



Internal Regulation Title	Rodent Cage Regulations				
Date Last Revised	09/14/2017	Date Created	07/17/2017	Revision #	
Regulation Number	1	Required by:	<input type="checkbox"/> OHRP	<input type="checkbox"/> Funding Agency	<input type="checkbox"/> OLAW
Applicability	<input type="checkbox"/> RGC Internal	<input checked="" type="checkbox"/> Researcher	<input type="checkbox"/> Institutional		
Subgroup	<input type="checkbox"/> NKU Compliance	<input type="checkbox"/> IRB	<input checked="" type="checkbox"/> IACUC	<input type="checkbox"/> IBC	

1.0 PURPOSE

The purpose of this regulation is to describe the requirements for rodent cages.

2.0 GENERAL INFORMATION AND SCOPE

The [Guide for the Care and Use of Laboratory Animals Eighth Edition](#) (hereafter referred to as “the Guide”) lists the minimum space recommendations for laboratory animals. Some of the issues addressed are as follows: “Singly housed animals may require more space per animal than that recommended for group-housed animals, while larger groups may be housed at slightly higher densities.” “When selecting a suitable social environment, attention should be given to whether the animals are naturally territorial or communal and whether they should be housed singly, in pairs, or in groups. An understanding of species-typical natural social behavior (e.g., natural social composition, population density, ability to disperse, familiarity, and social ranking) is key to successful social housing.” Population density can affect reproduction, metabolism, immune responses and behavior. Group composition should be held as stable as possible as mixing groups or introducing new members can alter behavioral and physiological functions. Larger animals may require more space to meet the performance standards.

The [Guidance on Prompt Reporting to OLAW under the PHS Policy on Humane Care and Use of Laboratory Animals](#) (PHS/OLAW NOT- OD-05-034) states as an example of reportable situations the following: “Chronic failure to provide space for animals in accordance with recommendations of the *Guide* unless the IACUC has approved a protocol-specific deviation from the *Guide* based on written scientific justification.”

3.0 DETAILS

A. INDICES FOR RODENT CAGES

Animal space performance standards of this internal regulation are based on indices listed in the *Guide*. The performance indices will be reviewed semiannually and on an individual protocol basis. Evaluation will consist of setting clearly defined goals and desired outcomes with the ability to consider many variables such as species, history of animal, facilities, research goals and staff expertise.

Indices		Outcome
Health	Rodent health is checked daily. An appropriate environment enhances healthy rodents.	Rodent wellbeing is maintained. Signs of a healthy rodent includes: maintenance of weight, good coat appearance, no evidence of consistent fighting (e.g. wounds on coat or tail, swollen feet).
Reproduction	Breeding colonies may require more space; number of adults, and age and size of litters must be considered. Mother and pups will be provided sufficient space for weaning.	Mothers and pups will have suitable space to develop to weaning without detrimental effects for the mother or litter.
Growth	A suitable environment will allow for normal growth.	Normal growth patterns are observed. This includes normal weight gain across development.
Behavior and Activity	Size and density of space will be considered to enhance normal behavior and activity of rodents including gnawing, grooming, foraging, playing and investigating.	Recognition of normal activity, appearance, and food/water intake.
Use of Space	Rodents require space for sleep, waste, play and normal postural adjustments. Proper space or reduced density will be provided to ensure rodents do not touch walls or ceilings and have adequate room for daily activities.	Rodents will show appropriate postural adjustments and room to play, sleep etc.
Special Needs	Post-operative rodents require special monitoring and adequate space.	Post-surgical rodents will be housed individually and observed frequently until food and water consumption and activity levels have returned to normal, presurgical levels.
Experimental Use	Protocol specific housing requests will be monitored through use of performance standards by PI and veterinarian.	The health and well-being of the animal will always take precedent in consideration of variances in housing conditions compelled by specific experimental procedures
Environmental Enrichment	Environmental enrichment provides animals with choices and a degree of control over their environment.	Recognition of normal use of enrichment items, such as rodent use of shelters for retreating in case of a disturbance and nesting material and deep bedding to allow mice to control their temperature and avoid cold stress.

B. SPACE REGULATIONS

Compliance with the following guidelines is required unless written exception has been approved by the Northern Kentucky University Institutional Animal Care and Use Committee (IACUC) on the grounds of accomplishing scientific objectives. Divergences from this policy should be discussed with the Veterinarian and IACUC.

NOTE: For animals that are not listed below, contact the NKU IACUC.

- *The Guide* states that animals “must have enough space to express their natural postures and postural adjustments without touching enclosure walls or ceilings.”
- *The Guide* also states that “space allocations should be assessed, reviewed and modified as necessary by the IACUC considering the performance indices”
- See the following tables for minimum requirements from the [Guide for the Care and Use of Laboratory Animals, Eighth Edition](#).

TABLE 1. RECOMMENDED MINIMUM SPACE FOR MICE AND RATS HOUSED IN GROUPS (THE GUIDE, P. 57)

Animal	Weight (g)	Floor Area/Animal (in ²)	Height (in)
Mice	<10	6	5
	10 – 15	8	5
	15 – 25	12	5
	>25	≥15	5
	Female + litter	51	5
Rats	<100	17	7
	100 – 200	23	7
	200 – 300	29	7
	300 – 400	40	7
	400 – 500	60	7
	>500	≥70	7
	Female + litter	124	7

TABLE 2. FOR STANDARD CAGING, THESE RECOMMENDATIONS TRANSLATE INTO THE FOLLOWING EXAMPLES

Animal/Cage type	Cage size (in)*	Maximum number of animals
Small mouse static microisolator cage	60	5 mice <25g
		4 adult mice ≥25g
		2 adults with unweaned litter
Small mouse ventilated cage: Alt Design Tecniplast (Blue) Tecniplast (Green) Allentown (Purple)	75	6 mice <25g
	78	5 mice ≥25g
	81	2 adults with one unweaned litter
	75	
Large mouse static microisolator cage and Large mouse ventilated cage: Allentown (Purple)	144	12 mice <25g
		9 mice ≥25g
	140	3 adults with two unweaned litters**

Large mouse ventilated cage: Alt Design	164	13 mice <25g
		10 mice ≥25g
		3 adults with two unweaned litters**
Rat microisolator	144	6 rats <200g
		5 rats <300g
		3 rats <400g
		2 rats ≥400g
		2 adults with one unweaned litter
Rat ventilated cage	140	6 rats <200g
		5 rats <300g
		3 rats <400g
		2 rats ≥400g
		2 adults with one unweaned litter
Suspended wire/metabolism cage	66	1 rat <500g
Rats housed in Guinea Pig cages	202	3 rats <500g
		2 rats ≥500g
		2 adults with one unweaned litter

*Cage size determined by measuring length and width of a cage at the level of the surface of the bedding.

**A breeding trio consists of 3 adults (1 male and up to 2 females with nursing litters)

TABLE 3. SPACE RECOMMENDATIONS FOR OTHER RODENTS (THE GUIDE, P. 57)

Animal	Weight (g)	Floor Area/Animal (in ²)	Height (in)	DLAR enclosure area (in ²)	Max # of animals / DLAR enclosure
Hamsters	<60	10	6	144.5	14
	60 - 80	13	6		11
	80 - 100	16	6		9
	>100	≥19	6		7
Guinea pigs	<350	60	7	202	3
	≥350	≥101	7		2

TABLE 4. SPACE RECOMMENDATIONS FOR RABBITS (THE GUIDE, P. 59)

Animal (Rabbits)	Weight (kg)	Floor Area/Animal (ft ²)	Height (in)	DLAR enclosure area (ft ²)	Max # of animals / DLAR enclosure
Allentown standard cage	<2	1.5	16	5 ft ²	3
	2 - 4	3	16		1
	4 - 5.4	4	16		1
	>5.4	≥5	16		1
Allentown expanded cage	<2	1.5	16	10 ft ²	6
	2-4	3	16		3
	4 - 5.4	4	16		2
	>5.4	≥5	16		2
	<2	1.5	16		4

Alternative Design standard cage	2-4	3	16	6 ft ²	2
	4 - 5.4	4	16		1
	>5.4	≥5	16		1
Alternative Design expanded cage	<2	1.5	16	12 ft ²	8
	2-4	3	16		4
	4 - 5.4	4	16		3
	>5.4	≥5	16		2

4.0 REFERENCES

[Guide for the Care and Use of Laboratory Animals Eighth Edition](#)

5.0 FORMS OR ATTACHMENTS

6.0 DEFINITIONS

Approvals

Title	Approved	Date Approved	Not Applicable
Manager of Research Compliance	<input checked="" type="checkbox"/>	11/01/2017	<input type="checkbox"/>
IACUC Chair	<input checked="" type="checkbox"/>	11/01/2017	<input type="checkbox"/>
Institutional Official	<input type="checkbox"/>		<input checked="" type="checkbox"/>

Revisions

Title	Approved	Date Approved	N/A	Summary
Manager of Research Compliance	<input type="checkbox"/>		<input type="checkbox"/>	
IACUC Chair	<input type="checkbox"/>		<input type="checkbox"/>	
Institutional Official	<input type="checkbox"/>		<input type="checkbox"/>	