

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

1. REGISTRATION NO. 13-R-0009
CUSTOMER NO. 265

FORM APPROVED
OMB NO. 0579-0036

ANNUAL REPORT OF RESEARCH FACILITY
(TYPE OR PRINT)

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

VERMONT TECHNICAL COLLEGE
VERMONT TECHNICAL COLLEGE
P O BOX 500
RANDOLPH CENTER, VT 05061

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)

VERMONT TECHNICAL COLLEGE
RANDOLPH, VT 05061

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		9	5		14
5. Cats		5	8		13
6. Guinea Pigs		1			1
7. Hamsters					
8. Rabbits			6		6
9. Non-Human Primates					
10. Sheep		6			6
11. Pigs					
12. Other Farm Animals					
HORSES			2		2
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 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
		10/26/2001

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

1. REGISTRATION NO. 13-R-0011	CUSTOMER NO. 14681	FORM APPROVED OMB NO. 0579-0036
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ANNUAL REPORT OF RESEARCH FACILITY
(TYPE OR PRINT)

DEC 11 2001

2. HEADQUARTERS RESEARCH FACILITY (Name and Address, as registered with USDA, include Zip Code)
THE BINDING SITE VT, INC.
3697 ROUTE 144
BENSON, VT 05743
(802) 537-2255 2227

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

AS LISTED IN 2

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					
6. Guinea Pigs					
7. Hamsters					
8. Rabbits					
9. Non-Human Primates					
10. Sheep	106	35	—	—	35
11. Pigs					
12. Other Farm Animals					
13. Other Animals					

ASSURANCE STATEMENTS

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- 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)

SIC	DATE SIGNED 12-3-01
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ANNUAL REPORT OF RESEARCH FACILITY
(TYPE OR PRINT)

2. HEADQUARTERS RESEARCH FACILITY (Name and Address, as registered with USDA, include Zip Code)
MIDDLEBURY COLLEGE
BIO DEPT. MIDDLEBURY COLLEGE
MIDDLEBURY, VT 05753
(802) 443-5434

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)

Bicentennial Hall Animal Facility

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					
6. Guinea Pigs					
7. Hamsters	40	55	160	48	263
8. Rabbits					
9. Non-Human Primates					
10. Sheep					
11. Pigs					
12. Other Farm Animals					
Red backed vole		4			4
deer mouse		10			10
Short tail shrew		3			3
Meadow vole		2			2

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)

NAME & TITLE OF CEO OR INSTITUTIONAL OFFICIAL (Type or Print) _____ DATE SIGNED 10/10/01

8), which is obsolete

PART 1 - HEADQUARTERS

Deviations from the regulations and the Guide:

The only exception to the *Guide* was the use of an alternative-housing chamber, termed the Visible Burrow System, instead of conventional cages for one hamster protocol. Six animals at a time were housed in the system over 6 cycles, for a total of 36 animals. The research proposal was looking at the changes in stress hormone levels in animals that establish and live in dominance hierarchies. The chamber is a large open box, with suspended food, and a series of escape tunnels to conventional cages. The animals were placed in this chamber for up to 4 weeks, but every few days, each animal was removed and given a "respite". The cage system was cleaned every two weeks but not sanitized. The process of sanitation would have destroyed the scent markings and invalidated the data. The deviations in housing and cleaning were discussed and approved by IACUC.

Column E Explanation Form

1. **USDA Registration number:** 13-R-0010
2. **Number of animals used in this study(s):** 48 Hamsters and 89 Rats
3. **Species of animals used in this study:** hamsters and rats
4. **Explain the procedure producing pain and /or distress:**

The following comments are from the Principal Investigator:

Our work utilizes the controllable/noncontrollable stress paradigm to dissociate physical from psychological aspects of stress. In this model system, an animal pair receives identical physical stressors, but differ in the psychological aspect of control over the stressor. One animal, the executive, can terminate the stress through a bar press, while his yoked partner cannot. Thus, both animals receive the identical physical stressor in terms of amount, duration, and intensity, but differ only in the psychological aspect of coping. The stimulus intensity is 0.8mA, which is not painful to humans, and is the minimum stimulus intensity aversive enough to motivate escape behavior. The shock boxes are connected to scramble shock generators, and the lever press in the executive box is connected so that when the executive animal presses the bar, the shock will be terminated in both the executive and yoked boxes.

Our work has shown that the executive animal learns this behavior in 10-15 trials. If, on an individual trial, the executive animals make no response, the shock will be terminated after 30 seconds. One session consists of 80 trials; the intertrial interval is a variable schedule ranging from 5-115 seconds, with a mean duration of 60 seconds. The average session lasts approximately 80-90 minutes. Therefore, the total duration of shock is less than 5 minutes spread out over a 90 minute period.

5. **Provide scientific justification why pain and /or distress could not be relieved. State methods or means used to determine that pain and or distress relief would interfere with test results.**

Because the proposed studies are examining the effect of stress on hormone secretion and behavior, the use of anesthetics, analgesics, or tranquilizing drugs would interfere with the scientific goals of the experiment. The use of these drugs would produce changes in brain activity and hormone concentration in the systems and neural circuits that we are analyzing. Presence of drugs would obscure changes experimentally induced by stress and produce confounding variables that would prevent accurate interpretation of the results. The dependent measure in these experiments include quantifying changes in cortisol and corticosterone as well as changes in corticotropin releasing hormone (CRH) mRNA within the hypothalamus with our stress paradigm. It has been well described that cortisol, corticosterone, and CRH mRNA all increase with administration of these drugs.