

Laboratory Animals In Research And Teaching Ethics Care And Methods

Handbook of Laboratory Animal Science Recognition and Alleviation of Distress in Laboratory Animals Fundamentals of Laboratory Animal Science The Laboratory Ferret Laboratory Animal Anaesthesia Laboratory Animal Medicine Laboratory Animal and Exotic Pet Medicine Science, Medicine, and Animals The Design of Animal Experiments Guidance for the Description of Animal Research in Scientific Publications Guide for the Care and Use of Laboratory Animals Recognition and Alleviation of Pain and Distress in Laboratory Animals Clinical Laboratory Animal Medicine Anesthesia and Analgesia in Laboratory Animals Laboratory Animal Law Guide for the Care and Use of Laboratory Animals Laboratory Animals in Research and Teaching : Ethics, Care, and Methods Handbook of Laboratory Animal Bacteriology, Second Edition Occupational Health and Safety in the Care and Use of Research Animals Laboratory Animals Laboratory Animal Medicine Animals and Medicine Animals for Research Handbook of Laboratory Animal Anesthesia and Pain Management Flynn's Parasites of Laboratory Animals The Welfare of Laboratory Animals Electrocardiography of Laboratory Animals Principles of Laboratory Animal Science The COST Manual of Laboratory Animal Care and Use Management of Animal Care and Use Programs in Research, Education, and Testing Laboratory Animals Science, Medicine, and Animals Guidelines for the Care and Use of Mammals in Neuroscience and Behavioral Research Applied Ethics in Animal Research Laboratory Animal Welfare Handbook of Laboratory Animal Science, Volume I Handbook of Laboratory Animal Science, Volume III Use of Laboratory Animals in Biomedical and Behavioral Research Principles of Animal Research for Graduate and Undergraduate Students A Manual for Laboratory Animal Management

Handbook of Laboratory Animal Science

Much has been written about the care of research animals. Yet little guidance has appeared on protecting the health and safety of the people who care for or use these animals. This book, an implementation handbook and companion to Guide For the Care and Use of Laboratory Animals, identifies principles for building a program and discusses the accountability of institutional leaders, managers, and employees for a program's success. It provides a detailed description of risks-- physical and chemical hazards, allergens and zoonoses, and hazards from experiments--which will serve as a continuing reference for the laboratory. The book offers specific recommendations for controlling risk through administrative procedures, facility design, engineering controls, and periodic evaluations. The volume focuses on the worker, with detailed discussions of work practices, the use of personal protective gear, and the development of an emergency response plan. This handbook will be invaluable to administrators, researchers, and employees in any animal research facility. It will also be of interest to personnel in zoos, animal shelters, and veterinary facilities.

Recognition and Alleviation of Distress in Laboratory Animals

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Clinical Laboratory Animal Medicine: An Introduction, Fourth Edition offers a user-friendly guide to the unique anatomy and physiology, care, common diseases, and treatment of small mammals and nonhuman primates. Carefully designed for ease of use, the book includes tip boxes, images, and review questions to aid in comprehension and learning. The Fourth Edition adds new information on transgenic mice, drug dosages, techniques, and environmental enrichment, making the book a comprehensive working manual for the care and maintenance of common laboratory animals. The book includes information on topics ranging from genetics and behavior to husbandry and techniques in mice, rats, gerbils, hamsters, guinea pigs, chinchillas, rabbits, ferrets, and nonhuman primates. A companion website provides editable review questions and answers, instructional PowerPoints, and additional images not found in the book. Clinical Laboratory Animal Medicine is an invaluable resource for practicing veterinarians, veterinary students, veterinary technicians, and research scientists.

Fundamentals of Laboratory Animal Science

COST (European Cooperation in the field of Scientific and Technical Research) is an intergovernmental initiative in science and research intended to promote the coordination of nationally funded research in Europe. Four working groups discuss the housing of animals, their environmental needs, refinement of procedures, genetically modified animals, and cost-benefit analysis. Based on the activities of these working groups, this book provides the European best practices for individuals and institutions working with laboratory animals. The text also discusses the ethical evaluation of experiments and procedures involving animals.

The Laboratory Ferret

Electrocardiography of Laboratory Animals is the only book covering electrocardiography of laboratory animals, including dogs, mini-pigs, and cynomolgus monkeys. As more countries institute requirements for the care of laboratory animals in research, this publication offers an effective standard on performing and analyzing ECGs. Topics covered include safety electrocardiography, toxicology, safety pharmacology, and telemetry. Electrocardiography of Laboratory Animals will assist biological and medical researchers, veterinarians, zoologists, and students in understanding electrocardiography of various species of animals used in research. Covers safety electrocardiography of large laboratory animals Offers comprehensive analysis of ECGs for practical laboratory use Includes a self-evaluation section for testing of ECG reading and analysis

Laboratory Animal Anaesthesia

The Handbook of Laboratory Animal Bacteriology, Second Edition provides comprehensive information on all bacterial phylae found in laboratory rodents and rabbits to assist managers, veterinary pathologists and laboratory animal veterinarians in the management of these organisms. The book starts by examining the general aspects of bacteriology and how to sample and identify bacteria in animals. It then describes the most relevant species within each phylum

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and discusses the impact they may have on research. Emphasizing those bacteria known to interfere with research protocols, the book offers methods for isolation and differentiation among related bacteria. It discusses where to purchase reagents for rodent bacteriology and outlines standards for safety in a bacteriological laboratory. Highlights of the second edition: Focuses on modern sequencing techniques based on molecular identification Reorganizes content according to modern systematics based on new identification methods Presents new chapters on mechanisms behind bacterial impact on animal models and on the systematic classification of bacteria Provides information on a range of bacteria interfering with animal models for human disease, not only for those bacteria which cause disease in laboratory animal colonies Includes new figures in color and with enhanced resolution The book is essential reading for those interested in the management of organisms known to interfere with the colony health of rabbits and rodents used in research protocols—including facility managers, clinical veterinarians, veterinary pathologists, and researchers.

Laboratory Animal Medicine

This combination text and lab manual provides clinically relevant coverage of laboratory animal medicine and procedures. It covers a variety of species, including rats, mice, guinea pigs, hamsters, rabbits, gerbils, ferrets, nonhuman primates, and in a separate chapter, nontraditional lab animals, such as swine, chinchillas, armadillos, reptiles, amphibians, bats, farm animals, and dogs and cats. Coverage of each species is presented in a consistent format that includes taxonomy, anatomy and physiology, uses in biomedical research, reproduction, behavior, husbandry, restraint and handling, identification methods, injection techniques, medication administration and anesthesia, blood collection, common diseases, and euthanasia. Other key topics include the laboratory setting, regulatory guidelines, and ethical considerations. The lab manual portion of the book features a variety of exercises and observation sheets. Comprehensive coverage of a variety of topics such as animal species, the laboratory setting, regulatory guidelines, and ethical considerations prepares readers for a career in laboratory animal medicine Familiarizes readers with the handling, behavior, nutrition, and lab and treatment procedures for a large variety of common and nontraditional laboratory animals The consistent organization of each species chapter makes it easy for readers to quickly identify similarities and differences among various laboratory animals Laboratory exercises are included in a perforated section at the end of the book, allowing users to apply their knowledge and develop job skills Features a wealth of user-friendly features such as a two-color design, learning objectives, key points, and review questions Provides detailed information on specific legal and ethical requirements of lab animal care and use, including the ethics of pain management Convenient boxes and tables provide quick access to important anatomic and physiologic data for each species Discusses specific uses of each species in biomedical research, providing readers with a perspective on animal use that allows them to explain the benefits of animal use as required by veterinary technology program accreditation procedures

Laboratory Animal and Exotic Pet Medicine

Laboratory Animals: Regulations and Recommendations for Global Collaborative

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Research is the only publication to offer a compilation of standards across the world in the care, welfare and use of animals in research. Timely in the new legislation in numerous regions of the world, this book provides the information in easily accessible, readable language. For professionals across laboratory animal science and biomedical research, *Laboratory Animals: Regulations and Recommendations for Global Collaborative Research* provides a broad picture of the regulations required in other areas of the world and is essential to appropriately manage animal care and use programs. Offers a worldwide view and global compilation of regulations, guidelines and recommendations for laboratory animal research Saves valuable time researching different regional legislation and regulations Provides insight into factors that play roles in the regulatory framework for countries and geographic regions Written in "layman's" terms to easily understand legislation and regulations

Science, Medicine, and Animals

Expanding on the National Research Council's™ Guide for the Care and Use of Laboratory Animals, this book deals specifically with mammals in neuroscience and behavioral research laboratories. It offers flexible guidelines for the care of these animals, and guidance on adapting these guidelines to various situations without hindering the research process. *Guidelines for the Care and Use of Mammals in Neuroscience and Behavioral Research* offers a more in-depth treatment of concerns specific to these disciplines than any previous guide on animal care and use. It treats on such important subjects as: The important role that the researcher and veterinarian play in developing animal protocols. Methods for assessing and ensuring an animal's™ well-being. General animal-care elements as they apply to neuroscience and behavioral research, and common animal welfare challenges this research can pose. The use of professional judgment and careful interpretation of regulations and guidelines to develop performance standards ensuring animal well-being and high-quality research. *Guidelines for the Care and Use of Mammals in Neuroscience and Behavioral Research* treats the development and evaluation of animal-use protocols as a decision-making process, not just a decision. To this end, it presents the most current, in-depth information about the best practices for animal care and use, as they pertain to the intricacies of neuroscience and behavioral research.

The Design of Animal Experiments

While replacing and reducing the use of laboratory animals are integral parts of the 3Rs-replace, reduce, refine-which form the cornerstones of laboratory animal science, biomedical research involving animals remains absolutely essential for the advancement of the medical, veterinary, agricultural, and biological sciences. Building upon the bestsel

Guidance for the Description of Animal Research in Scientific Publications

Where there is no alternative to the use of animals in biomedical research, it is important that experiments are well designed and correctly analysed in order to

minimise pain and maximize the chance of getting scientifically valid results. Experiments that use too few animals may fail to pick up biologically important effects, while those who use them incorrectly or wastefully may get invalid results while subjecting the animals to unnecessary pain, distress or lasting harm. The Design of Animal Experiments is intended for all research scientists who use laboratory animals, with the aim of helping them to design their own experiments more effectively and/or to improve their ability to communicate with professional statisticians when necessary. It covers all randomised controlled experimental designs likely to be needed in laboratory animal research, with worked examples showing how they can be statistically analysed. It suggests the more widespread use of randomised block designs and shows how both males and females can be included in an experiment without the need to increase the total number of animals by using factorial designs. It also includes guidance on the choice of experimental animals. The book covers the learning outcomes of Module 10 and part (ii) of Module 11 of education and training under Directive 2010/63/EU.

Guide for the Care and Use of Laboratory Animals

Laboratory Animal Anesthesia looks at recent significant developments in anesthetic practices in laboratory experiments involving animals. It also provides information about basic standards for proper use of anesthesia. In addition, it examines the equipment and different anesthetic agents that are used in performing an experiment on animals. The book also discusses the profound effects of anesthesia on the physiological aspect of the animals' body systems, such as hypothermia and respiratory depression. The book addresses the proper management and care that should be provided for the animals that undergo anesthesia. Furthermore, it covers different anesthetic procedures that should be used on various kinds of small animals intended for laboratory experiments. The main goal of this book is to provide information about the different anesthetic agents used in experiments, and the proper standards to follow when using anesthetics on lab animals.

- New edition provides new information on anesthesia and analgesia, and has an extensively revised and updated bibliography
- Provides a balanced consideration of the needs of scientific research and the welfare of laboratory animals
- Written by a veterinary anesthetist and scientist with over 30 years' experience in the field, and who is actively engaged in research in this area
- Provides rapid, easily accessed information using tabulated summaries

Provides those with limited experience of anesthesia with the information they need to carry our procedures effectively, safely, and humanely

- Provides sufficient depth for the more experienced anesthetist moving to this field

Recognition and Alleviation of Pain and Distress in Laboratory Animals

A respected resource for decades, the Guide for the Care and Use of Laboratory Animals has been revised by a committee of experts, based on input from scientists and the public. The Guide incorporates recent research on commonly used species, including farm animals, and includes extensive references. It is organized around major components of animal use: Institutional policies and responsibilities. The committee discusses areas that require policy attention: the

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role and function of the Institutional Animal Care and Use Committee, protocols for animal care and use, occupational health and safety, personnel qualifications, and other areas. Animal environment, husbandry, and management. The committee offers guidelines on how to design and run a management program, addressing environment, nutrition, sanitation, behavioral and social issues, genetics, nomenclature, and more. Veterinary care. The committee discusses animal procurement and transportation, disease and preventive medicine, and surgery. The Guide addresses pain recognition and relief and issues surrounding euthanasia. Physical plant. The committee identifies design and construction issues, providing guidelines for animal-room doors, drainage, noise control, surgery, and other areas. The Guide for the Care and Use of Laboratory Animals provides a framework for the judgments required in the management of animal facilities--a resource of proven value, now updated and expanded. This revision will be important to researchers, animal care technicians, facilities managers, administrators at research institutions, policymakers involved in research issues, and animal welfare advocates.

Clinical Laboratory Animal Medicine

Praise for the first edition: "It is hard to see how anyone with responsibilities under the Animals (Scientific Procedures) Act could manage without a book such as this." Michael Balls, review published in Atla "The strength of the book lies in the way Kevin Dolan brings his experience to bear blending information from various sources." Patrick Sinnott-Smith, review published in RDS News Written by the leading expert in this field, this is the only book providing practical guidance on the legal obligations of caring for laboratory animals. Up-to-date information on all relevant UK legislation and guidelines is given, with the main emphasis being on the interpretation of the Animals (Scientific Procedures) Act 1986. New to this edition: *Emphasis throughout is now on the practical application of legal controls of the use of animals in research. *Updated where relevant to keep in line with new welfare legislation. *Coverage of current format of application for personal and project licences. *Expanded coverage of Certificates of Designation. *Impact of the Freedom of Information Act is discussed. A vital resource for all those involved with the use of animals in research, and especially those studying for qualifications or licences in this field.

Anesthesia and Analgesia in Laboratory Animals

This combination text and lab manual provides clinically relevant coverage of laboratory animal medicine and procedures. It covers a variety of species, including rats, mice, guinea pigs, hamsters, rabbits, gerbils, ferrets, nonhuman primates, and in a separate chapter, nontraditional lab animals, such as swine, chinchillas, armadillos, reptiles, amphibians, bats, farm animals, and dogs and cats. Coverage of each species is presented in a consistent format that includes taxonomy, anatomy and physiology, uses in biomedical research, reproduction, behavior, husbandry, restraint and handling, identification methods, injection techniques, medication administration and anesthesia, blood collection, common diseases, and euthanasia. Other key topics include the laboratory setting, regulatory guidelines, and ethical considerations. The lab manual portion of the book features a variety of exercises and observation sheets. Comprehensive

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coverage of a variety of topics such as animal species, the laboratory setting, regulatory guidelines, and ethical considerations prepares readers for a career in laboratory animal medicine Familiarizes readers with the handling, behavior, nutrition, and lab and treatment procedures for a large variety of common and nontraditional laboratory animals The consistent organization of each species chapter makes it easy for readers to quickly identify similarities and differences among various laboratory animals Laboratory exercises are included in a perforated section at the end of the book, allowing users to apply their knowledge and develop job skills Features a wealth of user-friendly features such as a two-color design, learning objectives, key points, and review questions Provides detailed information on specific legal and ethical requirements of lab animal care and use, including the ethics of pain management Convenient boxes and tables provide quick access to important anatomic and physiologic data for each species Discusses specific uses of each species in biomedical research, providing readers with a perspective on animal use that allows them to explain the benefits of animal use as required by veterinary technology program accreditation procedures

Laboratory Animal Law

Scientific advances in our understanding of animal physiology and behavior often require theories to be revised and standards of practice to be updated to improve laboratory animal welfare. This new book from the Institute for Laboratory Animal Research (ILAR) at the National Research Council, Recognition and Alleviation of Distress in Laboratory Animals, focuses on the stress and distress which is experienced by animals when used in laboratory research. This book aims to educate laboratory animal veterinarians; students, researchers, and investigators; animal care staff, as well as animal welfare officers on the current scientific and ethical issues associated with stress and distress in laboratory animals. It evaluates pertinent scientific literature to generate practical and pragmatic guidelines. Recognition and Alleviation of Distress in Laboratory Animals focuses specifically on the scientific understanding of the causes and the functions of stress and distress, the transformation of stress to distress, and the identification of principles for the recognition and alleviation of distress. This book discusses the role of humane endpoints in situations of distress and principles for the minimization of distress in laboratory animals. It also identifies areas in which further scientific investigation is needed to improve laboratory animal welfare in order to adhere to scientific and ethical principles that promote humane care and practice.

Guide for the Care and Use of Laboratory Animals

AAP Prose Award Finalist 2018/19 Management of Animal Care and Use Programs in Research, Education, and Testing, Second Edition is the extensively expanded revision of the popular Management of Laboratory Animal Care and Use Programs book published earlier this century. Following in the footsteps of the first edition, this revision serves as a first line management resource, providing for strong advocacy for advancing quality animal welfare and science worldwide, and continues as a valuable seminal reference for those engaged in all types of programs involving animal care and use. The new edition has more than doubled the number of chapters in the original volume to present a more comprehensive overview of the current breadth and depth of the field with applicability to an

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international audience. Readers are provided with the latest information and resource and reference material from authors who are noted experts in their field. The book: - Emphasizes the importance of developing a collaborative culture of care within an animal care and use program and provides information about how behavioral management through animal training can play an integral role in a veterinary health program - Provides a new section on Environment and Housing, containing chapters that focus on management considerations of housing and enrichment delineated by species - Expands coverage of regulatory oversight and compliance, assessment, and assurance issues and processes, including a greater discussion of globalization and harmonizing cultural and regulatory issues - Includes more in-depth treatment throughout the book of critical topics in program management, physical plant, animal health, and husbandry. Biomedical research using animals requires administrators and managers who are knowledgeable and highly skilled. They must adapt to the complexity of rapidly-changing technologies, balance research goals with a thorough understanding of regulatory requirements and guidelines, and know how to work with a multi-generational, multi-cultural workforce. This book is the ideal resource for these professionals. It also serves as an indispensable resource text for certification exams and credentialing boards for a multitude of professional societies Co-publishers on the second edition are: ACLAM (American College of Laboratory Animal Medicine); ECLAM (European College of Laboratory Animal Medicine); IACLAM (International Colleges of Laboratory Animal Medicine); JCLAM (Japanese College of Laboratory Animal Medicine); KCLAM (Korean College of Laboratory Animal Medicine); CALAS (Canadian Association of Laboratory Animal Medicine); LAMA (Laboratory Animal Management Association); and IAT (Institute of Animal Technology).

Laboratory Animals in Research and Teaching : Ethics, Care, and Methods

Prepared under the auspices of the American College of Laboratory Animal Medicine, this second edition has been thoroughly updated and revised to improve utility and readability. The book is now organized by vertebrate host species, with parasites presented phylogenetically within chapters. Additional highlights of this edition include introductory chapters on modern diagnostic techniques and parasite biology, and a new appendix features a complete drug formulary. The well-presented and extensively illustrated volume addresses all aspects of laboratory animal parasites. Regarded as the most comprehensive and authoritative work available on the topic, this book is an essential reference for veterinary parasitologists, clinicians, students and laboratory animal scientists.

Handbook of Laboratory Animal Bacteriology, Second Edition

The publication of research articles involving animal studies is central to many disciplines in science and biomedicine. Effective descriptions in such publications enable researchers to interpret the data, evaluate and replicate findings, and move the science forward. Analyses of published studies with research animals have demonstrated numerous deficiencies in the reporting of details in research methods for animal studies. Considerable variation in the amount of information required by scientific publications and reported by authors undermines this basic

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scientific principle and results in the unnecessary use of animals and other resources in failed efforts to reproduce study results. Guidance for the Description of Animal Research in Scientific Publications outlines the information that should be included in scientific papers regarding the animal studies to ensure that the study can be replicated. The report urges journal editors to actively promote effective and ethical research by encouraging the provision of sufficient information. Examples of this information include: conditions of housing and husbandry, genetic nomenclature, microbial status, detailed experimental manipulations, and handling and use of pharmaceuticals. Inclusion of this information will enable assessment and interpretation of research findings and advancement of knowledge based on reproducible results.

Occupational Health and Safety in the Care and Use of Research Animals

Key features: Presents practical information in easily accessible 'bullet point' format Covers anesthetic machine and related equipment, anesthetic management and monitoring, anesthesia and analgesia pharmacology, euthanasia, and record keeping Written by well-recognized experts in the laboratory animal community Provides extensive references to direct the reader to sources for further study of alternative techniques and their procedures Concludes with a thorough chapter on Regulatory Management of Rodent Anesthesia which has global application Rodents are the most commonly used species in biomedical research. Individuals conducting rodent research are often responsible to ensure that all areas of anesthesia and analgesia are performed humanely. Anesthetic agent selection, anesthetic monitoring, and postoperative pain assessment and management are essential to the institutional animal care and use program and contribute significantly to the 3Rs by reducing pain and/or distress and refining various procedures. The Handbook of Laboratory Animal Anesthesia and Pain Management: Rodents is the first book to capture multiple advances in this important area that greatly impacts various experimental methodologies. Richly illustrated in full color, the book serves as a quick reference source for investigators, veterinarians, technicians, and other animal caretakers charged with the care and use of rodents in a research setting. The unique format of this book also makes it extremely valuable to IACUC members, institutional officials, and occupational health and safety professionals.

Laboratory Animals

Laboratory animal research remains a very important part of basic research and drug development. This book rectifies the problem by providing animal researchers and technicians with the essentials for conducting their work in the laboratory, offering detailed protocols and information that can be referred to on a daily basis.

Laboratory Animal Medicine

Laboratory animals are becoming increasingly important for biomedical research. It is said that approximately 70% of biomedical research is associated with the use of experimental animals. Laboratory animal research not only expands our knowledge

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of science, but also greatly improves human and animal health. The field of laboratory animal science is ever-growing and changing as new experimental techniques are developed and new animal models are created. It is essential to know not only the biological features of each laboratory animal but also how to use and care for them responsibly in order to perform high-quality experiments. Courses in beginning Laboratory Animal Science are starting to be offered in many universities throughout the world. However, a practical introductory textbook that contains state-of-the-art techniques is still lacking. *Fundamentals of Laboratory Animal Science* provides comprehensive information on the principles and practices of using laboratory animals for biomedical research. Each individual chapter focuses on a key sub-discipline of laboratory animal science: animal welfare and best humane care practices in the laboratory; the quality control of laboratory animals; the anatomy, physiology, and husbandry of commonly used species; the principles of creating and using animal models for studying human diseases; practical techniques used for laboratory animal experiments; experimental design; and animal experimentation management. Knowledge of this broad spectrum of concepts and skills will ensure research goes smoothly while greatly reducing animal pain and distress. Well-illustrated and thoroughly referenced, this book will serve not only as a standard textbook but also as a handy guide for veterinarians, researchers, animal care staff, administrators, and other professionals who are involved in laboratory animal science.

Animals and Medicine

The conservative nature of animal evolution makes animal models the ideal tool for learning about human biology. *The Handbook of Laboratory Animal Science, Second Edition: Animal Models, Volume II* addresses the development and application of models in different areas of biomedical research and details the criteria used to choose animal species and

Animals for Research

Clear guidelines on the proper care and use of laboratory animals are being sought by researchers and members of the many committees formed to oversee animal care at universities as well as the general public. This book provides a comprehensive overview of what we know about behavior, pain, and distress in laboratory animals. The volume explores: Stressors in the laboratory and the animal behaviors they cause, including in-depth discussions of the physiology of pain and distress and the animal's ecological relationship to the laboratory as an environment. A review of euthanasia of lab animals--exploring the decision, the methods, and the emotional effects on technicians. Also included is a highly practical, extensive listing, by species, of dosages and side effects of anesthetics, analgesics, and tranquilizers.

Handbook of Laboratory Animal Anesthesia and Pain Management

Scientific experiments using animals have contributed significantly to the improvement of human health. Animal experiments were crucial to the conquest of

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polio, for example, and they will undoubtedly be one of the keystones in AIDS research. However, some persons believe that the cost to the animals is often high. Authored by a committee of experts from various fields, this book discusses the benefits that have resulted from animal research, the scope of animal research today, the concerns of advocates of animal welfare, and the prospects for finding alternatives to animal use. The authors conclude with specific recommendations for more consistent government action.

Flynn's Parasites of Laboratory Animals

The welfare of laboratory animals, as well as the ethical issues involved in the humane use of animals for scientific purposes, are discussed in this new revised edition. Information is included on the biology and husbandry of animal models; on behavior, stress and well-being; genetic and microbiological standardization; health monitoring; anaesthesiology; animal alternatives; ethics. This book addresses all of the aspects that scientists need to know when considering the design of an animal experiment. Replacement, reduction and refinement of animal experiments are the guiding principles for its contents.

The Welfare of Laboratory Animals

Laboratory animal testing provides most of our current knowledge of human physiology, microbiology, immunology, pharmacology, and pathology. From studies of genetics in fruit flies to studies of cellular processes in genetically modified mice to recent dramatic developments in genetics, translational research, and personalized medicines, biomedical

Electrocardiography of Laboratory Animals

Laboratory Animals: Regulations and Recommendations for the Care and Use of Animals in Research, Second Edition, is the only publication to offer a global compilation of standards on the care, welfare and use of animals in research. The book provides updated information that will be of great interest to professionals across laboratory animal science and biomedical research. Users will find a broad picture of the regulations required in other areas of the world that will be essential to appropriately manage animal care and use programs. Offers a worldwide view and global compilation of regulations, guidelines and recommendations for laboratory animal research Provides insight into factors that play key roles in the regulatory framework for countries and geographic regions Compares and contrasts regulations in different regions Written in layman's terms to easily understand legislation and regulations

Principles of Laboratory Animal Science

Laboratory Animal Medicine is a compilation of papers that deals with the diseases and biology of major species of animals used in medical research. The book discusses animal medicine, experimental methods and techniques, design and management of animal facilities, and legislation on laboratory animals. Several papers discuss the biology and diseases of mice, hamsters, guinea pigs, and

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rabbits. Another paper addresses the dog and cat as laboratory animals, including sourcing of these animals, housing, feeding, and their nutritional needs, as well as breeding and colony management. The book also describes ungulates as laboratory animals, including topics on sourcing, husbandry, preventive medical treatments, and housing facilities. One paper addresses primates as test animals, covering the biology and diseases of old world primates, Cebidae, and ferrets. Some papers pertain to the treatment, diseases, and needed facilities for birds, amphibians, and fish. Other papers then deal with techniques of experimentation, anesthesia, euthanasia, and some factors (spontaneous diseases) that complicate animal research. The text can prove helpful for scientists, clinical assistants, and researchers whose work involves laboratory animals.

The COST Manual of Laboratory Animal Care and Use

Principles of Animal Research is the first publication to offer a broad look at animal research science for a student, early researcher, or technician. Offering guidance for all aspects of the research experience, including the research and development of a thesis, model selection, experimental design, IACUC protocol preparation, and animal husbandry and technical procedural needs, the book is a necessary addition to every student, technician, and researcher's education. Provides background material for students to understand the broader backdrop against which animal research is undertaken Includes ethical and regulatory information Covers commonly used animal models and the process to choose a model for biomedical research

Management of Animal Care and Use Programs in Research, Education, and Testing

This volume is a collection of chapters all contributed by individuals who have presented their ideas at conferences and who take moderate stands with the use of animals in research. Specifically the chapters bear of the issues of: notions of the moral standings of animals, history of the methods of argumentation, knowledge of the animal mind, nature and value of regulatory structures, how respect for animals can be converted from theory to action in the laboratory. The chapters have been tempered by open discussion with individuals with different opinions and not audiences of true believers. It is the hope of all, that careful consideration of the positions in these chapters will leave reader with a deepened understanding--not necessarily a hardened position.

Laboratory Animals

Anesthesia and Analgesia in Laboratory Animals focuses on the special anesthetic, analgesic, and postoperative care requirements associated with experimental surgery. Fully revised and updated this new edition provides the reader with agents, methods, and techniques for anesthesia and analgesia that ensure humane and successful procedural outcomes. * Provides researchers with the most comprehensive and up-to-date review of the use of anesthesia and analgesia in laboratory animals * Thoroughly updated with new material on ferrets, birds, reptiles, amphibians, fish, and invertebrates * Includes hot topic areas such as pain

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research, ethical issues, legal issues, and imaging studies

Science, Medicine, and Animals

Laboratory animals, including ferrets, play an important role in biomedical research and advances. The humane care and management of these animals remains an ongoing concern. Published in color to provide greater clarity to the techniques and concepts discussed, *The Laboratory Ferret* presents basic information and common procedures in detail to pro

Guidelines for the Care and Use of Mammals in Neuroscience and Behavioral Research

Science, Medicine, and Animals explains the role that animals play in biomedical research and the ways in which scientists, governments, and citizens have tried to balance the experimental use of animals with a concern for all living creatures. An accompanying Teacher's Guide is available to help teachers of middle and high school students use *Science, Medicine, and Animals* in the classroom. As students examine the issues in *Science, Medicine, and Animals*, they will gain a greater understanding of the goals of biomedical research and the real-world practice of the scientific method in general. *Science, Medicine, and Animals* and the Teacher's Guide were written by the Institute for Laboratory Animal Research and published by the National Research Council of the National Academies. The report was reviewed by a committee made up of experts and scholars with diverse perspectives, including members of the U.S. Department of Agriculture, National Institutes of Health, the Humane Society of the United States, and the American Society for the Prevention of Cruelty to Animals. The Teacher's Guide was reviewed by members of the National Academies' Teacher Associates Network. *Science, Medicine, and Animals* is recommended by the National Science Teacher's Association NSTA Recommends.

Applied Ethics in Animal Research

Laboratory Animals in Research and Teaching contains valuable information that college and high school instructors will need to establish and maintain laboratories at their institutions. The volume offers practical advice about administrative matters, ethical issues, and the guidelines and regulations for the care and feeding of animals. The authors, who include high school instructors, researchers, college instructors, and veterinarians, share lessons they have learned from their own experiences. Their suggestions address large institutions, as well as smaller ones (where resources may be scarce). The volume also includes useful appendixes that include classroom exercises, case studies, federal guidelines, and a detailed listing of resources. This will be an invaluable text for psychologists and teachers who seek innovative perspectives and methods for teaching and conducting research with animals.

Laboratory Animal Welfare

Animals and Medicine: The Contribution of Animal Experiments to the Control of

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Disease offers a detailed, scholarly historical review of the critical role animal experiments have played in advancing medical knowledge. Laboratory animals have been essential to this progress, and the knowledge gained has saved countless lives—both human and animal. Unfortunately, those opposed to using animals in research have often employed doctored evidence to suggest that the practice has impeded medical progress. This volume presents the articles Jack Botting wrote for the Research Defence Society News from 1991 to 1996, papers which provided scientists with the information needed to rebut such claims. Collected, they can now reach a wider readership interested in understanding the part of animal experiments in the history of medicine—from the discovery of key vaccines to the advancement of research on a range of diseases, among them hypertension, kidney failure and cancer. This book is essential reading for anyone curious about the role of animal experimentation in the history of science from the nineteenth century to the present.

Handbook of Laboratory Animal Science, Volume I

Laboratory Animal Welfare provides a comprehensive, up-to-date look into the new science of animal welfare within laboratory research. Animals specifically considered include rodents, cats and dogs, nonhuman primates, agricultural animals, avian animals and aquatic animals. The book examines the impact of experiment design and environment on animal welfare, as well as emergency situations and euthanasia practices. Readers will benefit from a review of regulations and policy guidelines concerning lab animal use, as well as information on assessing animal welfare. With discussions of the history and ethics of animals in research, and a debate on contemporary and international issues, this book is a go-to resource for laboratory animal welfare.

Handbook of Laboratory Animal Science, Volume III

This book examines the general principles of laboratory animal maintenance and experimental use as well as factors that have to be taken into account when good research is done with animals. In addition, it provides species specific coverage, concentrating on the species most used as laboratory animals. The book gives a comprehensive description of the welfare questions considered to be important for each species under laboratory conditions.

Use of Laboratory Animals in Biomedical and Behavioral Research

The necessity for animal use in biomedical research is a hotly debated topic in classrooms throughout the country. Frequently teachers and students do not have access to balanced, factual material to foster an informed discussion on the topic. This colorful, 50-page booklet is designed to educate teenagers about the role of animal research in combating disease, past and present; the perspective of animal use within the whole spectrum of biomedical research; the regulations and oversight that govern animal research; and the continuing efforts to use animals more efficiently and humanely.

Principles of Animal Research for Graduate and Undergraduate Students

A respected resource for decades, the Guide for the Care and Use of Laboratory Animals has been updated by a committee of experts, taking into consideration input from the scientific and laboratory animal communities and the public at large. The Guide incorporates new scientific information on common laboratory animals, including aquatic species, and includes extensive references. It is organized around major components of animal use: Key concepts of animal care and use. The Guide sets the framework for the humane care and use of laboratory animals. Animal care and use program. The Guide discusses the concept of a broad Program of Animal Care and Use, including roles and responsibilities of the Institutional Official, Attending Veterinarian and the Institutional Animal Care and Use Committee. Animal environment, husbandry, and management. A chapter on this topic is now divided into sections on terrestrial and aquatic animals and provides recommendations for housing and environment, husbandry, behavioral and population management, and more. Veterinary care. The Guide discusses veterinary care and the responsibilities of the Attending Veterinarian. It includes recommendations on animal procurement and transportation, preventive medicine (including animal biosecurity), and clinical care and management. The Guide addresses distress and pain recognition and relief, and issues surrounding euthanasia. Physical plant. The Guide identifies design issues, providing construction guidelines for functional areas; considerations such as drainage, vibration and noise control, and environmental monitoring; and specialized facilities for animal housing and research needs. The Guide for the Care and Use of Laboratory Animals provides a framework for the judgments required in the management of animal facilities. This updated and expanded resource of proven value will be important to scientists and researchers, veterinarians, animal care personnel, facilities managers, institutional administrators, policy makers involved in research issues, and animal welfare advocates.

A Manual for Laboratory Animal Management

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