Shock Center Protocol

Protocol: In Vivo Bone Densitometry and Body Composition (DEXA) -

Date: 2/8/17
Originator: J Neal

Note:

Following is the FGB protocol for PIXI. The FGB performs PIXI for the Shock Center.

1. Procedure Description

Include exact details of any/all chemical, biological, radiation, or physical agents as well as route(s)/ dose(s)/volume(s)/ frequency and duration

This test measures skeletal and soft tissue mass, enabling assessment of skeletal and body composition in living or dead mice. It utilizes 2 X-ray sources of separate energy levels, which are absorbed differentially by tissue. The ratio of absorption differences is proportional to bone density and body composition. The test is conducted on a LUNAR PIXImus II densitometer, and users must be trained in X-ray safety before use, and are required to wear a radiation safety monitoring badge/s during use.

Mice to be scanned dead are euthanized with CO_2 inhalation. Those scanned alive, are anesthetized with Tribromoethanol (0.2ml/10g IP) or with Isoflurane (induced with concentrations up to 5% and flow rate of 0.8 – 2.0 L/min in oxygen and maintained via nose cone between 0.5 and 2%). Ophthalmic ointment is placed on the eyes to prevent drying of the cornea while the mouse is anesthetized and tested. Mice are individually placed on a disposable plastic tray that is then placed onto the exposure platform of the PIXImus. The process to acquire a single scan lasts approximately 4 minutes; data can be manipulated subsequently to obtain specific regions of interest. At the end of scanning time, mice are removed, recovered from anesthesia, and then returned to their home cage.

In the event that longitudinal studies of body composition are required with individual mice, it is possible that a given mouse will be subjected to the above procedure for as many as 6 times at an interval as short as every 5-7 days in some cases. Long-term studies could be up to the entire life of the mouse, with scans conducted at intervals of one month or longer.

2. Anesthetic/Analgesic Regimen

a. Please list all anesthetics/analgesics used in this procedure in the following table.

If not applicable, please check here ☐ NA

Example

Anesthetic Agent	Diluents Used	Dose & Route of Administration (e.g. 1mg/kg I.V.)	Volume
Isoflurane	Oxygen	Inhalation to effect~2%	
OR. Tribromoethanol	Sterile PBS	400 mg/kg IP	0.2ml/10g body weight

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Tribromoethanol	PBS	400 mg/kg IP	0.2 ml/10g
Isoflurane	Oxygen	By inhalation to effect: ≤5% for induction; 1-2% maintenance	1-5% @ 1.5L/min

Analgesic Agent	Dose & Route of Administration (e.g. 1mg/kg I.V.)	Volume

b. Supportive care while animal recovers from anesthesia:

After testing mice are placed in a recovery box. Half of the box is warmed to 80-86°F and animal has the opportunity to move away from the heat source. To avoid overheating the temperature inside the cage is monitored with a thermometer at rodent level prior to animal placement, and frequently thereafter. When the animals have fully recovered they are returned to cages and checked once again before the end of the day.

3. Post Procedure Care

Describe post procedure care, including frequency of observations, schedule for removal of sutures/clips, etc…

During the time the mouse is recovering from anesthesia, with supportive care as described above, guidelines on supportive care while animal recovers from anesthesia (found in the "Standards for Rodent Survival Surgery at The Jackson Laboratory") will be followed.

4. References if applicable: