Acclimation Periods for Newly-Received and Transferred Animals

Policy: The UofL Institutional Animal Care and Use Committee (IACUC) requires an acclimation and stabilization period for all animals arriving at the university prior to experimental manipulations. All newly received laboratory animals must be held for a minimum number of days (depending on the species and intended use) without any experimental manipulation for acclimation, observation, and potential treatment. Acclimation periods do not include the day of arrival/shipment. Exceptions to this policy must be requested in an IACUC proposal describing the rationale for the exception and must be approved by the IACUC.

Rationale: The *Guide* states, "Regardless of whether the animals are quarantined, newly received animals should be given a period for physiologic, behavioral, and nutritional acclimation before their use." The *Agricultural Guide* states, "Newly received animals require a period of acclimation. Acclimation refers to a stabilization period, before animal use, which permits physiological and behavioral adaptation to the new environment." Transportation causes stress in animals and subsequently changes an animal's physiological status during transportation and for some period thereafter. Stress associated with transportation has been shown to have changes on the cardiovascular, endocrine, immune, central nervous and reproductive systems. These effects can adversely impact research results. New housing conditions, changes in social groupings, new feed, and new care staff are all additional stressors to newly received laboratory animals. An acclimation period allows animals time to adapt to a new environment, for physiological changes to stabilize, and promotes both animal welfare and reproducible experimental results. Based on current literature, the UofL IACUC has adopted the following guidelines.

Procedures, Guidelines, and Exceptions:

1. ***Definitions:***
   a. **Acclimation:** The period during which newly arrived research animals are allowed to recover from the physiologic and psychological stress of shipping prior to being used in research, teaching, or testing proposals. Nutritional stabilization and adjustments to new surroundings, feed, light/dark cycles, cage/pen mates, and personnel also take place during this time period.

   b. **Quarantine:** The separation of newly received animals from those already in the facility until the health and possibly the microbial status of the newly received animals have been determined with the goal of minimizing the chance for introduction of pathogens into an established colony. Quarantine periods for animals may vary in duration based on the species, the source and health status of the incoming animals, and regulatory requirements. This policy does not address quarantine and researchers should contact a Comparative Medicine Research Unit veterinarian for further information on quarantine requirements for specific situations.

Original Approval: 18 July 2013
Revised: 8 January 2024
Last Approval: 18 January 2024

2. ***Rodent Species***
    a. Researchers are advised to consider the effect that shipping or transportation stress may have on experimental data based on individual research needs. These may include but are not limited to temperature extremes (both cold and hot) and weather conditions (such as rain or snow).
    b. For euthanasia and tissue harvest only, animals may be used the day of arrival.
    c. For all other uses, a minimum of 72 hours is required for newly-acquired rodents and recommended for housing transfers; this includes following internal housing transfer between buildings requiring outdoor routes.

3. ***Non-Rodent Species***
    a. For euthanasia and tissue harvest only, animals may be used the day of arrival.
    b. To reduce the chance of stress-induced disease, including anesthetic death, a minimum of 1 week (7 days) is recommended for non-survival surgery or other procedures; however, a minimum of 3 days (72 hours) is required.
    c. A minimum of 1 week (7 days) is required for survival surgery or long-term experiments.

References:

1. Aguila HN, Pakes SP, Lai WC, Lu YS. The effect of transportation stress on splenic natural killer cell activity in C57Bl/6J mice. Lab Anim Sci, 1988; 38:148-151.
2. Bean-Knudsen DE, Wagner JE. Effect of shipping stress on clinicopathologic function in F344/N rats. Am J Vet Res, 1987; 48(2):306-8.
3. Breinekova K, Svoboda M, Smutna M, Vorlova L. Markers of acute stress in pigs. Physiol. Res. 2007; 56: 323-9.
4. Capdevila S, *et al*. Acclimatization of rats after ground transportation to a new animal facility. Lab Anim, 2007;41(2);255-61.
5. Everitt JI, Schapiro SJ. The art and science of introducing animals to the research environment. ILAR J. 2006; 47(4):281-2.
6. FASS (Federation of Animal Science Societies) 2010. Guide for the Care and Use of Agricultural Animals in Agricultural Research and Testing.
7. Hicks TA, *et al*. Behavioural, endocrine, immune, and performance measures for pigs exposed to acute stress. J Anim Sci, 1998; 76(2);474-83.
8. Hodgson PD, *et al*. Effect of stress on viral–bacterial synergy in bovine respiratory disease: novel mechanisms to regulate inflammation. Comp Funct Genom, 2005; 6:244-250.
9. Kannan G, Terrill TH, Kouakou B, Gazal OS, Gelaye S, Amoah EA, Samake S. Transportation of goats: effects on physiological stress responses and live weight loss. J Anim Sci, 2000; 78:1450-1457.
10. Knowles TG, *et al.* Effects on cattle of transportation by road for up to 31 hours. Vet Rec, 1999; 145:575-82.
11. Landi MS, Kreider JW, Lang CM, Bullock LP. Effects of shipping on the immune function in mice. Am J Vet Res.,1982; 43:1654-57.
12. McGlone JJ, Salak JL, Lumpkin EA, Nicholson RI, Gibson M, Norman RL. Shipping stress and social status effects on pig performance, plasma cortisol, natural killer cell activity, and leukocyte numbers. J Anim Sci, 1993; 71:888-96.
13. Murata H, *et al.* Influence of truck transportation of calves on their cellular immune function. Nippon Juigaku Zasshi, 1985; 47:823-27.
14. NRC (National Research Council) 2011. Guide for the Care and Use of Laboratory Animals.
15. NRC (National Research Council) 2006. Guidelines for the Humane Transportation of Research Animals.
16. Obernier JA, Baldwin RL. Establishing an appropriate period of acclimatization following transportation of laboratory animals. ILAR J. 2006; 47(4):364-9.

Original Approval: 18 July 2013
Revised: 8 January 2024
Last Approval: 18 January 2024

17. Rowland RT, *et al.* Transportation or noise is associated with tolerance to myocardial ischemia and reperfusion injury. J Surg Res, 2000; 89:7-12.
18. Tuli J, *et al.* Stress measurements in mice after transportation. Lab Anim, 1995;2 9:132-8.

Original Approval: 18 July 2013
Revised: 8 January 2024
Last Approval: 18 January 2024