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According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0579-0036. The time required to complete this information collection is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.		OMB APPROVED 0579-0036
This report is required by law (7 U.S.C. 2143). Failure to report according to the regulations can result in an order to cease and desist and to be subject to penalties as provided for in Section 2150.		Fiscal Year: 2009

<b>UNITED STATES DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE</b>  <b>ANNUAL REPORT OF RESEARCH FACILITY</b> (TYPE OR PRINT)	REGISTRATION NUMBER: 14-R-0036
	Customer Number: 515 2. HEADQUARTERS RESEARCH FACILITY (Name and Address, as registered with USDA, include ZIP Code)  University Of Massachusetts Amherst (b)(2)High, (b)(7)F 70 Butterfield Terrace Amherst, MA 01003  Telephone: (413) 545 0668


3. REPORTING FACILITY (List all locations where animals were housed or used in actual research, testing, teaching, or experimentation, or held for these purposes. Attach additional sheets if necessary.)

FACILITY LOCATIONS (Sites) See Attached Listing

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY (Attach additional sheets if necessary or use APHIS FORM 7023A.)

A.  Animals Covered By The Animal Welfare Regulations	B.  Number of animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.	C.  Number of animals upon which teaching, research, experiments, or tests were conducted involving no pain, distress, or use of pain-relieving drugs.	D.  Number of animals upon which experiments, teaching, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs were used.	E.  Number of animals upon which teaching, experiments, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic, or tranquilizing drugs would have adversely affected the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests. (An explanation of the procedures producing pain or distress on these animals and the reasons such drugs were not used must be attached to this report.)	F.  TOTAL NUMBER OF ANIMALS  (Cols. C + D + E)
4. Dogs					0
5. Cats					0
6. Guinea Pigs		4			4
7. Hamsters	144	208	94		302
8. Rabbits		3	21		24
9. Non-human Primates	33	19		7	26
10. Sheep		240			240
11. Pigs		3			3
12. Other Farm Animals					
see continuation sheet					
13. Other Animals					
prairie vole	571	250	111	206	567
swamp sparrow		50			50

- ASSURANCE STATEMENTS**
- 1.) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.
  - 2.) Each principal investigator has considered alternatives to painful procedures.
  - 3.) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). A summary of all such exceptions is attached to this annual report. In addition to identifying the IACUC approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.
  - 4.) The attending veterinarian for this research facility has appropriate authority to ensure the provisions of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

CERTIFICATION BY HEADQUARTERS RESEARCH FACILITY OFFICIAL (Chief Executive Officer (C.E.O.) or Legally Responsible Institutional Official (L.O.)) I certify that the above is true, correct, and complete (7 U.S.C. Section 2143).	
SIGNATURE OF C.E.O. OR L.O.	NAME AND TITLE OF C.E.O. OR L.O. (Type or Print)
	(b)(6), (b)(7)c
DATE SIGNED	11/24/09

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AUG 2009

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Interagency Report Control  
No. 0180-DOA-AN

Fiscal Year: 2009

UNITED STATES DEPARTMENT OF AGRICULTURE  
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

CONTINUATION SHEET FOR ANNUAL  
REPORT OF RESEARCH FACILITY

(TYPE OR PRINT)

REGISTRATION NUMBER: 14-R-0036

Customer Number: 515

2. HEADQUARTERS RESEARCH FACILITY (Name and Address, as registered with USDA, include ZIP Code)

University Of Massachusetts Amherst

(b)(2)High, (b)(7)F

70 Butterfield Terrace  
Amherst, MA 01003

Telephone: (413) 545 0668

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cow		34			34
goat		130			130
gerbil		4			4
Field studies:					
golden cat			1		1
kob			12		12
mongolian gazelle			17		17
moose			11		11
black bear			3		3
mouse lemur			49		49
dwarf lemur			27		27
wild birds		302			302
chipmunk		3			3
red back vole		1			1

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11/24/09

APHIS FORM 702  
AUG 2009

NOV 25 2009



OMB APPROVED  
0579-0036

Fiscal Year: 2009

## Customer Number: 515

## University Of Massachusetts Amherst

Telephone: (413) 545 0668

(TYPE OR PRINT)

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Summary of Exceptions to the Regulations and Standards  
Specified and Explained by the Principal Investigator and Approved by the IACUC

In a study involving Syrian hamsters, the researcher submitted a memorandum of explanation to the IACUC regarding a change in the cleaning schedule for cages in which his hamsters are housed for particular studies approved previously by the IACUC. This relates to 9 CFR, Ch. 1, Part 3, Subpart B, 3.31,a. This matter was discussed and approved by the IACUC on April 8, 2009. The measure is supported by a policy statement of the Society for the Research on Biological Rhythms which appeared in the Journal of Biological Rhythms, Vol. 8, pp. 97-106 (1993) which outlines and explains modifications of normal observance, cleanliness/sanitation, and food and water provision procedures for rodents in circadian rhythm studies. The change involved delaying cage cleaning for up to three weeks because the stimulus of the cleaning process (new cage, fresh bedding, disrupts free running activity levels developed during the study. These activity levels must be measured over several weeks in the same (unchanged) cage environment. It was agreed that the researcher will monitor closely the cages during these particular studies to insure the environments of the hamsters and mice will be satisfactory as possible until the data collections are completed. Such observations must be conducted under very dim red illumination. It was agreed by the IACUC and the Director of Animal Care that inactive animals will be visually checked to make sure they are not ill or in distress. Healthy mice and hamsters run many revolutions on a wheel each night, and computer records indicating robust activity are considered adequate verification of each animal's well being.

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## Column E Explanation

1. Registration Number: 14-R-0036
2. Species: marmoset
3. Number: 7 marmosets
4. Project involves an assessment of the behavioral and chemical consequences of chronic adolescent MDMA (ecstasy) use. Behavioral consequences that will be studied are the possible cognitive consequences: learning, memory, attention, pre-frontal function; and possible psychosocial consequences: altered familial interactions, and long-term changes in reproductive and parenting behaviors. Biochemical consequences that will be studied are monitored as non-invasively as possible, thus minimizing the severity of the procedures in this study. A minimal number of animals will be sacrificed for *in vitro* analysis of neurochemical changes that cannot be determined through imaging; other animals will be monitored over the course of their MDMA exposure and later adult life using functional magnetic resonance imaging (fMRI). The use of fMRI allows us to observe the neural response to MDMA treatment and how that response changes over chronic intermittent exposure across adolescence. Primate species was needed in order to (a) eliminate significant species differences between rodents and human responses to MDMA; (b) ensure that subtle behavioral analysis is possible, and (c) allow monitoring of complex cognitive tasks that can be directly compared between primates and human subjects. Marmosets were specifically chosen as one of the smallest and most basic monkey species, allowing us (a) small body size for imaging in small bore of animal MRI scanner, (b) sufficient intelligence to carry out complex cognitive tasks, if a lot of training is carried out, (c) suitability for laboratory housing in family groups in environmentally enriched vivariums, allowing study of social behavior and reproductive function, (d) reasonably short developmental time course allowing 3 years to study adolescence into adulthood.

While fMRI allows us to examine chemical and activity responses to MDMA non-invasively and without sacrifice of animals, it does require us to restrain awake marmosets for approximately 1 hour. The restraint is inherently stressful, but we make every effort to minimize the stress involved, through the use of a validated acclimation procedure before studies begin, the use of a local anesthetic to minimize the potential pain of pressure points (where restraint system holds head steady), and the administration of acetaminophen (Tylenol) following the study. It is not possible to anesthetize, sedate or otherwise treat the marmosets during imaging, since we are seeking to examine brain activation in response to MDMA treatment in order to correlate animal brain activity with subjective reports of psychological experiences in

ecstasy users. The response of an anesthetized subject would be of little use in these studies, and administration of any other compounds would weaken any interpretation of our data as consistent with the effects of MDMA alone.

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## Column E Explanation

1. Registration Number: 14-R-0036
2. Species: prairie vole
3. Number: 134 pups less than 3 days of age
4. Parental Behavior: Basically, female voles at the end of pregnancy will exhibit one of two kinds of behavior when presented with pups: aggression (pups attacked), or maternal (pups licked, groomed and/or picked up). The subject is placed in a clear cage containing wood chips, food, and a small amount of hay. Two unrelated pups are placed in the corners opposite to the subject's location. Behavioral responses are recorded continuously for 10 minutes. If subjects do not make contact with either pup during the 10-minute period, testing is continued for an additional 10 minutes. In the event of an attack, pups are quickly removed from the cage and euthanized by decapitation (using sharp scissors). Decapitation is the quickest way to euthanize a pup, thereby minimizing suffering after attacks. There is no alternative behavioral test for determining maternal responsiveness in animals. The procedure described is a frequently used and established test for parental behavior. For references, see:

Wiesner & Sheard (1933). Maternal behaviour in the Rat. Edinbergh: Oliver and Boyd.

Rosenblatt (1967). Nonhormonal basis of maternal behavior in the rat. *Science* 156(781):1512-4.

Jakubowski & Terkel (1985). Transition from pup killing to parental behavior in male and virgin female albino rats. *Physiol. Behav.* 34(5):683-6.

Rees, Panesar, Steiner, Fleming (2006). The effects of adrenalectomy and corticosterone replacement on induction of maternal behavior in the virgin female rat. *Horm. Behav.* 49(3):337-45.

### Column E Explanation

1. Registration Number: 14-R-0036
2. Species: Prairie Vole
3. Number: 72 adult voles
4. Forced Swim Test: Voles are placed in a large glass beaker filled with water (27-32°C) for 10 minutes on Day 1. On Day 2, the same procedure is repeated for 5 minutes. During the second test, the amount of time the animal spends active (e.g. paddling, etc.) and floating is measured. On both days, a scoop is used to remove the animals from the beaker. The animals are towel-dried and placed in a large tub that contains a heat lamp only on one side. Because the animals are conscious, they are able to move around the cage to regulate the amount of heat they receive. The animals are monitored throughout the test and drying procedures until replaced in their home cages. The specifics of the procedure were chosen after reviewing previous literature. If an animal appears to be unable to float it is removed immediately, dried and returned to its cage. This procedure is a behavioral test for determining depression in rodents for which a non-distress causing alternative is not available.

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