UQBR SOP 36 – Animal Husbandry – Guinea Pigs
AEC Reviewed: 2015

REQUIREMENT:

1. To ensure that the requirements and regulations as set out by the following are met as far as practicable:
    - AEU UQ
    - The Code
    - OGTR
    - Department of Agriculture and Fisheries (DAF)
    - QLD Workplace Health and Safety, and
    - UQ OH&S

2. To standardise practice for all UQBR staff and researchers within UQBR facilities.

3. Annual review is required to maintain best practice and usability of this SOP.

RESPONSIBILITY:

It is the responsibility of the individual performing animal handling procedures and techniques to ensure they have been assessed as competent.

Please Note:
This UQ Biological Resources (UQBR) SOP expands upon UQ Animal Ethics Unit SOPs. This document outlines the procedures followed by UQBR and should not be referenced in Animal Ethics Applications.

No changes or deviations from this SOP are to occur unless the Director of UQBR gives prior authorisation.

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

1.0 Purpose:

1.1. To promote the responsible care and use of animals

2.0 Scope:

2.1 Guinea pigs may show pain and distress differently and often the initial signs of pain, distress or illness can be subtle. These guidelines have been developed to ensure all animals displaying signs of abnormal behaviour are treated as soon as possible.

2.2 In addition, general guidelines for accepted research and institutional husbandry and care have been outlined within this document.

3.0 Responsibilities:

3.1 Institutions using guinea pigs for scientific purposes are responsible for responding effectively to recommendations of the institution's Animal Ethics Committee to ensure that facilities are appropriate to the maintenance of well-being and health of the guinea pigs (NSW DPI Guideline 21, 2006).

3.2 The Chief Investigator/teacher should ensure that the extent of personnel/staff supervision is compatible with the level of competence of each person and the responsibilities they are given in relation to guinea pig care and management (NSW DPI Guideline 21, 2006).

3.3 Circumstances with the potential to have an adverse impact on the wellbeing of an animal must be identified. Experimental and non-experimental causes must be considered, including acquisition and breeding, capture, transport, housing and care, social and physical environment, handling, restraint, sample collection, non-surgical procedures, anaesthesia, surgical procedures, genetic modification, humane killing and provisions for the animal at the conclusion of their use (Clause 3.1.2, The Code, 8th Ed).

4.0 Definitions:

4.1 Investigator – is considered the owner of their AEC-approved research animals. They have personal responsibility for all matters that relate to the wellbeing of animals that they use, including housing husbandry and care. This responsibility extends throughout the period of use approved by the AEC until provisions are made for the animal at the conclusion of their use (The Code, 8th Ed).

4.2 PPE - Personal Protective Equipment

4.3 Zoonosis - A disease naturally transmissible between animals and people.

5.0 Procedures:

5.1 Acquisition of guinea pigs

5.1.1 Outsourced guinea pigs selected for research should be healthy and in good condition prior to entering the facility

5.1.2 Upon ordering guinea pigs, producers should be given specific order requirements.

5.1.3 Guinea pigs should be examined for pathologies.

5.1.4 Females should be examined as best as possible to ensure they are not pregnant

5.1.5 Guinea pigs presenting signs of diarrhoea (faeces on perianal area) or poor body condition should be reported as per UQBR SOP 22 Veterinary Care Protocol

5.2 Transport

Refer to Training Module 2.31.5 Packaging Animals for Transport – Guinea Pigs

5.2.1 Transport and unfamiliar sounds and vibrations both cause increase in respiration rate of guinea pigs that may take over 2 hours to return to normal (NSW DPI Guideline 21, 2006).

5.2.2 The provision of hay for shelter during transport is used to decrease stress and stampeding (NSW DPI Guideline 21, 2006).

5.2.3 Where possible, it is recommended that guinea pigs are rested on feed and water following transportation prior to research procedures as specified by an AEC.

5.2.4 Guinea pigs need to be closely monitored as differences in food and water systems may cause a reluctance to eat and drink (NSW DPI Guideline 21, 2006).

5.3 Guinea Pig Arrivals

Refer to UQBR SOP 32b Unpacking received Rodents to ensure unpacking procedures are followed and animals are checked for health on arrival

Refer to Training Module 2.7.4 Assess Animal Health – Guinea Pigs

5.3.1 Guinea pigs should be bathed on arrival to help reduce the incidence of ringworm. Refer to Section 5.18 Bathing Guinea Pigs.

5.4 Housing

Refer to Training Module 2.23.5 Use of Contents in a Standard Cage – Guinea Pigs

5.4.1 Guinea pigs may be housed in floor pens, cages mounted on shelving or on mobile racks.

5.4.2 Ideal living areas for guinea pigs incorporate open space with shelters using a deep litter bedding system (NSW DPI Guideline 21, 2006).

5.4.3 Guinea pigs should not be housed individually without AEC approval on the basis of strong scientific evidence (NSW DPI Guideline 21, 2006).

5.4.4 Required floor areas differ for breeding groups versus adults groups. Recent literature suggests larger floor areas compared with earlier recommendations.

Recommended minimum floor areas, adapted from NSW DPI Guideline 21 (2006).

Breeding pair with litter	2500 cm^2
Each additional breeding female	+ 1000 cm^2
Non-breeding guinea pig weighing 200g to 450g	1800 cm^2
Each additional animal weighing 200g	+ 200 cm^2
" >200g - 300g	+ 350 cm^2
" >300g - 450g	+ 500 cm^2
Non-breeding guinea pig weighing >450g	2500 cm^2
Each additional animal weighing >450g - 700g	+ 700 cm^2
" >700g	+ 900 cm^2

Recommended minimum floor areas, adapted from VIC DPI (2004).

Species	Single or group housing or breeding animals	Animal weight (g)	Min floor area * (cm^2 per animal)	Min height ** (cm)
GUINEA PIGS	single	<250	700	20
		250-550	900	23
		>550	1000	23
	group	<250	300	20
		250- 550	450	23
		>550	600	23
	breeding	F + litter	1200	23
		per F in harems	1000	23

5.4.5 Enclosure height of 240mm is sufficient to contain guinea pigs in floor pens and will allow the animals to see approaching persons.

5.4.6 UQBR commonly uses commercially available wood shavings as a floor substrate. Wood shavings are preferably steam/heat treated and from appropriate wood species.

5.4.7 The provision of shelter is provided by piping or similar to provide for privacy and a space to retreat. Shelters should be non-toxic, easy to clean and disinfected.

5.4.8 Where hay is used for shelter or dietary requirements autoclaving prior to use is required within UQBR to decrease the introduction of pathogens into a facility.

5.4.9 Guinea pigs are social animals and should be housed in single sex units. Establishing social structures is important where group housing is used and when new groups are formed to assist social stability (NSW DPI Guideline 21 2006).

5.4.10 Guinea pigs may be given hay, straw or wooden chews to encourage natural gnawing behaviour where appropriate for the experimental protocol.

5.5 Feed and water regimen

Refer to Training Module 2.2.5 Feeding – Guinea Pigs

Refer to Training Module 2.3.5 Supply Drinking Water – Guinea Pigs - Bottled

5.5.1 Guinea pigs are generally fed a pelleted diet with a crude fiber such as hay.

5.5.2 They may be supplemented with succulent feeds such as carrot and apple. Excessive feeding of succulent feeds may cause gastrointestinal upsets.

5.5.3 Guinea pigs are unable to synthesise Vitamin C. To avoid disease Vitamin C should be added as a supplement to the drinking water at 1g/L and prepared fresh daily in a non-copper delivery system (VIC DPI 2004). Note this is required only if current feed is not Vitamin C fortified.

5.5.4 Guinea pigs should have food and water provided ad libitum.

5.5.5 Guinea pigs commonly play with watering devices. Placement of trays or drip channels beneath water bottles aids in keeping cages and pens dry.

5.5.6 Guinea pigs practice coprophagy. They produce two different pellets and consume 40% of their faeces at night (NSW DPI Guideline 21 2006).

5.5.7 Guinea pigs are prone to anorexia following procedures. Monitoring to ensure they have resumed eating is required.

5.6 Cleaning regimen

Refer to Training Module 2.5.5 Cleaning Environment – Guinea Pigs

Refer to Training Module 2.25.5 Spot Changes – Guinea Pigs

5.6.1 Regular cleaning is recommended to reduce build-up of faeces and keep floor areas dry.

5.6.2 Cleaning of floor or cage environment is completed weekly or more frequently with daily spot cleaning completed as required.

5.6.3 Cleaning of cages and floor pens should be performed with total replacement of bedding substrates at specified intervals or when new batches of animals are introduced.

5.6.4 Environmental contamination with cleaning products or other chemicals should be avoided.

5.6.5 Disinfection of used cage items to decrease ring worm contamination is required.

5.6.6 Floor Pen Cleaning Procedure

EQUIPMENT

- PPE: Hair net, P2 mask, gloves, protective eye wear, lab coat, enclosed foot wear, Shoe covers
- Long handled broom
- Long handled rake
- Plastic light weight shovel
- Long handled mop and bucket
- HEPA filtered vacuum cleaner
- Long handled dust pan and brush
- Hay
- Wood shavings
- Replacement water bottles and feed hoppers
- Rubbish bins and bin liners (extras for replacement)
- 70% Ethanol
- Disinfectant
- 240L bin for animal waste

PREPARATION

- Prepare all items ready for floor pen cleaning – spray into room where required
- Ensure consumable levels are adequate and stocked ready for use
- Ensure administration items are positioned for easy use during cage change

PROCEDURE

1. Ensure you are wearing all appropriate PPE
2. Transfer each guinea pig from its pen to a clean pen/holding area whilst checking:
    - Number of animals – if incorrect investigate and alert supervisor
    - Sex – if incorrect investigate and alert supervisor
    - Health – if concerned follow UQBR Veterinary Care Protocol
3. Rake bedding into a pile. Use the shovel to place all dirty bedding into 240L bin
4. Use the HEPA filtered vacuum to remove smaller debris. Vacuum bags will require periodic replacement
5. Empty and clean food hoppers. See Section 5.5 Feed and water regimen
6. Mop floor with disinfectant in hot potable water OR remove plastic lining and replace
7. Allow floor to dry
8. Fill floor pen with clean bedding substrate – wood shavings followed by hay
9. Return guinea pigs to their pen

5.7 Environment

5.7.1 UQBR provides a daily light cycle for guinea pigs.

5.7.2 Use of a radio for white noise should not be used at high volumes. The value of this practice is not yet confirmed.

5.7.3 The recommended air temperature range for guinea pigs is 18-24°C (VIC DPI 2004).

5.7.4 Recommended relative humidity is 40-70% (VIC DPI 2004).

5.7.5 Recommended maximum lux level is 350 lux at one meter from the ground (VIC DPI 2004).

5.8 Animal Restraint

Refer to Training Module 2.22.5 Animal Restraint - Guinea Pigs

5.8.1 Guinea pigs may appear nervous. They should be alerted when approaching to avoid stampeding.

5.8.2 To alleviate capture stress use items to aid in corralling animals within the holding area.

5.8.3 Wrap one hand around the chest while supporting the hindquarters.

5.9 Sexing

Refer to Training Module 2.4.5 Sexing Animals – Guinea Pigs

5.9.1 Restrain the guinea pig appropriately

5.9.2 Determine sex by:

- Evaluating and comparing the anogenital distance
- Presence or absence of a vaginal prepuce
- If you are unsure of the sex when observing a single animal, then compare the anogenital distance between 2 or more animals until you can see the difference.

5.10 Animal Checks

Refer to Training Module 2.10.5 Animal Checks – Guinea Pigs

5.11 Euthanasia

Note that the euthanasia method is project dependent.

Euthanasia Using Carbon Dioxide in Adults

5.11.1 Refer to UQBR SOP 4 Euthanasia – Carbon Dioxide Asphyxiation in Mice and Rats with the following modification:

- Monitor animals while the chamber is filling
  - Average immersion time required for guinea pigs is greater than 10 minutes

5.12 Assess Animal Health

Refer to Training Module 2.7.4 Assess Animal Health – Guinea Pigs

5.13 Identify Pregnancy

Refer to Training Module 2.20.4 Identify Pregnancy – Guinea Pigs

5.13.1 Visually assess the sow for pregnancy by assessing the flanks for bulging or roundness.

5.13.2 When the female is not visibly pregnant the abdomen may be palpated by gently feeling the abdomen for small ‘lumps’, at the researchers request.

5.13.3 Animal weight can be an indication of pregnancy. This method requires tracking from the time of mating.

5.14 Assess Oestrus

Refer to Training Module 2.21.4 Assess Oestrus – Guinea Pigs

5.14.1 Sows should only be mated between 4 and 7 months of age due to pelvic fusion occurring after this age range.

5.14.2 Females in oestrus (i.e. receptive to mating and most likely to become pregnant) will have an open vaginal membrane.

5.15 Perform Necropsy

Refer to Training Module 2.26.5 Perform Necropsy – Guinea Pigs

Refer to UQBR Guideline 4 Post Mortem Checklist

5.16 Weaning

Refer to Training Module 2.30.4 Weaning – Guinea Pigs

5.16.1 Guinea pigs may be weaned based on weight. Seek guidance from supervisor and project specifications.

5.17 Provide care for sick or recovering animals

Refer to UQBR SOP 22 Veterinary Care Protocol

5.18 Bathing Guinea Pigs

Refer to Training Module 2.36.1 Bathing – Guinea Pigs

5.18.1 Bathing on arrival is necessary to help reduce the incidence of ring worm. It is an OHS expectation that all reasonable steps are taken to reduce the risk of zoonotic transfer.

<u>PROCEDURE</u>

1. Fill two appropriate sized containers with lukewarm water at a depth no greater than the height of the guinea pig
2. Slowly introduce guinea pig into the first container to thoroughly wet coat
3. Remove guinea pig from the water
4. Apply and lather UQBR Veterinary approved treatment
5. Allow to stand for recommended contact time
6. Slowly introduce guinea pig into the first container again to thoroughly wet coat
7. Carefully and gently wash the guinea pig to remove lather, avoiding splash around the head
8. Place guinea pig into second container to rinse

9. Remove guinea pig from water and place on a dry towel. Towel dry to remove excess water residue.
10. Use a hairdryer from a distance to complete the drying of hair to prevent hypothermia

6.0 Zoonotic Potential

6.1 Zoonotic diseases can spread through close contact with infected animals or contact with contaminated bedding and equipment.

6.2 Good personal hygiene, wearing protective clothing and maintaining healthy animals minimises the risk of animal-borne diseases infecting people (DAFF, QLD).

6.4 Other zoonotic infections such as fungus infections like microsporum spp (Ring worm) are highly transmissible from guinea pigs to people. UQBR manages this risk by treating all incoming guinea pigs for ringworm, typically by bathing in an approved medicated solution.

6.6 Tetanus vaccinations are required to be current when working with all animals.

7.0 Considerations

Nil

8.0 Safety

8.1 All accidents, injury or near misses are to be reported immediately to the Facility Manager and recorded on a UQ OHS Incident Report Form.
8.2 In the event of a spill follow the facility emergency spill procedures
8.3 Ensure you have read the risk assessment and SDS for the disinfectant you are using

9.0 References

9.1 Animal Care and Protection Act 2001 (Qld): https://www.legislation.qld.gov.au/LEGISLTN/CURRENT/A/AnimalCaPrA01.pdf
9.2 Australian code for the care and use of animals for scientific purposes (8th Edition, NHMRC 2013): https://www.nhmrc.gov.au/guidelines/publications/ea28
9.3 Code of Practice for the Housing and Care of Laboratory Mice, Rats, Guinea Pigs and Rabbits (DPI, Vic 2004): http://www.depi.vic.gov.au/agriculture-and-food/animal-health-and-welfare/animal-welfare/animal-welfare-legislation/victorian-codes-of-practice-for-animal-welfare/code-of-practice-for-the-housing-and-care-of-laboratory-mice,-rats,-guinea-pigs-and-rabbits
9.4 Department of Agriculture and Fisheries (DAF): http://www.daf.qld.gov.au/
9.5 Guidelines to promote the wellbeing of animals used for scientific purposes (NHMRC, 2008): https://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/ea18.pdf

9.6 NSW DPI Animal Review Panel Guideline 21 May 2006: http://www.animalethics.org.au/__data/assets/pdf_file/0012/222510/housing-guinea-pigs-scientific-institutions.pdf

9.7 OGTR PC2 work requirements and regulations: http://www.ogtr.gov.au

9.8 QLD WH&S Act 2011: https://www.worksafe.qld.gov.au/laws-and-compliance/workplace-health-and-safety-laws/laws-and-legislation/work-health-and-safety-act-2011

9.9 UQ Animal Ethics Unit SOPs: http://www.uq.edu.au/research/integrity-compliance/standard-operating-procedures-sops

9.10 UQ OHS Unit: http://www.uq.edu.au/ohs/

9.11 UQ OHS Incident Report Form: http://www.uq.edu.au/ohs/index.html?page=141331

9.12 UQBR SOPs: V:UQBR/SOPs/Common/UQBR SOPs and http://biological-resources.uq.edu.au/secure/uqbr-sops

9.13 Zoonoses, Queensland Government Department of Agriculture, Fisheries and Forestry: http://www.daff.qld.gov.au/animal-industries/animal-health-and-diseases/zoonoses