

PA04 - A super enriched rat cage - with increased ergonomics for staff

Lundbeck



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Lundbeck's aspiration is to become a world leader within animal welfare and improve ergonomics for animal care takers

Following this aspiration, there is a need for a new way of housing rats while keeping the cages easy and simple to handle, clean and maintain. In corporation with SCANBUR, the 5-star accommodation EC4Rats cage has been developed.

9 cages can be placed in a Scantainer EC4Rats, offering high level of protection against allergens and pathogens for personnel and animals.



Requirements for new cage

Improved animal welfare

- ✓ Group housing (also surgically prepared animals) and still have the option to separate, when needed
- ✓ Diverse enrichment -> Expression of natural behaviour (playing, climbing, rearing, digging, gnawing and exploring)^{1, 2}
- ✓ Social interaction in larger groups³
- ✓ Control allergens/pathogens

Animal welfare facts

- 2400 CM² (bottom + shelf)- max 5 rats < 600 g (H38.3 x W40.3 x D39.7))
- The three cages in one row can become into one large cage
- The diverse environment supports the rats different preferences of where to sleep, and use of the enrichment
- Improved animal welfare -> lower stress -> better results

Better ergonomics for animal care takers

- ✓ Light weight (1 kg) cage bottom -> handling weight reduced to > 60% compared to handling of Type 4 cages
- ✓ Easy to change bedding and enrichment in the cage
- ✓ Frequency of cage change reduced by 80%
- ✓ Dimension of caging system is improved, and work is in progress to optimize handling of individual animals located in top and bottom cages

Ergonomics facts

- Reduction of repeated movements
- Avoid work-related discomfort/attrition of staff

Easy to use

- ✓ Easy to wash
- ✓ Easy mounting of enrichment
- ✓ Use as stand alone or in cabinet (ventilation and humidity controlled)
- ✓ Both bottles and automatic watering can be used

FAQ

If group housed, less voluntary interaction with handler?	The rats became very active, explorative and showed interest in the handler. The rats explore using their mouth, but does not bite, getting used to this can be challenging for the handler
Difficulties of handling animals becoming aggressive due to compound effect?	We are still investigating if there are any issues when rats are treated with test compounds modifying behaviour (e.g. amphetamin), however so far, we have not observed a negative effect
Is it possible to group house animals with surgical implants e.g. head implants?	During testing of prototype, EEG pedestals were placed in the cages for the rats to explore during the postoperative period. Thereafter, during the group housing, the rats did not shown interest in head implant. No rats had any damages to implants nor any fighting wounds
Is it possible to monitor locomotor activity (DVC) in the cage?	Yes, it is possible if the individual rat is chipped
Is it possible to keep each cage as a isolated unit (Health perspective)?	The scantainer can become an isolated unit
Does the enriched caging impact the research	We are still investigating this. It may impact some research models. Comparing EC4Rats to cage Type 3 group housed rats, we found corticosterone level was not altered; the EC4Rats housed rats, showed less locomotor activity in novel environment (a type 3 cage with bedding only), and during amphetamin induced hyperactivity test, the effect of amphetamin was not significant at 1.5 mg/kg, but at 0.4 mg/kg. Less variance was observed for the EC4Rat cages rats in the amphetamin induced hyperactivity test.

References

1. Makowska I. Joanna og Weary Daniel M. "The importance of burrowing, climbing and standing upright for laboratory rats", Royal Society Open Science, 2016, 3; 1-12.
2. Vachon, P., *Double Decker Enrichment cages have no effect on long term nociception in neuropathic rats but increase exploration while decreasing anxiety-like behaviors.* Scandinavian Journal of Laboratory Animal Sciences, 2014. 40.
3. Spangenberg, E, et al., *Effects of physical activity and group size on animal welfare in laboratory rats.* Animal Welfare, 2009. 18(2): p. 159-169.

Please see SCANBURs flyer on the Scantainer EC4Rats for more information (SCANBUR stand #53)

