

HM-28 ENRICHMENT 2015

RESEARCH ANIMAL RESOURCES

ENVIRONMENTAL ENRICHMENT PLAN

2015

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INTRODUCTION

The Johns Hopkins Environmental Enrichment Program (EEP) has been created to ensure animals housed at all Johns Hopkins facilities are provided with environments that promote psychological well-being through the expression of species-typical behaviors and reduce, redirect, and/or eliminate abnormal behaviors. The EEP contains natural history and environmental enrichment information for animal species housed at Johns Hopkins.

The EEP ensures compliance with all federal, state, and local guidelines and regulations regarding the appropriate care of laboratory animals. Regulations defined in the Animal Welfare Regulations (USDA/APHIS 9CFR, Chapter 1, Subchapter A- Animal Welfare, Part 3) are closely followed to ensure appropriate care for all research animals housed At JHU. The Johns Hopkins University is accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care International (AAALAC), and is therefore in compliance with the Guide for the Care and Use of Laboratory Animals (NRC, 2011). Additionally, the EEP meets/exceeds all aspects of the Animal Welfare Regulations in order to guarantee the promotion of psychological well-being in nonhuman primates as outlined in, “Environment enhancement to promote psychological well-being” (USDA/APHIS 9CFR, Chapter 1, Subchapter A- Animal Welfare, Part 3, Subpart D, Section 3.81).

Environmental Enrichment Plan

Environmental enrichment is provided as a means to allow animals the ability to express species-typical behaviors and promote psychological well-being. Animals housed at JHU receive species-appropriate environmental enrichment that meets each species needs. The EEP consists of two types of environmental enrichment: social and non-social enrichment.

Interaction with conspecifics and humans are both considered social enrichment. Interaction with conspecifics is regarded as one of the most important forms of environmental enrichment for many species, though introduction to unfamiliar adults may not be ideal for all species (NCR, 2011). Human social interaction is attained on a daily basis through husbandry tasks performed by the carestaff. Additionally, animals may be trained to perform study related tasks through positive reinforcement. Food enrichment may be handed out by the care, enrichment, technical, and veterinary staffs in order to acclimate animals to humans and handling. Unless isolated for a health concern, animals retain visual, olfactory, and auditory access with conspecifics. When appropriate, compatible animals are socially housed with full contact or varying degrees of contact. Nesting materials, foraging feeders, manipulable objects/toys, shelters, visual blockers, destructible items, perches, swings, and food treats are just a few of the different types of non-social enrichment provided to the laboratory animals at Johns Hopkins.

Occasionally, animals may be exempt from any aspect of the EEP due to a study requirements listed in the corresponding IACUC-approved research protocol or while under veterinary care due to a medical condition. Nonhuman primates requiring an exemption from the EEP not listed in the IACUC-approved protocol must receive the exemption from the attending veterinarian.

NONHUMAN PRIMATES

Natural History

Johns Hopkins houses a variety of nonhuman primates that require environments that allow for the expression of natural behaviors. Special care is taken when providing enrichment to ensure the needs of each species are met, with ability to exhibit species-typical behavior and reduce/redirect/eliminate abnormal/atypical behaviors. Nonhuman primates maintain visual, auditory, and olfactory access to conspecifics, and when compatible social partners are available, individuals are socially housed in order to promote psychological well-being through the expression of social behaviors. Nonhuman primates may be exempt from any aspect of the EEP if scientifically justified in an IACUC-approved protocol or determined to be detrimental to an animal's health by the attending veterinarian.

New World Primates

Common marmosets (*Callithrix jacchus*)

Common marmosets tend to live in multi-male/ multi-female groups, consisting of one to two breeding females, with one dominant over the other. Births usually result in twins. Male and female adults within the group assist the mother with carrying the infants around. Common marmosets are arboreal and sleep on/in vines, branches, and tree holes. They are exudativore- insectivores. (Falk, 2000; Cawthon Lang, 2005)

Owl monkeys (*Aotus spp.*)

Owl monkeys are the only nocturnal primate. They live in monogamous pairs with up to three offspring. Other than nursing, mothers aren't as involved in rearing of offspring as males are. Owl monkeys use scent cues and vocalization as communication. They are primarily frugivorous, but also feed on saps and insects. (Falk, 2000; Cawthon Lang, 2005)

Squirrel monkeys (*Saimiri spp.*)

Squirrel monkeys live in large, mixed-sex social groups. They use vocalizations, postural displays, and scent marking for communication. Squirrel monkeys are insectivores and frugivores. (Falk, 2000; Cawthon Lang, 2005)

Old World Monkeys

Rhesus Macaques (*Macaca mulatta*)

Rhesus macaques live in large multi-male/ multi-female groups. Females remain in their natal groups and dominance hierarchy is determined by the dominance level of one's mother. Dominance hierarchy amongst sisters occurs in youngest ascendancy- meaning, the youngest outranks her older sisters. Grooming behavior is seen frequently between females. Males emigrate from their natal groups prior to puberty. There is a marked breeding season in rhesus macaques. Rhesus macaques communicate through vocalizations and gestures. They are omnivores. (Falk, 2000; Cawthon Lang, 2005)

Pigtail Macaques (*Macaca nemestrina*)

Pigtail macaques live in large multi-male/ multi-female groups. Females remain in their natal groups, and males emigrate from their natal groups near puberty. Males are dominant over females and often displace them during feeding. Like rhesus, grooming is an important behavior that secures bonds between individuals. Pigtails are not seasonal breeders, but instead mate year-round. The majority of their diet consists of fruits, but they also feed on insects and plants. (Cawthon Lang, 2005)

Cynomolgus Macaques (*Macaca fascicularis*)

Cynomolgus macaques live in large multi-male/ multi-female groups. Female dominance is matrilineal. Females remain in their natal groups, while males emigrate from their natal groups with peers. Males will

attempt to move up in dominance around the age of seven. *Cynomolgus* macaques are frugivorous, but they will also eat insects and plants. (Cawthon Lang, 2006)

Bonnet Macaques (*Macaca radiata*)

Bonnet macaques live in multi-male/ multi-female groups. Females remain in their natal groups, while males emigrate from their natal groups. Female dominance hierarchy is matrilineal. They are omnivores. (Raney & Abernathy, 1981; Rahaman & Parthasarathy, 1969).

Baboons (*Papio spp.*)

Savana baboons live in large multi-male/multi-female troops. Troops consist of related females, with females inheriting the rank of their mother. Males emigrate from their natal group as they reach puberty. Male dominance is linear within the troop. Males are known to be aggressive with each other, but also form close alliances. Savana baboons are omnivores. (Falk, 2000)

Environmental Enrichment

Social Enrichment

All nonhuman primates are housed with visual, auditory, and olfactory contact with conspecifics or members of compatible species. Animals that are eligible for social housing are assessed to find compatible social partners. When two or more nonhuman primates are found to have compatible temperaments, they are introduced through a carefully supervised process. Care is taken to monitor for positive behaviors (lipsmacking, grooming, etc.) and negative behaviors (aggression, biting/fighting, fear grimacing, screaming). The behavioral staff continues to monitor animals with full contact for the duration of their social housing. Any sign of concern (extreme fear/ aggression) will require a reevaluation of the pair/group. Animals that are given full contact may be housed in harem groups consisting of one male and many females (JHU FARM), family breeding groups, pairs, triads, and quads. Additionally, some primates may have limited tactile contact (grooming holes) with conspecifics.

Some nonhuman primates may require single housing for one of the following reasons:

1. **Aggressions:** Animals deemed to be overly aggressive through behavioral observations and/or interactions with conspecifics will be exempt from social housing.
2. **Medical Condition:** Animals that are under veterinary care may be temporarily or permanently exempt from social housing. Additionally, animals that are isolated from conspecifics due to a health concern may require an exemption from housing with visual, auditory, and olfactory access to conspecifics. In this case, isolated animals will receive additional interaction with care staff and extra enrichment for the duration of their exemption.
3. **Age:** Animals unfit for social housing due to age may also be exempt.
4. **Quarantine:** Animals in quarantine are usually singly housed so the attending veterinarian can monitor for any disease before being exposed to the population. Animals that arrive with known social histories may be socially housed to reduce risk of stress, and aggression after an extended period apart. This decision will be made by the attending veterinarian.
5. **Research:** Animals may be exempt from social housing due to an IACUC-approved protocol with provided scientific justification.

If single housing is required due to Aggression, Medical Condition, Age, or Quarantine Status, the attending veterinarian will provide a written exemption for the duration of the exemption to be reviewed monthly.

Nonsocial Enrichment

Structure and substrate: In order to provide increased cage complexity, all nonhuman primate cages or enclosures have a variety of elevated perches, hammocks, and /or wooden branches depending on the

species. At the Research Farm indoor-outdoor runs have elevated and hanging perches, hanging chains, and/or barrels for hiding. Animals have access to outside areas at will.

Manipulanda: Each nonhuman primate is provided with manipulanda specific to its housing environment. RAR provides all standard cages with two commercially available pet toys (rubber, hard nylon, plastic, etc.).

Novel Food Items:

East Baltimore/ Homewood/ Bayview/ JHU Farm

Each nonhuman primate receives a novel food item at least twice weekly. Novel foods are any food other than an animal's standard feed, and can include fresh or dried fruits and vegetables, forage mixes, or manufactured treats. Additionally, nonhuman primates are provided with a variety of foraging feeders and devices.

Behavioral Monitoring

East Baltimore/ Homewood/ Bayview

Nonhuman primates housed in all Baltimore RAR facilities are given a behavioral assessment at least quarterly. Animals observed to exhibit any abnormal/atypical behavior are put on an enrichment treatment plan. These animals are reassessed during the next behavioral observation. Animals observed to exhibit severe abnormal/atypical behaviors (i.e. self-injurious behavior) are reassessed by the behavioral staff on a more frequent basis as determined by the veterinarian and behaviorist. The behavioral staff notes probable causes, severity, and planned enrichment treatment in the JHU Behavioral Database. Additionally, all nonhuman primates are observed by RAR personnel at least once daily including on weekends and holidays. Nonhuman primates exhibiting abnormal/ atypical behaviors are reported to the veterinary staff and behavioral staff.

JHU Farm

All nonhuman primates housed at the JHU Farm are monitored daily for any behavioral concerns. Concerns are documented in their record and the behavioral staff assess these animals at her/his next visit.

Dogs

Natural History

Domestic dogs (*Canis familiaris*)

The domestic dog is the only fully domesticated species from the family Canidae. Like the wolf, from which they originated, they are social animals living in packs. Socialization from an early age is necessary for dogs to develop normal behaviors. They benefit from positive reinforcement through human interaction, consisting of petting, praise, and treats. Any form of negative reinforcement or punishment can lead to extreme fear or aggression. (Serpell, 1995; NRC, 1994).

Environmental Enrichment

Social Enrichment

When possible, dogs are pair or group housed. All socially housed dogs are closely monitored for any signs of aggression or incompatibility. Occasionally, dogs are required to be singly housed due to aggression or lack of compatible social partners. These singly housed dogs maintain visual, auditory, and olfactory access to conspecifics. When appropriate, singly housed dogs have nose-to-nose contact with conspecifics. Each day, while husbandry tasks are being performed, dogs are allowed supervised access outside of their runs. During this time, dogs receive positive human interaction with care staff. The enrichment staff provides positive human interaction and novel treats at least twice weekly.

Non-social Enrichment

All dogs are provided with at least two commercially available dog toys. Novel treats provided at least twice weekly are distributed in various forms (i.e. hidden in toys, frozen treats, scattered throughout the cage, etc.)

Ferrets

Natural History

Ferrets (*Mustela putorius furo*)

Ferrets are strictly carnivores, with the inability to digest plant matter. They use the scent glands located on the anus to mark territory. Ferrets are highly social animals. They sleep in small spaces huddled together. They make a loud chuckling sound and their bodies shake when excited. (Fox, 1998)

Environmental Enrichment

Social Enrichment

Where possible ferrets will be pair or group housed. In situations where there is only a single animal due to euthanasia of social partners, incompatibility, or study restrictions, ferrets will be housed in the same room with conspecifics. Ferrets are handled daily by the care staff prior to and after cage cleaning. During this time, they receive positive human contact through play and petting.

Non-social Enrichment

Ferrets are provided with 2 toys to manipulate in their cages. Additionally, ferrets may be offered hammocks and/or large huts/shelters to rest in.

Cats

Natural History

Domesticated Cats (*Felis sylvestris catus*)

Domesticated cats develop complex social hierarchies when living in social situations but are known to easily adapt to solitary living. Both scent markings and visual cues are important forms of communication. Side-to-side twitching of the tail tip and attempts to flee from conspecifics or humans are visual cues of irritation. (Martin, 1998)

Environmental Enrichment

Social Enrichment

When possible, cats are housed in compatible pairs. During the work week, cats are allowed access to an activity room for play and socialization with other cats. They are closely monitored for any sign of incompatibility with conspecifics. They are returned to their cages in the evening. The care staff interacts with the cats on a daily basis while performing husbandry tasks.

Non-social Enrichment

Cats are housed in cages that have visual blockers for the cats to hide behind. Each cage has a scratching board, a resting perch, and at least 2 toys for each cat. The activity room has spaces for cats to hide, numerous scratching boards/posts, ledges and tree branches to climb and rest on, and toys. Cats receive novel treats at least twice weekly.

Sheep and Goats

Natural History

Sheep (*Ovis aries*) and Goats (*Capra hircus*)

Sheep and goats live in social groups known as flocks. Goats tend to be much more aggressive than sheep. Sheep and goats are herbivorous ruminants. (Haupt, 1998).

Environmental Enrichment

Social Enrichment

Where possible, sheep and goats will be pair housed prior to research use and depending upon size. In situations where there is only a single animal of either species, they will be housed in the same room with a compatible species such as pigs. Additionally, they receive positive human interaction with care staff during daily husbandry tasks.

Non-social Enrichment

Sheep and goats are provided substantial amounts of hay for both bedding and forage. They receive at least one novel treat weekly from the enrichment staff. All cages have at least one floor toy.

Pigs

Natural History

Pigs (*Sus scrofa*)

Pigs are highly social animals that live in large groups. Among littermates, dominance is established within the first two days following birth, with the largest and firstborn often establishing the dominant rank. Unfamiliar pigs will establish dominance within a few days of introduction through fighting. Aggression has been noted during feeding, with dominant animals monopolizing the majority of food. Tail biting can occur in socially housed pigs that lack the ability to root. Pigs lack the ability to sweat, so their environmental temperature should be closely monitored. (Haupt, 1998)

Environmental Enrichment

Social Enrichment

When possible pigs are housed in pairs or social groups, typically by maintaining animals in the social arrangements in which they arrive. Single housed pigs will be housed in a manner that permits animals to have auditory, visual, olfactory, and in most cases snout-to-snout tactile contact with conspecifics. Positive human interaction is received during daily husbandry tasks.

Non-social Enrichment

Pigs are provided with one hanging toy and at least one floor toy. They receive novel treats during positive interactions with the enrichment staff at least once weekly. Treats may be directly handed to the pigs or distributed in feeder the pigs must use their snouts to root with in order to free the treats.

Rabbits

Natural History

Rabbits (*Oryctolagus cuniculus*)

Rabbits are social animals. Adult males tend to be more aggressive than females. Female rabbits are easier to socially house than males. Though nocturnal by nature, rabbits housed in a laboratory setting often following diurnal behavioral patterns. Rabbits have a strong prey instinct, and can become easily scared. They are herbivores consuming a diet higher in protein and soluble carbohydrates. Rabbits produce a night feces rich in nutrients, which is ingested. (Suckow, Stevens, & Wilson, 2012; Suckow & Douglas, 1997)

Environmental Enrichment

Social Enrichment

Rabbit cage racks are arranged in holding rooms in a manner that permits animals to have auditory, visual and olfactory contact with conspecifics. When possible, female rabbits are socialized through pair-housing.

Non-social Enrichment

Each rabbit is provided with at least one chew toy and one hanging toy for manipulation. Rabbits receive both hay and a novel food item once weekly.

Chinchillas

Natural History

Chinchillas (*Chinchilla laniger*)

Chinchillas are very active animals that tend to be shy and easily frightened. They live in large groups consisting of many smaller family groups. Females are dominant over males and tend to be more aggressive. They are nocturnal by nature, but adjust to a diurnal lifestyle in the laboratory. They are considered herbivores, but occasionally eat insects. They dust bathe in order to maintain a healthy coat. (Suckow, Stevens, & Wilson, 2012)

Environmental Enrichment

Social Enrichment

Chinchillas may be socially housed as long as they are compatible. Singly-housed chinchillas have visual, auditory, and olfactory access to conspecifics.

Non-social Enrichment

Chinchilla cages contain houses for them to hide in and sit on. Additionally, they are provided with a dust bath once a week. Chinchillas receive novel food items at least three times a week. This includes dried fruits, hay, forage mixes, and dried vegetables.

Guinea Pigs

Natural History

Guinea pigs (*Cavia porcellus*)

Guinea pigs are very docile rodents that prefer physical contact with conspecifics. Guinea pigs do well when socially housed; however, males can become aggressive with other males. They are thigmotactic, but will venture into the center of their cage if burrowing material or shelters are available. Guinea pigs are sensitive to noise. (Suckow, Stevens, & Wilson, 2012)

Environmental Enrichment

Social Enrichment

When possible, guinea pigs are socially housed. They are given visual, olfactory, and auditory access to conspecifics.

Non-social Enrichment

Guinea pigs are housed on either Carefresh® or Tek-fresh™ bedding. As allowed by cage size, guinea pigs are provided a CPVC tube or paper tube as shelter. They receive novel food items (dried fruit/ veggies, forage mixes, hay, etc.)

Hamsters

Natural History

Hamsters (*Mesocricetus auratus*)

Hamsters are nocturnal animals that spend a significant amount of time sleeping. Single housing may be required when housing adults because unfamiliar adults can be quite aggressive towards each other; however, litter mates or animals introduced at an early age tend to get along well. Hamsters, both male and female, build nests. They are granivorous, but will also eat plants, insects, and fruits. (Suckow, Stevens, & Wilson, 2012)

Environmental Enrichment

Social Enrichment

Hamsters are housed singly in clear micro-isolators and arranged in a manner that permits animals to have auditory, visual or olfactory contact with conspecifics.

Non-social Enrichment

Hamsters are housed on hardwood bedding and provided Nestlets® or weekly provision of hay. They are provided with huts or CPVC tubing. Hamsters receive novel food items at least twice weekly, which includes dried fruit or forage mixes.

Bats

Natural History

Pallas' Long-tongued Bats (*Glossophaga soricina*)

Pallas' Long-tongued Bats roost in multifemale/multimale groups along with other species. Maternity groups consisting of mothers and their young form during certain times of the year. Activity peaks after dusk and again before dawn. Sunlight and intense moonlight deter Pallas' Long-tongued Bats from leaving their roost. They are territorial and will defend their territory by directly flying at intruders and chasing them away. Their diet consists of flowers, nectar, insects, and fruit. (Alvarez, Willig, Jones, & Webster, 1991)

Short-tailed Fruit Bat (*Carollia perspicillata*.)

Short-tailed Fruit Bats have a heightened sense of smell used in locating food. They leave their day roost after dusk to feed on fruits and seeds. During feeding, they take meals to a feeding roost, which is different from their day roost. Short-tailed Fruit Bats live in harem groups, consisting of one males and one or more females with offspring. Males that do not yet have their own harem live in bachelor groups. Males are territorial and protect their harems. (Cloutier & Thomas, 1992)

Egyptian Fruit Bats (*Rousettus egyptiacus*)

Egyptian Fruit Bats use echolocation while flying in order to avoid obstacles in their path. Their diet consists of a variety of fruits, flowers, and leaves, and they rely on their sense of smell in selecting food. They roost in large groups, and compete for the darkest location within their roosting spot. While roosting, they maintain close contact with conspecifics. During the night, while they are active, they may spend up to half of the evening grooming food from their hair. (Kwiecinski & Griffiths, 1999)

Big Brown Bats (*Eptesicus fuscus*)

Big Brown Bats rely on echolocation while flying to avoid obstacles and locate insect prey. Females roost together in the spring/summer (after hibernating) in groups referred to as “maternity colonies.” Males tend to roost alone, but have been known to roost with either sex. Big Brown Bats tend to hibernate individually or in small groups of just a few individuals. (Kurta & Baker, 1990)

Environmental Enrichment

Social Enrichment

Bats are socially housed unless singly housing is required by their study. Singly housed bats are housed in rooms with conspecifics.

Non-social Enrichment

Bats are provided with towels to hide under. Additionally, branches, netting, and crates are provided for the bats to roost under/on. Depending on their natural diet, bats are provided daily with mealworms, fruit, and/or nectar.

Mice and Rats

Natural History

Mice (*Mus spp.*)

Mice are social animals, but are known to fight, causing serious injury. Males in general and certain strains of either sex tend to be more aggressive. Barbering, or excessive hair loss, occurs when a dominant animal overgrooms a subordinate animal. Mice frequently borrow and nest, which helps in maintaining body temperature. (Suckow, Danneman, & Brayton, 2001)

Rats (*Rattus norvegicus*)

Rats are non-aggressive rodents. Though males tend to be more aggressive than females, socially housed males are unlikely to fight. Rats are known to be social, but they don't seem to mind being housed individually. They are nocturnal, and prefer small dark spaces. They have well developed hearing and sense of smell. They prefer to manipulate objects within their enclosures. (Sharp and La Regina, 1998)

Environmental Enrichment

Social Enrichment

Where possible, mice and rats are housed in pairs or groups. Mice and rat racks are arranged in holding rooms in a manner that permits animals to have auditory, visual or olfactory contact with conspecifics. Conditions that could require single housing include but are not limited to: incompatibility, dietary investigations, disease conditions, breeding requirements.

Non-social Enrichment

Mice and rats are housed on either Carefresh® or corn cob bedding. Rats are provided with ENVIROPAKS™. Mice are provided with nesting material, specifically a Nestlet® or bedding that

provides the ability to nest such as Carefresh® or shavings. Investigators may provide the following additional forms of enrichment without explicitly indicating such in their animal care and use protocol: Nyla bones for gnawing, huts, igloos, tubes and/or tunnels made of polycarbonate (or similar high grade autoclavable plastic polymer) or paper pulp (non-autoclavable, single-use only) for nesting and shelter. Stocking, restocking, placing and sterilizing these items is the responsibility of the investigator, not the RAR care staff or supervisors.

Birds

Natural History

Barn Owls (*Tyto Alba*)

Barn Owls are nocturnal predators that hunt small mammals and occasionally small birds. They use eyesight and hearing to find prey, though, if necessary, they can rely solely on hearing to locate and capture prey. They are known to be monogamous, but can be polygamous. (Marti, Poole, & Bevier, 2005)

Japanese Quail (*Coturnix japonica*)

Quail are social animals with well-defined hierarchies. It is very difficult to introduce unfamiliar animals to established groups, and usually results in aggression and fighting. (Research Animals Department, RSPCA, 2011)

American Singer Canary (*Serinus canaria*)

Canaries are social animals living in large groups. Multiple females can live together in an enclosure, though males can be territorial and may require single housing to avoid fighting with other males. Males attract mates through singing. (Brough, 2013)

Environmental Enrichment

Social Enrichment

Where possible birds are housed in pairs/ groups. Socially housed animals are monitored closely for any sign of incompatibility. Mature males may not be pair or grouped housed in order to avoid aggression and injury. Additionally, male canaries may require single housing to maintain the quality of their songs.

Non-social Enrichment

When appropriate, nesting boxes and perches are made available. Additionally, barn owls receive dead rats twice weekly, which allows them to exhibit their natural need to hunt and consume prey.

Fish and Frogs

Natural History

Fish (Various spp.)

The species of fish used in research at Johns Hopkins range from highly social “schooling,” open water species such as *Danio* spp. to less social bottom dwellers such as Catfish. (Fox et al. 2002)

Frogs (*Xenopus* spp.)

Xenopus are completely aquatic and like most amphibians seek shelter as a means of predator avoidance. (Fox et al. 2002)

Environmental Enrichment

Social Enrichment

Where possible, fish and frogs are housed in pairs or groups. Conditions that could require single housing include but are not limited to: incompatibility, disease conditions, and breeding requirements.

Non-social Enrichment

Species that are known to utilize shelter, such as *Xenopus* spp. and catfish are provided with structures such as artificial plants or plastic tubes.

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<http://www.arkive.org/island-canary/serinus-canaria/>

Appendix A

Definitions of Abnormal Nonhuman Primate Behavior

Coprophagia (COP)

Consuming feces.

Digit Sucking (TSK)

Sucking on a digit (fingers or toes). Usually seen in younger animals.

Eye Poking (EYP)

Poking of the eye with a finger. Usually seen while saluting.

Finger Painting with Feces

Smearing feces in the cage.

Floating Limb (FLT)

While sitting passively, one limb or tail is observed beginning a slow, upward movement. This apparently goes unnoticed at first by the animal.

Headbanging (HBG)

Banging the head into the side of cage or floor. Can occur in conjunction with rocking.

Hair Loss (HLS)

Not a behavior in itself, but the symptom of an underlying problem. Scored using two components: percentage of body missing hair and location of hair loss.

Scoring System:

1- >0 to 33% hair loss

2- >33% to 66% hair loss

3- >66% to 100% hair loss

Huddle (HDL)

Crouching or curling up while hugging oneself or a cohort. Can include rocking while in this position.

Locomotor Stereotypy (LST)

Moving in a repetitive, ritualized pattern that serves no obvious function (i.e., is not a part of play, sex, grooming, etc). Subcategories can include pacing, circling, flipping, non-huddled rocking, and head tossing.

Masturbate (MBT)

Manipulating one's genitals with one's hands or feet. This behavior will be noted if directly observed or inferred by the presence of seminal fluid.

No Abnormal Behavior (NAB)

No abnormal behaviors observed.

Penis Suck (PSK)

Observed sucking on one's own penis. Subcategories can include urine drinking or sexual stimulation.

Regurgitate (RGT)

Expelling food through the mouth at any point during digestion including food that has been chewed but not swallowed. This behavior will be noted if directly observed or inferred by the presence of partially digested food in or on the enclosure.

Rocking (ROC)

Sitting in a crouched position while rocking back and forth.

Salute (SLT)

Observed holding one's hand or finger against one's eye or eyebrow. Can include eye poking.

Self-Grab (SGB)

Observed clasping a part of one's own body with hands and/or feet. Self-grabbing is a natural part of the behavioral repertoire of pigtail macaques and should not be considered abnormal.

Self-Mouth (SMT)

Observed sucking or resting one's open mouth on any part of one's own body other than genitals.

Self-directed Display (SDD)

Observed mouthing oneself vigorously while looking directly at an observer or cohort. Commonly referred to as sham biting.

Self-injurious Behavior (SIB)

Observed biting or scratching oneself without looking at an observer or cohort, or any apparently self-inflicted injury of indeterminate cause, or any observed self-inflicted pain or injury not directly caused by one of the above listed behaviors.