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In this *BRL Bulletin* we will discuss standard rodent husbandry procedures that are performed at the BRL and animal facilities on the West Campus, special husbandry requests, and other cage card identifiers that may be used in rodent rooms.

Standard Rodent Housing

The BRL uses static microisolators to house mice and rats. These cages are made of polysulfone and rely on the ventilation in the room for appropriate air exchange through the filter top. These cages are cleaned in a mechanical cagewasher. Once dry, corn cob and environmental enrichment items are added and the cages are autoclaved as a unit. For mice (with the exception of nude mice) the standard environmental enrichment item is a compressed cotton square Nestlet™ that is shredded by the mice to form a nest. Nude mice do not have eyelashes, and therefore the Nestlets™ can cause eye lesions, so they receive crinkle nesting material. Rats receive tongue depressors that they gnaw for enrichment. The water bottles used in the microisolators are polysulfone with a rubber stopper and metal sipper tube. These components are washed, the bottles are filled with municipal water, and the filled water bottle is autoclaved. The food given to the mice and rats is Teklad 7912 which is an irradiated product that contains 19% protein and 6% fat. Quality assurance testing is performed on the food and water every three months to test for contaminants. Sterilization of the cage, bedding, enrichment and water bottle, along with the use of irradiated food, ensures that rodents are provided with an environment free of murine pathogens.

Crinkle nesting and paper bedding are two items that can be provided by the BRL. Crinkle nesting may be beneficial for mice that are “sensitive” breeders and can be provided for investigators if

discussed with the area veterinarian or supervisor. Paper bedding may be used for “sensitive” rat breeders as well as for strains of rodents that develop foot lesions either due to their phenotype (certain immunodeficiencies) or the experimental protocol (e.g. sciatic nerve ligation, hind limb ischemia). Once again, the investigator must discuss the use of paper bedding with the area veterinarian or supervisor so that it can be made available. As with the standard bedding substrate and enrichment, paper bedding and crinkle nesting are autoclaved prior to use.

The following items are considered to be special husbandry requests, and special stickers or cards are available to label cages accordingly.

Special Husbandry Requests

For many of the stickers/labels described below, the change in husbandry will not go into effect until the next scheduled cage change. For example, if an antibiotic water sticker is placed on a cage on Thursday and the scheduled cage change is Monday, Monday is the first day that antibiotic water will be placed in the cage. If a change in husbandry needs to occur before the scheduled cage change, the investigative staff must discuss this request with the area supervisor.

Do Not Feed

The red “Do Not Feed” sticker is used for diets that are part of an ACC approved protocol and are provided by the PI. The container must be appropriately labeled with the name of the investigator, the name of the diet, the date of manufacture, and the date of expiration. Unless an expiration date is printed on the diet packaging, diets are considered to expire six months after the date of manufacture. We recommend that these diets be stored in the animal facility. If the diet requires refrigeration,

the area supervisor must be notified. The PI is responsible for changing the food in the cage at least weekly, if not more often (e.g. high fat or other diets that spoil in less than a week) and is responsible for ordering the diet. This is in contrast to "Special Diet" (see below) where the BRL husbandry staff provides the food to labeled cages weekly. The PI is notified if there is no food in the cage, if food levels are low, or if food appears spoiled (change in color, has become dry, etc.). If new food is not added in a timely manner, standard rodent diet will be added to the cage by the BRL husbandry staff.

Special Diet

The blue "Special Diet" sticker is used for diets that are part of an ACC approved protocol and can be stored at room temperature in the animal facility. This food is stored in a bin in the animal room and labeled "Special Diet." This food will be provided by the BRL husbandry staff during weekly cage changes to cages labeled "Special Diet." The PI must order this diet and is notified by the area supervisor if inventory is low.

Antibiotic Water

The purple "Antibiotic Water" sticker is used to indicate that sulfamethazole trimethprim (TMS) is being administered in the water. The BRL staff adds 8mL of the oral suspension to a 16 oz water bottle which results in a concentration of 0.64 mg/mL of sulfamethazole and 0.128 mg/mL of trimethprim. TMS can be administered as part of an approved protocol, for rodent strains with certain immunodeficiencies, or for veterinary concerns. If investigators wish to give TMS at a different concentration, this is requested as a "Do Not Water" (see below). Mice given TMS are typically housed on paper bedding, and the water bottle is covered with foil due to the light sensitivity of the antibiotic. Cages that are labeled "Antibiotic Water" have an increased per diem compared to regular rodent housing.

Do Not Water

The green "Do Not Water" sticker is used for water additives or water replacements (e.g. gel formulations) that are part of an ACC approved protocol. These water additives are provided by

the PI. As mentioned above, the water that is supplied to rodents is autoclaved. If possible, water additives should be placed directly into newly sterilized water bottles which are stored in the animal rooms. Water bottles should be changed at least weekly by the investigative staff, if not more often depending on the additive. Water bottles should not be re-used and tap water should not be used. If water bottles need to be protected from light, foil should be placed over the water bottle. The foil should be placed so that it covers only the top of the water bottle, as rodents will chew on any foil that is in contact with the wire bar lid. It is recommended that the water additive be written on either the green "Do Not Water" sticker or on the cage card. The investigator is contacted if water levels are low and is given a deadline by which the water should be replaced; otherwise, regular water is placed on the cage. If a cage is flooded, the cage is changed but a water bottle is not placed on the cage. The investigator is notified that the cage was flooded and is given a deadline to place special water on the cage; otherwise, regular water is placed on the cage.

Acid Water

Acid water is made by adding hydrochloric acid to the water to lower the pH to between 2.0 and 3.0. Acid water helps protect animals from opportunistic bacterial infections. This water is indicated for animals following irradiation as well as for immunocompromised animals either due to strain or experimental manipulations. Acid water must be included in the ACC approved protocol and a pink "Acid Water" sticker placed on the cage card. The BRL staff places acid water on the cages for investigators, and these animals are typically housed on paper bedding.

Do Not Enrich

The dark pink "Do Not Enrich" sticker is used only for animals that have received ACC approval to be exempt from the environmental enrichment program. Environmental enrichment is considered an integral part of humane animal care, so it is only for scientific reasons that exemptions will be approved by the ACC.

Do Not Disturb

The yellow “Do Not Disturb” sticker is used for “sensitive” strains or “sensitive” breeding animals. The husbandry for these animals is provided by the investigative staff, which includes changing the cage (including wire bar lid, food and water) at least weekly. The BRL staff inspects these cages during daily room checks and intervenes if there is an animal welfare issue. The BRL staff change the cages if there is excessive soiling or if the cage is flooded. The BRL staff also removes dead animals found in the cages or replenishes low levels of food or water. The area supervisor notifies the investigative staff when the BRL staff has performed any of the aforementioned activities to a cage labeled “Do Not Disturb.”

Diabetic

An orange “Diabetic” sticker is placed on the cages of animals that are diabetic either because of their phenotype or because of an experimental manipulation, such as administration of streptozotocin. This label notifies the BRL husbandry staff that these cages may require more frequent spot changing or more water due to increased water consumption and thirst. Rat cages that are labeled “Diabetic” are changed daily and have an increased per diem.

This Cage May Need More Frequent Spot Changing

This pink card is placed perpendicularly behind the cage card. It identifies animals that may require increased cage changes aside from diabetic animals. In addition to the weekly cage change, cages will be changed as needed if there is excessive soiling, or low water or food levels.

Dead Animal Notification

This yellow card is placed perpendicularly behind the cage card, and used if an investigator needs to collect tissues from animals that are found dead. This card requires that the investigator supply a phone number where he/she can be reached if an animal in the cage is found dead. When an animal in the cage is found dead, the investigator is called by the area supervisor and the carcass is placed in the “save” box located in the carcass cooler.

Other Cage Notifications/Overlays**Health Issue**

This green card is placed perpendicularly behind the cage card. It includes the date that a health issue was noticed, a description of the health issue, and the weekly veterinary observations. The investigative staff is contacted via email if there is a health issue that requires intervention (e.g. applying triple antibiotic to ulcerative dermatitis lesions) or if animals have reached humane endpoints. Investigators should email or call the veterinarian if they have questions about information on the green cards. These cards should not be removed from the cage unless the investigator has spoken with the area veterinarian or has taken the animal for terminal experiments or euthanasia.

Overcrowded Cage

This yellow card is placed perpendicularly behind the cage card. It lets the investigator know when the cage was marked as overcrowded. The area veterinarian emails the investigator about the overcrowded cage, and it is expected that the animals in the cage be separated within 48 hours. Overcrowded cages that are still present in the room during the next veterinary inspection will be separated by the veterinarian, and a fee of \$20 per new cage created is charged to the investigator’s account.

Chemical Hazard

This yellow card is placed perpendicularly behind the cage card. All of the information on the card must be filled out completely, including the chemical that was given, the date it was given, the deactivating agent for the chemical, and when (if applicable) the animals and their housing are no longer considered to be chemical hazards. Any chemicals administered must be discussed with an Environmental Health and Safety officer and included in the approved ACC protocol. Prior to initiation of work in the chemical hazard room, the PI staff should notify the area veterinarian and supervisor so that correct chemical hazard signs can be placed in the room.

Mice Have Been Anesthetized

This neon green card is placed perpendicularly behind the cage card. Mice must be monitored by the investigative staff until they are able to ambulate following anesthesia. These cards can be placed on the cage to inform the husbandry staff that should mice appear wobbly or lethargic, it is likely due to anesthetic effects.

Red Overlay

This red see-through overlay is placed over the cage card by the veterinary staff. It is used to indicate cages with animals that need to be euthanized for humane reasons. The veterinary staff emails the investigative group to make them aware that an animal has reached a humane endpoint and given a deadline for euthanasia. If the animal is still in the room past the deadline and the veterinarian has not been contacted regarding the plans for that animal, he/she will euthanize it.

Orange Overlay

This orange see-through overlay is placed over the cage card by the investigative staff. It is placed on cages with animals that have had surgery, and must be maintained on the cages until post operative monitoring has been completed (two weeks). After the monitoring period is completed, the investigator removes the orange overlay.

Breeding Cards

These are blue cards that are available for investigators to monitor their breeding colonies. The veterinary and husbandry staffs do not record any information on these cards.

Experimental Manipulations

When injections or manipulations are performed on animals, the procedure, the route of administration, and the date of the manipulation should be written on the cage card. This helps the veterinary staff during animal assessments and allows for better communication with investigators regarding their animals.

Many of the special husbandry items discussed in this *Bulletin* must be included in the ACC

approved animal protocol. They are reviewed by the veterinary staff and other ACC members to ensure appropriate administration and scientific justification for the request. If there are any concerns about changes to routine husbandry and animal care for a protocol, the investigative staff is contacted during the protocol review process by the veterinary staff. When investigators are about to begin a project that involves changes to routine husbandry, it is a good idea to discuss the changes with the area supervisor to make sure that adequate supplies are available (e.g. TMS, acid water, foil, paper bedding, etc.). Investigative staff should introduce themselves to the husbandry staff so that both parties know who to contact if there are any concerns.

The BRL husbandry and veterinary staff are dedicated to providing exceptional care and service to assist investigators with their research projects. If there are any questions regarding normal rodent husbandry or special rodent husbandry requests, please contact the area supervisor or veterinarian.

ANNOUNCEMENTS

Congratulations to the following BRL staff who recently became certified by AALAS as Assistant Laboratory Animal Technicians: Leo Gonzalez, Martin Camargo, Jesse Mendez, and Jennifer Garcia. Way to go!!

Help us congratulate our 2015 Technician of the Year, Greta Nekrasova. Benji Cuyugan and Jose Campos both received honorable mention. This award recognizes the excellent service they provide to the UIC research community.

