

**Mouse Water Restriction
IACUC Standard Procedure
Effective Date: 8/25/2020**

FLUID REGULATION IN MICE

General: This standard procedure is for investigators who use fluid restriction and/or fluid deprivation in healthy rodents for experimental reasons such as behavioral, physiological and neuroscience studies. Due to the variability in experimental design and due to the compensatory action known as “dehydration anorexia”, close monitoring and provision of supportive care are necessary for fluid-regulated animals.

Description of procedure: At UCSF, fluid regulation is implemented through two main distinct regimens that may sometimes be used in conjunction:

Fluid deprivation: refers to the withholding of water for a definite period of time. At the end of the designated timeline, animals are tested and then either euthanized or most commonly returned to *ad libitum* water consumption. Scientific justification for a particular duration must be provided within the context of potential discomfort and physiological harm.

Fluid restriction: refers, not to a complete withholding but to a prolonged provision of a controlled water ration (e.g.: 1ml/per day). The chronic nature of this regimen can lead to adverse effects on animals’ health and well-being.

Classification: Any animal without access to water for approximately 24 hours must be listed in Category E. The total duration can occasionally increase to 26 hours but not more than once weekly.

Any animal on ongoing fluid regulation with anticipated weight loss of > 20% must be listed in Category E.

Description of procedure:

- Animals should preferably be allowed to gradually acclimate to fluid restriction (e.g.: 3-5 days transition period).
- Fluids offered as rewards should be very palatable (e.g.: sucrose solution, evaporated milk, soy milk); alternatives to plain water as a reward must be considered and justification must be provided if only plain water is offered.
- Prior to initiating fluid deprivation/restriction, a baseline weight must be recorded.
- Animals on fluid regulation should be weighed 3 times weekly (and weights must be recorded) until a drop of **10%** ad libitum weight is observed (ad libitum weight refers to pre-restriction weight if animals are > 8 weeks of age; it refers to ad libitum age-matched controls or strain-specific graphs if animals are < 8 weeks).
- Once mice exhibit 10% weight loss, they must be weighed more frequently, per Section J. of the approved IACUC protocol.

- The next critical threshold requiring intervention can be any of the following:
 - **20%** weight loss for mice > 8 weeks or **25%** weight loss compared to age-matched controls or established age-specific data for animals started at < 8 weeks old
 - The mouse has a ruffled hair coat
 - The mouse has a hunched posture
 - The mouse has an awkward gait

The following steps must be taken immediately:

1. The research scientist tags the cage
2. The scientist notifies the LARC
3. The scientist starts a daily quantitative health assessment sheet (QHA) is started, and updated daily (see [fluid regulation log template](#))
4. The corrective plan described below - based on the total score obtained in the QHA – must be followed

Total score	Care to be provided
≤3 or 3 in any one criterion	Give water as stated in the protocol
4	Give additional 0.5ml of water orally or SC/IP daily
5	Give additional 1ml of water orally or SC/IP daily
≥6	Give 1ml of SC/IP fluids and put the mouse on water <i>ad lib</i> until fully recovered *

* Mice may return to water regulation only after receiving a QHS of 2 or less for three consecutive days

- The quantitative health assessment must be conducted daily until both of the following criteria are met:
 - The score obtained is 2 or less for three consecutive days
 - The animal no longer meets any of the criteria for being on quantitative health assessment (weight; ruffled hair coat; awkward gait)
- Animals may return to water regulation 3 days after any surgical procedure is performed unless the protocol states otherwise

TRAINING AND RECORD KEEPING

1. The assessment, care and documentation for fluid-regulated animals are the responsibility of the Principal Investigator. These responsibilities are required 7 days a week, including weekends and holidays.
2. Training in health assessment, monitoring and supportive care is available through LARC veterinary staff upon request.
3. All weights, quantitative health assessments, scoring, and supportive care must be recorded and maintained by the laboratory. Records must be presented to LARC or IACUC upon request.
4. Notations in the record must include protocol number, principal

investigator's name, date of entry, and pertinent information.

Literature search words required:

Literature search was performed for development of this Standard Procedure in July 2020:

<u>Key Words</u>	<u>Search Sites</u>	<u>Years Covered</u>
Mouse, Fluids, Deprivation, Regulation, Restriction, Guidelines, Welfare	PubMed	1970-2020

References: National Research Council. Guide for the Care and Use of Laboratory Animals: Eighth Edition. Washington, DC: The National Academies Press, 2011. Pp 30-31.