

# Breeding performance of pair and triple housed Sprague Dawley rats

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## The unique CALAR collaboration

This study is one of many performed within the Danish Centre for Applied Laboratory Animal Research (CALAR), a research collaboration established in 1999 between academia and industry, with the main focus of improving the welfare of animals and humans in modern, laboratory animal facilities through research performed at the highest scientific level within the field.



Figure 1: The unique CALAR collaboration [www.calar.dk](http://www.calar.dk).

## The aim of the study

The aim of this study was to evaluate and compare breeding performance of Sca:SD Sprague Dawley rats housed under three different housing conditions:

A) Permanent pair (one male and one female) housed rats under environmentally super-enriched conditions in extra high type IV cages with an inbuilt shelter in the ScantainerNovo rat cage system

B) Permanent triple (one male and two females) housed rats under environmentally super-enriched conditions in extra high type IV cages with an inbuilt shelter in the ScantainerNovo rat cage system

C) The traditional breeding method of single housed rats under semi-enriched conditions in type III cages



Figure 2: The ScantainerNOVO rat cage system.

## Study design

The breeding performance was followed throughout four breeding periods and the following data was obtained: Birth dates of the litters, number of pups at birth, dates of weaning, number of pups at weaning, sex ration at weaning. Furthermore the pups were weighed by the age of 1, 1½, 2, 2½, and 3 weeks – the whole litter was weighed as one as well as the smallest and largest pup in the litter.

## Results of the breeding performance study

The results of the study showed a significant smaller litter size by the permanent triple housed rats, a significant higher survival rate by the permanent pair housed rats housed in the super-enriched ScantainerNOVO rat cage system, and significant longer periods between the litters for the rats housed under the traditional method as single housed under semi-enriched conditions in type III cages.

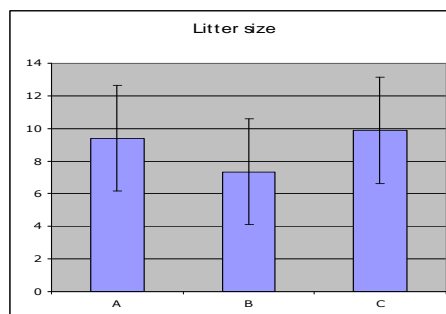


Figure 3: Litter size under A) permanent pair (one male and one female) and B) permanent triple (one male and two females) housed rats under environmentally super-enriched conditions in extra high type IV cages with an inbuilt shelter in the ScantainerNovo rat cage system and C) the traditional breeding method of single housed rats under semi-enriched conditions in type III cages.

	A	B	C
Survival (no)	283	279	412
Non-survival (no)	18	83	123
Total (no)	301	362	535
Survival-%	94	77	77

Figure 4: Survival rate between offspring from the three different housing conditions.

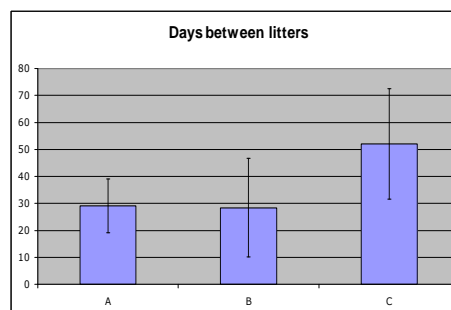


Figure 5: Days between litters under the three different housing conditions.

## Recommendations

Based on the results, we highly recommend that rats are permanent pair housed for breeding purposes in the super-enriched ScantainerNovo rat cage system.