

 CREATE CHANGE	UQ Animal Ethics Committee - Standard Operating Procedure LAB_051 TSE PhenoMaster Institutional author: Integrated Physiology Facility (IPF) AEC Reviewed & Approved: July 2026 SOP Expiry: July 2029	Version #2.1 Page 1 of 5
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LAB_051 TSE PhenoMaster (Expiry: July 2029)

I. OBJECTIVE

To ensure the safe housing of live mice in a metabolic phenocage system (TSE PhenoMaster) for continuous recording of experimental parameters via the use of non-invasive sensors. Sensors continuously measure temperature, food and water consumption (including totals as well as frequency of consumption), O₂ and CO₂ levels (for indirect calorimetry), body weight (via a suspended weighing tube that doubles as environmental enrichment), and movement/activity (in an X, Y and Z axis OR via running wheels).

Note: Environmental control chambers maintain light cycle, temperature, and humidity within a desired experimental range.

NB: The use of (*) indicates this statement is dependent on the facility procedures

NB: The use of () indicates this statement is dependent on AEC Approvals**

II. COMMENTS / RECOMMENDATIONS

- This procedure has been written with specific reference to the Integrated Physiology Facility (IPF). The IPF PhenoMaster includes both software and hardware (TSE PhenoMaster) components and may only be used by an IPF approved experienced operator. *Warning: failure or improper setup of any one component may lead to malfunction and damage to the system.*
- Holding mice within the PhenoMaster system is broadly considered to have a negative impact on animal wellbeing given the stress associated with transport, isolation, and often reduced availability of environmental enrichment material. This must be taken into consideration when planning to use this infrastructure.
- When using this SOP, the following must be described in the individual ethics application: any variation to the processes outline in this SOP (e.g. dietary changes/restrictions or altered light cycles), any specific procedures (e.g. injections or treatments), maximum duration of phenotyping (i.e. the duration within the PhenoMaster).
- Users need to keep animal monitoring records**. AEC approved scoresheets should be used and maintained in the facility in proximity to the animals to ensure continuity of animal care with facility staff.
- Never exit or turn off the PhenoMaster software.
- This SOP should be read in conjunction with relevant animal handling and transport SOPs.
- Users should read and understand the associated Risk Assessment prior to operation: 3978 PhenoMaster (available on the [UQSafe](#) website).
- Equipment/software failures and animal escapes need to be reported to the IPF manager immediately.
- Wild type and genetically modified animals must be transported to equipment as per OGTR guidelines.
- Due to the IPF's unknown commensal microbial status, rodents transferred into the facility cannot generally be returned to their original animal facility. Animal transport and ongoing care arrangements must be planned in advance with the relevant animal facility managers.

III. SAFETY AND COMPLIANCE

- The person undertaking this task must ensure all relevant approvals are in place, and risk assessments have been performed. If unsure, consult your supervisor or IPF Manager.
- Facility protocols should be followed.
- Possible risks include mouse bite injury.

Conditions:

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- A safety step for accessing the top shelf may be used during this procedure and should be done so with awareness.
- All incidents/injuries should be reported to the IPF manager and via [UQSafe](#) online.

IV. TRAINING CONSIDERATIONS

- All unsupervised procedures must be performed by appropriately trained personnel who have been deemed to be competent in the procedure.

V. EQUIPMENT

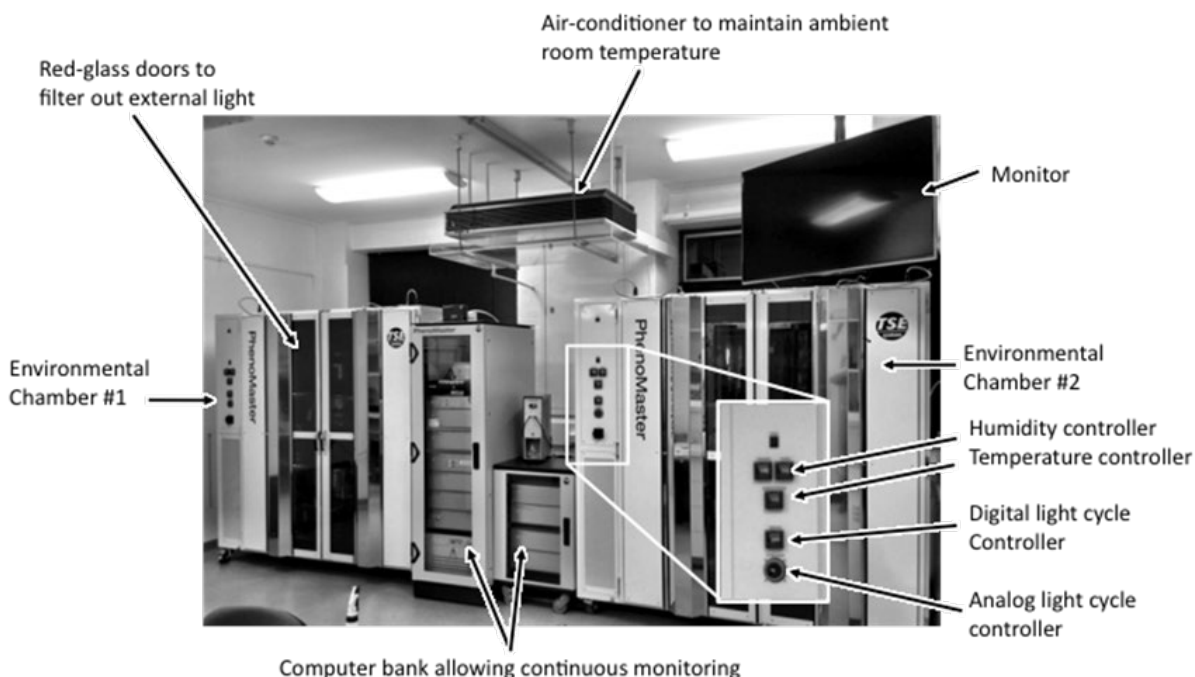
- PPE.

Minimum PPE includes gloves, gown, eye protection, P2 fitted face mask and closed in shoes. Additional PPE may be required based on additional risk (e.g., working with infectious animals).

- TSE PhenoMaster system (Figure 1).
- IVC Tecniplast (Greenline) cage base and compatible TSE lid:
 - TSE lid: acclimation lid (see Figure 2).
 - TSE lid: experimental lid (very similar in design to the acclimatisation lid).

16 mice can be individually housed in the environmentally controlled PhenoMaster chambers.

- TSE PhenoMaster food and water hoppers.
- TSE PhenoMaster weight tubes.
- Running wheels (optional).
- Scales.
- Purachip bedding.
- Mouse pellets and water (or AEC approved hydration substance).
- Disinfectants (e.g., 80% Ethanol (v/v), 1-2% Virkon).
- Clinical waste bin.



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Figure 1: PhenoMaster layout within the Integrated Physiology Facility.



Figure 2: IVC Tecniplast cage base and TSE acclimation lid.

VI. PREPARATION

1. Check AEC approvals to ensure that the correct procedure, personnel and facility are approved to undertake the planned work**.
Deviations can occur between approved procedures listed versus what is planned with the animal, check that they match and that the relevant personnel are approved. For example, if dietary modification is intended to occur this must be specified in the AEC application.
2. Check booking dates and details with the Facility manager.
3. All animal arrivals/departures and euthanasia's must be recorded on the Mosaic movement sheet available in the animal facility.

VII. PROCEDURE

The following procedures are typically performed by trained IPF staff with the exception of maintaining project specific score sheets required for drug treatments, surgical interventions or animal disorders resulting from transgenic manipulation (i.e. Sod1-G93A scoring).

Moving mice into the acclimatisation cages:

1. Prepare relevant number of acclimation cages to accommodate singly housed animals.
2. Fill food and water hoppers and ensure their proper function and correct position in IVC cage. Mark water level on the side of the hopper with a sharpie.
Traditional sized mouse pellets are halved before loading individual food hoppers to avoid blockages.
3. Check animal identification, weigh animals and record on score sheet.
4. House mice (one mouse per cage) with enough Purachip bedding (50-60 gm) to cover the floor of the IVC cage. Ensure acclimation lid is secure with food and water hoppers facing forward (Figure 2). Envirodry or other nesting material can be used during acclimation.
5. Mice are typically housed in acclimatisation cages for 5 – 7 days as they learn to use the different style of hoppers.
The food and water hoppers used in the PhenoMaster are unfamiliar to the mice, and some mice take time to adapt to the equipment.

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6. Mice need to be checked daily in a methodical manner. Check mice are freely moving, appear healthy and alert.
7. Monitor food and water consumption daily whilst mice are acclimating. Check food is accessible through the grate at the base of the hopper and refill if necessary. Check for the presence of faeces in the bedding.
8. Check water level has dropped by comparing to the previous day's water mark. Check water nozzle is functioning and refill if necessary. Check water has not leaked from the hopper. Replace any wet bedding.
9. Weigh your mice daily until weight becomes stable and any initial weight loss is regained.
Weight loss of >10% requires investigation and immediate intervention.
10. If a mouse is having difficulty adapting to the hoppers (i.e. does not eat/drink during a 12-hour period), provide gel and food/mash on the floor. Record animal wellbeing using a generic- or project-specific score sheet**. *In the event a mouse seems unwell refer to LAB_022 UQBR Managing Adverse Health Events (Expiry: March 2029). Report any Unexpected Adverse Events to the AEC.*
11. Record in the room diary that you have checked your mice and make note of any complications identified.

Moving mice into the TSE PhenoMaster:

1. Ensure PhenoMaster software is running and ALL calorimetry devices and both environmental cabinets are turned on.
Never turn PhenoMaster software off while system is running.
2. Calibrate gas sensors, food and water hoppers, and weight tubes (if running wheels are to be used check that they have been correctly installed).
3. Fill water and food hoppers and ensure their proper function before suspending in cage lids. Ensure hoppers are facing forward.
4. Use software to enter AEC approved environmental cabinet parameters**: for example, light cycle: 6 am lights on/6 pm lights off, chamber temperature: 25°C, chamber humidity: 50%
5. Manually weigh each mouse and enter its weight into PhenoMaster software. Place mice into their individual PhenoMaster cages using enough Purachip bedding (50-60 gm) to cover the floor of the IVC cage and no nesting material (Figure 3).
Excessive bedding will interfere with the motion sensors.
6. Fully close cabinet doors and use software to start recording measurements.
7. Animals in the PhenoMaster must be monitored daily to ensure food and water hoppers remain in working order.
Software can be used to monitor eating, drinking, weight and activity.
8. Cabinets must be opened at least daily, and each cage visually checked to ensure food hoppers have not become blocked - Food should be visible at the base of the hopper.
Facility staff check food, water, animals and equipment operations every morning. An additional check of software and equipment is done in the afternoons of weekdays only. Any checks required in addition to these are performed by the research team. As mice sleep during the day there is typically no food/water intake happening and no changes or issues would be noted.
9. If a mouse has not consumed water during its 12-hour active cycle (typically overnight), physically check the water nipple is still functional. Use the software to establish which box is currently being measured before opening the box.
If the individual cage of interest is the one being measured by the calorimetry software wait until the measurement is complete (approximately 3-4 minutes) before inspecting the water hopper.
10. On completion of your experiment ensure all animals have been removed from the PhenoMaster and record any movements on the Mosaic movement sheet.
11. Export all relevant data.
12. DO NOT turn off or exit the PhenoMaster software.

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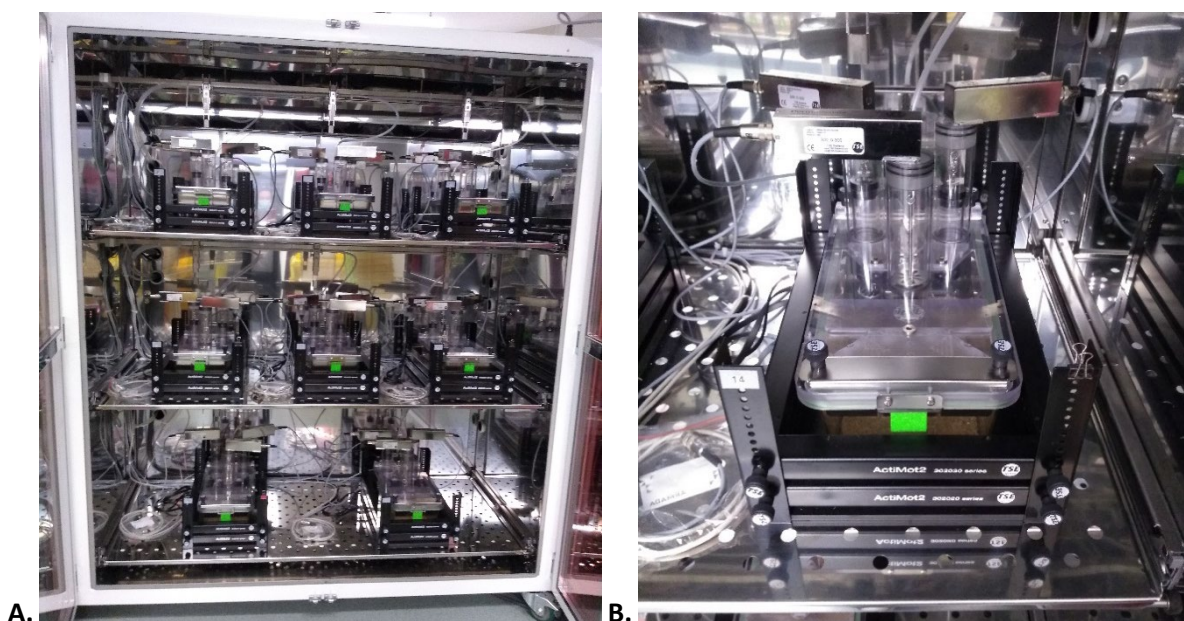


Figure 3: A. One of the two Environmentally controlled PhenoMaster Cabinets which holds 8 individually housed mice during the recording phase of experiments. B. Each TSE lid contains food, water, bodyweight, and temperature sensors. All IVC cages sit within an ActiMot® frame able to monitor mouse activity

VI. MONITORING

- Researchers must maintain “records of monitoring and assessment of animal wellbeing”, as per Clause 2.4.18 (vii) of the Australian code for the care and use of animals for scientific purposes (NHMRC, 2013). Example templates can be obtained by contacting the UQBR Veterinarians or Animal Ethics Unit Veterinary Officer.
- All monitoring records must remain in the facility with the animals during measurements to ensure continuity of animal care with facility staff.
- In the event a mouse seems unwell refer to LAB_022 UQBR Managing Adverse Health Events (Expiry: March 2029).

This SOP deserves notable reference and acknowledgement of authorship by Jennifer Outhwaite (Integrated Physiology Facility – Facility Manager) and Dr Tim Biffin (Animal Ethics Veterinary Officer), with review and update in 2026 by Jennifer Outhwaite.

Version #	Reviewing AEC	AEC Review Date	Outcome
1.0	Anatomical Biosciences AEC, Health Sciences AEC, Molecular Biosciences AEC and Laboratory Biomedicine AEC	March 2025 (one year extension)	Approved to March 2026
2.1	Anatomical Biosciences AEC, Health Sciences AEC, Molecular Biosciences AEC and Laboratory Biomedicine AEC	July 2026	Administrative change made (ABS), Approved to 2029

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