Implementing refined mouse handling in animal facilities

Megan LaFollette[1]

[1]The 3Rs Collaborative, Denver, Colorado, United States

Keywords: Refined Mouse Handling, Non-Aversive Handling, Tunnel Handling, 3Rs, Refinement,

1. Introduction

Traditional methods of handling laboratory mice—such as picking them up by the tail—have long been standard practice in animal facilities. However, a growing body of evidence now supports refined handling techniques, such as using tunnels, huts, or cupped hands, as a significant 3Rs refinement. These refined methods reduce stress and anxiety in mice, improve scientific outcomes, and enhance handler safety and satisfaction. Transitioning large mouse facilities to these refined methods is feasible, with a careful approach.

2. Body

The 3Rs Collaborative is a non-profit organization based in the United States that seeks to advance better science – for both people and animals – through facilitating collaborative 3Rs initiative. As part of their Refinement initiative, they have created extensive resources to help organizations switch to refined mouse handling.

Refined handling, pioneered by Professor Jane Hurst, has been validated by over 20 independent studies across more than a decade. These studies demonstrate that mice handled with tunnels or cupped hands exhibit reduced anxiety and depressive-like behaviors, improved physiological parameters (e.g., glucose tolerance, corticosterone levels), and increased voluntary interaction with handlers. Additionally, refined handling has been shown to improve breeding outcomes and scientific data reliability. Importantly, these benefits are consistent across mouse strains, sexes, cage types, and laboratory environments. They event persist after conducting common procedures.

Implementation of refined handling is both practical and scalable. Institutions that have adopted it report no increase in time required for cage changes once staff are trained, and many report improved identification of health issues and reduced handler injuries. Successful implementation involves a staged rollout, support from leadership, and engagement of early adopters. As more facilities transition to refined handling, the practice is proving to be a win for animal welfare, scientific integrity, and staff well-being.

3. Conclusion

Ultimately, I advocate for replacing tail handling with refined mouse handling, due to multi-model benefits to science, the 3Rs, and operations. This shift in best practice is occurring throughout the United Kingdom, Europe, and North America. The 3Rs Collaborative Refined

Mouse Handling resource hub can provide individuals and organizations with extensive guidance and training to support this transition.

References

1. **Young L, Goldsteen D, Nunamaker EA, Prescott MJ, Reynolds P, Thompson-Iritani S, Thurston SE, Martin TL, LaFollette MR.** Using refined methods to pick up mice: A survey benchmarking prevalence & beliefs about tunnel and cup handling. *Plos one.* 2023 Sep 7;18(9):e0288010.
2. **Gouveia K, Hurst JL.** Improving the practicality of using non-aversive handling methods to reduce background stress and anxiety in laboratory mice. *Scientific reports.* 2019 Dec 30;9(1):20305.