

**Recognition and Alleviation of**  
***Pain and Distress***  
**in Laboratory Animals**

**NATIONAL RESEARCH COUNCIL**

# Recognition And Alleviation Of Pain And Distress In Laboratory Animals

**Tim Allen**



## **Recognition And Alleviation Of Pain And Distress In Laboratory Animals:**

Recognition and Alleviation of Pain and Distress in Laboratory Animals National Research Council, Commission on Life Sciences, Institute for Laboratory Animal Research, Committee on Pain and Distress in Laboratory Animals, 1992-01-01 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

**Recognition and Alleviation of Pain and Distress in Laboratory Animals** Committee on Pain and Distress in Laboratory Animals, Institute for Laboratory Animal Research, Commission on Life Sciences, National Research Council, 1992-01-15 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

**Recognition and Alleviation of Pain in Laboratory Animals** National Research Council, Division on Earth and Life Studies, Institute for Laboratory Animal Research, Committee on Recognition and Alleviation of Pain in Laboratory Animals, 2010-01-14 The use of animals in research adheres to scientific and ethical principles that promote humane care and practice 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 Recognition and Alleviation of Pain in Laboratory Animals the second of two reports revising the 1992 publication Recognition and Alleviation of Pain and Distress in Laboratory Animals from the Institute for Laboratory Animal Research ILAR focuses on pain experienced by animals used in research This book aims to educate laboratory animal veterinarians students researchers and investigators Institutional Animal Care and Use Committee members and animal care staff and animal welfare officers on the current scientific and ethical issues associated with pain in laboratory animals It evaluates pertinent scientific literature to generate practical and pragmatic guidelines for recognizing and alleviating pain in laboratory animals focusing specifically on the following areas physiology of pain in commonly used laboratory species

pharmacologic and non pharmacologic principles to control pain identification of humane endpoints and principles for minimizing pain associated with experimental procedures Finally the report identifies areas in which further scientific investigation is needed to improve laboratory animal welfare

**Recognition and Alleviation of Pain and Distress in Laboratory Animals**, 1992 **Definition of Pain and Distress and Reporting Requirements for Laboratory Animals** National Research Council, Institute for Laboratory Animal Research, Committee on Regulatory Issues in Animal Care and Use, 2000-12-26 In this first in a proposed series of workshops on regulatory issues in animal care and use the Institute for Laboratory Animal Research ILAR has addressed the existing and proposed requirements for reporting pain and distress in laboratory animals The Animal Welfare Act administered by the Animal and Plant Health Inspection Service of the United States Department of Agriculture USDA mandates that pain and distress in laboratory animals be minimized USDA is considering two policy changes with regard to this specific mandate Firstly since there has been no functional definition of distress USDA has prepared such a definition and requested feedback from the scientific community on its usefulness for regulatory and reporting requirements The second issue concerns the pain and distress categorization scheme for reporting to USDA Various groups and individuals have questioned the efficacy of the current categories and specific changes have been proposed by the Humane Society of the United States USDA is considering these and other potential changes to the existing scheme Thus given these potential changes to animal welfare policy the aim of the ILAR NIH joint workshop was to provide feedback to the USDA The speakers were asked to address these two issues as well as to comment upon whether the information contained in the 1992 ILAR report Recognition and Alleviation of Pain and Distress in Laboratory Animals is still useful to investigators in assisting them to comply with regulations The speakers provided perspectives based on their individual expertise in the areas of science of pain and distress animal welfare policy protocol review and or as representatives of relevant organizations or institutions The following proceedings are an edited transcript of their presentations

**Recognition and Alleviation of Distress in Laboratory Animals** National Research Council, Division on Earth and Life Studies, Institute for Laboratory Animal Research, Committee on Recognition and Alleviation of Distress in Laboratory Animals, 2008-04-10 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 **Definition of Pain and Distress and Reporting Requirements for Laboratory Animals** National Research Council, Institute for Laboratory Animal Research, Committee on Regulatory Issues in Animal Care and Use, 2001-01-26 In this first in a proposed series of workshops on regulatory issues in animal care and use the Institute for Laboratory Animal Research ILAR has addressed the existing and proposed requirements for reporting pain and distress in laboratory animals The Animal Welfare Act administered by the Animal and Plant Health Inspection Service of the United States Department of Agriculture USDA mandates that pain and distress in laboratory animals be minimized USDA is considering two policy changes with regard to this specific mandate Firstly since there has been no functional definition of distress USDA has prepared such a definition and requested feedback from the scientific community on its usefulness for regulatory and reporting requirements The second issue concerns the pain and distress categorization scheme for reporting to USDA Various groups and individuals have questioned the efficacy of the current categories and specific changes have been proposed by the Humane Society of the United States USDA is considering these and other potential changes to the existing scheme Thus given these potential changes to animal welfare policy the aim of the ILAR NIH joint workshop was to provide feedback to the USDA The speakers were asked to address these two issues as well as to comment upon whether the information contained in the 1992 ILAR report Recognition and Alleviation of Pain and Distress in Laboratory Animals is still useful to investigators in assisting them to comply with regulations The speakers provided perspectives based on their individual expertise in the areas of science of pain and distress animal welfare policy protocol review and or as representatives of relevant organizations or institutions The following proceedings are an edited transcript of their presentations *Welfare of Experimental Animals* Tim Allen, 1994

**Guide for the Care and Use of Laboratory Animals**, 1996 Demonstrates how computers logic controllers PLCs and programmable logic devices PLDs have in common the characteristics of being synchronous sequential systems and differ with regard to modularity design confidentiality and speed The first section introduces logic controllers and makes the connection between digital electronics and PLCs The second section is dedicated to PLDs and their use in designing PLCs The final section considers PLCs and their applications and PLC programming languages Annotation copyrighted by Book News Inc Portland OR **Handbook of Laboratory Animal Management and Welfare** Sarah Wolfensohn, Maggie Lloyd, 2008-04-15 This third edition of the bestseller Handbook of Laboratory Animal Management Welfare has been fully revised and updated making it an essential handbook for all those working with animals under the Animals Scientific Procedures Act 1986 Designed to be a practical reference book it covers every area of animal care and aims to improve

animal welfare through best practice and refinement of techniques It covers principles applicable to all species including training of licensees the regulatory framework euthanasia management of pain and stress anaesthesia and surgery and also includes specific sections on biology and husbandry Organtransplantation in Rats and Mice Wolfgang

Timmermann,Heinz-Jochen Gassel,Karin Ulrichs,Robert Zhong,Arnulf Thiede,2012-12-06 Main focus of the new book will be the description and discussion of rat and mouse models for organ transplantation Various microsurgical techniques will be presented which allow transplantation of functional organs in syngeneic systems In particular the extremely difficult methods necessary for organ transplantation in mice will be presented and evaluated Besides these practical aspects the book will also cover the theoretical sides of organ transplantation like the immunobiology of allotransplantation Special emphasis will be given to the resurgent field of xenotransplantation The results from xenograft models developed in the recent years using rats or mice will be reviewed and their impact on future human xenotransplantation will be discussed **Laboratory**

**Animal Welfare** Kathryn Bayne,Patricia V. Turner,2013-09-02 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 Using Animals in Intramural Research

,1999 Guide for the Care and Use of Laboratory Animals -- Korean Edition National Research Council,Division on Earth and Life Studies,Institute for Laboratory Animal Research,Commission on Life Sciences,2005-08-27 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

**Anesthesia and Analgesia in Laboratory Animals** Dennis F. Kohn, Sally K. Wixson, William J. White, G. John Benson, 1997-05-01 Anesthesia and Analgesia in Laboratory Animals focuses entirely on the special anesthetic analgesic and postoperative care requirements associated with experimental surgery Sponsored by the American College of Laboratory Animal Medicine this informative work provides the reader with agents methods and techniques for anesthesia and analgesia that ensure humane and successful procedural outcomes Focuses on a wide variety of animal species used in research Provides a comprehensive overview of the pharmacology of anesthetics and analgesics Includes monitoring of analgesia and anesthesia Organizes topics by species for agents and methods of providing anesthesia analgesia and post op care to animals No other American text is devoted entirely to this topic

**In vivo Models of HIV Disease and Control** Herman Friedman, Steven Specter, Mauro Bendinelli, 2007-04-27 An AIDS vaccine is still elusive and HIV treatment continues to develop multidrug resistance at alarming rates Because of the similarities between HIV and immune deficiency infections in a variety of animals it is only natural that scientists use these animals as models to study pathogenesis treatment vaccine development and many other aspects of HIV Part of the series Infectious Agents and Pathogenesis this volume reviews the immune deficiency virus in a variety of hosts Pathogenesis vaccine and drug development epidemiology and the natural history of the monkey mouse cat cow horse and other animal viruses are detailed and compared to HIV Also included are chapters on the history and future of animal models as well as a chapter on ethical and safety considerations in using animal models for AIDS studies

**The Psychological Well-Being of Nonhuman Primates** Committee on Well-Being of Nonhuman Primates, Institute for Laboratory Animal Research, Commission on Life Sciences, National Research Council, 1998-11-17 A 1985 amendment to the Animal Welfare Act requires those who keep nonhuman primates to develop and follow appropriate plans for promoting the animals psychological well being The amendment however provides few specifics The Psychological Well Being of Nonhuman Primates recommends practical approaches to meeting those requirements It focuses on what is known about the psychological needs of primates and makes suggestions for assessing and promoting their well being This volume examines the elements of an effective care program social companionship opportunities for species typical activity housing and sanitation and daily care routines and provides a helpful checklist for designing a plan for promoting psychological well being The book provides a wealth of specific and useful information about

the psychological attributes and needs of the most widely used and exhibited nonhuman primates Readable and well organized it will be welcomed by animal care and use committees facilities administrators enforcement inspectors animal advocates researchers veterinarians and caretakers Reducing, Refining and Replacing the Use of Animals in Toxicity Testing David G. Allen, Dave Allen, Michael D. Waters, Mike D. Waters, 2013 This thought provoking book describes the ever expanding toolbox of methods now available to reduce refine or replace animal usage in toxicity testing **Guide for the Care and Use of Laboratory Animals** National Research Council, Division on Earth and Life Studies, Institute for Laboratory Animal Research, Committee for the Update of the Guide for the Care and Use of Laboratory Animals, 2011-01-27 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

Management of Animal Care and Use Programs in Research, Education, and Testing Robert H. Weichbrod, Gail A. (Heidbrink) Thompson, John N. Norton, 2017-09-07 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 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

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Life is Cellular 1 .pdf - CHAPTER 8 LESSON 1 Life Is... The Discovery of the Cell KEY QUESTIONWhat are the main points of the cell theory? The smallest living unit of any organism is a cell. Cells were unknown until ... 8.1 Life is Cellular Flashcards Study with Quizlet and memorize flashcards containing terms like Robert Hooke, Anton van Leeuwenhoek, Cells and more. biology 7.1 life is cellular worksheet Flashcards biology 7.1 life is cellular worksheet. 5.0 (2 reviews). Flashcards · Learn · Test ... See an expert-written answer! We have an expert-written solution to this ... 8.1 Life is cellular The cell theory states: -

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All living things are made up of cells. -Cells are the basic units of structure and function in living things. Cell review packet answers0001.pdf Are all eukaryotes large, multicellular organisms? No, some live solitary lives as single- celled organisms.

11. Complete the table about the two categories of ... READING Chapter 7.1 Life Is Cellular | PDF READING Chapter 7. 1 Life is Cellular worksheet. The Discovery of the Cell Seeing is believing, an old saying goes. It would be hard to find a better ...

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