



Curtin University Standard Operating Procedure

LONG TERM HOLDING OF RATS AND MICE IN BUILDING 300 FOR EXTENDED PERIODS OF TIME (Approval by AEC required)

Number: HUS 18
Version: 2.1
Date: 13/03/2012

Date of Approval: 13/03/2012
Reviewed:

DATE	12/06/2014	14/9/2016			
REVIEWER	Dr Tara Pike	Dr Tara Pike			

Aims / Objectives: To provide guidelines on maintaining rats or mice in the Animal Facility Building 300 for long term periods of greater than 3 months and less than 2 years.

Procedures:

1. Animals must be approved to stay for the length of time required by the researchers by the Curtin University Animal Ethics Committee.
2. Animals must be housed appropriately for their species and size and age. Consideration must be taken to the size the animal will be once fully grown, and the appropriate size cages allocated.
 - i. Cages available at the Animal Facility are 21 cm Wide; 37cm Deep; and 18.5 Height = 516cm².
 - ii. The current recommendations from the NSW Department of Primary Industries are 60cm² per adult mouse, with a minimum floor area of 500cm² for 2 or more mice; and a minimum height of 12cm
 - iii. Rats require larger areas- the minimum floor area for a group of up to 5 rats of up to 250-300gm body weight should be 1,500cm² and preferably 1,800cm² (NSW Department of Primary Industries)
 - iv. It is very important in terms of height for rats and this is often the most limiting factor. Ideally the height of cages should allow rats to stand on their hind legs and stretch up fully. This height does not need to be provided over the entire area of the cage. As a guide, for rats weighing 250 - 300gm, a cage height of 22cm over part of the



- cage should be provided. For rats weighing more than 250 - 300gm, the cage height over part of the cage should allow the rats to fully stretch upright (NSW Department of Primary Industries).
- v. In Building 300, the traditional rat cages should house no more than 2 rats when < 3 months, over 3 months of age they should be separated.
3. A plan for environmental enrichment should be instigated once the animals arrive, and this to be consulted with the animal carers prior to the beginning of the research.
 4. A weekly weight should be recorded for each animal to ensure they are either growing or maintaining their weight.
 5. A detailed health check should be carried out weekly and recorded to ensure transparency should any problems arise. Monitoring forms can be obtained from the animal facility which can to be filled in for each animal by the researcher each week (e.g. Form 9).
 6. If any animal begins to show signs of illness or ill thrift, an individual health monitoring sheet needs to be filled in and the animal monitored daily as per the Facility scoring sheet (See Form 1)
 7. Consideration of the strain of rat or mice to be kept must be done prior to submitting an application to the AEC. Certain strains such as the C57Bl/6 mice are more prone to barbering and this must be justified to using these strains if planning on keeping them for a long time. See the SOP TEC 12 on barbering.
 8. The likelihood of disease and /or death occurring at particular ages must be considered when planning the proposal for research, and must be outlined to the AEC in the approval application. If the death rate of the untreated research animals falls at a level less than the expected rate for that age and breed, post mortems can be carried out by the researcher or in – house pathologists. If the death rate rises above the expected level for that age of mice, external post mortems must be carried out on these animals at the researchers cost. See below for accepted rates. These must be reported and recorded.
 9. If signs of ill health or ill thrift are showing, the Animal Facility Manager and/ or the Veterinarian must be consulted to see if it is viable to allow the animal to be continued in the study. If it is not, the animal must be humanely culled at that point in time.



Strain Survival Information

The chart below provides the age at which 90%, 75%, 50%, 25% and 10% of the population has survived. These ages are averages derived from large populations (from Turturro et al., 1999), so survival data in small groups of animals will vary. **Please Note** the NIA typically will not ship animals past the 25% survival age, as very old rats and mice are frail and more sensitive to the stresses of shipping. Very old rats and mice are also more prone to underlying age-associated diseases and are not a good research model for most purposes.

% Survival	90%	75%	50%	25%	10%
F344 Males	19 mo.	22 mo.	24 mo.	26 mo.	28 mo.
F344 Females	19 mo.	23 mo.	26 mo.	28 mo.	30 mo.
F344BN Males	25 mo.	29 mo.	34 mo.	37 mo.	38 mo.
F344BN Females	23 mo.	26 mo.	30 mo.	34 mo.	36 mo.
F344 Males	19 mo.	22 mo.	24 mo.	26 mo.	28 mo.
F344 Females	19 mo.	23 mo.	26 mo.	28 mo.	30 mo.
BN Males	22 mo.	27 mo.	32 mo.	34 mo.	36 mo.
BN Females	22 mo.	27 mo.	32 mo.	35 mo.	38 mo.
C57BL/6 Males	19 mo.	24 mo.	27 mo.	30 mo.	32 mo.
C57BL/6 Females	18 mo.	22 mo.	25 mo.	28 mo.	30 mo.
DBA/2 Males	16 mo.	22 mo.	25 mo.	28 mo.	29 mo.
DBA/2 Females	8 mo.	16 mo.	23 mo.	26 mo.	29 mo.
B6D2F1 Males	23 mo.	26 mo.	31 mo.	35 mo.	39 mo.
B6D2F1 Females	19 mo.	24 mo.	28 mo.	31 mo.	34 mo.
B6C3F1 Males	24 mo.	28 mo.	32 mo.	36 mo.	40 mo.
B6C3F1 Females	23 mo.	26 mo.	29 mo.	32 mo.	35 mo.

Source URL: <http://www.nia.nih.gov/research/dab/aged-rodent-colonies-handbook/strain-survival-information>



Balb-C Survival Rates

There are marked ranges in the literature for the expected life span of a Balb-C mouse- from 18.7 months (Festing and Blackmore 1971) to 27.2 months (Goodrick, 1975). In Goodrick, 1975, ex-breeders are shown to have a reduced life span (average about 15 months). These studies all appear to be from the 1960's to 1970's.

A table that can be used from 16 months onwards can be seen here:

Age	Percentage Alive	Average Weight (g)
16 months of age	100% alive	25.2
18 months of age	95% alive	23.9
20 months of age	80% alive	22.5
22 months of age	70% alive	23.0
24 months of age	40% alive	22.9
26 months of age	20% alive	21.5
28 months of age	0% alive	

Information taken from Pierpaol, and Regelson, 1994

References

Fawcett, A. ARRP Guideline 22: Guidelines for the Housing of Mice in Scientific Institutions

NSW Department of Primary Industries, Animal Welfare Branch, West Pennant Hills.
http://www.animaethics.org.au/___data/assets/pdf_file/0004/249898/draft-guidelines-housing-mice.pdf

ARRP Guideline 20: Guidelines for the Housing of Rats in Scientific Institutions
Animal Welfare Branch, NSW Department of Primary Industries

ANU Animal Research

http://search.anu.edu.au/search/search.cgi?query=scoring+sheets&collection=anu_external&scope=researchservices.anu.edu.au

National Institutes of Health Aged Rodent Colonies Handbook

<http://www.nih.gov/>

Pierpaoli, W, Regelson, W. Pineal control of aging: Effect of melatonin and pineal grafting on aging mice. Proc. Natl. Acad. Sci. USA Vol. 91, pp. 787-791, January 1994

Charles L. Goodrick, Life-Span and the Inheritance of Longevity of Inbred Mice
Journal of Gerontology 1975, Vol. 30, No. 3, 257-263

Harlan Laboratories Information Sheet on Balb-C mice

Festing, M.F.W., Blackmore, D.K., (1971) Life Span of Specified Pathogen Free (MRC Category 4) Mice and Rats. Laboratory Animals (1971) 5, 179-192.