



TITLE: Swine Environmental Enrichment

SOP Category: Enrichment

CMR SOP #: 6.07

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Approval: *Bhupinder Singh*

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SCOPE:

This document describes the procedures to be followed when providing enrichment to swine. This SOP applies to all Animal Care Staff (ACS), ACS Supervisors (ACSS), Veterinary Staff (VS), and Research Staff members (RS) at the Rutgers University facilities.

OBJECTIVE:

The objective is to summarize swine environmental enrichment. This SOP is concordant with the Rutgers Environmental Enrichment Program, which states that all laboratory animal species used at Rutgers must be provided with species-specific environmental enrichment unless scientifically justified.

DEFINITIONS:

Natural Behavior: Swine (*Sus scrofa*) are intelligent, social animals and require species-specific socializing and handling techniques. Swine rely heavily on smell, touch, and sound for sensory input and interactions with conspecifics and the environment, but they have relatively poor vision. Swine often touch each other and their environment with their noses for interaction. Wild swine spend most of their active time foraging for food, exploring and rooting. Laboratory swine require environmental enrichment to satisfy their need to chew and root. Swine are sedentary animals and generally move when aroused by activity such as feeding or introduction of new personnel or conspecifics.

Abnormal Behavior:

Abnormal behaviors in swine include:

1. Tail biting
2. Ear biting
3. Pacing
4. Bar biting
5. Vacuum chewing

When these behaviors are observed, VS will evaluate the need for additional environmental enrichment.

PROCEDURES:

1. Social Enrichment

- All pigs should be housed in social groups of similar health status, age, and sex.
- Previously established social hierarchies should be considered when group housing is utilized. Dominance fighting may transiently occur when new animals are introduced until social hierarchy has been re-established.
- If group housing is not possible, swine should be housed in a way allowing sensory contact with other swine.
- When single housed, provision of physical and food enrichment, as well as the frequency of human interactions should be increased.

2. Physical Enrichment

- Two new clean toys should be placed in the pen at least once per week.
 - Examples for toys: Plastic dumbbells, balls in different sizes, metal chains, puzzle toys, hanging balls
 - At least one toy should be hung from the side or front of the cage at about the height of the pig's mouth.
- Housing enclosures may have a scratching device present.

3. Food Enrichment

- Includes fruit, vegetables, snacks and treats
 - Food enrichment may be offered as often as daily by placing one serving of fruit and/or vegetables in a clean food bowl or in a puzzle toy
- Treats may be offered by hand feeding, in a clean bowl, or, if bedding is present, sprinkled or buried in clean straw or hay, which can encourage rooting behavior.

4. Human Interaction

- Activities including talking, petting, playing, offering of food enrichment, scratching should be done, especially for single housed pigs.

5. Activity Enrichment

- Where possible, swine may be released from their pen and allowed to roam the animal holding room, to allow for physical activity and explorative behavior.

Considerations:

- Cost, availability of materials, safety issues for the animals and the staff, study constraints, and sanitation requirements must be evaluated for each enrichment idea.
- Exemptions to the environmental enrichment program must be justified and approved by the IACUC or prescribed for medical or behavioral reasons.

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- For novel enrichment devices or strategies, a group of animals may be selected for a pilot study to evaluate any behavioral changes, husbandry needs, and steps necessary for sanitation of the devices.
- ACS assist in the environmental enrichment program by placing environmental enrichment devices in cages as directed by ACSS, RS and VS. ACS are responsible for removing and replacing damaged or soiled devices and for sanitizing or disposing of devices as appropriate.

Records:

The ACS, RS and VS will log provision of enrichment according to the facility specific documentation records.

REFERENCES:

National Research Council, Guide for the Care and Use of Laboratory Animals, ed 8 available at <http://grants.nih.gov/grants/olaw/Guide-for-the-Care-and-Use-of-Laboratory-Animals.pdf>

Smith, Alison C., and M. Michael Swindle. "Preparation of swine for the laboratory." *ILAR journal* 47.4(2006):358-363.

Swindle, M. Michael, and Alison C. Smith, eds. *Swine in the laboratory: surgery, anesthesia, imaging, and experimental techniques*. CRC press, 2015.