

# Rat (*Rattus Novergicus*)

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# Main groups of rats

1. **Wistar Albino**: Wistar institute, prolific breed throughout the world.
2. **Sprague Dawley Albino**
3. **Long Evanse**

Developed 70 years ago from white brown/Norwegian rat

- The name of **brown** rat is **Rattus Novergicus**, brown rat is found in association with the **black** rat **Rattus rattus**



# General description

- **Brown rat** adapts to lab. Condition **but black** rat is difficult to rear.
- Eyes are **black** and skin is **pigmented**.
- Rat are **omnivorous** and experimental feeder.
- Rat are very much used in behavioral studies because they are **more intelligent** than other lab animals.

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- Male rats are **less prone to fighting** than male mice.

It they fight the loser is killed.

- Rat are **less photophobic** than mice.
- Rat escape from cages but return to other cage.
- Rat can be kept **singly** well in cages.

- A rat if badly handled will bite the handler but if another rat of some cage is nicely handled it will also bite due behavioral response.
- **Use** : used mostly next to mice account for **10% tests**. They also be used for toxicity test, nutritional studies, behavioral research and also cancer research
- **Life span** : life span is **3** years provided it is in good condition but most of rats die before 3 years because of respiratory diseases.

- When born are hairless, closed eyes and ears, no erupted teeth.
- Scarlet red in colour when born but turns pink within 2-3 days.
- Hair begins to appear on 4<sup>th</sup> day. Ears and eyes open on 13<sup>th</sup> day.
- On 16<sup>th</sup> day eat solid food and drink from bottle.

# Breeding cycle

- The age of sexual maturity is 6.5 to 7.5 weeks.
- Duration of estrus is 12 h.
- The female show post-partum estrus, they exhibit estrus just after delivery.
- They are spontaneous ovulation.

# Housing and caging

- Rats are kept in “**large shoe box**” cage.
- 200sqcm for 1 breeding pair.
- The rat are **very much** thermoregulation mechanisms.
- **Wastage of food is less** in rat as compared to mice.

- If material is not available to female rat for nest making. Then she will break hair of other rats and of himself to make nest for successful delivery.
- The temperature in cage should be 20-25 c without frequent fluctuation.
- Rat are less sensitive to noise than mice.

- Lungs are sensitive to irritant dust, food dust, gases like  $\text{NH}_3$ ,  $\text{SO}_2$  and first reaction is irritation of **Goblet cells** of respiration tract.
- Accumulation of lymphoid tissue in lungs making them prone to mycoplasma infection.
- Controlled illumination is important for breeding behavior 12-16 hours.

- For every gram of food consumed **double** (2ml) of water is needed.
- Polygamous
- Female rat do not tolerate another female in cage.
- “**Engorgement mastitis**” which may resemble mammary tumor.
- **Vaginal plug** (spermatozoa can be seen in vaginal smear)

# Difference between Mice and Rat

s.no	Mice	Rat
1	Fur is smooth	coarse
2	Tail is thinner	Thicker
3	Tail not serrated	Tail is well serrated
4	Thin skin	Thick skin
5	Light in weight	Heavy in weight
6	Young one born if not active is likely to be rejected by dam	Young one born is not rejected by dam
7	Wastage of food is more	wastage of wood is less

8	They require same amount of water as food	They require double the amount of food consumed
9	Can not be kept singly	Can be kept singly
10	Less intelligent	More intelligent
11	More photophobic	Less photophobic
12	Vaginal plug stages for about 48 hours	Fall after few hours
13	More prone to fighting	less prone to fighting
14	Ear are less fleshy	More fleshy

Thanks