

**University of Pennsylvania-Radiology  
Small Animal Imaging Facility Steering Committee  
Standard Operating Procedure**

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**Title: Guideline for the Longitudinal Imaging Studies at  
the Small Animal Imaging Facility**

**SOP Number:** 4.04

**Revision Number:** 1

**Effective Date:** November 10, 2005

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**Review Date:** December 15, 2005

**Approval:** \_\_\_\_\_  
Co-Director

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Co-Director

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- I. **Purpose:** The purpose is to provide the guideline for proper use of the Small Animal Imaging Facility (SAIF). Target audience is Penn animal researchers for various longitudinal imaging studies at the SAIF.
  
- II. **Responsibilities and Scope:** All researchers involved in the longitudinal animal imaging studies (i.e., MRI/ MRS, PET/ SPECT, CT, Optical, and/or Ultrasound) at the SAIF must familiarize themselves with this SOP. To reduce conflicts with researchers at the SAIF, the principal responsibility will belong to the principal investigators (PI) and not their associates, post-docs, and technicians.
  
- III. **Definitions:**
  - A. Longitudinal imaging studies: This is defined as multiple (not a one time use) uses of any imaging modalities. It refers to animals on whom: A) more than one imaging procedure will be performed; *and* B) the imaging procedures will take place on more than one day.
  
- IV. **Procedures:**
  - A. Proper training in the use of the facility and safety procedures is required.
  - B. After receiving written approval from IACUC and from ULAR, PI must then apply to the Animal Oversight Subcommittee (AOS) of the SAIF. PI must obtain written approval from the Animal Subcommittee of the SAIF prior to the movement of any animals (refer to SOP #4.03). For the longitudinal

imaging studies, all live animals must be transported back to the holding rooms instead of the primary room.

- C. **Complete the Application Form for Holding of Animals in #509 Richards for Longitudinal Imaging Studies (see attachment-#1).** Only mice are currently permitted at the 5<sup>th</sup> Richards. The period of the longitudinal studies is initially limited to 3 months in a first come first serve basis, due to space restrictions in the animal imaging holding areas of 5<sup>th</sup> Richards. If more time is needed to complete the studies, PI must first get written authorization from the AOS.
- D. PI must also send 1) a copy of the associated SAIF Research Application Form; 2) ULAR Request for Animal Relocation Form; 3) a copy of the approval letter/ email from ULAR (Dr. Abigail) for animal transfer; 4) a copy of the approved protocol under which the imaging studies will be performed; and 5) a copy of the IACUC approval letter for that protocol to AOS (refer to SOP#4.03)
- E. PI must follow the animal transfer SOP (refer to SOP #4.01).
- F. During animal preparation, all researchers must be careful when using Isoflurane gas anesthesia (refer to SOP #2.04).
- G. **A holding area for mice is available for longitudinal imaging studies at 5<sup>th</sup> Richards (room #509).**
1. PI wishing to use imaging instruments for their longitudinal imaging studies at the SAIF must follow the relevant SOPs (refer to SOPs #4.01 & #4.03).
  2. Prior to the transfer of animals from the Penn animal facilities to the animal imaging holding areas at the 5<sup>th</sup> Richards, PIs must receive approval for use of the mouse imaging holding area (refer to SOP #4.03).
- H. **Longitudinal animal imaging studies using various imaging instruments:**
1. When researchers are interested in using any Imaging modalities at the SAIF, they should look at the protocol for a new user. Prior to performing the 1<sup>st</sup> imaging session at this facility, they should have the proper documents completed and approved.
  2. After obtaining appropriate written approval, PI and their associates can transfer mice from the Penn-Animal Facilities to the 5<sup>th</sup> Richards animal imaging holding area (room #509). In addition they can transfer their mice from the 5<sup>th</sup> Richards animal imaging holding area (room #509) to the SAIF areas for their imaging studies by reservation.
  3. PI wishing to use MRI/ MRS instruments for their imaging studies must follow SOP (refer to SOP #4.07).

4. PI wishing to use PET, SPECT, and CT instruments for their imaging studies must follow SOP (refer to “Penn-website for PET/ SPECT Nuclear Medicine Core Facility”).
5. After PET studies, animals must be kept in a hot-radioactive animal imaging holding areas (room #505 & #507).
6. PI wishing to use optical instruments for their imaging studies must follow SOP (refer to “Penn-website for Bioluminescence Imaging Core Facility”).
7. PI wishing to use Ultrasound instruments for their imaging studies must follow SOP (refer to SOPs #4.06).
8. If researchers plan to use multi-imaging instruments for their imaging studies, we strongly recommend that they perform Ultrasound imaging as the first procedure, followed by MRI/ MRS imaging and Optical imaging. PET/ SPECT, CT should be performed last.

**V. Directions:**

None

**VI. Safety Considerations:**

- A. When “hot” radioactive materials are used, the imaging procedures involved with radioactive materials must be performed at the last.
- B. Reminder: Drinking, eating, and open-toe shoes are not allowed in the SAIF, including the 5<sup>th</sup> Richards animal imaging holding areas and the Founders Basement. Safety glasses are strongly recommended in the Founders Basement and Ultrasound Core-#338 Stemmler Hall-SAIF.

**VII. References:**

- A. Guideline #16 (6/23/99): Penn-IACUC Guideline for Transportation of Laboratory Animals- Philadelphia Campus.
- B. Penn-ULAR-SOP #4.21. Transport of Laboratory Rodents-Philadelphia Campus (updated version is available as of July 19, 2005).
- C. Description and Standard Operation Procedures for the Bioluminescence Imaging Core Facility, University of Pennsylvania (updated version is available as of July, 2005).

**VIII. Attachments:**

1. Form-SAIF-Radiology-#3. “Application Form for Holding of Animals in #509 Richards for Longitudinal Imaging Studies”

**IX. Document History:**

<b>Version Number</b>	<b>Effective Date</b>	<b>Author</b>	<b>Reason</b>
1	November 10, 2005	I. Lee	New
2	January 2, 2006	I. Lee	Revised