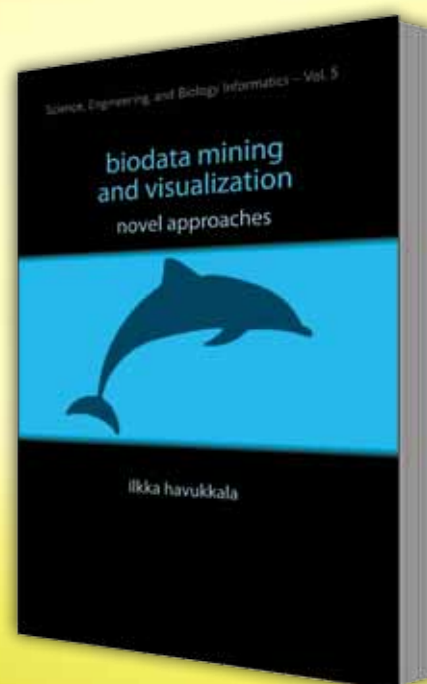
Novel Approaches

by **Ilkka Havukkala**

There is a lack of an exposition on interdisciplinary and innovative methods of data mining and visualization for biodata. This book fills the gap by introducing an interdisciplinary set of the most recent methods and references on novel techniques from artificial intelligence, data mining, engineering, pattern recognition, and ontological data mining fields that are applicable to bioinformatics. The latest novel approaches are explained in detail, their advantages and disadvantages are summarized, and pointers to the future development of new applications are given.

Readership: Advanced undergraduate and graduate students in bioinformatics, data mining, knowledge discovery, pattern recognition, genomics, systems biology, and biostatistics; biology researchers and biodata knowledge engineers.

324pp Jun 2010
978-981-279-036-1 US\$88 £61



TOPICS IN BIOMATHEMATICS

by **J C Misra** (*Indian Institute of Technology, Kharagpur, India*)

This book focuses on the integration of mathematical models dealing with the dynamics of the cardiovascular system. The author uses a step-by-step approach to describe different components of the cardiovascular system and provides a variety of information about the dynamical behavior of the cardiovascular system with appropriate diagrams. Various mathematical models for modeling the vascular dynamics of wall tissues, the circulatory system and the flow dynamics of blood in normal as well as pathological states are presented in a systematic manner. This unique work explains technical aspects of the techniques in simple language that is appropriate for novice researchers and scientists. The book bears the potential to suggest further lines of both experimental and theoretical studies.

Readership: Graduate students, academics and researchers in biomathematics, mathematical biology, mathematical modeling, biotechnology, biocomputing, biophysics, bioengineering and mechanics.

400pp	Jan 2012	
978-981-283-659-5	US\$111	£76
978-981-283-660-1(ebook)	US\$144	

COMPUTATIONAL NEUROANATOMY

The Methods

by **Moo K Chung** (*University of Wisconsin-Madison, USA*)

Computational neuroanatomy is an emerging field that utilizes various non-invasive brain imaging modalities, such as MRI and DTI, in quantifying the spatiotemporal dynamics of the human brain structures in both normal and clinical populations. This discipline emerged about twenty years ago and has made substantial progress in the past decade. The main goals of this book are to provide an overview of various mathematical, statistical and computational methodologies used in the field to a wide range of researchers and students, and to address important yet technically challenging topics in further detail.

Readership: Researchers and graduate students in the fields of computational neuroscience and brain imaging, medical image analysis and pattern recognition.

400pp	Jun 2011	
978-981-4335-43-0	US\$124	£77
978-981-4335-44-7(ebook)	US\$161	

SYSTEMS BIOLOGY

Applications in Cancer-Related Research

edited by **Hsueh-Fen Juan** (*National Taiwan University, Taiwan*) & **Hsuan-Cheng Huang** (*National Yang-Ming University, Taiwan*)

This volume presents an overview of recent developments in systems biology and their applications in cancer-related research. The ongoing advances in our understanding of genomics and proteomics, coupled with the development of new and more robust tools, have led to an emphasis on analyzing biological systems at multiple levels. Thus, there is a need to integrate different types of data into a comprehensive "systems" view.

Readership: This book is an essential source of reference for medical doctors, oncologists, chemists, genome biologists and computational biologists. It is also suitable for senior undergraduate, graduate students and researchers who are interested in systems biology and cancer research.

350pp	Sep 2011	
978-981-4324-45-8	US\$98	£61
978-981-4324-46-5(ebook)	US\$127	

Series in Biostatistics - Vol. 4

RECENT ADVANCES IN BIOSTATISTICS

False Discovery Rates, Survival Analysis, and Related Topics

edited by **Manish Bhattacharjee, Sunil K Dhar & Sundarraman Subramanian** (*New Jersey Institute of Technology, USA*)

The articles included in this volume are based on a careful selection of peer-reviewed papers, authored by eminent experts in the field, representing a well balanced mix of researchers from the academia, R&D sectors of government and the pharmaceutical industry.

Readership: Advanced Graduate students; active researchers in universities; R&D managers and directors of biostatistics / public health research in government and industry.

312pp	Mar 2011	
978-981-4329-79-8	US\$90	£56
978-981-4329-80-4(ebook)	US\$117	



Science, Engineering, and Biology Informatics - Vol. 7

ADVANCES IN GENOMIC SEQUENCE ANALYSIS AND PATTERN DISCOVERY

edited by **Laura Elnitski** (*National Human Genome Research Institute, USA*), **Helen Piontkivska** (*Kent State University, USA*), & **Lonnie R Welch** (*Ohio University, USA*)

Mapping the genomic landscapes is one of the most exciting frontiers of science. We have the opportunity to reverse engineer the blueprints and the control systems of living organisms. Computational tools are key enablers in the deciphering process. This book provides an in-depth presentation of some of the important computational biology approaches to genomic sequence analysis. The first section of the book discusses methods for discovering patterns in DNA and RNA. This is followed by the second section that reflects on methods in various ways, including performance, usage and paradigms.

Readership: Those who perform biological, medical and bioinformatics research.

236pp	Jan 2011	
978-981-4327-72-5	US\$90	£56
978-981-4327-73-2(ebook)	US\$117	

POPULATION BIOLOGY AND CRITICALITY

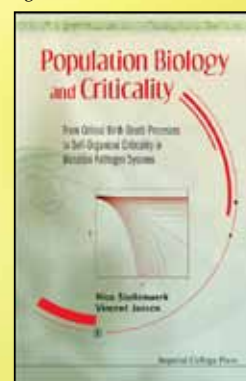
From Critical Birth-Death Processes to Self-Organized Criticality in Mutation Pathogen Systems

by **Nico Stollenwerk** (*Universidade de Lisboa, Portugal*) & **Vincent Jansen** (*Royal Holloway, University of London*)

The present book describes novel theories of mutation pathogen systems showing critical fluctuations, as a paradigmatic example of an application of the mathematics of critical phenomena to the life sciences. It will enable the reader to understand the implications and future impact yet follow the mathematical tools and scientific origins of critical phenomena.

Readership: Academics in the field of biology, medicine and physics (cross-disciplinary) interested in stochasticity in biological and medical systems.

236pp	Nov 2010	
978-1-84816-401-7	US\$96	£66
978-1-84816-402-4(ebook)	US\$125	



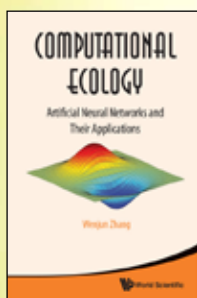
COMPUTATIONAL ECOLOGY**Artificial Neural Networks and Their Applications**

by **WenJun Zhang** (*Sun Yat-Sen University, China & International Academy of Ecology and Environmental Sciences*)

Computational Ecology consists of two parts: the first describes the methods and algorithms of ANNs, interpretability and mathematical generalization of neural networks, Matlab neural network toolkit, etc., while the second provides case studies of applications of ANNs in ecology, Matlab codes, and comparisons of ANNs with conventional methods.

Readership: Research scientists, university teachers, graduate students and high-level undergraduates in the area of ecology, environmental sciences and computational science.

312pp **Jun 2010**
978-981-4282-62-8 **US\$96** **£66**
978-981-4282-63-5(ebook) **US\$125**



Science, Engineering, and Biology Informatics - Vol. 4

MACHINE LEARNING APPROACHES TO BIOINFORMATICS

by **Zheng Rong Yang** (*University of Exeter, UK*)

The book succeeds on two key unique features. First, it introduces the most widely used machine learning approaches in bioinformatics and discusses, with evaluations from real case studies, how they are used in individual bioinformatics projects. Second, it introduces state-of-the-art bioinformatics research methods. The theoretical parts and the practical parts are well integrated for readers to follow the existing procedures in individual research.

Readership: Final-year undergraduate students, master students, PhD students and researchers in bioinformatics.

336pp **May 2010**
978-981-4287-30-2 **US\$107** **£74**
978-981-4287-31-9(ebook) **US\$139**

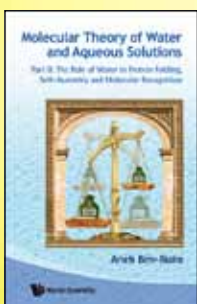
**PROTEIN-PROTEIN COMPLEXES****Analysis, Modeling and Drug Design**

edited by **Martin Zacharias** (*Technische Universität München, Germany*)

The book consists of about 15 review chapters, written by experts, on the characterization of protein-protein interfaces, structure determination of protein complexes (by NMR and X-ray), theory of protein-protein binding, dynamics of protein interfaces, bioinformatics methods to predict interaction regions, and prediction of protein-protein complex structures (docking and homology modeling of complexes, etc.) and design of protein-protein interactions.

Readership: Graduate students and researchers in bioinformatics and computational biology, biophysics, biochemistry, structural biology, and drug design.

400pp **May 2010**
978-1-84816-338-6 **US\$133** **£92**
978-1-84816-339-3(pbk) **US\$77** **£53**
978-1-84816-340-9(ebook) **US\$173**

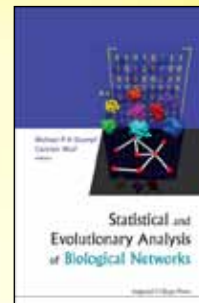
**Bestselling Backlist****STATISTICAL AND EVOLUTIONARY ANALYSIS OF BIOLOGICAL NETWORKS**

edited by **Michael P H Stumpf** (*Imperial College London, UK*) & **Carsten Wiuf** (*Aarhus University, Denmark*)

This book reviews and explores statistical, mathematical and evolutionary theory and tools in the understanding of biological networks. The book is divided into comprehensive and self-contained chapters, each of which focuses on an important biological network type, explains concepts and theory and illustrates how these can be used to obtain insight into biologically relevant processes and questions.

Readership: Academics, researchers, postgraduates and advanced undergraduates in bioinformatics. Biologists, mathematicians/statisticians, physicists and computer scientists.

180pp **Dec 2009**
978-1-84816-433-8 **US\$92** **£60**
978-1-84816-434-5(ebook) **US\$120**

**BIOINFORMATICS****A Swiss Perspective**

edited by **Ron D Appel** & **Ernest Feytmans** (*Swiss Institute of Bioinformatics, Switzerland*)

This book provides an insight into some of the key areas of activity in bioinformatics in Switzerland. With contributions from SIB members, it covers both research work and major infrastructure efforts in genome and gene expression analysis, investigations on proteins and proteomes, evolutionary bioinformatics, and modeling of biological systems.

Readership: Bioinformaticians, computational biologists, and biologists; advanced undergraduate and graduate students in bioinformatics, biology, medicine, and biochemistry; non-expert audience interested in bioinformatics.

464pp **Apr 2009**
978-981-283-877-3 **US\$166** **£110**
978-981-283-878-0(ebook) **US\$216**

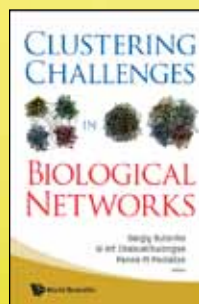
**CLUSTERING CHALLENGES IN BIOLOGICAL NETWORKS**

edited by **Sergiy Butenko** (*Texas A&M University, USA*), **W Art Chaovalitwongse** (*Rutgers University, USA*), & **Panos M Pardalos** (*University of Florida, USA*)

This volume presents a collection of papers dealing with various aspects of clustering in biological networks and other related problems in computational biology. It consists of two parts, with the first part containing surveys of selected topics and the second part presenting original research contributions. In addition, the book can be used as a supplement to any course in data mining or computational/systems biology.

Readership: Advanced undergraduate and graduate students in engineering, computer science, mathematics, and biology; researchers and practitioners in biological studies and data mining.

348pp **Feb 2009**
978-981-277-165-0 **US\$170** **£112**
978-981-277-166-7(ebook) **US\$221**



Series on Advances in Bioinformatics and Computational Biology - Vol. 9

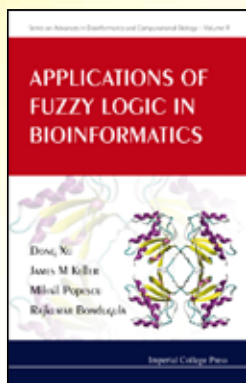
APPLICATIONS OF FUZZY LOGIC IN BIOINFORMATICS

by **Dong Xu**, **James M Keller**, **Mihail Popescu** & **Rajkumar Bondugula** (University of Missouri-Columbia, USA)

This book comprehensively addresses several important bioinformatics topics using fuzzy concepts and approaches, including measurement of ontological similarity, protein structure prediction/analysis, and microarray data analysis. It also reviews other bioinformatics applications using fuzzy techniques.

Readership: Postdoctoral fellows, students, senior investigators and professional practitioners/bioinformatics experts.

248pp **Aug 2008**
978-1-84816-258-7 **US\$127** **£84**
978-1-84816-259-4(ebook) **US\$165**



Complex Systems and Interdisciplinary Science - Vol. 3

BIOLOGICAL NETWORKS

edited by **François Képès** (CNRS & University of Evry, France)

This volume presents a timely and comprehensive overview of biological networks at all organization levels in the spirit of the complex systems approach. It discusses the transversal issues and fundamental principles as well as the overall structure, dynamics, and modeling of a wide array of biological networks at the molecular, cellular, and population levels.

Readership: Graduate students and industry experts in systems biology and complex systems; biologists; chemists; physicists; mathematicians; computer scientists.

532pp **Dec 2007**
978-981-270-695-9 **US\$211** **£139**
978-981-277-236-7(ebook) **US\$274**



Series on Advances in Bioinformatics and Computational Biology - Vol. 7

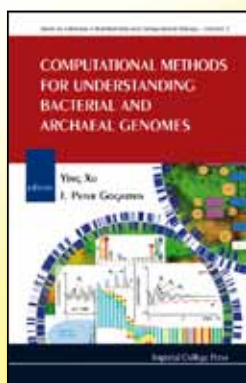
COMPUTATIONAL METHODS FOR UNDERSTANDING BACTERIAL AND ARCHAEAL GENOMES

edited by **Ying Xu** (University of Georgia, USA) & **J Peter Gogarten** (University of Connecticut, USA)

This comprehensive volume includes a collection of cohesively written chapters on prokaryotic genomes, their organization and evolution, the information they encode, and the computational approaches needed to derive such information.

Readership: Graduate students and microbiologists in microbial genomics and bioinformatics.

496pp **Aug 2008**
978-1-86094-982-1 **US\$172** **£113**
978-1-86094-983-8(ebook) **US\$224**



BIOMATHEMATICS

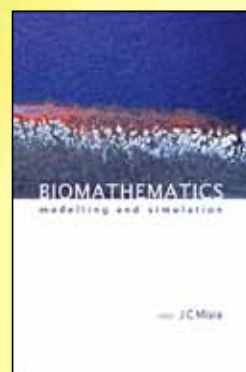
Modelling and Simulation

edited by **J C Misra** (Indian Institute of Technology, Kharagpur)

This book on modelling and simulation in biomathematics will be invaluable to researchers who are interested in the emerging areas of the field. Graduate students in related areas as well as lecturers will also find it beneficial. Some of the chapters have been written by distinguished experts in the field.

Readership: Graduate students, academic and researchers in biomathematics, mathematical biology, mathematical modeling, biotechnology, biocomputing, biophysics, bioengineering and mechanics.

524pp **Sep 2006**
978-981-238-110-1 **US\$212** **£140**
978-981-277-485-9(ebook) **US\$276**



COMPUTATIONAL STRUCTURAL BIOLOGY

Methods and Applications

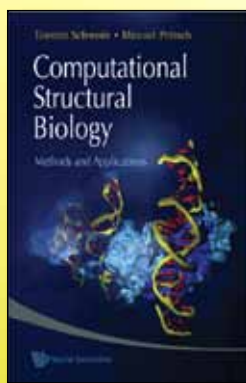
edited by **Torsten Schwede** (Swiss Institute of Bioinformatics & Biozentrum University of Basel, Switzerland) & **Manuel C Peitsch** (Novartis Institutes of BioMedical Research, Switzerland)

"Undergraduates and master students focused on structural bioinformatics will clearly benefit from the breadth of topics covered ... Finally, post-docs and professors will be able to explore tangential areas of their immediate research and get a firm grasp of the larger field by having such a broad spectrum of material presented that is well written and up-to-date."

Crystallography Reviews

Readership: Academics, industry scientists in bioinformatics/computational biology/biocomputing/proteomics/systems biology and cell/molecular/structural biology.

792pp **May 2008**
978-981-277-877-2 **US\$209** **£138**
978-981-277-878-9(ebook) **US\$272**



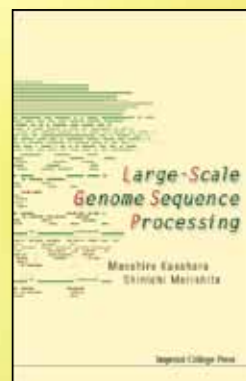
LARGE-SCALE GENOME SEQUENCE PROCESSING

by **Masahiro Kasahara** & **Shinichi Morishita** (University of Tokyo, Japan)

Efficient computer programs have made it possible to elucidate and analyze large-scale genomic sequences. Fundamental tasks, such as the assembly of numerous whole-genome shotgun fragments, the alignment of complementary DNA sequences with a long genome, and the design of gene-specific primers or oligomers, require efficient algorithms and state-of-the-art implementation techniques. This textbook emphasizes basic software implementation techniques for processing large-scale genome sequences and provides executable sample programs.

Readership: Course textbook for advanced undergraduate students in computer science and biology; biotechnology and computer industry.

248pp **Jul 2006**
978-1-86094-635-6 **US\$110** **£72**



Other Related Titles

HANDBOOK OF BIOMIMETICS AND BIOINSPIRATION A Reference Set for Basic Scientists, Engineers and Physicians (In 3 Volumes)

edited by **Esmail Jabbari** (*University of South Carolina, USA*)

Presented in a set of three volumes, this handbook covers biomimetics and bioinspiration within the scope of materials, mechanics, dynamics, transport, chemical reactions, control, recognition, and informatics.

Contents: Vol 1: Biomimetic Bioinspired Materials, Mechanics and Dynamics; Vol 2: Biomimetic Bioinspired Transport and Chemical Transformation; Vol 3: Biomimetic Bioinspired Recognition, Signaling, Information and Control.

Readership: Undergraduate and graduate students studying bioengineering, and researchers, engineers, chemists, biologists, physicists, material scientists and physicians.

Set	3000pp	Dec 2012
978-981-4354-92-9	US\$1300	£845
978-981-4354-93-6(ebook)	US\$1950	

COMPUTATIONAL ECOLOGY

Graphs, Networks and Agent-based Modeling

by **WenJun Zhang** (*Sun Yat-sen University, China & International Academy of Ecology and Environmental Sciences*)

Graphs, networks and agent-based modeling are the most thriving and attracting sciences used in ecology and environmental sciences. As such, this book is the first comprehensive treatment of the subject in the areas of ecology and environmental sciences.

From this integrated and self-contained book, researchers, university teachers and students will be provided with an in-depth and complete insight on knowledge, methodology and recent advances of graphs, networks and agent-based-modeling in ecology and environmental sciences.

Readership: Research scientists, university teachers, graduate students and high-level undergraduates in the areas of ecology, environmental sciences, computational science and applied mathematics.

350pp	Mar 2012	
978-981-4343-61-9	US\$118	£77
978-981-4343-62-6(ebook)	US\$153	

DIFFUSION, PROPAGATION AND GROWTH IN BIOMEDICAL SYSTEMS

by **Livio Triolo** (*Università di Roma Tor Vergata, Italy*)

This book takes an in-depth look into the great interdisciplinary mainstream of mathematical modeling in the life sciences. The various topics reflect the author's experience in statistical mechanics and in multiscale biomathematical analysis. One of the main issues is the multiscale aspect — the microscopic, subcellular level is linked, through the growth process, to the emerging macroscopic organization. Detailed attention is paid to the interplay between different descriptions — deterministic and stochastic, spatial and non-spatial. The exposition is not formal, details are referred to the Bibliography and some topics are critically reviewed.

Readership: Applied mathematicians, biophysicists, theoretical biologists with medical interests.

250pp	Jul 2011	
978-1-84816-341-6	US\$89	£61
978-1-84816-342-3(ebook)	US\$116	

GENOME SCIENCE AND TECHNOLOGY

by **Jingdong Tian** (*Duke University, USA*)

In the rapidly evolving field of genome sciences and technology, it is difficult for professional researchers to keep track of new knowledge and technology developments. This unique book attempts to remedy this situation by presenting the basic principles and technological foundations that support current and future advances in this exciting field. Also, the most state-of-the-art technologies which drive the development of this field are described in detail, with a special focus on genome engineering and synthetic genomics in the field of synthetic biology.

Contents: Nucleic Acids Amplification and Detection; Molecular Cloning, DNA and Genome Sequencing; Microarray Technology; Genome Engineering; Synthetic Genomics.

Readership: Advanced undergraduates and graduate students in life sciences and engineering. Biomedical researchers, engineers, and non-experts interested in genomics.

300pp	Feb 2012	
978-1-84816-435-2(pbk)	US\$75	£50

THE GLOBAL BURDEN OF CHLAMYDIAE

Chlamydiae, Genomics and Global Public Health

by **Deborah Dean** (*University of California at Berkeley, USA & University of California at San Francisco, USA*)

This book describes the major discoveries regarding chlamydial evolution, virulence, and pathogenesis as they relate to human chlamydial diseases worldwide. It discusses these discoveries through the application of new and advanced bioinformatics and statistical tools for comparative genomics, microarray analyses, and functional genomics. This monograph also deals with the threat posed by the expanding and evolving repertoire of chlamydial organisms that originate from reptiles and lower-vertebrate mammals, as well as from the environment. It includes an in-depth discussion on how these research discoveries help to bring about approaches for global disease interventions including vaccine development, and on the broader public health impact. This book will appeal to those interested in infectious diseases generally.

Readership: Researchers and public health practitioners interested in infectious diseases and the application of bioinformatics tools.

400pp	Feb 2012	
978-1-84816-546-5	US\$124	£86
978-1-84816-547-2(ebook)	US\$161	

Series on Partial Differential Equations and Applications

SOLUTION SET OF SEMILINEAR ELLIPTIC EQUATIONS

Global Bifurcation and Exact Multiplicity

by **Junping Shi** (*College of William & Mary, USA*)

This volume provides a unified approach to the problem of exact multiplicity and global bifurcation of semilinear elliptic equations, demonstrating applications of modern bifurcation theory to important nonlinear equations in physics, chemistry and biology. In particular, it lucidly presents a systematic theory of precise bifurcation diagrams for the development of radially symmetric solutions over the last thirty years.

Contents: Bifurcation Theory for PDE; Imperfect Bifurcation; Solution Set and Global Bifurcation Diagrams for General Bounded Domains; Exact Multiplicity and Global Bifurcation Diagrams for Spherical Domains; Properties of Solutions in Whole Space and Half Space; Solution Set for Symmetric Domains; Singularly Perturbed Problems.

Readership: For researchers and graduate students biology, chemistry, material and ecology.

250pp	Jul 2011	
978-981-277-594-8	US\$65	£45

METABONOMICS IN MODERN HEALTH SCIENCES AND TRADITIONAL MEDICINE

by **Wei Jia** (*Shanghai Jiao Tong University, China*), **Huiru Tang** (*Chinese Academy of Sciences, China*), & **Zhu Chen** (*Shanghai Institute of Hematology, China*)

This book covers research on metabonomics, ranging from the development of specialized chemical analytical techniques to the construction of databases and methods for metabolic simulation. The authors have been directly involved in the development of all the subject areas, including gas chromatography, liquid chromatography, mass spectrometry, metabolic databases, and metabolic simulation. Basic definition, breakthrough achievements and the future of metabonomic studies are described, making this book a valuable source for researchers in metabonomics in diverse fields such as animal, cellular, microbial, pharmaceutical, medical, and life sciences.

Readership: Biochemists, chemists, pharmacists, toxicologists, TCM practitioners.

300pp	Oct 2011	
978-981-283-694-6	US\$99	£68
978-981-283-695-3(ebook)	US\$129	

Molecular Medicine and Medicinal Chemistry

ALZHEIMER'S DISEASE: INSIGHTS INTO LOW MOLECULAR WEIGHT AND CYTOTOXIC AGGREGATES FROM IN VITRO AND COMPUTER EXPERIMENTS

Molecular Basis of Amyloid-Beta Protein Aggregation and Fibril Formation

edited by **Philippe Derreumaux** (*University of Paris 7, France*)

This book provides a panoramic view across recent *in vitro* and *in vivo* studies along with state-of-the-art computer simulations, designed to increase the readers' understanding of A β oligomerisation and fibril formation. At the same time, the book delves into the pathogenesis of familial and sporadic Alzheimer's disease at the atomic level of detail.

Written by leading authors in their respective fields, this book will be valuable to all scientists working with Alzheimer's disease.

Readership: Student; general public; professionals.

400pp	Oct 2011	
978-1-84816-754-4	US\$158	£103
978-1-84816-755-1(ebook)	US\$205	

Series in Mathematical Biology and Medicine - Vol. 10

OPTIMAL TRANSPORT NETWORKS IN NATURE

by **Natalya Kizilova** (*Kharkov National University, Ukraine*)

This unique book presents a broad range of data on geometry and topology of long-distance liquid transport networks in nature including circulatory and respiratory systems of mammals, trophic fluid transport systems of animals, and conducting systems of higher plants. It is the very first book where evidence of the common design principles and optimal properties of the transportation networks of vascular plants and animals is provided.

The book also provides a comprehensive comparative study of the recent measurement results and data analysis, including unique data obtained by the author to conduct systems of plant leaves of different shapes, sizes, venation types and evolutionary ages.

Readership: Academics, researchers, and graduate students in mathematical biology, mathematical modeling, biomedical engineering, pattern recognition/image analysis.

200pp	Aug 2011	
978-981-283-873-5	US\$77	£53
978-981-283-874-2(ebook)	US\$100	

STEM CELLS

From Mechanisms to Technologies

edited by **Michal K Stachowiak** (*State University of New York at Buffalo, USA*) & **Emmanuel S Tzanakakis** (*State University of New York at Buffalo, USA*)

Microfluidic platforms can be used to recreate aspects of the stem cell niche and obtain a better understanding of the interactions among stem cells and with their environment. The milieu of stem cells and their progeny can be shaped with appropriately designed biomaterials for the engineering of tissues to replace, reconstitute or regenerate damaged organs. To that end, enabling bioreactor technologies will be necessary for the generation of large quantities of stem cells and their derivatives in a robust and cost-efficient manner. This book invites world-renowned experts in the above fields to discuss the latest advances in their respective areas and to provide insights on the future challenges and achievements in the area of stem cells.

Readership: Advanced undergraduates, postgraduates, and researchers in cell and molecular biology, systems biology and tissue engineering; biologists, biophysicists and bioengineers.

300pp	Fall 2011	
978-981-4317-70-2	US\$102	£63
978-981-4317-93-1(ebook)	US\$133	

World Scientific Series in Information Studies - Vol. 3

EMERGENT INFORMATION

An Outline Unified Theory of Information Framework

by **Wolfgang Hofkirchner** (*Vienna University of Technology, Austria*)

Many academics refrain from undergoing unifications, as most undertakings are reductionistic. This book contends that it is the noble task of an as-yet-to-be-developed science of information to go one step in the direction of a unified theory of information without falling back into neither reduction nor anthropomorphisation.

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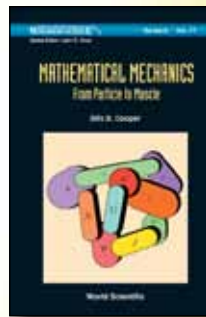
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