

## Summary of Discussions from the workshop at Scanbur's Seminar Oct. 1998 with the topic "Positive and Negative Effects of Enrichment Elements in Cages for Small Rodents".

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On 15-16 October 1998 Scanbur in Denmark held the 6th International Seminar with representatives from 7 countries focusing on enrichment for rodents. At this seminar different topics about enrichment and stress were discussed in workshops. Five lectures were given by the following persons: Dr. Vera Baumans, University of Utrecht; Prof. Paul F. Brain, University of Wales; Prof. Robert Murison, University of Bergen; Ron Raymond, Head of Biological Resources, Imperial Cancer Research Fund, London; and Prof. Wolfgang Scharmann, Federal Institute of Consumers' Protection and Veterinary Medicine, Berlin.

On the first day the discussion was about enrichment in general for rodents, e.g. mice and rats, and different aspects concerning enrichment and enrichment objects were evaluated.

It was generally agreed that social housing or group housing is a good kind of enrichment although it can cause some problems housing male mice together. It is important that the groups are stable for longer periods and that the research project is not disturbed by the group housing. In addition to group housing or when group housing is not possible, different kinds of enrichment elements can be introduced in the cage. It is of great importance that these objects are standardised and evaluated before used in the cages. Each object must be evaluated through intensive studies.

The evaluation can be done through:

- behavioural studies (how is the object used, for how long and how does it change the behaviour of the animals)
- preference tests (long-term observations)

- handling procedures (does the object make the animals more difficult or easier to handle)
- physiological parameters (circulation, respiration, immune system, hormone system)
- learning from the wild type behaviour (how is the natural habitat "designed")

The enrichment device must be general for each species although there can be some strain differences in the preference and test results.

For easy introduction of the enrichment objects in the laboratories, the objects must be cheap to acquire, easy to clean so the hygiene in the cage is not compromised and the objects must be easy to handle, too. For the caretakers to accept enrichment they must be motivated in the right way. The caretakers must feel that they are doing something good for the animals by introducing enrichment objects in the cages. This can be done by talking with the caretakers and by listing some of the advantages for the animals when enrichment objects are introduced in the cages.

On day 2 the discussion was based on how to assess stress and what impact stress has on the animals and on the biomedical research project itself.

One big topic was how to measure stress in animals and whether it is actually possible to measure stress at all? Working with animals under artificial conditions will always produce some amount of stress in the animals. But the stress can be both good and bad. To conclude whether the stress is good or bad it must be measured in some way. This may be done through a combination of the following parameters:

- physiological parameters (hormones, heart rate, blood parameters)

- behavioural parameters (stereotypics, abnormal behaviour, apathy).

Then the problem arises whether the parameters indicate good stress or bad stress. This topic needs more research before a clear conclusion can be made.

The question is then whether enrichment reduces stress in animals or in fact increases stress. It can, however, be concluded that enrichment always has an effect, either positive or negative. For further research it will be of great importance to find ways to evaluate and quantify the effects of the enrichment, so that the quality of the enrichment attempts can be measured.

A topic which was introduced at the meeting was the use of IVC-systems (Individually Ventilated Cages). There was general agreement that these systems can be used for special purposes, e.g. housing infected, pathogen free, transgenic and very expensive animals. Especially when the alternatives are an isolator or a SPF unit, then the IVC-system is much more flexible. The conclusion was that much more research is needed for the use of the IVC-system, especially with regard to animal welfare, to find out how the animals are affected by the system, e.g. what is the draft-sensibility for rodents, is it possible to enrich the IVC-system, how safe is the system?