

Health Care for Genetically Altered Animals

Background

The microbiological quality of laboratory mice and other rodents has improved significantly during the past 20 years. This has been due, in large part, to improved surveillance programs and housing. However, as the use of laboratory rodents in biomedical research has increased, largely because of transgenic and gene targeting technology, individual animals have assumed great value. They may also have reduced reproductive efficiency and lowered resistance to disease caused by unanticipated phenotypic expression of a genetic alteration. Thus, such animals may respond atypically to infectious agents compared to “normal” immunocompetent animals. Cutting edge biomedical research demands the use of only the highest quality, microbiologically and genetically defined animals. This is a critical requirement that will continue to grow along with rodent use (1).

Issues

- Animal experimentation is essential for biomedical research.
- Genetically manipulated rodents are being developed and used as animal models at an accelerating rate: laboratory mouse populations are increasing at about 20% per year.
- Collaborative research has accelerated the pace and scope of animal exchange and transportation
- Infectious diseases of laboratory rodents alter research results.
- Phenotypes of genetically altered rodents can be misinterpreted due to underlying infectious diseases.
- The demand is growing for quarantine programs that protect vivaria from importation of diseased animals or contaminated animal products.
- “The age of discovery for rodent infectious diseases is far from over” (2).

- Federal funding for programs to help insure the quality of experimental animals has dwindled as the need for such services has increased.

Positions

- The integrity of animal experimentation must be supported by the highest quality clinical medicine and diagnostic laboratory services.
- Renewed federal funding to help achieve high quality animal health care and diagnostic support is essential. One mechanism for accomplishing this goal is the development of regional centers of excellence (3).
- Renewed federal funding is critically needed for applied research on emerging rodent infectious diseases and improved diagnostics.
- Commercial laboratory animal breeders have benefited immensely from diagnostic and therapeutic technologies developed at academic institutions. They should be encouraged to invest in the scientific future of such programs.
- Uniform international standards for defining rodent quality should be adopted for assessing animals to be used in biomedical experimentation.
- Uniform international standards also should encompass rodent products including tumors, cell lines and blood products.
- A universal format and language that is clear, accurate and complete should be used to report test results pertaining to rodent quality. Nomenclature (e.g. SPF, VAF) should also be universally understood.

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1. Gaertner, D. G., L. K. Riley, and D. G. Martin. 1998. *ILAR J* 39:306–311.
 2. Barthold, S. W. 1998. *ILAR J* 39:316–320.
 3. Jacoby, R. O. and J. R. Lindsey. 1997. *FASEB J* 11:609–614.