This report is required by law (7 USC 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.

See reverse side for additional information.

Interagency Report Control No 0180-DOA-AN

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

ANNUAL REPORT OF RESEARCH FACILITY

(TYPE OR PRINT)

1. REGISTRATION NO. 93-R-0432 **CUSTOMER NO.** 9191

FORM APPROVED
OMB NO. 0579-0036

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

UNIVERSITY OF CALIFORNIA, BERKELEY
119 CALIFORNIA HALL
BERKELEY, CA 94720-1500

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)*

THE UNIVERSITY OF CALIFORNIA, BERKELEY
BERKELEY, CA 94720-1500

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 in these animals and the reasons such drugs were not used must be attached to this report)*	F. TOTAL NO. OF ANIMALS **(Cols. C + D + E)**
4. Dogs					
5. Cats			118		118
6. Guinea Pigs			132		132
7. Hamsters		505	545		1050
8. Rabbits		801	73		874
9. Non-Human Primates			15		15
10. Sheep					
11. Pigs					
12. Other Farm Animals					
13. Other Animals					
Hyena			34		34
Squirrel			4		4
Tuco Tuco		108			108

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 the 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 provision 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 or Legally Responsible Institutional official)
I certify that the above is true, correct, and complete (7 U.S.C. Section 2143)

SIGNATURE OF C.E.O. OR INSTITUTIONAL OFFICIAL	NAME & TITLE OF C.E.O. OR INSTITUTIONAL OFFICIAL *(Type or Print)*	DATE SIGNED
		11/14/2006

This report is required by law (7 USC 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.

See reverse side for additional information.

Interagency Report Control No 0180-DOA-AN

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

CONTINUATION SHEET FOR ANNUAL REPORT OF RESEARCH FACILITY

(TYPE OR PRINT)

1. **REGISTRATION NO.** 93-R-0432 **CUSTOMER NO.** 9191

FORM APPROVED
OMB NO. 0579-0036

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

UNIVERSITY OF CALIFORNIA, BERKELEY
119 CALIFORNIA HALL
BERKELEY, CA 94720-1500

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY *(Attach additional sheets if necessary or use this form.)*

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 in these animals and the reasons such drugs were not used must be attached to this report)*	F. TOTAL NO. OF ANIMALS **(Cols. C + D + E)**
Vole		113			113
Wild, Mouse	15	75	80		155
Wild, Rat			269		269

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 the 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 provision 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 or Legally Responsible Institutional official)

I certify that the above is true, correct, and complete (7 U.S.C. Section 2143)

SIGNATURE OF C.E.O. OR INSTITUTIONAL OFFICIAL	NAME & TITLE OF C.E.O. OR INSTITUTIONAL OFFICIAL *(Type or Print)*	DATE SIGNED
		11/14/2006

Supplement to the USDA Annual Report of Research Facility
For the University of California, Berkeley
APHIS FORM 7023 (AUG 91)
Reporting Period October 1, 2005 to September 30, 2006

Section 3 of the Annual Report of Research Facility (APHIS FORM 7023) (Section 2.36(b)(4) of the Animal Welfare Act): Location of Facilities for Housing, Teaching and Research:

The following facilities are categorized by their dedicated usage. All facilities have more than one usage.

Facility	Housing	Research	Teaching
Field Station for Behavioral Research	√	√	√
Life Sciences Addition	√	√	√
Minor Hall (School of Optometry)	√	√	
Northwest Animal Facility	√	√	√
Valley Life Sciences Building	√	√	√

Part 3 of the Assurance Statement of APHIS Form 7023 (AUG 91) (Section 2.36 (b)(3) of the Animal Welfare Act): IACUC Approved Exceptions to Standards and/or Regulations

Approved exceptions to standards and regulations of the Act during the reporting period included the following:

Multiple Major Survival Surgeries

The IACUC will not permit multiple major survival surgeries on a single animal unless the surgeries are related and necessary components of a research project. During this reporting period, multiple major survival surgeries were performed in six projects approved by the IACUC.

The first two projects are studies of neural processes with macaques. In order to conduct electrophysiological recordings, each animal must have: 1) a head-post anchored to the cranium to prevent head movements during recording and 2) a recording chamber placed over a small opening in the skull to allow access to the cortex. The surgery to attach the recording chamber is not undertaken until and unless the animal is able to perform the required behavioral tasks. This usually occurs several months after the head-post is implanted. During this reporting period seven animals underwent multiple surgeries.

The third project is also a study with macaques. In order to conduct electrophysiological recordings in this study, each animal must have: 1) microelectrode arrays inserted into a series of small microports and 2) a head positioner anchored to the cranium to help stabilize the head during recording. The head positioner is placed during the surgery for the microports if time permits. In the event a second surgery is required there is at least a two-week interval between surgeries. During this reporting period no animals underwent multiple surgeries.

In the fourth and fifth projects, heat-sensitive transmitters are implanted in the peritoneal cavities of hamsters to provide a constant monitoring of body temperature during hibernation and other studies. Because the duration of some studies exceeds the lifetime of the transmitter's batteries, a second abdominal surgery must be performed on some animals to replace the batteries. In some animals, baseline body temperatures are recorded from the telemeters for several weeks and then a brain lesion (which requires a craniotomy) or a gonadectomy is performed to determine the effects of these procedures on baseline body temperature, food intake, and other physiological parameters. During this reporting period, seventy-two hamsters had both the transmitter and an additional surgery.

The sixth project studies sexual differentiation in the spotted hyena. A captive-breeding colony of hyenas is maintained for this research and currently consists of 31 animals. One aspect of the project involves terminating pregnancies at various times to study the sexual differentiation process and its hormonal correlates. Since there are a limited number of breeding females, the investigator has received permission from the ACUC to carry out multiple Cesarean sections (C-sections) on individual females to achieve the minimum sample sizes for statistical validity. The minimum interval between surgeries is 6 months, and each C-section must be approved by the Office of Laboratory Animal Care (OLAC) veterinary staff on a case-by-case basis. During this reporting period, no hyenas (that previously had a C-section) underwent an additional Cesarean section.

Physical Restraint

Prolonged physical restraint of alert animals is prohibited unless essential to research objectives. All such restraint must be justified to and approved by the ACUC. In addition, the restraint device must be evaluated and approved by OLAC veterinary staff prior to use. The ACUC approved four projects that require physical restraint of unanesthetized animals.

The first project is studying the transmission of Lyme disease. Wild rodents are partially restrained in tubular wire mesh cages for 12 to 24 hours to allow ticks to attach to them. Animals can move backward and forward, but side-to-side motions are restricted to prevent them from removing the ticks. Previous studies have shown that 12-24 hours is the minimum period required for effective tick attachment and disease transmission. Carrot or potato slices are placed in the cages to provide a source of food and water. OLAC veterinary staff have observed and approved the restraint procedure. Thirty-two wild rodents underwent physical restraint during this reporting period.

In three studies, electrophysiological recordings are taken from the cortex of awake macaques trained to perform specific behavioral tasks. In each project, the animal sits in a specially designed primate chair that allows it to freely move its limbs and adjust its posture while in a head restraint. In-chair training is initiated several months before the actual study begins, to allow the animal to adjust to an increasing duration of restraint. Stress to the animal is minimized as the animal controls the initiation of each trial by an eye movement or a key press. The recording for any day ceases when the animal stops performing the task. The animal is chaired between 2-6

hours per day, 5-7 days a week for studies that may last 4-6 weeks. The committee has determined that this is the minimum period necessary to permit reliable data collection from certain brain sites. Because the animals are performing operant tasks, task initiation is always under their control, and they may work at their own pace and cease work when they are satisfied. Animals are monitored continuously while they are in the chair, and are removed from the restraint if they cease working before the scheduled end of a session. OLAC veterinary staff have observed and approved the restraint procedure. During this reporting period, fourteen animals underwent physical restraint.

Housing

The ACUC approved two exceptions to requirements for housing dwarf hamsters. The first is an exception to the 6-inch interior height requirement of primary enclosures used to confine hamsters. Dwarf hamsters are housed in opaque 7 x 11 x 5 inch cages with wire lids, with ample room for postural adjustments. These cages were purchased prior to August 15, 1990 and provide approximately 65 square inches of floor space. During this reporting period, 405 hamsters were housed in these cages. The second is an exception to the requirement that a nursing female hamster, together with her litter, be housed in a primary enclosure that contains no other hamsters. Breeding dwarf hamsters are pair-housed in male-female units, a standard husbandry practice for this species. During this reporting period, 135 female hamsters were pair-housed in male-female units. These 135 hamsters were a subset of the 405 hamsters mentioned above. Variances from the USDA have been granted for both of these exceptions to housing requirements.

Sanitation

The ACUC has approved one protocol that does not conform to the sanitation schedules recommended by the Guide. The project is studying the behavior of captive tuco-tucos. The animals are housed in artificial burrow systems constructed of clear Plexiglas tubing interspersed with clear plastic boxes that are used as food, nest, and refuse chambers. The diameter of plastic tubing (3 in) simulates the diameter of the animals' tunnels in nature. The dimensions of nest and refuse chambers (8 x 8 x 6 in) are also based on field measurements of burrow systems. Food chambers (8 x 12 x 16 in) are elevated approximately 5 in above the remainder of the burrow system to simulate emerging above ground to forage. To avoid disrupting females with litters, spot cleaning of the nest and food boxes is performed daily. All plastic boxes in a burrow system are inspected and wet bedding is removed and clean bedding replaced as needed. Once per week all nest and food chambers are emptied and sanitized. Once every 6-8 weeks, each burrow system (Plastic tunnels and tunnel junctions) is entirely dismantled and sanitized. This schedule has been shown to maintain an adequate level of sanitation. Sixty-three tuco-tucos were involved in this project during the reporting period.

Temperature Standards

The ACUC approved two projects studying hibernation and torpor where Siberian and Syrian hamsters are housed in specially constructed, walk-in environmental chambers for up to 5 months at temperatures ranging from 5-21° C (41-70° F). The natural habitat of these hamsters frequently sees air temperatures as low as –40° C. 475 hamsters were housed in the environmental chambers during this reporting period.

Food or Fluid Regulation

Currently, three projects approved by the ACUC involve regulating water in experimental studies. These are electrophysiological recording projects with non-human primates. The projects require regulating the water of the animals during training and recording procedures. The animals are on a schedule that regulates their access to water to daily laboratory sessions of up to 6 hours per day during training and neurophysiological recording. Juice or water rewards are used during these times as a positive reinforcement in shaping the animal to perform the required tasks using operant conditioning techniques. Solid food cannot be used as a reward because the act of chewing involves facial and cranial muscles that preclude the stability required for successful recording from cortical neurons. When animals are on water regulation, water intake is recorded to ensure that the animal gets sufficient daily fluid. Supplemental hydration is provided if clinical signs of dehydration are observed. During this reporting period, fourteen animals underwent fluid restriction.