

Biological parameters & Housing of Laboratory Animals

LPM-604

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Biological & Physiological parameters of laboratory animals:

Parameters	Mice	Rat	Guinea Pig	Hamster Syrian/Chinese	Rabbit
Birth Weight (gm)	1-1.5	6-7	70-100	20	50-70
Body weight (adult gm)	30-40	250	800	80-90/35-40	1500-5500
Daily feed consumpt.(gm)	5-6	15-20	45-50	10-15/10	200-250
Age of first mating (M)	1.5-2	2.5-3	3	2-3/2-3	6-7
Age for experiment(M)	45(days)	1.5	3	1/1	6
Heart rate (beat/min.)	330-750	310-500	250-400	315-410/310-400	150-300
Respiration rate /min.	85-230	70-180	70-110	35-130/30-125	40-60
Sex ratio (Male : Female)	1:3	1:5	1:6	1:1/1:1	1:1

Parameters	Mice	Rat	Guinea Pig	Hamster Syrian/Chinese	Rabbit
Blood Volume (% of Body Wt.)	7-10	5-7	6-12	6-9/6-10	5-8
Life span (Years)	1.5-2.5	2-3	3-5	2-3/2-3	5-6
Gestation period (Days)	20-21	21-22	65-67	16/21	31-32
Litter size	7-12	8-10	3-4	5-7/4-5	6-8
Age at Weaning (Weeks)	3	3	2-3	3½/3	7
Litter/year	8-10	7	4-5	10/7	4-5
Rest period for females in between 2 mating(days)	15	15	15	18/15	20
No. Of pairs of mammary gland	5	5	1	6-7/4	3-4

Housing of Laboratory animals

- Laboratory animals require elaborated housing with adequate ventilation and space to move.
- The house should provide protection from weather, predators, mosquitoes and insects.
- Laboratory animals can be housed on floor or in cages in groups in the house.
- The space requirement mostly depends on body weight and size. Formula to calculate floor space for laboratory animals is:

$A = n (3W + 5\sqrt{W})$ in square inches.

$A' = n (0.7W' + 6\sqrt{W'})$ in square cm.

Where A or A' = Floor space

W or W' = Wt. of animals (W = Wt. In ounce and W' = Wt. In grams) and n = no. of animals.





Floor space requirement:

Animal	Area (cm ²)	Height of cage (cm)
Mice	38-99	17.5
Rat	110-260	22.5
Hamster	64-125	22.5
Guinea Pig	270-650	35

Site of housing: -

- ❖ Higher elevation
- ❖ Minimum access to visitors
- ❖ Minimum noise disturbance
- ❖ Separate from main biological/Immunological production unit
- ❖ Away from polluted area.

Types of housing: -

1. Non-air conditioned
2. Air conditioned

Non-air conditioned: - The direction of air flow should be taken into consideration while constructing those houses. The air flow should not directly enter the entrance of house. The house should have 2 corridors.

- a. Clean corridor:** - This is place in front of animal room and used-
- To bring in sterile food/feed.
 - To take in autoclaved cages.
 - To take bedding materials in the house.
 - A foot dip with antiseptic/disinfectant solution be provided at the entry of the clean corridor which facilitates reduction of microbes infiltration in house.
 - The door of entry should open outside so that hot and light air will rush outside after opening the door, which help in checking the infiltration of outside infection in the house.
 - The house must be free from rodents as well as insects like mosquitoes, cockroaches, bugs, flies etc.

- b. Dirty corridor:** - This is placed at backside of animal house and used
- To remove the garbage by having a washing room.
 - To check contamination of incoming food/feed by removing garbage by separate outlet.
 - To prevent direct cold drift or entry of sunlight in animal rooms.

