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The Institute for Laboratory Animal Research (ILAR) is a component of the Commission on Life Sciences (CLS), National Research Council (NRC). Partial support for ILAR has been provided for many years from the Department of the Army to enable ILAR to fulfill its mission.

Founded in 1952, ILAR has become recognized nationally and internationally as a leader in developing and making available to the biomedical and laboratory animal science communities guidelines for animal care, breeding, and use; descriptions of animal models for human diseases and physiological processes; and reports on specific issues of humane care and use of laboratory animals. ILAR's mission is to help improve the availability, quality, care, and humane and scientifically valid use of laboratory animals.

ILAR accomplishes its goals through its core program, which is carried out by the staff, and its special-project program, which is carried out by NRC-appointed committees with staff assistance. The number of committees and size of the staff are dependent on the number of special projects and available funding. Both programs are directed by a 14-member Council comprised of experts in laboratory animal medicine, zoology, genetics, medicine, ethics, and related biomedical sciences. The Army funds partially support general office operations, the Animal Models and Genetic Stocks Information Program, publication of *ILAR Journal*, and work of the Council.

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N/A In conducting research using animals, the investigator(s) adhered to the "Guide for the Care and Use of Laboratory Animals," prepared by the Committee on Care and use of Laboratory Animals of the Institute of Laboratory Resources, national Research Council (NIH Publication No. 86-23, Revised 1985).

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Reyn D. Bell
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ANNUAL REPORT

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INTRODUCTION

For many years the Army has provided partial core support to the Institute for Laboratory Animal Research (ILAR), a component of the National Research Council's (NRC) Commission on Life Sciences. The NRC is the operating arm of the National Academy of Sciences, a private, nonprofit organization that was created in 1863 by congressional charter to serve as an official advisor to the federal government on questions of science and technology.

Founded in 1952, ILAR has become recognized nationally and internationally as a leader in developing and making available to the biomedical and laboratory animal science communities guidelines for animal care, breeding, and use; descriptions of animal models for human diseases and physiological processes; and reports on specific issues of scientific and humane use of laboratory animals. These guidelines from the National Academy of Sciences serve as important indications to members of congress, government officials, the press, and the public of the high quality of care provided to laboratory animals. ILAR's mission is to help improve the availability, quality, care, and humane and scientifically valid use of laboratory animals.

ILAR's studies, like all those of the NRC, are carried out by recognized experts in fields appropriate to the required tasks. These serve on a volunteer basis, without compensation. As a part of the NRC, ILAR has access to this country's most knowledgeable and distinguished laboratory animal and biomedical scientists, who provide objective counsel on laboratory animal matters. A significant number of the experts used by ILAR are also members of the National Academy of Sciences or the Institute of Medicine. In some cases, ILAR utilizes scientists from other countries.

Reports of NRC studies are extensively reviewed by independent NRC-appointed experts in the subject area before they are released. They are prepared in sufficient quantity to ensure distribution to the sponsor, experts, and other relevant parties in accordance with Academy policy. Reports are usually made available to the public without restriction.

ILAR'S GOALS

- Since its founding, ILAR has provided guidance and information on laboratory animal matters to the federal government, the biomedical and laboratory animal science communities, and the public. In keeping with its mission, ILAR continually seeks to strengthen and refine its existing programs and to initiate new programs that will assist government officials; scientists who use animals in research, testing, and education; and the institutional animal care and use committees that monitor animal use. ILAR's goals are as follows:
- to provide a forum within the National Academy of Sciences for the Department of Defense to discuss issues and develop guidance for laboratory animal-related matters;
- to continue to serve on behalf of biomedical science and education as an authoritative voice within the U.S., and on behalf of the U.S. scientists internationally;

- to promote humane and appropriate care and use of laboratory animals;
- to provide scientific guidance on laboratory animal-related issues to agencies of the federal government and others on request;
- to provide information on laboratory animal matters to government officials, laboratory animal and other biomedical scientists, institutional animal care and use committees, and the public;
- to promote the use of standardized nomenclature for accurately defining and identifying genetic stocks of animals;
- to assist developing countries attain quality laboratory animal science programs through dissemination of information including the translation of ILAR reports;
- to promote cost-effective ways to preserve valuable animal models; and
- to broaden the access to information on selection of appropriate biological models and methods through ILAR's home page, databases, publications, and resources of the new ILAR Associateship program.

Accomplishing the Goals

ILAR accomplishes its goals through its core program, which is carried out by the staff, and its special-project program. The number of studies and size of the staff are dependent on the number of special projects and available funding. Both programs are directed by a 16-member ILAR Council comprised of experts in laboratory animal medicine, virology, zoology, genetics, medicine, ethics, and related biomedical sciences.

THE CORE PROGRAM

ILAR Council

The ILAR Council (see appendix 1 for roster) serves four principal functions: to provide program direction and strategic planning; to oversee the information programs, which consist of the Animal Models and Genetic Stocks Information Program and the quarterly *ILAR Journal*; to oversee special projects; and to direct ILAR's international programs and its participation as the U.S. national member in the International Council of Laboratory Animal Sciences (ICLAS). The international program is discussed in the Special Projects section below. Periodically, the Council meets with other scientists and funding agency administrators to discuss areas in which ILAR might prove useful. It then uses these discussions in strategic planning. The Council occasionally employs core funds to undertake specific, NRC-approved projects itself.

Staff

ILAR is staffed by a director, a managing editor of the *ILAR Journal*, a project assistant who maintains the AMGS database, a project assistant and secretary to the director, and a project director (currently vacant). Under the special projects program, staff works closely with experts to

engage in studies, develop working papers, assist in the production of a cohesive report, and conduct literature reviews.

Animal Models and Genetic Stocks Information Program

Some of the most critical information needed by Department of Defense scientists is often the most difficult to obtain, including information on the most appropriate model for the proposed research and, if the model is an animal, to find sources of the model and information on appropriate care. As author of the *Guide for the Care and Use of Laboratory Animals*, ILAR is in a position to assist investigators and Institutional Animal Care and Use Committees (IACUCs) in interpreting guidelines for the humane care and use of animals and fulfilling requirements of the Animal Welfare Regulations regarding reduction of pain and distress and identification of alternative methodologies. For over 40 years, ILAR has conducted a program to provide such information. That program, called the Animal Models and Genetic Stocks Information Program, offers assistance in locating sources of animals, selecting appropriate animal models, using standardized nomenclature, and understanding the importance of the use of animals in biomedical and behavioral research and testing. It includes two databases: one (called Animals for Research, AFR) contains commercially available and investigator-held colonies of animals for research; the other is a registry of codes used with standardized nomenclature of rodents and rabbits to identify institutions that maintain breeding colonies. The databases have been incorporated into ILAR's World Wide Web (WWW) home page and are available to investigators world-wide. The Animals for Research website averages approximately 10 "hits" per day. ILAR has just undertaken a major update to both databases and expects to add many new sources as well as increased information about the animal stocks listed.

ILAR Journal

ILAR Journal, a quarterly, peer-reviewed publication, provides thoughtful and timely information for all those who use, care for, and oversee the use of laboratory animals. The readership of *ILAR Journal* includes more than 3,500 investigators in biomedical and related research, institutional officials for research, veterinarians, and members of animal care and use committees. The *ILAR Journal* Editorial Board, of the ILAR Council, plans each issue around a chosen theme and carefully solicits authors to best present a balanced view of the topic which is then peer reviewed.

Since March 1999, the full-time managing editor has established a more attractive and less expensive design for *ILAR Journal*, which has been timely without exception. During the last year, issues have been published on the following themes: Animal Models of Human Vision; Animal Models of Pain; Animal Models of Inflammation; The Squirrel Monkey in Biomedical and Behavioral Research; and Humane Endpoints for Animals Used in Biomedical Research and Testing. Themes of forthcoming issues, which are in various stages of production, include Mouse Behavioral Models in Biomedical Research; Cryobiology of Embryos, Germ Cells, and Ovaries; Laboratory Animal Allergens; Animal Models of Hepatitis B and C; Impact of Noninvasive Technology on Animal Research; Fish Models in Biomedical Research; and Advanced Physiologic Monitoring in Animals. Topics being considered for future issues are Motivation in Behavioral Research and Recognition; and Animal/Human Interaction and Bonds.

ILAR Associate Program

In an effort to provide better access to ILAR's information and resources and to better leverage funding from core and project sponsors, ILAR initiated an associateship program in 1997. Individuals and institutions that subscribe to the associate program help defray the cost of publishing the *Journal* and managing the AMGS program. ILAR Associates receive the *ILAR Journal* (number of copies varies with level of Associate membership) and a 20% discount on all ILAR and other National Academy Press publications. As do ILAR's core sponsors, the Associates arguably represent the best of US biomedical and laboratory animal scientists and serve as an important audience to receive, critique, and provide guidance to ILAR's programs. ILAR's core sponsors are valuable members of the Associates program.

SPECIAL PROJECTS

Projects are developed in response to specific requests from government agencies and private organizations or on the initiative of staff, or ILAR Council. Although these projects are supported by contracts and grants from federal agencies, foundations, and private organizations, they are never completely separate from the core program because the Council is involved during each step of the process. This sponsorship provided by this grant is recognized in each published ILAR report. The Council reviews each project extensively before it is undertaken, examines the qualifications of experts, oversees the conduct of the project to ensure that it is accomplished in a timely manner, and reviews and signs off on each report as a part of the NRC review process. In addition, ILAR reports are frequently published as special inserts of the core-support *ILAR Journal*. The following projects are examples of recently completed projects, or projects that are underway or which will begin when funding has been received.

ICLAS and International Activities

ILAR has had a long history of interest in international laboratory animal science. Historically, this interest has sought to assist young investigators in developing countries through dissemination of reports (some translated into foreign languages to increase their usefulness) and participation in international meetings that support young investigators. In 1988, ILAR became the U.S. national member of the International Council for Laboratory Animal Science (ICLAS), with support from member agencies (including USAMRDC) of the Interagency Research Animal Committee (IRAC). This membership affords a conduit for U.S. investigators to develop and conduct an active international program in laboratory animal science. One goal of the U.S. membership in ICLAS was to streamline ICLAS management and programs to better represent U.S. scientists in the international community. In 1995, that goal came to fruition through the election of former ILAR Council chairman (Steven Pakes) as Secretary General of the ICLAS General Assembly. Dr. Pakes works closely with ILAR and is an annual guest of ILAR Council to discuss ICLAS and other international issues.

The goals of ILAR's international activities center around the following:

- Facilitating the impact of NAFTA for the benefit of trade affecting scientific exchange
- Developing a database of contacts (scientists, government officials, and trade organizations) in Mexico and Canada
- Updating and expanding ILAR's online database on Animals for Research
- Distribution of NRC reports to appropriate scientific audiences
- Translation of Reports

In the past year ILAR's *Guide for the Care and Use of Laboratory Animals* has been translated into Chinese, Korean, and Japanese, Spanish, French, and Russian. The Spanish translation was distributed by the Mexican National Academy of Medicine; the French translation will be placed on Annulab (French language listserv) that has 1700 subscribers. Other translations underway or contemplated are German and Arabic. The use of the *Guide* internationally by scientists and laboratory animal personnel further supports ILAR's effort to achieve animal care and use policies that will facilitate international scientific exchange of biologics and products.

A meeting was held at the end on November 15, 1999, with Japanese and American Researchers on the subject of Harmonization of Nomenclature and Methods in Laboratory Animal Based Research. Participants discussed microbiological testing of laboratory mice and rats, emerging microorganisms in laboratory mice and rats, genetic evaluation of outbred rats, and phenotypic definition of genetically modified mice in the US and Japan, and examined ways in which these definitions could be harmonized. This will begin the process of harmonizing and standardizing methods, nomenclature, and descriptions of phenotypes between Japan and the US. Annual US/Japan meetings have been occurring since 1980 and have resulted in a number of notable efforts including several ILAR publications. The proceedings of last year's conference on the subject of Microbial and Phenotypic Definition of Rats and Mice was published in July 1999. The proceedings of the most recent meeting will be published in late spring 2000.

The Cost of Animal-Based Research

This study supported by NIH was initiated in September 1997 and has two related tasks: to examine the cost allocation method described in the revised NIH Rate Setting Manual, compare that method to the allocation scheme called for in OMB Circular A-21 and make recommendations concerning cost allocation; and secondly, to examine the components of the total cost of using animals in research and determine what cost containment strategies might be considered. The interim report on the cost allocation issue was completed and released in May 1998. The final report, which uses a survey undertaken by Yale University to determine the components of the costs for maintenance of an animal-based research facility at NIH-supported biomedical research institutions, is expected by the summer of 2000.

Methods for Producing Monoclonal Antibodies

Monoclonal antibodies are used extensively in medical and biological research as reagents to detect and quantitate various proteins and other substances in cells and body fluids and as therapeutic agents in cancer research. A study was initiated in September 1998 with support from NIH to examine the scientific need to use the mouse ascites method for producing monoclonal antibodies and if the committee decides it is necessary, then to recommend ways of minimizing pain and distress in the mice. The report has been completed and a final printed version was available by May 1999. This report formed the basis for the NIH response to a petition from the American Antivivisection Society requesting that NIH ban the use of the mouse ascites method for producing monoclonal antibodies. Also the report has been cited in a recent Dear Colleague from OPRR.

Prospective Activities

- The Behavior of the Laboratory Mouse. A workshop will be held to summarize current knowledge concerning behavioral research on the laboratory mouse. An earlier ILAR report entitled *Biomedical Models and Resources* described the need for researchers to have behavior as a variable when characterizing the phenotype of genetically altered mice.
- Occupational Health and Safety in Care of Nonhuman Primates. A committee will be asked to identify the hazards associated with using nonhuman primates (NHPs) in research, assess the degree of risk of these hazards, and suggest options for managing the risks including engineering controls, personal protective equipment, and worker training. Recommendations would be made for institutional management of workers after suspected exposure.
- Revision of *Science, Medicine, and Animals*. A subcommittee of ILAR would review and prepare a revision of the 1991 publication, *Science, Medicine, and Animals*. The revision would use more modern examples of the benefits of the use of animals in research and would serve as an educational and informational document to provide a scientific discussion of continually evolving and unsettled issues associated with +animal use in research. An extensive dissemination effort would be carried out that would include targeted mailings, briefings, seminars, educational exhibits at scientific and professional meetings.
- The 1978 ILAR report entitled *Laboratory Animal Housing* will be updated using modern technical criteria for animal research facility design including performance criteria, description of the animal environment, requirements for hazardous agent containment, cost-effectiveness of design for new construction as well as renovation.
- Workshop on Regulatory Requirements for Animal Care and Use—A workshop will be held 1 to 2 times per year to discuss issues associated with the implementation of

current regulations governing the care and use of animals in research, education, and testing.

- **Increasing Veterinary Involvement in Biomedical Research**—A workshop will be held to address issues surrounding recruitment of veterinarians into academic comparative medicine/comparative pathology. The following questions will be examined: How can more veterinarians be prepared for careers in academic comparative medicine/comparative pathology? What programmatic activities have been effective in stimulating veterinary students/veterinarians to pursue a career in biomedical research? What factors are important in contributing to successful biomedical research careers for veterinarians?

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