Transferring a mouse with a plastic tunnel (Source: University of Liverpool)

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Handling Mouse Friendly

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Mouse handling and stress

Stress control is a critical measure to assure consistent and reliable animal experimental outcomes, especially those from behavioral tests. Sources of stress affecting animal behavior had been well documented, including the improper room light intensity, disrupted light-dark cycles, improper social/single housing, improper room temperature, vibration, noise, and smells from predator species or from aggressive males of the same species. Handling (by human) stress also causes variation in animal behavior. Tail-picking, which is use conventionally as a husbandry routine (by animal caretakers) and during experimentation (by scientists) for transferring mice in a short distance, similarly induces stress and anxiety.

Conventional tail picking

For a short distance transfer of a mouse, e.g. transferring across cages, moving to an experimental equipment nearby or before restraining, the mouse is picked by grasping the base of the tail between the thumb and the forefinger. Picking by a pair of forceps is another consideration for biosecurity or biocontainment.

Cupping

A mouse is scooped and being transferred without restrain using one or both palms. Beginners may require both hands to prevent mice from jumping. After establishing skills and animal-handler bond, handler may require only one hand to transfer the mouse.

Handling by tunnel

To transfer a mouse using a tunnel, the tunnel is placed on the cage floor and while one hand is holding it, the other hand is intentionally guiding the animal into the tube. For longer distances, the handler loosely cover both ends of the tube with two hands when lifting and moving. Slowly lower the other end of the tube to the new place with the mouse sliding down backwards for release. Mice become accustomed to the new process after several practice sessions. Clear transparent tunnel of 50mm in diameter with smooth surface is ideal for such handling.

Impact of mouse handling methods on experiment and animal welfare

In comparison with tail-picking, mice handled by tunnel are less anxious. Besides increased ease of handling, the mice urinate and defecate less at handling, indicating less stress. In elevated plus maze test, mice handled by tunnel generally entered the open arms more frequently, spent more time on open arms and expressed protected stretch attend posture less frequently.

Ideally, for animal welfare consideration, switching all mice handling by tail picking to tunnel handling is beneficial to the animal, although tunnel handling by the experimenters only is sufficient to reduce stress in mice, which are tail-picked during routine husbandry (Jane Hurst, personal communication).

Training Video available for downloading

Mouse tunnel handling:
https://vimeo.com/236716093

Mouse cup handling:
https://vimeo.com/236715432

Impact of handling on radial maze exploration: *https://vimeo.com/236716672*

Mouse handling posters (N3Rs):
https://www.nc3rs.org.uk/mouse-handling-poster

References

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