

Guidelines for Toe Clipping of Rodents

Removal of a portion of a digit^{6,7}, toe clipping, is used as a method of identifying small rodents by using a predetermined numbering code¹ and may simultaneously be used as a method to obtain biopsy tissue for genotyping by polymerase chain reaction. Toe clipping should only be used in altricial pre-weaning rodents (e.g., mice and rats, NOT guinea pigs) after the toes are no longer webbed (usually between postnatal days 4 and 5) and up to seven days of age. Every reasonable effort should be made to minimize pain or distress, including limiting the number of digits clipped to one digit per rodent. If possible, it is preferable to remove toes from a hind paw rather than a forepaw, especially if the animals will be used in studies that include grip strength testing^{5,6,7}. If the forepaw must be used, it is preferable to not cut the hallux (“dew claw” or “little toe” of the forepaw) as this may decrease the rodent’s grasping ability. To ensure pain and distress is minimized, small sharp scissors should be used and personnel performing the procedure should be trained. Use of a local vapocoolant anesthesia is not recommended⁶.

Studies in mice^{2,3} indicate that toe clipping, removing the distal part of the toe (approximately 1/3, corresponding to the first phalanx), produces no more acute pain or distress than other commonly used rodent identification procedures when performed from five to seven days of age. These studies also reported no long-term effects of this procedure in test batteries evaluating physiological, developmental, and behavioral assessments^{2,3,6}. It may be the preferred method for neonatal mice up to seven days of age⁴. This procedure must be referenced and approved by the IC ACUC prior to its implementation.

References

1. Assistant Laboratory Animal Technician Manual, American Association for Laboratory Animal Science, 2009, p 74-75.
2. Castelhana-Carlos M, Sousa N, Ohi F, Baumans V. Identification Methods in Newborn C57BL/6 Mice: A Developmental and Behavioral Evaluation. 2010. Lab Anim. p 88-103. DOI: 10.1258/1a.2009.009044.
3. Dahlborn K, Bugnon P, Nevalainen T, Raspa M, Verbost P, Spangenberg E. Report of the Federation of European Laboratory Animal Science Associations Working Group on Animal Identification. 2013. Lab Anim. p 2-11.
4. Guide for the Care and Use of Laboratory Animals, National Research Council, National Academy Press, 2011, p 75.
5. Iwaki S, Matsuo A, Kast A. Identification of Newborn Rats by Tattooing. 1989. Lab Anim. p 361-364.
6. Paluch L, Lieggi C, Dumont M, Monette S, Riedel E, Lipman N. Developmental and Behavioral Effects of Toe Clipping on Neonatal and Preweanling Mice with and without

Vapocoolant Anesthesia. 2014. JAALAS. p 132-140.

7. Schaefer D, Asner I, Seifert B, Bürki K, Cinelli P. Analysis of Physiological and Behavioral Parameters in Mice after Toe Clipping as Newborns. 2010. Lab Anim. p 7-13.

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