Summary of Exceptions to Standards and Regulations

Three exceptions have been approved that affect 140 hamsters that are used in research and teaching. Note that the hamster colony is no longer present as of August 2012.

1. IACUC approved exceptions to the regulation discouraging multiple surgeries. Female hamsters serving as subjects in studies of the neural and neuroendocrine control of reproductive behavior will often undergo gonadectomy followed by brain surgery. Such combinations of procedures are central to the project's goals and experimental designs, both of which revolve around the observation of responses to brain manipulations (requiring the brain surgery) in animals with controlled levels of gonadal hormones (requiring the gonadectomy). The rationale for separating these procedures is two-fold: (1) We are convinced that a sequence of surgical procedures is less stressful than a single operation including both of the necessary procedures; (2) Some of the behaviors of interest are subject to large individual differences, with the potential to obscure treatment effects. In such situations, it often is useful to use a within-subjects experimental design, in which the impact of individual differences is reduced by using each subject as its own control. In many studies, this requires that a subject be gonadectomized (so as to bring hormone levels under control), then undergo an initial round of behavioral testing (to establish baseline levels of behavior), then receive a brain manipulation or control treatment, then undergo additional behavioral testing (to measure the treatment's impact). Such designs obviously require multiple surgeries.

2. IACUC also approved an exception to allow some hamsters to undergo more than one brain surgery. However, this will occur infrequently, and only when the sequence or combination of procedures and responses is crucial to the success of the project (e.g., the use of sequential unilateral lesions to eliminate mortality that would be induced by a single procedure placing bilateral lesions). A typical experiment of this type might include: (1) the screening of prospective subjects; (2) a surgical procedure that combines gonadectomy with the placement of a unilateral lesion (e.g., administration of a cell-specific neurotoxin to the left ventromedial hypothalamic nucleus, or VMN); (3) at least 1 week of recovery; (4) 1-2 weeks of behavioral testing; (5) a second surgical procedure for the completion of bilateral lesions (e.g., by damaging the right VMN); (6) at least 1 week of recovery; (7) a second round of behavioral testing; (8) euthanasia. Again, such sequences are employed only where critical to the experimental goals and designs, seem to be tolerated well, and seem to us to be less stressful and risky than a single operation including all of the necessary procedures.

3. IACUC approved a plan to use a non-pharmaceutical grade anesthetic in his work with hamsters. In approving this request, two factors led IACUC to determine that the continued use of reagent-grade nebutol from Sigma was justified. First, the investigator demonstrated that the formulation used is safe and effective and is equal to, or perhaps even superior to, the pharmaceutical grade of the drug. Second, IACUC determined that in the absence of this exemption, the investigator would be required to switch to using a different anesthetic, a process that would not necessarily be more safe and would likely increase the number of animals needed to complete the research.

Three exceptions have been approved that affect 549 bats that are used in research and teaching.

1. IACUC approved exceptions to the regulation requiring that bats be housed in flight cages, i.e., cages sufficiently large for flight. Some of the bats housed in our facility are subjects in studies of the neuroendocrine and metabolic changes that help to support hibernation. During their participation in these studies, these bats are hibernating and inactive, making opportunities for flight unnecessary.

2. IACUC approved exceptions to the regulation establishing 30-70% as normal range of humidity. Some of the studies in our facility focus on neuroendocrine and metabolic correlates of hibernation in bats. The successful induction and maintenance of hibernation requires the creation of conditions such as bats encounter during the winter in their natural environments. These are characterized by levels of humidity at or near saturation. Despite their departure from the humidity levels that otherwise might be normal, such elevated levels of humidity are entirely normal and appropriate for these animals in this condition.

3. IACUC approved plans to allow torpid bats during hibernation to die without receiving pain relief or euthanasia. It was determined that the removal of bats from the hibernation chambers would likely arouse other bats within the chamber from torpor and increase the possibility that these other bats would not survive. It was also determined that during torpor the bats do not exhibit signs of pain or distress that would enable the investigators to identify which bats were in need of euthanasia. Lastly, the lack of symptoms of pain or distress may indicate that death during hibernation is less distressful than arousing the affected bat for euthanasia.