SH

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.

Interagency Report Control No. 0180-DOA-AN

Fiscal Year: 2009

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

ANNUAL REPORT OF RESEARCH FACILITY

(TYPE OR PRINT)

REGISTRATION NUMBER: 21-R-0084

Customer Number: 448

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

Nathan S Kline Institute For Psych Res
140 Old Orangeburg Rd
Orangeburg, NY 10962

Telephone: (845) 395 5500

NOV 2 5 2009

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					
5. Cats					
6. Guinea Pigs					
7. Hamsters					
8. Rabbits			4		4
9. Non-human Primates	59		14		14
10. Sheep					
11. Pigs					
12. Other Farm Animals					
13. Other Animals					

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

SIGNATURE OF C.E.O. OR I.O.

NAME AND TITLE OF C.E.O. OR I.O. ***(Type or Print)***

(b)(6), (b)(7)c

DATE SIGNED 11/24/09.

APHIS FORM 7023
AUG 2009

EG 12-3-09

NOV 2 5 2009

Annual Report of Research Facility **APHIS FORM 7023**

Certificate # 21-R-0084 **Customer # 448**

RE: Attachment to annual census of use report for Oct. 1, 2008 – Sept. 30, 2009.

Seven (7) Rhesus monkeys (*macaca mulatta*) were used in controlled water access procedures as part of IACUC approved studies during the reporting period. The use complied with the following guidelines:

Guidelines and regulations:

I. Animal Welfare Regulations, 2002 9CFR Ch.1. Subpart C. Research Facilities,

2.38Miscellaneous, (f) Handling (2)(ii) Deprivation of food or water shall not be used to train , work or otherwise handle animals; Provided, however, That the short-term withholding of food or water from animals, when specified in an IACUC-approved activity that includes a description of monitoring procedures is allowed by these regulations.

II. Animal Welfare Regulations, 2002 9CFR Ch.1. Subpart D. Nonhuman Primates,

3.83 Watering. Potable water must be provided in sufficient quantity to every nonhuman primate housed at the facility. If potable water is not continually available to the nonhuman primates, it must be offered to them as often as necessary to ensure their health and wellbeing, but no less than twice daily for at least 1 hour each time, unless otherwise required by the attending veterinarian, or as required by the research proposal approved by the Committee at research facilities.

III. Guide for the Care and Use of Laboratory Animals, Institute of Laboratory Animal Research, Commission on Life Sciences, National Research Council, 1996.

Food or Fluid Restriction

When experimental situations require food or fluid restriction, at least minimal quantities of food and fluid should be available to provide for development of young animals and to maintain long-term well-being of all animals. Restriction for research purposes should be scientifically justified, and a program should be established to monitor physiologic or behavioral indexes, including criteria (such as weight loss or state of hydration) for

temporary or permanent removal of an animal from the experimental protocol (Van Sluyters and Oberdorfer 1991). Restriction is typically measured as a percentage of the ad libitum or normal daily intake or as percentage change in an animal's body weight.

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NRC Guide for the Care and Use of Laboratory Animals (cont.)

Precautions that should be used in cases of fluid restriction to avoid acute or chronic dehydration include recording of fluid intake and recording of body weight at least once a week (NIH 1990)-or more often, as least restriction that will achieve the scientific objective should be used. In the case of conditioned-response research protocols, use of a highly preferred food or fluid as positive reinforcement, instead of restriction, is recommended.

IV. Guidelines for the care and use of mammals in neuroscience and behavioral research / Committee on Guidelines for the Use of Animals in Neuroscience and Behavioral Research. National Academy of Sciences. 2003.

FOOD AND FLUID REGULATION

Neuroscience-related protocols occasionally require the regulation of animals' food or fluid intake to achieve a specific experimental goal. The regulation process may entail *scheduling* of access to food or fluid sources so an animal consumes as much as desired at regular intervals, or *restriction*, in which the total volume of food or fluid consumed is strictly monitored and controlled. As stated in the *Guide,* "the least restriction that will achieve the scientific objective should be used" (p. 12). Regulation of food or fluid is commonly used as motivation in experiments that require animals to perform a behavioral task with a high degree of repeatability (Toth and Gardiner, 2000), but the food or fluid consumption is not the experimental variable. In those studies, food and fluid regulation is used to motivate the animals to perform a specific behavioral task for a food or fluid reward; regulation of food or fluid outside the experimental session ensures response reliability to the food and fluid reward in each session (NIH, 2002). That allows the investigator to elicit and monitor the same movement repeatedly, to present the sensory stimuli under highly controlled conditions, and to obtain physiologic discriminations from the animal. For example, water-regulated monkeys may be trained to press a button for a juice reward, while the investigator measures the effect on neuronal firing rates. In conditioned-response experiments, (for example, a monkey may be conditioned to associate a light with a fluid reward), consideration should be given to whether the use of highly preferred food or fluid as positive reinforcement can be used instead of restriction.

Fluid reward is preferable to food reward in some types of experiments. For example, studies that monitor neuronal activity in the brain may require the minimization of jaw or head movement to avoid displacing a microelectrode from its position. Because fluid rewards can be delivered through a tube positioned near the animal's mouth and tongue, they offer a particular advantage: licking and swallowing a fluid reward are much less disruptive to the neuronal recordings than chewing or crunching movements of the teeth or jaws that accompany the consumption of food rewards (NIH, 2002).

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NAS Guidelines for the care and use of mammals in neuroscience and behavioral research (cont.)

Fluids offer additional experimental advantages. They can be easily delivered in small quantities, maximizing the number of trials that can be executed before satiation of the animal. In contrast with food rewards that require chewing before swallowing, fluids are quickly consumed, reducing the inter trial interval an important advantage when an animal must perform a behavior hundreds or even thousands of times in an experimental session to allow for statistical analysis.

Determination of Minimum Fluid Consumption

Assessing the ad libitum fluid consumption for each fluid-regulated experimental animal might be an important step in ensuring the health and well-being of the animal.

However, voluntary fluid-consumption levels in a laboratory setting might not be equivalent to the animal's minimal fluid-requirement levels. Limited availability of fluid is a common determinant of consumption in natural settings, and physiologic and behavioral mechanisms have evolved to enable animals to adapt to the limitation. For example, rats and monkeys quickly learn to consume much, if not all, of their daily fluid needs in a short, restricted period (reviewed by Evans, 1990). Species that drink from watering sites only once per day invoke homeostatic mechanisms to control urine output in relation to their hydration state (Toth and Gardiner, 2000). Mammals may also use torpor to adapt to the dry season in their natural habitat (Schmid and Speakman, 2000). Thus, it is difficult to designate specific minimum fluid needs, because requirements may vary with species, strain, environment, efficiency of fluid-saving mechanisms, and so on. IACUCs, veterinarians, and researchers should take into account the possibility that laboratory animals can be adequately physiologically sustained with less fluid than they would voluntarily consume.

At the start of a new research protocol involving restricted or altered access to fluid, the amount of fluid consumed, body weight, and a hydration assessment should be recorded daily for each animal, as individual animals may manifest physiologic and behavior differences. Those data will help in refining the protocol and evaluating the adequacy of access to fluid. In evaluating the adequacy of access to fluid, each animal should be evaluated individually to determine how it is adapting to the imposition of restricted or altered access. For example, if an animal attains and then maintains a new body weight, it could suggest successful adaptation even if the new weight is below the weight recorded during ad libitum access to fluid.

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NAS Guidelines for the care and use of mammals in neuroscience and behavioral research (cont.)

Fluid-Regulation Design

When fluid regulation is selected as a behavioral motivator, access to fluid outside the experimental setting has to be regulated to motivate performance of the rewarded behavior (NIH, 2002). Generally, fluid regulation is patterned after one of two designs. In "fluid restriction," animals are given access to a metered volume of fluid per day and may consume that volume over any length of time. In "fluid scheduling," the experimenter determines the time of day during which the animal has access to fluid, but the duration of drinking and the volume consumed are determined by the behavior of the animal. For example, in many behavioral protocols, animals are given continual access to fluid for as long as they continue to perform a task. Because food and fluid generally are not freely available in the wild and some effort (foraging) is required to obtain them (NIH, 2002), such scheduling designs may model the effort expenditure necessary to obtain food and fluid in the wild For both types of fluid regulation, animals generally should be given free access to fluid for some period on days when experimental sessions are not scheduled, unless scientifically justifiable reasons preclude such fluid supplementation (NIH, 2002).

When developing a restriction design to motivate an animal to perform a task, the main consideration is determining what level of restriction is necessary to achieve the desired performance. Generally, the more complicated the task, the more stringent the restriction protocol needs to be. For example, in a study of water-restricted rats, where the rats were required to bar press to obtain their daily allotment of water (Collier and Levitsky, 1967), mild restriction (rats receive 75% of their average ad libitum intake) resulted in poor performance while a more stringent restriction (rats receive 32% of their average ad libitum intake) resulted in maximal performance. This is why fluid restriction levels used in one study may not provide adequate motivation for learning or performing other more demanding tasks (Toth and Gardiner, 2000). However, the most severe restriction is not always necessary for achieving maximal performance. In this same study (Collier and Levitsky, 1967), bar-press rates were similar when water was restricted to 32%, 42%, or 56% of average ad libitum intake.

Species- and Strain-Specific Considerations

Other Influences on Fluid Homeostasis In some situations, fluid reinforcers (such as fruit juice) are used because they may maintain behavioral performance when access to fluid is restricted; for example, some monkeys prefer fruit juice when performing long behavioral sessions
in which many reinforcements are delivered (NIH, 2002). Investigators, veterinary personnel, and IACUCs should consider and monitor for any potential physiologic ramifications of total substitution of solute-containing fluids for water
in a fluid-restricted protocol. Sweetened milk or juices may be unfavorable choices for use in a long-term study in which an animal will participate for many

months or years, because of the potential for dental caries (NIH, 2002). Provision of treats, such as fruits or vegetables, is recommended when appropriate to provide variety and nutritional balance to an experimental animal's diet (NRC, 1996). The water content of these dietary supplements can be difficult to estimate, so their potential contribution to hydration should not be considered in determining the minimal ration of fluids to be given to the animal (see Pennington et al., 1998, for data on water content of fruit and vegetable supplements). However, investigators, veterinary personnel, and caretakers should be aware of the potential need for restriction or substitution of supplemental food items in fluid-regulated animals.

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