



National Centre
for the Replacement
Refinement & Reduction
of Animals in Research

Mouse handling poster: Terms of use

The NC3Rs has produced an A2-sized poster on non-aversive mouse handling methods for display in laboratory animal facility rooms and corridors to help raise awareness about the methods and familiarise staff with the correct technique, in conjunction with practical training.

For a full list of available posters and information on how to implement non-aversive mouse handling in your facility, please see our resource page: <https://www.nc3rs.org.uk/how-to-pick-up-a-mouse>.

Print specifications

The proper use of this poster requires the photos to be clearly visible, as they demonstrate the correct handling technique. Therefore, it must be printed by a professional print service at the full A2 size.

This poster in this PDF has been set up to professional print standards and has crop and bleed marks added. Please use the print specification outlined below and the printer will trim the poster to the finished size.

- Finished Size: 594mm x 420mm (A2 portrait)
- Print specification: Full colour
- Paper specification (ideally): 170gsm silk

If you have any issues, or need the file in another format, please contact enquiries@nc3rs.org.uk.

Circulation and reproduction

The poster in this PDF should not be circulated without this covering page attached to it.

Any requests to reproduce this poster, or to include it in any publications or training materials, should be directed to enquiries@nc3rs.org.uk. You should include how, why and where the poster will be used so that we can consider your case for approval. It is helpful to include any associated text, so we can see the context in which the poster will be put.

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New methods to handle mice – time for a change

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The way that you pick up laboratory mice influences their stress, longer-term anxiety and reliability in scientific testing. Picking up mice by the tail induces negative responses¹⁻³. In contrast, picking them up in a tunnel, or cupping them on the hand, considerably reduces stress and anxiety, and results in animals that are much more willing to interact with you voluntarily¹⁻³. Below are simple tips for implementing these methods. Your choice should be compatible with your local biosecurity rules.

For further details and advice, see our free video tutorial at www.nc3rs.org.uk/mouse-handling-tutorial

Tunnel handling

- Guide mouse into tunnel with free hand
- Lift mouse inside tunnel
- Remove mouse by tipping out backwards, with end of tunnel just above surface
- Mice habituate very quickly to tunnels
- Ideal for less experienced handlers
- Minimal risk of being bitten
- Abnormal behaviour easily spotted



Cup handling

- Scoop mouse onto one or both palms
- Lift hand(s) clear of cage
- Mouse sits on the hand without restraint
- A single hand is sufficient once mice are familiar with this method
- Mice slower to habituate to cup handling
- Needs more skill to prevent mice jumping, but can improve animal-handler bond



Combined tunnel to cup handling

- Pick up mouse in a tunnel
- Tip backwards onto open hand
- Mouse should stay willingly on the hand



Tips for good handling

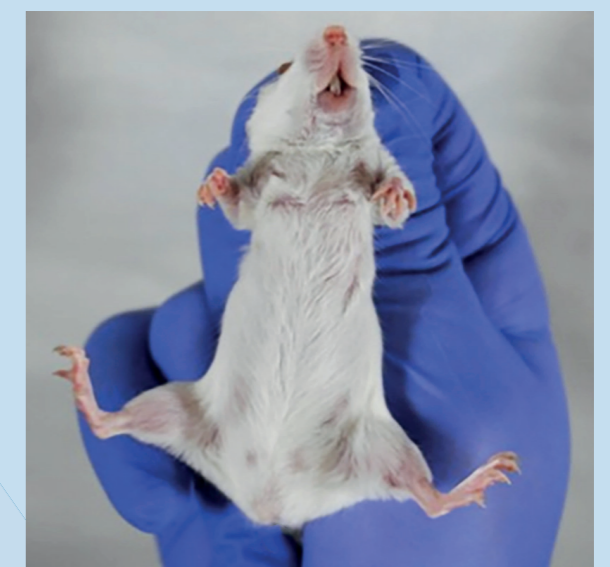
- **Do not** be hesitant
- Use cage side and free hand to guide mouse quickly into the tunnel – **do not** chase the mouse with the tunnel
- **Do not** wait for the mouse to enter voluntarily, actively guide it in
- With good technique, mouse will go straight in – practice makes perfect!
- Mice familiar with tunnels enter more readily
- Provide mice with a tunnel in their home cage if possible²
- Mice stay in the tunnel when lifted up, but cover tunnel ends to move animals safely over a distance
- Tip mice out backwards, **do not** shake them out
- Smooth clear plastic tunnels are ideal, 50 mm in diameter



- Inexperienced mice may try to jump off open hand
- To familiarise, scoop between hands held loosely around mouse for a few seconds
- See video tutorial for more detailed advice

Restraint for procedures

- Capturing and picking up mice by the tail should be avoided where possible
- Once picked up, mice can be restrained by the tail, e.g. for sexing
- They can also be restrained by scruffing as needed for scientific procedures
- **Restraint by the tail or scruff does not reverse the positive effects of tunnel and cup handling¹**



Benefits

- Mice are much less anxious than those picked up by the traditional tail method¹⁻³
- You can still restrain mice manually by the tail base or scruff when needed¹
- Mice show more reliable behavioural³ and physiological responses⁴
- They only need brief experience of tunnel handling to habituate^{2,3}
- Once skilled, you can pick up mice by tunnel or cup just as quickly as by tail. You will need to practice to become efficient – but it's worth it!



Acknowledgements

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References

1. Hurst JL & West RS (2010) *Nature Methods* 7:825-6.
2. Gouveia K & Hurst JL (2013) *PLOS ONE* 8: e66401.
3. Gouveia K & Hurst JL (2017) *Scientific Reports* 7:44999.
4. Ghosal S et al. (2015) *Physiology & Behavior* 150:31-7.



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