

preface

Mice are used in biomedical research more than any other species. They are small and comparatively easy to house and handle, and they have attributes that make them particularly desirable as animal models for studies of the basis, treatment, and prevention of human diseases of genetic origin. They breed often and produce comparatively large litters; they develop rapidly and typically complete their life cycle within about 2 years; and they thrive in the laboratory environment. They also share approximately 95% of their genome with humans and develop many disease syndromes that are similar to inherited diseases of humans. Perhaps most important of all is their ability to survive inbreeding—most species exhibit *inbreeding depression* to such an extent that truly inbred strains cannot be created or sustained—and their ability to tolerate and breed following complex genetic manipulations. It is hardly surprising that these valuable animals are viewed as precious entities within the laboratory. Emphasis is placed on assuring that they are cared for and handled in a manner that optimizes their value in research while safeguarding their health and welfare.

The first edition of this handbook was published in 2000. Since that time, there have been many advances in mouse research, as well as improved strategies for protecting the health and welfare of laboratory mice. This second edition was revised and expanded to reflect those advances. As with the first edition, it was devised as a quick reference for investigators, technicians, managers, and animal caretakers charged with caring for, or using, mice in biomedical research. While it cannot, and should not, be viewed as a substitute for proper training, we anticipate that it will prove particularly

useful for individuals at small institutions that may lack the depth of resources often associated with large, complex animal care and use programs.

The second edition is organized a bit differently than the first edition, and is comprised of seven chapters: "Important Biologic Features" (Chapter 1), "Husbandry" (Chapter 2), "Management" (Chapter 3), "Clinical Medicine" (Chapter 4), "Preventive Medicine" (Chapter 5), "Experimental Methodology" (Chapter 6), and "Resources and Additional Information" (Chapter 7). Compared with the first edition, there is new information on the following topics: colony health vs. health of individual animals; moving mice within the institution and shipping to other institutions; receiving mice from other institutions, including quarantine programs; phenotyping; testing of biological materials for microbial contamination; and developing an emergency plan for dealing with outbreaks of infectious diseases.

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