

Sourcebook Of Models For Biomedical Research

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From Molecules to Systems BoD – Books on Demand

This 30-chapter volume informs students and professionals about the behavioral biology of animals commonly housed in laboratory and other captive settings. Each species evolved under specific environmental conditions, resulting in unique behavioral patterns, many of which are maintained in captivity even after generations of breeding. Understanding natural behavior is therefore a critical part of modern animal care practices. The descriptions, data, guidance, resources, and recommendations in this book will help the reader understand their animals better, refine the care and treatment that they receive, and improve the well-being, welfare, and wellness of their animals. The book is divided into three sections, all focusing on aspects of the behavioral biology of animals found in laboratories and related research settings. After five introductory chapters, 25 chapters are dedicated to specific taxonomic groups (including mice, zebrafish, zebra finches, reptiles, macaques) while a concluding section of ethograms provides a centralized resource for those interested in understanding, and potentially quantifying, animal behavior. The Behavioral Biology of Laboratory Animals will provide anyone working in maintenance, care, and/or research programs that involve laboratory animals with information about the way the animals live in the wild, and the way that they should live in captive research settings. Many of the guidelines and recommendations will also be valuable to those managing and working with animals in other environments, including zoological parks, aquaria, and sanctuaries.

Urinary Tract John Wiley & Sons

Animal Models for the Study of Human Disease, Second Edition, provides needed information on model sharing, animal alternatives, animal ethics and access to databanks of models, bringing together common descriptions of models for busy researchers across biomedical and biological sciences.

Offering easily searchable advantages and disadvantages for each animal model and organized by disease topics, this resource aids researchers in finding the best animal model for research in human disease. Organized by disease orientation for ease of searchability Provides information on locating resources, animal alternatives, and animal ethics Covers a broad range of animal models used in research for human disease Contributed by leading experts across the globe Expanded coverage of diabetes and neurological diseases Probiotic Research in Therapeutics Academic Press

Biomechanics of the Female Pelvic Floor, Second Edition, is the first book to specifically focus on this key part of women ' s health, combining engineering and clinical expertise. This edited collection will help readers understand the risk factors for pelvic floor dysfunction, the mechanisms of childbirth related injury, and how to design intrapartum preventative strategies, optimal repair techniques, and prostheses. The authors have combined their expertise to create a thorough, comprehensive view of female pelvic floor biomechanics in order to help different disciplines discuss, research, and drive solutions to pressing problems. The book includes a common language for the design, conduct, and reporting of research studies in female PFD, and will be of interest to biomechanical and prosthetic tissue engineers and clinicians interested in female pelvic floor dysfunction, including urologists, urogynecologists, maternal fetal medicine specialists, and physical therapists. Contains contributions from leading bioengineers and clinicians, and provides a cohesive multidisciplinary view of the field Covers causes, risk factors, and optimal treatment for pelvic

floor biomechanics Combines anatomy, imaging, tissue characteristics, and computational modeling development in relation to pelvic floor biomechanics

Pain Management in Veterinary Practice Springer Nature

The basic anatomy and physiology of the urinary tract, the validity of animal models and other methodological considerations as well as a range of potential therapeutic targets are comprehensively reviewed by leading international experts, making this a unique reference source for basic scientists and research-minded clinicians alike

Animal Welfare Information Center Bulletin SAGE Publications

Pain Management in Veterinary Practice provides veterinary practitioners with the information needed to recognize and manage pain in a wide range of large, small, and exotic animal species. Encompassing acute, adaptive, and chronic, maladaptive pain, the book provides an up-to-date review of the physiology and pathophysiology of pain. Pain Management in Veterinary Practice offers specific strategies for addressing pain in animals, including local and regional analgesia, continuous rate infusions, and novel methods of analgesic drug delivery. With comprehensive information on the pharmacokinetic and pharmacodynamic characteristics of analgesic drugs, the book goes beyond pharmaceutical options to incorporate scientific information on techniques for complementary treatment, including physical therapy, acupuncture, chiropractic

techniques, and nutritional strategies. Pain Management in Veterinary Practice is a valuable resource for developing pain management protocols in the veterinary clinic.

The Bacterial Spore Springer Nature Laboratory Animal Medicine, Third Edition, is a fully revised publication from the American College of Laboratory Medicine's acclaimed blue book series. It presents an up-to-date volume that offers the most thorough coverage of the biology, health, and care of laboratory animals. The book is organized by species, with new inclusions of chinchillas, birds, and program and employee management, and is written and edited by known experts in the fields. Users will find gold-standard guidance on the study of laboratory animal science, as well as valuable information that applies across all of the biological and biomedical sciences that work with animals. Organized by species for in-depth understanding of biology, health, and best care of animals Features the inclusion of chinchillas, quail, and zebra finches as animal models Offers guidance on program and employee management Covers regulations, policies, and laws for laboratory animal management worldwide

Laboratory Animal Welfare John Wiley & Sons The world has recorded losses in terms of human life as well as extensive time spent in experimentation with development of new drugs, elucidation of disease mechanism(s), and therapeutic agent discovery. Ethical and legal issues cojoin in slowing down scientific discoveries in medicine and biology. The past two (2) decades, therefore, have seen tremendous attempts that largely are successful in developing animal models with the characteristics of mimicking, approximating, or expressing transplanted human organs/tissues. These models or rather approaches seem to be fast, cost-effective, and easy to maintain compared to primates. This book is a collection of expert essays on animal models of human diseases of global interest. A visible objective of the book is to provide real-time experimental approach to scientists, clinicians, ethicists, medicolegal/medical jurisprudence workers, immunologists, postgraduate

students, and vaccinologists and informative and multidisciplinary approach for the identification of new therapeutic targets and biomarkers using animal models as well as investigating the pathogenesis and therapeutic strategies of human diseases. An increased understanding of the genetic, molecular, and cellular mechanisms responsible for the development of human diseases has laid out the foundation for the development of rational therapies mainly with animal models.

Animal Models for the Study of Human Disease John Wiley & Sons

This book analyses the mass production and application of biological control products for biotic and abiotic factors affecting agricultural production. It also describes how to develop sustainable agriculture under Egyptian conditions. The book is divided into four parts covering: 1) mass production of parasitoids, insects and mite predators, 2) mass production of the microbial control agents for managing insect pests, 3) biocontrol products for plant diseases, and 4) bioproducts against abiotic factors. It discusses various methods of controlling insect pests and plant diseases in order to increase agricultural production, improve the quality of field crops and reduce the food gap by applying a range of technologies. This book helps increase our understanding and awareness of how to produce healthy products for local consumption and utilization as well as for exports.

Applications Sourcebook of Models for Biomedical Research

The study of bacterial spores spans biosecurity to ecology The first articles describing the sporulation process were published by Robert Koch and Ferdinand Cohn in the late 19th century. Although most of the work accomplished in the past 50 years has focused on the model organism *Bacillus subtilis*, more recent work significantly expanded the scope of sporulation research to integrate medically relevant spore pathogens, such as *B. anthracis* and *Clostridium difficile*, as well as investigations of the ecology of spore-forming species. This new direction is supported by an

explosion of novel techniques that can also be applied to nonmodel organisms, such as next-generation sequencing, metagenomics, and transcriptomics. The Bacterial Spore provides a comprehensive series of reviews of the major topics in spore biology that represent intensive, cutting-edge spore research. Editors Adam Driks and Patrick Eichenberger assembled chapters written by a team of diverse and multidisciplinary experts in biodefense and microbial forensics to produce an overview of topics of spore research, such as spore molecular biology, bioremediation, systems biology, issues in biodefense, and the challenge of food safety that is accessible to any reader, regardless of expertise. The Bacterial Spore also encompasses the diversity of spore research, which will appeal to those seeking to broaden their knowledge. The Bacterial Spore is a reference for a wide range of readers, including geneticists, cell biologists, physiologists, structural and evolutionary biologists, applied scientists, advanced undergraduate and graduate students, and nonresearchers, such as national security professionals.

Encyclopedia of the Eye John Wiley & Sons Genome-wide association (GWA) studies, as a prototype of large-scale OMICs studies, have advanced our understanding of the genetic basis of many common diseases. With respect to coronary artery disease (CAD) and cardiovascular risk factors, like lipids, blood pressure or BMI, they have identified hundreds of chromosomal loci that modulate disease risk. Despite their scientific success, GWA studies have been criticized for having failed so far in delivering diagnostically or therapeutically relevant products. However, the ability to achieve such goals has been strengthened recently by further layers of OMICs-based data, including large-scale transcriptomics data, and better annotation of regulatory sequences and epigenetic changes in the genome (e.g. through the ENCODE project), as well as novel tools for bioinformatics analysis, allowing a systems medicine based approach to be applied. All in all, the last decade with its "gold

rush of genomic discovery" led to the identification of known and novel pathways involved in the pathogenesis of cardiovascular diseases and point to novel treatment targets. This Research Topic has gathered contributions from scientists working in the field of cardiovascular genetics who have common interests in understanding the pathomechanisms linking genetic association findings and disease to finally translate the findings from large-scale genetic studies into novel treatment options.

Genetically Engineered Mice for Cancer Research
Academic Press

Neuroscience is, by definition, a multidisciplinary field: some scientists study genes and proteins at the molecular level while others study neural circuitry using electrophysiology and high-resolution optics. A single topic can be studied using techniques from genetics, imaging, biochemistry, or electrophysiology. Therefore, it can be daunting for young scientists or anyone new to neuroscience to learn how to read the primary literature and develop their own experiments. This volume addresses that gap, gathering multidisciplinary knowledge and providing tools for understanding the neuroscience techniques that are essential to the field, and allowing the reader to design experiments in a variety of neuroscience disciplines. Written to provide a "hands-on" approach for graduate students, postdocs, or anyone new to the neurosciences Techniques within one field are compared, allowing readers to select the best techniques for their own work Includes key articles, books, and protocols for additional detailed study Data analysis boxes in each chapter help with data interpretation and offer guidelines on how best to represent results Walk-through boxes guide readers step-by-step through experiments

Behavioral Biology of Laboratory Animals
Springer Science & Business Media

As the first comprehensive reference for the eye, its support structures, diseases, and treatments, *Encyclopedia of the Eye* is an important resource for all visual

scientists, ophthalmologists, and optometrists, as well as researchers in immunology, infectious disease, cell biology, neurobiology and related disciplines. This four-volume reference is unique in its coverage of information on all tissues important for vision, including the retina, cornea and lens. It also covers the physiological and pathophysiologic processes that affect all eye tissues. This Encyclopedia is invaluable for graduate students and postdoctoral fellows who are seeking an introduction to an area of eye research. Each chapter explains the basic concepts and provides references to relevant chapters within the Encyclopedia and more detailed articles across the wider research literature. The Encyclopedia is also particularly useful for visual scientists and practitioners who are researching a new area, seeking deeper understanding of important research articles in fields adjacent to their own, or reviewing a grant outside their immediate area of expertise. Written by experts at a level that permits students to grasp key elements of a specific subject Provides an entryway into the major features of current eye research No other source puts this much information, so well-indexed and with so many helpful full color figures and graphics, in the hands of the ophthalmic scientist

Biomechanics of the Female Pelvic Floor
Academic Press

The collection of systems represented in this volume is a unique effort to reflect the diversity and utility of models used in biomedicine. That utility is based on the consideration that observations made in particular organisms will provide insight into the workings of other, more complex

systems. This volume is therefore a comprehensive and extensive collection of these important medical parallels. The Retina and Its Disorders Springer Nature
Rapidly changing market, technological, and organizational environments are forcing government and private sector enterprises to improve services and transform processes. Employing a case study approach, the Enterprise Dynamics Sourcebook presents frameworks and analytical models of the enterprise as a complex system to improve your understanding of its dynamic elements and their interactions. Illustrating the transformation environments and the evolution of methods required to address emerging challenges, this sourcebook is the product of MITRE-sponsored research on enterprise dynamics and the range of applications pertaining to enterprise transformation programs. It explains how to address the complexities involved with the coordination of policies, organizations, economics, and technology (POET) in operational strategies and processes. It also: Presents qualitative and quantitative data-analytic methods including process workflow, systems dynamics, and highly optimized tolerance-inspired models of SoSE processes Features Bayesian probability and state-space transition methods to address uncertainties in the controlled, influenced, and uncontrolled aspects of enterprise dynamics Explains how to use hybrid multi-scale modeling coupled with enterprise architecture to support decision making in the design, acquisition, and management of complex transformation efforts Outlines methods applicable in the national security, aviation, nuclear waste processing, international commerce, energy and materials, and healthcare sectors of the U.S. economy The structures and concepts covered in this book will be useful to managers and technical staff in government entities as well as private sector enterprises with significant operational and regulatory

interaction with government entities. The enterprise dynamics methods discussed can help in the advancement of systems engineering practices at the enterprise level and also enable the enterprise systems engineering and architecting (ESE/A) process. Filled with examples, the text provides the understanding of the qualitative and quantitative data-analytic methods required to reduce risk and failure rates and enable your organization to operate effectively in today's complex and ever-changing environment.

Cottage Industry of Biocontrol Agents and Their Applications Academic Press

Cardiovascular disease is the leading cause of morbidity and premature death of modern era medicine. It is estimated that approximately 81 million people in the United States (US) currently have one or more of the many forms of cardiovascular disease, resulting in 1 in every 2.8 deaths, or 900,000 deaths per year. 40% of all deaths in Europe are a result of cardiovascular disease in people under the age of 75. Aneurysms form a significant portion of these cardiovascular related deaths and are defined as a permanent and irreversible localised dilation of a blood vessel greater than 50% of its normal diameter. Although aneurysms can form in any blood vessel, the more lethal aneurysms develop in the cranial arteries, and in the thoracic aorta and abdominal aorta.

Frequently aneurysms are undetected and if left untreated may eventually expand until rupture with very high levels of morbidity and mortality. The biomechanics and mechanobiology of aneurysmal diseases are not fully understood and this monograph aims to provide new insights into aneurysm aetiology and behavior based on the most recent biomechanics research related to this important topic. The contributors to

this volume bring together a unique blend of expertise in experimental, computational and tissue biomechanics relating to aneurysm behavior and enable the reader to gain a fresh understanding of key factors influencing aneurysm behavior and treatment. Biological risk factors such as tobacco smoking, sex, age, hypertension, family history and mechanobiological risk factors such as aneurysm geometry and shape as well as mechanical properties of the diseased tissues are considered in detail as are many of the diagnostic and treatment options.

design, analysis, pathways, validation and pre-clinical testing John Wiley & Sons

Genetically-engineered mouse models for cancer research have become invaluable tools for studying cancer biology and evaluating novel therapeutic approaches. This volume focuses on state-of-the-art methods for generating, analyzing and validating such models for studying aspects of human cancer biology. Additionally, these models are emerging as important pre-clinical systems in which to test cancer prevention and therapeutic strategies in order to select compounds for testing in clinical trials.

From GWAS Hits to Treatment Targets CRC Press

Sourcebook of Models for Biomedical Research Springer Science & Business Media

The Care and Feeding of an IACUC Springer

How consciousness appeared much earlier in evolutionary history than is commonly assumed, and why all vertebrates and perhaps even some invertebrates are conscious. How is consciousness created? When did it first appear on Earth, and how did it evolve? What constitutes consciousness, and which animals can be said to be sentient? In this book, Todd Feinberg and Jon Mallatt draw on recent scientific findings to answer these questions—and to tackle the most fundamental question about the nature of consciousness: how does the material brain create subjective experience? After assembling a list of the

biological and neurobiological features that seem responsible for consciousness, and considering the fossil record of evolution, Feinberg and Mallatt argue that consciousness appeared much earlier in evolutionary history than is commonly assumed. About 520 to 560 million years ago, they explain, the great “Cambrian explosion” of animal diversity produced the first complex brains, which were accompanied by the first appearance of consciousness; simple reflexive behaviors evolved into a unified inner world of subjective experiences. From this they deduce that all vertebrates are and have always been conscious—not just humans and other mammals, but also every fish, reptile, amphibian, and bird. Considering invertebrates, they find that arthropods (including insects and probably crustaceans) and cephalopods (including the octopus) meet many of the criteria for consciousness. The obvious and conventional wisdom-shattering implication is that consciousness evolved simultaneously but independently in the first vertebrates and possibly arthropods more than half a billion years ago. Combining evolutionary, neurobiological, and philosophical approaches allows Feinberg and Mallatt to offer an original solution to the “hard problem” of consciousness.

Computational Immunology Elsevier

A comprehensive introduction to the role of epidemiology in veterinary medicine This fully revised and expanded edition of *Veterinary Epidemiology* introduces readers to the field of veterinary epidemiology. The new edition also adds new chapters on the design of observational studies, validity in epidemiological studies, systematic reviews, and statistical modelling, to deliver more advanced material. This updated edition begins by offering an historical perspective on the development of veterinary medicine. It then addresses the full scope of epidemiology, with chapters covering causality, disease occurrence, determinants, disease patterns, disease ecology, and much more. *Veterinary Epidemiology, Fourth Edition: ?*

Features updates of all chapters to provide a current resource on the subject of veterinary epidemiology ? Presents new chapters essential to the continued advancement of the field ? Includes examples from companion animal, livestock, and avian medicine, as well as aquatic animal diseases ? Focuses on the principles and concepts of epidemiology, surveillance, and diagnostic-test validation and performance ? Includes access to a companion website providing multiple choice questions Veterinary Epidemiology is an invaluable reference for veterinary general practitioners, government veterinarians, agricultural economists, and members of other disciplines interested in animal disease. It is also essential reading for epidemiology students at both the undergraduate and postgraduate levels.

Springer Nature

Key features: Serves as the detailed, authoritative source of the clinical chemistry of the most commonly used laboratory animals Includes detailed chapters dedicated to descriptions of clinical chemistry-related topics specific to each laboratory species as well as organ/class-specific chapters Presents information regarding evaluation and interpretation of a variety of individual clinical chemistry end points Concludes with detailed chapters dedicated to descriptions of statistical analyses and biomarker development of clinical chemistry-related topics Provides extensive reference lists at the end of each chapter to facilitate further study Extensively updated and expanded since the publication of Walter F. Loeb and Fred W. Quimby's second edition in 1999, the new The Clinical Chemistry of Laboratory Animals, Third Edition continues as the most comprehensive reference on in vivo animal studies. By organizing the book into species- and organ/class-specific chapters, this book provides information to enable a conceptual understanding of clinical chemistry across laboratory species as well as information on evaluation and interpretation of clinical chemistry data relevant to specific organ systems. Now sponsored by the American College of Laboratory Animal Medicine (ACLAM), this well-respected resource includes chapters on multiple laboratory species and provides pertinent information on their unique physiological characteristics, methods for sample

collection, and preanalytical sources of variation for the particular species. Basic methodology for common procedures for each species is also discussed. New Chapters in the Third Edition Include: The Laboratory Zebrafish and Other Fishes Evaluation of Cardiovascular and Pulmonary Function and Injury Evaluation of Skeletal Muscle Function and Injury Evaluation of Bone Function and Injury Vitamins Development of Biomarkers Statistical Methods The Clinical Chemistry of Laboratory Animals, Third Edition is intended as a reference for use by veterinary students, clinical veterinarians, veterinary toxicologists, veterinary clinical pathologists, and laboratory animal veterinarians to aid in study design, collection of samples, and interpretation of clinical chemistry data for laboratory species.