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ATTACHMENT to USDA Annual Report 2019

Explanation of the usage of voles in Category E

Social isolation: In some cases, voles are housed singly to examine the effects of social isolation. This approach commonly is used to induce isolation stress. Voles are isolated for periods of time ranging from overnight to four weeks to examine the effects of isolation stress on measures such as autonomic function, ultradian behavioral patterns, and the composition of the intestinal micro biota. In addition, some animals are isolated due to loss of a cagemate due to death or use in an experiment. Attempts are made to minimize such occurrences by pairing the newly isolated animals with other isolated individuals, but, due to their social structure, not all voles will accept a new cagemate. Re-paired individuals cannot be used in experiments, but may serve as stimulus animals or for pilot studies. When attempts to re-pair animals fail, the unpaired animals are terminated. However, this is done only after all attempts at re-pairing have been exhausted. In any case, no animal that has lost its cagemate is isolated for more than two weeks unless it can be routed into one of the social isolation experiments.

Resident/intruder test: The resident-intruder test is commonly used to examine aggressive behavior. The subject animal is placed in a cage to establish "residence." After ten minutes an "intruder" animal is introduced into the arena and aggressive behavior on the part of the resident is quantified for a further ten minutes. Both animals are of the same species. Aggression typically is manifested by threat displays and chases, although biting occasionally occurs. The use of large cages allows the animals room for separation. Animals are closely monitored by trained personnel throughout the test to ensure that neither animal is seriously harmed. Any instance in which skin is penetrated results in termination of the test, as does an apparent inability by either of the animals to defend itself. Although the risk of injury is small, the stimulus animals may experience stress discomfort as a result of being exposed to an aggressor. Since this stress cannot be alleviated without altering the outcome of the test, these animals are included in USDA Category E.