



University of Maryland College Park Animal Care and Use Standard

Stabilization of Newly Arrived Animals

Purpose: This standard describes the minimum time periods for stabilization of newly arrived laboratory animals intended for use in teaching or research.

Background: Stress associated with transportation causes significant physiological effects in laboratory animals, including changes in the cardiovascular, endocrine, immune, central nervous, and reproductive systems. Although potentially short-lived, **these changes can confound research or teaching results** if animals are utilized before physiological measures return to “normal”. Some changes from baseline measures return to normal within 1 to 7 days; others take longer. Animals that are young, severely stressed, and/or express stress-sensitive genotypes may also show altered physiological measures for several weeks. The need for stabilization has been demonstrated in rodents, nonhuman primates, ungulates, and fish; time for stabilization is likely important for other species as well. A period of stabilization following transport should be provided. Per the *Guide for the Care and Use of Laboratory Animals* (page 111):

“...newly received animals should be given a period for physiologic, behavioral, and nutritional acclimation before their use. The length of time for acclimation will depend on the type and duration of animal transportation, the species, and the intended use of the animals.”

Definitions:

Stabilization: A period of housing newly-received animals in the new environment without experimental intervention to allow the animal to return to a more stable (not necessarily baseline prior to transport) physiological and behavioral state.

Standards: Newly arriving vertebrate animals require a minimum stabilization period to begin recovery from shipping stress prior to use in research. Although this standard provides minimum times, longer stabilization periods may benefit the animals and the research. Principal Investigators (PIs) should determine the most appropriate stabilization times according to current literature for their specific animal model and intended use. Intra-campus transportation may also have adverse impacts on animals and PIs should consider these impacts on research outcomes.

Methodology: Although minimum periods are described below, longer stabilization times typically further enhance animal welfare, minimize variability, and provide more stable biological models. Principal Investigators are encouraged to establish stabilization periods for their research animals informed by current literature for the animal model and intended use. Unless an exception is scientifically justified in the protocol and approved by the IACUC, or an exception is granted by the University Attending Veterinarian (or designee):

- **All rodents** should have a minimum stabilization period of 72 hours (3 days) prior to use in research. Longer periods are recommended as informed by the current literature.

- **Non-mammalian vertebrate species** (e.g., fish, reptiles, amphibians, birds, etc.) should have a minimum stabilization period of 72 hours (3 days) prior to use in research.
- **All USDA-covered non-rodent species** (e.g., rabbits, ferrets, swine, ungulates, etc.) should have a minimum stabilization period of 7 days prior to use in research. Longer periods are recommended as informed by the current literature.
- **EXEMPTIONS:** Although stabilization is recommended and strongly encouraged, animals for use in acute, terminal research procedures (e.g., euthanasia prior to tissue collection) may be exempt from the requirements above. Animals for use in teaching and training may also be exempt. The PI should ensure that the research or the teaching/training objectives do not rely on reproducible physiologic responses.
- Although the minimum stabilization period is different than any required quarantine period, these periods may run concurrently.
- Stabilization periods are separate from the time required to acclimate animals to novel devices or objects (e.g., behavioral equipment, restraint devices, handling procedures, etc.) prior to the collection of data.

References:

- a) National Research Council. 2011. *Guide for the Care and Use of Laboratory Animals: Eighth Edition*. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/12910>.
- b) Conour LA, Murray KA, Brown MJ. Preparation of animals for research--issues to consider for rodents and rabbits. *ILAR J*. 2006;47(4):283-93.
- c) Obernier JA, Baldwin RL. Establishing an appropriate period of acclimatization following transportation of laboratory animals. *ILAR J*. 2006;47(4):364-9.
- d) Landi MS, Kreider JW, Lang CM, Bullock LP. 1982. Effects of shipping on the immune function in mice. *Am J Vet Res* 43:1654-1657.
- e) Prasad SB, Gatmaitan R, O'Connell RC. 1978. Effect of a conditioning method on general safety test in guinea pigs. *Lab Anim Sci* 28:591-593.
- f) Sanhoury AA, Jones RS, Dobson H. 1989. The effects of different types of transportation on plasma cortisol and testosterone concentrations in male goats. *Br Vet J* 145:446-450.
- g) Tuli JS, Smith JA, Morton DB. 1995. Stress measurements in mice after transportation. *Lab Anim* 29:132-138.
- h) Madureira, TV, Costa, JL, et. al. 2019. Design of a multi-parametric profile for assessing the acclimation period of juvenile brown trout after an acute transport to new housing environment. *Appl An Behav Sci* 219:104835
<https://doi.org/10.1016/j.applanim.2019.104835>
- i) [Selected other references](#) on the DLAR Resources webpage.