Novel Housing of Non-human Primates at Charles River

R Goburdhun and D Robb Charles River Preclinical Services, Edinburgh

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Abstract

Charles River launched its latest housing of non-human primates for conducting safety evaluation studies in a new facility which opened in November 2007.

A completely new concept of housing non-human primates in a complex, varied and stimulating environment has been designed. This novel housing is based on a 2-storey system with greater emphasis being paid to the age of animals rather than to their body weight. Other considerations included increased use of vertical dimension in a cage, a purpose designed catching system to be used with positive reinforcement training and compliance with ETS123 Appendix A[1].

Figure 1. Viewing area outside the barrier

Design Considerations

In designing this novel housing for non-human primates, the following considerations were taken into account:

- Legislative changes[1]
- Age of animals, 3 years plus
- Use of maximum cage volume
- Use of vertical height
- Catching animals without stress
- Enhancement of positive reinforcement training
- Natural daylight
- Enriched, varied and complex environment
- Maximum use of the floor area in the holding room

Innovative Housing Design 2-Storey Pens

Designed to meet and exceed the expected requirements following revision of the Council of Europe Convention.

Minimum Cage Requirements		
Age of animals	< 3 Years	> 3 Years
Minimum Floor Area for Cage	2.0m^2	2.0m^2
Height of Enclosure	1.8m	1.8m
Minimum Cage Volume	3.6m^3	3.6m^3
Minimum Volume per Animal	1.0m^3	1.8m^3

Cages are designed to house a single dose group of animals of the same sex (max. 6 monkeys over 3 years of age) in 2-storey pens with each storey connected by hatches and vertical tunnels. Each storey is “walk-in” for the technical staff, with the upper storey being accessed *via* a service walkway grid.

This housing design will be used for running safety evaluation studies ranging from short term to long term duration (up to 52 weeks).

Cage Specification for 2-Storey Pens

Cage Specifications	Ground Floor	Upper Floor
Height	2.50m	2.03m
Width	1.61m	1.61m
Depth	1.66m	1.66m
Cage Volume	6.68m^3	5.43m^3

- Total cage volume = 12.1m^3 (to house 6 monkeys over 3 years of age or 12 monkeys less than 3 years of age)
- Combined height 4.5 metres, enables “vertical flight reaction”
- Cages are manufactured from anodised aluminium, infilled with glass, wood laminate or stainless steel rods as appropriate
- Cage visibility is enhanced by the use of solar tubes to bring natural daylight into the upper floor

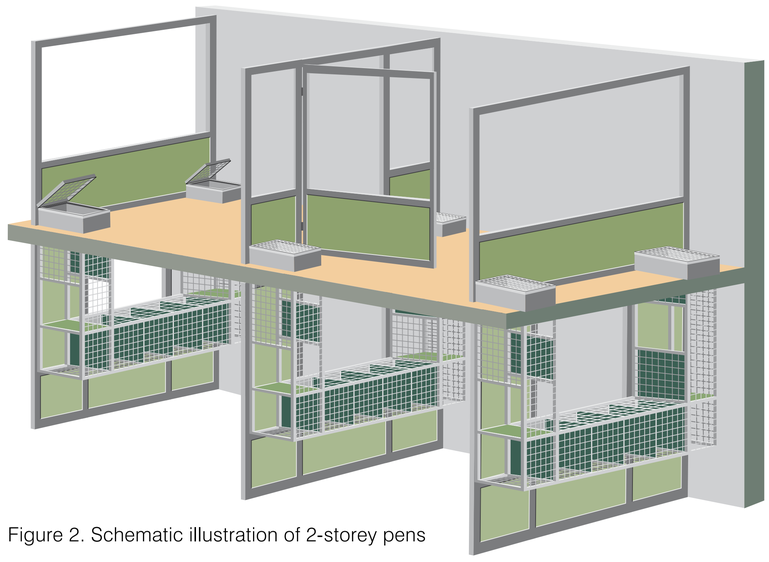

Figure 2. Schematic illustration of 2-storey pens

Single Floor Cages with 2 Sub-divisions

In addition to the 2 storey pens, we have also designed single floor cages with 2 sub-divisions to meet other needs.

These are cages with potential for temporary sub-divisions on the ground floor for undertaking preliminary range finding studies and/or for welfare isolation. Animals can be separated into the 2 sub-division units within the whole cage for approximately 2hrs for measurements of food consumption.

Single Floor Cage Specifications	
Height	2.50m
Width	1.25m
Depth	1.66m
Cage Volume	5.19m^3

Benefits of the New Housing Design

- Animals are trained and rewarded during the acclimatisation and conditioning period
- No crush back mechanism for animal handling (welfare benefit)
- Animals will be caught from the home cage by positive reinforcement to enter in-built but removable catching boxes
- Cages are designed to help with the training of the animals by use of positive reinforcement techniques
- This housing design offers the opportunity to perform training with the animals on a 1:1 basis in the animal’s home cage
- Animals are all housed in social groups to promote natural interaction and behaviour
- Cages are furnished with a range of enrichers (food substrate, forage mix, toys, shelves and climbing frames) to provide varied enrichment to the animals

Conclusion

Our novel caging design sets a new standard in non-human primate housing, health and welfare. It gives the animals a complex and stimulating environment that promotes good health and physiological well-being and full opportunity for social interaction. This novel housing enables the animals to carry out their normal behaviour (resting, running, climbing, leaping, foraging, etc.) and to be ‘trained’ for co-operating with handling, restraint and experimental procedures.

We believe that this housing will result in a more relaxed animal model, thus generating higher quality data and leading to a more meaningful safety evaluation.

Figure 3. Photograph of 2-storey pens (upper floor)

Figure 4. Photograph of 2-storey pens (ground floor)

References

[1]Council of Europe (2002) Multi-lateral Consultations of Parties to the European Convention for the Protection of Vertebrate Animals used for Experimental and Other Scientific Purposes (ETS123).

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