



## Standard Operating Procedures (SOP)

<b>Title:</b>  <b>In-Scan Subject Health Monitoring</b>	<b>SOP No.</b> SAIL-MRI-SOP-03
	<b>Version No.</b> 02
	<b>Effective Date:</b> July 28, 2017
<b>Author:</b> Mathieu Simard, M.Sc.	<b>Page:</b> 1 of 6

Approvals		
Name	Signature	Date
SAIL Director: Dr. Barry J. Bedell	On File	July 28, 2017
Reviewer: Antonio Aliaga, M.Sc.	On File	July 28, 2017
ARD Director : Dr. Lucie Côté	On File	July 28, 2017
ACC Chair: Dr. Momar Ndao	On File	July 28, 2017

## Distribution

Small Animal Imaging MRI Laboratory (SAIL), RI-MUHC, 1001 Decarie Blvd, Suite E.S2.1602
Glen Facility Animal Care Committee (FACC)
Small Animal Imaging Laboratory Website: <span style="background-color: yellow;">to be determined</span>
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## 1. Purpose

To describe the process of monitoring the health of animal-subjects during their MRI scan session at the SAIL MRI facility.

## 2. Scope

Applicable to all studies involving scanning with the 7T MRI scanner in the SAIL MRI facility

## 3. Responsibility

- 3.1 To be followed by trained laboratory personnel. It is the responsibility of the SAIL MRI technician, under the supervision of the SAIL Manager, to ensure compliance with procedures involving the animal during the scan session.
- 3.2 It is the responsibility of the study Principal Investigator(s) and/or his/her designate(s) to ensure the health of the animal subject while it is inside the scanner. The SAIL technician and the SAIL Manager will provide assistance as required.

## 4. Materials

- Respiratory sensor
- Temperature probe
- Sterile temperature probe cover slips
- Personal Protective Equipment (PPE)

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## 5.Procedure

- 5.1 Standard sensors include: (1) a rectal temperature probe set up in a feedback loop with the heated ventilation to ensure proper temperature regulation, and (2) a pressure sensor that non-invasively registers the respiration rate, allowing monitoring of the animal's general health and anesthetic depth.
- 5.2 Upon anesthetizing (SAIL-MRI-SOP-02) and installing the animal upon the scanner bed (SAIL-MRI-SOP-01), place the respiratory pressure sensor under the animal.
- 5.3 Unwrap and slip a clean probe cover over the rectal temperature probe. Gently insert the probe into the animal's rectum.
- 5.4 Ensure that the heater and sensor hardware is operational and complete the *Scan and Scanner Preparation* as per section 6.2 of SAIL-MRI-SOP-01.
- 5.5 In the scanner observation suite, turn on the monitoring software PC.
- 5.6 Ensure that the respiratory sensor is registering the animal's respiratory rate. Adjust and re-position the sensor under the animal-subject, if necessary.
- 5.7 Set the software heater control module to ~37 degrees Celsius with a maximal output threshold of ~47% capacity.
- 5.8 Wait and observe the vital readings until they reach a steady-state.
- 5.9 Continue monitoring the vital readings throughout rest of the scan procedure as outlined in the study AUP. Ensure that the vitals remain within a suitable physiological range given the anesthesia depth. Acceptable temperature range is: 36-37 degrees Celsius and respiration rates ranges are: between 85-155 breaths per minute for mice and 50-80 breaths per minute for rats. Lower isoflurane/sevoflurane level if respiration rate is too low or increase it if it's too high.
- 5.10 Once the scan session is completed, exit the software and remove the animal from the magnet and gently remove all sensors before placing it in the recovery chamber. Continue with the animal recovery procedures as indicated in SAIL-MRI-SOP-04.

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## 6. References

SAIL-MRI-SOP-01: Scanner Preparation and Pre-scan Procedures

SAIL-MRI-SOP-02: Anesthesia Induction and Maintenance

SAIL-MRI-SOP-04: Post-Scan Animal Recovery

## 7. Appendices

None

