

IACUC Approved Exception #1**1. Registration number.**

47-R-0004

2. Number of animals used in this study.

23 sheep

3. Species of animals used in this study.Sheep (*Ovis aries*)**4. Explain the IACUC Approved Exception**

After surgery to place indwelling IV catheters, ewes are kept in 2.2 x 1m carts. The sheep adapt readily to these carts and have free access to water, salt, and food. The bottom of the cart is plastic or smooth metal "pig" mesh through which feces and urine drop into a tray below the cart. Each cart is cleaned daily. The sheep is dog-collared by a chain to the front of the cart during studies (~2hr) and for daily flushing of catheters (~15min). This is not a tight restraint, as chains are about 30 cm in length. Ewes are kept in these carts for 3 to 10 days. Previous studies have held ewes in similar carts for several weeks without problems or animal discomfort. Animals in these carts eat, drink, and gain weight appropriately.

Sheep must be kept in these carts, as catheters require daily flushing and chasing a sheep down and pinning it in a larger room would be stressful and traumatic. In addition, when catheters are exposed for studies or daily flushing, chaining the ewe prevents it from becoming entangled in the catheters or biting them, either of which would cause irreversible damage and loss of the experimental unit.

Sheep in carts are kept adjacent with one another similar to pen location.

IACUC Approved Exception #2**1. Registration number.**

47-R-0004

2. Number of animals used in this study.

68 Stripped Ground Squirrel

3. Species of animals used in this study.

Thirteen-lined ground squirrel (*Ictidomys tridecemlineatus*)

4. Explain the IACUC Approved Exception

Suspend daily checks on the animals during torpor.

The justification:

Long periods of torpor punctuated with regularly spaced inter-bout arousals (IBAs) are a normal aspect of mammalian hibernation. Among hibernating mammals, torpid body temperatures and the periodicity of IBAs can vary depending on the species. This includes a continuous low torpid body temperature of 3C for 3-4 weeks interspersed with IBAs in striped ground squirrels

We hypothesize that these frequent arousals are the result of noise associated with regular animal checks within the environmental chamber. In the natural environment, these animals are not subject to these disturbances and therefore maintain the long torpor bouts.

Therefore, we are suggesting limiting our animal checks to once a week in order to minimize disturbances and restore the normal animal rhythms seen in the wild. Reducing the frequency of animal checks will maintain animal health and welfare so that our captive animals can experience natural environmental conditions during the hibernation season.