

## **"Research and Welfare: Rethinking Mouse Cages"**

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Optimizing the handling and environment of mice in biomedical research requires a careful balance between conducting effective research and ensuring the welfare of the animals involved. This balance is crucial to both ethical considerations and the reliability of research outcomes. Here are some key points to consider: adherence to ethical guidelines and regulations governing the use of animals in research on the one hand, but also providing appropriate housing conditions, considering factors such as cage size, environmental enrichment, and social interactions. The concept of environmental enrichment has origins in neuroscience, where it has been used for decades to promote neural plasticity, whereas “standard” conditions for laboratory rodents have been rather impoverished. These engineering standards are often based on practicality and economic, rather than biological, considerations. Justified concerns have been expressed whether the animals raised in such conditions are representing a normal, healthy population. On a positive note, biomedical research community is increasingly aware of this shortcoming. Focus is shifting to the automated, 24/7 monitoring of animals in their home cage where species-specific needs are met as much as possible. By maintaining a commitment to both rigorous research and high standards of animal welfare, researchers can contribute to advancements in biomedical science while upholding ethical principles. Collaboration between researchers, veterinarians, animal care staff and equipment manufacturers are essential for achieving this delicate balance.