

# PET/CT IMAGING IN MICE AND RATS

## Description of procedure:

### 1. PET Only

Radionuclide tracers for PET imaging will be injected via IV (intravenous tail vein or intraorbital) route. Anesthesia is required for intraorbital injection. The injection volume will be in accordance with the IACUC approved guideline. The radiation dose will follow manufacture protocols or descriptions from publication. In general, it will be between 200uCi to 500uCi per injection. After injection, depending on the specific imaging agent being used, there may be a delay prior to imaging, during which the animal may be allowed to recover from anesthesia.

Mice or rats will be imaged under inhalation anesthesia of isoflurane at a concentration of 4% for induction and 2% for maintenance. Animal will be positioned in the imaging chamber with the head into a nose cone, and will be visually monitored via the computer screen throughout the scan. The PET imaging is performed via the detection of radiation emitted from the tracers that have been injected into the animal.

Following scan, animal is allowed to recover from anesthesia and returned to housing for repeated imaging studies at a later time as required. Each scan session will last approximately 30-60 minutes.

### 2. CT Only

CT contrast media may be injected via IP (intraperitoneal) or IV (intravenous), or administered orally prior to or during imaging if necessary. After injection, depending on the specific contrast agent being used, there may be a delay prior to imaging, during which the animal may be allowed to recover from anesthesia (if intraorbital is used for injection). Anesthesia is not required for tail vein IV or IP injections nor for oral dosing. Mice or rats will be imaged under inhalation anesthesia of isoflurane at concentration of 4% for induction and 2% for maintenance. Animal will be positioned in the imaging chamber with the head into a nose cone, and will be visually monitored via the computer screen throughout the scan. During CT scan, the animal will be exposed to X-ray. The X-ray dose is between 20-50kVp with intensity up to 400 microamps. The exposure time will be approximately 20 - 40 min. Contrast agents and dosage to be used will follow published references or manufacture's suggestions.

Following scan, animal may be allowed to recover from anesthesia and returned to housing for repeated imaging studies if needed.

### 3. Combined PET and CT

Mice or rats will be imaged under inhalation anesthesia of isoflurane at a concentration of 4% for induction and 2% for maintenance. Animal will be positioned in the imaging chamber with the head into a nose cone, and will be visually monitored via the computer screen throughout the scan. Animals will receive radionuclide tracers and/or CT contrast media via IP (intraperitoneal), IV (intravenous), or oral routes. The injection volume will be in accordance with the IACUC approved guideline. The radiation dose will follow manufacture protocols or descriptions from publications. In general, it will be between 200uCi to 500uCi per injection. CT contrast agent and dosage to be used will follow published references or manufacture's suggestions.

After injection, depending on the imaging agent to be used, there may be a delay prior to or during imaging, during which the animal may be allowed to recover from anesthesia.

PET imaging is performed via the detection of radiation emitted from the tracers that have been injected into the animal. After PET scan, CT imaging will follow for a co-registry of anatomical locations of PET signal. During CT scan, the animal will be exposed to X-ray. The X-ray dose is between 20-50kVp with intensity up to 400 microamps. The exposure time will be approximately 20 - 40 min.. PET and CT imaging will be taken subsequently while the animal is under anesthesia in the chamber.

Following scan, the animal may be allowed to recover from anesthesia and housed in the animal facility for repeated imaging studies if needed.