Guideline for  
Food and/or Fluid Scheduling and Restriction  
And Fasting

**Purpose:** Food and/or fluid restriction is sometimes necessary in studies involving behavior, obesity, nutrition, etc. This guide is intended to inform investigators of the IACUC guideline for food and water restriction and to aid investigators’ compliance with regulations and the University’s guideline. It will also clarify the use of fasting as a preoperative procedure. This guideline does not include special diets approved to be administered by the laboratory.

*The Guide for the Care and Use of Laboratory Animals* states the following:

“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 wellbeing 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. 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."

“Precautions that should be used in cases of fluid restriction to avoid acute or chronic dehydration include daily recording of fluid intake and recording of body weight at least once a week or more often, as might be needed for small animals. Special attention should be given to ensuring that animals consume a suitably balanced diet because food consumption might decrease with fluid restriction. The 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.”

**Definitions**

A. **Restriction or Scheduling:** the act of controlling the amount of water or food an animal receives and when the animal receives it.

B. **Fasting:** the act of holding food for a maximum of 16 hours (i.e. 5pm to 9am), prior to anesthesia. Many laboratory animals can be fasted for far shorter periods than 16 hours or not at all prior to anesthesia. The investigator is strongly encouraged to consult with the ULAR Veterinary Staff regarding species-specific adjustments to the length of fasting.

**Restriction/Scheduling Procedures**

A. **Protocol Submission-** The following must be addressed in the IACUC protocol (Section 24):

1) **Justification for performing procedure.** Scientific justification must be provided for using restriction/scheduling and for the level and length of time of the restriction/scheduling proposed. An extensive and complete alternatives literature search must be performed and evaluated. Appropriate keywords for
the search include, but are not limited to: food restriction, fluid and water restriction, food deprivation, fluid and water deprivation, positive reinforcement and “alternative”. These terms should be combined with specific keywords related to the animal model and type of study.

2) **Description of how the level of restriction/scheduling will be determined for each individual animal.** As per the *Guide*, the level of restriction is typically measured as a percentage of the *ad libitum* daily intake or as a percentage change in an animal’s body weight. For instance, investigators may monitor and record the normal daily intake of an animal prior to beginning a restriction protocol to determine how much food/water can be removed from an individual without negatively impacting their health.

   1. Please note that investigators working with young, developing animals should specifically address their use in the protocol, as these animals may have additional dietary requirements for maintaining a normal rate of growth.

3) **Description of the restriction/schedule.** Describe how the restriction/scheduling will be conducted. Indicate the length of time of the restriction/scheduling, the time of any scheduled ‘breaks’ from an on-going program, etc.

4) **Description of monitoring the animals.** Describe who will be monitoring the animals, how often they will be observed, how often they will be weighed, the parameters that will be used to monitor their health, and criteria used to determine whether an animal should be removed from the study.

B. Exemption Request Form – An exemption form must be completed and submitted along with the protocol for studies involving restriction or scheduling. (http://www.upenn.edu/regulatoryaffairs/IACUCForms.html )

C. Record Keeping - Record keeping is extremely important to document the health of the animal prior to and during the restriction period. Records must be maintained daily. The restriction schedule itself must also be documented. At any time, records should be available for inspection by ULAR veterinarians, IACUC members, or regulatory representatives. A template record is attached to this guideline. The following items must be documented at a minimum for each animal on study:

1) General Information (i.e. protocol number, animal identification number, principal investigator, contact person, contact phone number)
2) Baseline weight (before restriction period began)
3) Date (daily documentation is necessary)
4) Total fluid amount per day (ml)
5) Total food amount per day (g)
6) Weight - **at least** weekly for large animals (rabbit and larger), more often for smaller species (guinea pig or smaller) (Note: Long hair may “hide” weight loss)
7) Health/Condition
8) Initials

D. Veterinary Care – A ULAR veterinarian must be contacted when any of the following occur: weight drops below 10% of the baseline, the animal appears less active, depressed,
sunken eyes, abnormal posture, animal has reduced feed or water intake (even lower than the restricted amounts), or shows signs of pain or distress.

**Fasting Procedures**

A. Protocol Submission – When submitting a protocol the following must be addressed:

1. Fasting may be necessary for procedures performed under anesthesia. These circumstances typically occur in the context of surgery and, therefore, a description should only be provided in the description of the surgery. The section in protocol Form A, for Restriction/Scheduling does not need to be completed under these circumstances.

2. Because various species-specific factors (high metabolic rates, rapid gut transit time, anatomically unable to vomit, delicate flora balance, etc.), many species either do not require a fasting period or require a significantly less than 16 hour fasting period. Therefore, the investigator should consult with a ULAR veterinarian to determine if the particular species requires a fasting period prior to the specific procedure(s) and how many hours of fasting would be sufficient.

3. Because of probable acid-base disturbances with fasting, rabbits should not undergo a fast (presurgical or otherwise) without a specific justification to the contrary.3

B. ULAR Procedures – ULAR SOP 8.00 “ULAR Services Overview for Animal Research Surgery” states that it is the principal investigator’s responsibility to arrange fasting with the facility manager.

   1. Fill out a red “No Food/Water” card in the ULAR facility.
   2. Place the red card over the cage card in the animal room.
   3. Notify the facility manager of the animal that is to be fasted and its location. Fill out the ULAR FASTING REQUEST FORM at http://www.ular.upenn.edu/

**Resources**

1. *The Guide for the Care and Use of Laboratory Animals*, National Research Council
# Fluid/Food Restriction Record Sheet

**Type of Restriction:**
- Fluid
- Food
- Both

**Protocol #:**

**PI:**

**Restriction Start Date:**

**Contact Person:**

**Length of Restriction Period:**

**Contact Phone:**

**Restriction End Date:**

**Animal ID #:**

**Base Weight:** _______ kg

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<tr>
<th>Date</th>
<th>Total Water Given (ml)</th>
<th>Total Food Given (g)</th>
<th>Body Weight (kg)</th>
<th>On restriction protocol Y/N</th>
<th>Health Observations</th>
<th>Initials</th>
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