

# Refining Cages for Social Housing of Non-Human Primates on ADME Studies

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## 1 INTRODUCTION

The assessment and understanding of Absorption, Distribution, Metabolism and Elimination (ADME) for new pharmaceuticals is required in regulatory submissions. Typically, ADME studies are conducted using metabolism cages designed for the single housing of animals to enable the quantitative collection of urine and faeces, normally over a 1 week period.

It is well documented that providing pair or group housing of social animals such as nonhuman primates has a significant positive impact on the welfare of the animals. Charles River, Edinburgh have successfully performed many ADME studies with pair housed animals, with radioactivity recovery and plasma concentrations comparable to single housing.\*

As traditional single housing cages are relatively small, we designed new and larger cages with improved features. In addition to the welfare benefits for the animals with social housing, the refinements enable more efficient study conduct, dosing, blood sampling and faecal collections.

This poster describes some of the advantages of the enhancements we have made.

## 2 CAGE DESIGN

Our original metabolism cages were entirely stainless steel construction. Whilst effective, metal is also, unfortunately, cold to the touch. Trespa panels are warmer, reflect light well and provide a better ambience to the caging. Following extensive testing we concluded that these could be used without detriment to the radioactive recovery, so we used these for the caging sides.

We made the cages as large as possible, whilst still manoeuvrable enough to go through the facility doors and fit inside the cage-washer. The internal volume is 1.65m<sup>3</sup> per cage.

The squeeze back mechanism is incorporated into a central bar running the length of the cage, also providing an extra perch for the animals to sit on. A further, wide perch is situated at the rear of the cage, this slides through the back panel when using the squeeze back device.

Both the floor and roof utilise bars running parallel to the sides, minimise the risk of finger, toes and tails getting pinched when using the squeeze back.

Manipulanda is placed on the roof to provide additional stimulus for the animals. A Trespa 'crown' is positioned to prevent these rolling off the cage. The crown is removable, to enable the cages to fit in the cage washer.

## 3 DOSING AND BLOOD SAMPLING

The cage doors have a combination of vertical and horizontal bars. Using well established positive reinforcement training techniques, animals will present an arm through the vertical bars. This enables comfortable restraint on the door for dosing. Many intravenous, intramuscular and subcutaneous administrations can be performed without requiring removal from the cage.

Blood samples can be taken from the cephalic veins. Alternatively, legs can be presented through the horizontal bars, enabling femoral vein sampling.

## 4 FLEXIBILITY

The cages incorporate connecting hatches enabling several cages to be combined together. This modular approach facilitates a variety of uses in addition to ADME studies, for example; use as recovery housing following surgery.

## 5 ACKNOWLEDGEMENTS

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