

Small Animal Imaging Core Facility
Children's Cancer Research Institute (CCRI)
UT Health Science Center at San Antonio TX 78229

Small Animal Imaging Protocol

Anesthetic	Dose (mg/kg or %)	Route	Duration
ketamine/xylazine	90mg/kg + 10mg/kg	intraperitoneal	20-30 min
<i>or</i> Isoflurane	3% per 1.5L oxygen	inhaled (nose cone)	20-30min
Luciferin	150mg/kg	intraperitoneal	1 time
+/- fentanyl	0.25mg/kg	intramuscular	20-30min
Barium sulfate or Iodine	less than 1mL	enternal or gastric gavage	slow feed or push

Animals with tumors will be assessed for the size of the tumor and extent of invasiveness by small animal imaging using X-ray computed tomography or optical imaging. Computed Tomography is a radiological method of observing internal organs of the mice without need to euthanize the animal. To improve the information value of the scan, mice may receive clinical gastrointestinal or intravenous contrast agents (barium- or iodine-based). Administration of contrast agents would be performed by a trained technician from the Principle Investigator's lab. Gastrointestinal tract agents would be administered in food or water or by gavage bolus and/or enema without anesthesia, as is done in clinical practice. Intravenous contrast agents would be administered by bolus using peripheral (e.g. tail vein) injection using a 27 gauge needle without anesthesia, as is done in clinical practice. After contrast administration, the animal would be deeply anesthetized using either ketamine plus xylazine intraperitoneally, or isoflurane by inhalation. Initial anesthesia to the animal will be administered by the Principle Investigator's technician outside the imaging facility barrier and the animal will be brought into the facility in an air-tight container. Isoflurane may be used in conjunction with a mouse ventilator (MRI-1, CWE Inc., Ardmore, PA) when precise visualization of the heart and lungs is necessary. If a saphenous vein is used for peripheral vascular access prior to the scan, the animal will also receive intramuscular fentanyl for anesthesia prior to venipuncture. The animal will be restrained for safety in a specially designed 6 x 6 x 10 cm plastic isolator with micro-filtered free flowing air. The animal will remain immobilized for the 5 – 30 minutes required for the computed tomography scan during which time anesthesia will be continued through isoflurane by inhalation administered by the lab manager of the imaging facility or his trained technician. The animal will be observed by direct visualization for any signs of distress during the scan. The animal will be recovered in a normal mouse cage after the procedure and will be replaced in a biological safety hood in the LAR quarantine area for Principle Investigator or his technician's pickup. Optical imaging procedures will be essentially the same, except that the activation of optical reporter genes will be either low energy laser scanning or an intraperitoneal injection of 150 mg/kg luciferin, the substrate for firefly luciferase.