

**THE UNIVERSITY OF HONG KONG**  
**Committee on the Use of Live Animals in Teaching and Research**

To: All Heads/Directors of Departments/Schools  
Deans, Faculties of Medicine, Dentistry, Education, Engineering and Science  
All Principal Investigators of CULATR-approved projects

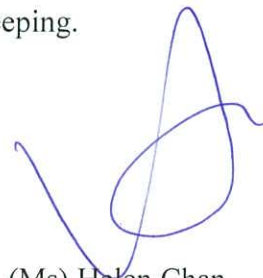
**Intra-operative Monitoring (IOM)**

It is a recommendation under the new “Guide for the Care and Use of Laboratory Animals, NRC, 2011, [http://www.aaalac.org/resources/Guide\\_2011.pdf](http://www.aaalac.org/resources/Guide_2011.pdf) (‘Guide’)” that “intra-operative monitoring (IOM)” with appropriate documentation should be carried out for all animal surgeries. This new “Guide” is used by AAALAC (Association for the Assessment and Accreditation of Laboratory Animal Care International) as one of their "Three Primary Standards" (<http://www.aaalac.org/about/guidelines.cfm>) to evaluate animal care and use programs. IOM includes routine evaluation of anaesthetic depth and physiological functions and conditions such as body temperature and cardiac/respiratory rates. Therefore careful monitoring and timely attention to problems during operations increase the likelihood of a successful surgical outcome.

At the CULATR meeting held on November 13, 2012, the Committee discussed the need to implement “intra-operative monitoring” in animal experiments in order to keep practices of the University in line with international standards. It endorsed the IOM Record forms prepared by the Laboratory Animal Unit (LAU) for use in small and large animal surgeries (Appendix A - C, available at the LAU homepage <http://www.lau.hku.hk/>) and agreed that these forms should be used by researchers with immediate effect. The LAU has incorporated IOM as one of the topics in its bi-monthly orientation practical training sessions since January 2013 and will also provide tailor-made training for researchers on request. CULATR will conduct inspection of the IOM records during its semi-annual inspections of departmental animal facilities and research laboratories.

Please feel free to contact Dr. Cassius Chan of the LAU at 2816 8470 / <casschan@hku.hk> for enquiries on IOM and related record keeping.

Thank you for your attention.



(Ms) Helen Chan  
for Secretary

Committee on the Use of Live Animals in  
Teaching and Research

July 25, 2013

**THE UNIVERSITY OF HONG KONG  
LABORATORY ANIMAL UNIT  
Intra-operative Monitoring Record for Rodent**

CULATR No: \_\_\_\_\_

Operation Date:							
Animal ID:							
Species							
Note 1	Reflex	HR	RR	SpO <sub>2</sub>	Temp	Anaesthetic	Remark
							st

Operation Date:							
Animal ID:							
Species							
Note 1	Reflex	HR	RR	SpO <sub>2</sub>	Temp	Anaesthetic	Remark
							st

Operation Date:							
Animal ID:							
Species							
Note 1	Reflex	HR	RR	SpO <sub>2</sub>	Temp	Anaesthetic	Remark
							st

Operation Date:							
Animal ID:							
Species							
Note 1	Reflex	HR	RR	SpO <sub>2</sub>	Temp	Anaesthetic	Remark
							st

Time of Recording

Note 1: Enter the initial (at surgery start time) and final (at surgery finish time) "intra-operative monitoring" readings as well as any changes during operation

Pedal Withdrawal/Toe/Tail/Ear Pinch Reflex

Pedal Withdrawal / Toe / Tail Pinch Reflex in rodents and Pedal Withdrawal / Toe / Ear Pinch Reflex in rabbits should only be present on recovery and induction. Palpebral Reflex (blinking of the eye upon touching the eyelids) is difficult to assess in small rodents and may not be lost until dangerously deep anaesthetic level is attained in rabbits. ("-" = absent; "+" = present)

Heart Rate (BPM) <sup>Note 2</sup>

Respiration Rate (BPM) <sup>Note 2</sup>

Under anaesthesia, normal ranges of heart rate and respiratory rate of mouse, rat and rabbit are listed below:

	Mouse	Rat
Heart Rate (Beats per minute)	300-800	300 - 500
Respiratory Rate (Breaths per minute)	100-200	70 - 110

Elevated values outside this range may be indicative of pain, inadequate anaesthetic depth or physiological complications ("+" = elevated, "N" = normal, "-" = decrease). Please note that heart rate is difficult to obtain without monitoring equipment such as a pulse oximeter. Please seek veterinary advice if needed.

Saturated Pulse Oxygenation

Saturated pulse oxygenation is measured by a pulse oximeter and should be in the range of 90-100%. Without an oximeter, Mucous Membrane (MM) colour could be assessed from the mouth, conjunctiva etc. and should be pink (P) and not pale pink or grey/blue (PP or G/B). Abbreviations (P, PP, G/B) should be used in the monitoring table.

Body Temperature

Dermal infra-red thermometer is used in the absence of a rectal probe. Normal rectal temp are : Mouse: (36.5-38.0°C) and Rat: (37.5-38.5°C). Dermal temperature however varies with the ambient temperature and a significant deviation from the initial reading should be remarked. Use of warming devices (wd) should be specified.

Anaesthetic Top-up

Isoflurane (%) or injectable Anaesthetic (mL) (if applicable)

Remark

Other notes of actions should include any descriptions of procedure or monitoring not covered in the chart (euthanasia method, surgery start time (st), surgery finish time (sf), fluid therapy (ft), etc...)

Note 2: Source of normal physiological values: - "Principles of Laboratory Animal Science (2001), Elsevier"








Name of  Principal Investigator /  LAU User  
(please tick)


Signature of  Principal Investigator /  LAU User  
(please tick)

Date



**THE UNIVERSITY OF HONG KONG  
LABORATORY ANIMAL UNIT**

**Intra-operative Monitoring Record for Guinea Pig and Rabbit**

CULATR No.:				Animal I/D:			
 (Note 1)							Remark
							st


 **Time of Recording**  
 Note 1: Enter the initial (at surgery start time) and final (at surgery finish time) "intra-operative monitoring" readings as well as any changes during operation


 **Pedal Withdrawal / Toe / Tail / Ear Pinch Reflex**  
 Pedal Withdrawal / Toe / Tail Pinch in rodents and Pedal Withdrawal/ Toe/ Ear Pinch in rabbits should only be present on recovery and induction. Palpebral Reflex (blinking of the eye upon touching the eyelids) is difficult to assess in small rodents and may not be lost until dangerously deep anaesthetic level is attained in rabbits. ("-" = absent; "+" = present)

 **Heart Rate (BPM) (Note 2)**  
 **Respiration Rate (BPM) (Note 2)**  
 Under anaesthesia, normal ranges of heart rate and respiratory rate of guinea pig and rabbit are listed below:

	<b>Guinea Pig</b>	<b>Rabbit</b>
Heart Rate (Beats per minute)	230-380	130-325
Respiratory Rate (Breaths per minute)	42-104	30-60

Elevated values outside this range may be indicative of pain, inadequate anaesthetic depth or physiological complications ("+" = elevated, "N" = normal, "-" = decrease). Please note that heart rate is difficult to obtain without monitoring equipment such as a pulse oximeter. Please seek veterinary advice if needed.

 **Saturated Pulse Oxygenation**  
 Saturated pulse oxygenation is measured by a pulse oximeter and should be in the range of 98-100%. Without an oximeter, Mucous Membrane (MM) colour could be assessed from the mouth, conjunctiva etc. and should be pink (P) and not pale pink or grey/blue (PP or G/B). Abbreviations (P, PP, G/B) should be used in the monitoring table.

 **Body Temperature**  
 Dermal infra-red thermometer is used in the absence of a rectal probe. Normal rectal temp (Note 2) are : Guinea pig: (38.0 – 40.0 °C) and Rabbit: (38.5-39.5°C). Dermal temperature however varies with the ambient temperature and a significant deviation from the initial reading should be remarked. Use of warming devices (wd) should be specified.

 **Anaesthetic Top-up**  
 Isoflurane (%) or injectable Anaesthetic (mL) (if applicable)

**Remark**  
 Other notes of actions should include any descriptions of procedure or monitoring not covered in the chart (euthanasia method, surgery start time (st), surgery finish time (sf), fluid therapy (ft), etc...)

Note 2: Source of normal physiological values: - "Principles of Laboratory Animal Science (2001), Elsevier"

Name of  Principal Investigator/  LAU User  
 (please tick)

Signature of  Principal Investigator /  LAU User  
 (please tick)

Date

