NC3Rs

National Centre for the Replacement, Refinement and Reduction of Animals in Research

Primate Welfare Meeting

15 November 2007

Advances in Primate Housing

Agenda - NC3Rs Primate Welfare Meeting 2007

09.30	**REGISTRATION and COFFEE**
10.00 – 10.10	**Welcome and introduction**
10.10 – 10.30	**New housing for cynomolgus monkeys at a contract research organisation** *Dr John Finch, Charles River Laboratories, Edinburgh*
10.30 – 10.50	**Experiences with a new housing design for common marmosets at a university** *Dr Jo Keeley & Mr Colin Windle, University of Cambridge*
10.50 – 11.20	**New housing for breeding groups of rhesus macaques and common marmosets at the Dutch primate centre** *Anon, Biomedical Primate Research Centre, The Netherlands*
11.20 – 11.50	**COFFEE**
11.50 – 12.10	**Housing and husbandry of macaques and marmosets in zoological collections** *Dr Vicky Melfi, Whitley Wildlife Conservation Trust, Paignton Zoo Environmental Park*
12.10 – 12.30	**Welfare advantages of a two-story enclosure with extensive visual barriers for breeding groups of cynomolgus monkeys** *Dr Moshe Bushmitz, BFC Israel Ltd.*
12.30 – 12.45	**AstraZeneca global standards for primate care and use** *Mr Hugh Jones, AstraZeneca, UK*
12.45 – 12.55	**Joint Working Group on Refinement report – refinements in primate husbandry, care and common procedures** *Dr Mark Prescott, NC3Rs*
12.55 – 13.55	**LUNCH**
13.55 – 14.00	**Introduction to afternoon break-out groups** *Dr Mark Prescott, NC3Rs*
14.00 – 15.00	**Break-out group discussions** **Group A – Housing considerations for successful science** **Group B – Housing considerations for successful animal training** **Group C – Managing social housing** **Group D – Meeting the needs of different age classes and long-term housing** **Group E – Evaluating housing and enrichments**
15.00 – 15.30	**COFFEE**
15.30 – 16.00	**DISCUSSION, RAFFLE and CLOSE**

New housing for cynomolgus monkeys at a contract research organisation

Dr John Finch
Charles River Laboratories, Edinburgh

Over the last few years the contract research industry has faced a universally predicted increase in demand for its services across the board, but especially from small companies without in-house resource. Increasingly, these firms have been developing new treatments based on using antibodies targeted against chronic diseases, especially cancer. This trend is likely to lead to an increase in the use of monkeys for safety assessment and also to an increase in the use of mature animals.

At the same time, the Council of Europe has been considering its recommendations for housing of monkeys in research laboratories and has come up with a set of proposals that acknowledges the physiological and psychological needs of these intelligent and emotional animals.

Laboratories must be as certain as they can be that each and every monkey used is necessary for the treatment or prevention of disease in humans and there must be rigorous review processes to ensure this. The systems developed for this purpose will be described. The care, handling and use of these animals must reflect sympathetic understanding of their advanced emotional and cognitive abilities. They must be given a living space that reflects the spirit as well as the letter of the Council of Europe Convention. Using monkeys in research is a privilege, not a right.

The investment and creativity needed to comply with these imperatives in a commercial GLP environment of increasing demand is huge and this talk will describe how it has been achieved. Against this background, the main part of the talk will describe the design, planning and use of two-storey accommodation that houses animals in social groups. This complex space provides them with interest, daylight, forage and opportunities for vertical flight, play, other social interaction and privacy, while remaining fit for the purpose of conducting regulatory toxicology studies.

Experiences with a new housing design for common marmosets at a university

Dr Jo Keeley & Mr Colin Windle
University of Cambridge

This presentation describes the planning of new caging for a colony of up to 300 common marmosets, consisting of approximately 18 breeding pairs and 50 vasectomised male-female experimental pairs. Issues that needed to be considered included legislation, limitations imposed by the existing room space, research requirements (e.g. ability to divide cages, and catch marmosets) and last, but not least, marmoset welfare. Assessment of cage design was carried out using cage prototypes and a questionnaire circulated to researchers, animal technicians and Named Veterinary Surgeons. Problems encountered and improvements made to caging will be discussed. Improvements include an experimental cage design that gives increased space and enrichment to marmosets, whilst still adapting to meet the requirements of the researchers and allowing easy catching of marmosets by hand, and large and enriched walk-in breeding pens, allowing greater socialisation between the marmosets and animal technicians.

New housing for breeding groups of rhesus macaques and common marmosets at the Dutch primate centre

Anon
Biomedical Primate Research Centre, The Netherlands

In order to meet new legislation on the housing and husbandry of laboratory primates, the Biomedical Primate Research Centre (BPRC) in the Netherlands has maintained a dialogue with the Dutch government over the last few years. This has resulted in a subsidy from the Ministry of Education Culture and Science, with which the BPRC has built new facilities for both rhesus macaques and common marmosets.

In the first part of this presentation we will share our ideas of how a breeding colony of common marmosets can be housed as naturally as possible, considering the natural habitat of the species. We have accomplished a whole new environment for housing marmosets. The indoor enclosure has a bio-floor, which turns out to be perfect enrichment in itself as it is full of insects to chase and catch. With the possibility of going indoors and outdoors at all times, we hope we have set a new standard for the housing of breeding families of marmosets in a research institute. We will also discuss new ways of handling and training marmosets to co-operate in several minor procedures.

In the second part of this presentation we will discuss changes the BPRC has made to its rhesus macaque breeding policy. Formerly singly-caged experimental animals have been resocialized to form the core of new social groups in the breeding colony at the institute. Over the last decade, more than 30 social groups of rhesus macaques have been created. We will report on the effects of the changed housing conditions on the well-being and breeding of the monkeys. Formation of the new social groups was not always easy, since several animals demonstrated poor social skills. However, the new housing conditions have reduced the amount of stress and stereotypic behaviour in the colony. In addition, a self-sustaining colony gives us the opportunity to pair-house almost all animals in stock and on experiment, which has been shown to improve the animals' well-being.

Housing and husbandry of macaques and marmosets in zoological collections

Dr Vicky Melfi
Whitley Wildlife Conservation Trust, Paignton Zoo Environmental Park

European zoos maintain a diverse collection of macaques and marmosets. The housing and husbandry regimes used to maintain these primates are equally variable. In part, this is due to different local, national and European legislation and regulation. However, resources, including finances and expertise, guidelines, tradition and myth, has also lead to different housing and husbandry regimes. Variation is not bad however! It can provide the opportunity to evaluate the impact of different housing and husbandry regimes on captive primate behaviour and welfare. Evaluating how housing and husbandry effect primate behaviour and welfare is the first step to ensuring that housing and husbandry regimes are evidence based. Evidence based systems are important, as they ensure we are effective in the use of our resources and more importantly ensure we are improving primate welfare. This can be achieved by evaluating how different housing and husbandry regimes, or changes in one zoo, affect primate behaviour and welfare. Information gained this way, can then be used as evidence that the system works, or that changes are necessary.

When we start using evidence based housing and husbandry, we can make use of findings (evidence) accrued from the housing and husbandry of primates in any captive setting. Indeed, there are similar challenges to maintaining primates in all captive settings. I would suggest that we expect the five freedoms are not compromised, and that we work towards providing more than the minimum requirement and hope to ensure our primates have a good quality of life. For example, the use of environmental enrichment or husbandry training can be implemented in zoos, laboratories and sanctuaries alike.

This presentation will provide a brief overview of: the macaques and marmosets maintained in European zoos; some of the regulations and organisations which affect how we manage them; and through examples, demonstrate how evidence based housing and husbandry have been implemented in zoos to promote good captive primate welfare.

Welfare advantages of a two-storey enclosure with extensive visual barriers for breeding groups of cynomolgus monkeys

Dr Moshe Bushmitz
BFC Israel Ltd.

The problems in breeding groups of primates are different from those in study groups. Most of the problems faced by primates in breeding groups do not result from human factors, but from interactions with other group members. BFC learned that the limited space of a breeding cage should be divided internally using visual barriers of different forms. This gives the animals more privacy, more hiding places and allows low-ranking animals a better quality of life, better access to food and greater breeding potential.

BFC developed a new cage for its cynolmolgus monkeys with a wooden floor which divides horizontally a 4 metre high cage into two storeys, hence serving as an extensive visual barrier. The high cage with its wooden floor and openings allows the monkeys to perform many natural behaviours (such as climbing, running, leaping, foraging and social interactions) and at the same time permits low-ranking animals to escape below the wooden floor and hide from aggressive high-ranking animals. The new cage design has increased the visual barrier area by 700% and has dramatically reduced the consequences of aggression.

When designing and building the cage, special attention was given to providing high-ranking animals with the best observation places and positions; this results in a lower motivation to leave preferred positions and to chase low-ranking animals into the lower level. Observations show a significant decrease in aggression, increase in group social activity and improvement in the condition of low-ranking females and males.

Breeding facilities worldwide hold huge number of primates in stable groups for many years. Good welfare conditions for breeding animals will result in the production of healthy and psychologically stable animals for the research community. BFC is committed to this goal and we hope that regulatory bodies will consider good welfare conditions to be as important as high health status and will incorporate these into their obligatory requests.

AstraZeneca global standards for primate care and use

Mr Hugh Jones
AstraZeneca, UK

It is recognised that there are genuine concerns within society about the use of animals in research with particular sensitivity on the use of non-human primates. At the same time the appropriate use of animals remains a small but vital part of the drug discovery process. The use of non-human primates forms a small proportion of the total animal use, but this is increasing over time.

AstraZeneca considers it essential that it is seen to employ a consistently high standard of animal welfare and scientific rigour throughout its in house and externally sponsored animal based research. AstraZeneca has had Global Standards for animal care and use in a number of formats for several years. In 2006 it was decided to produce revised Standards with a specific section for non-human primates covering not only husbandry, environmental enrichment and legislative compliance, but also veterinary care, education and training of staff, ethical and scientific review, incorporation of the 3Rs, and auditing of facilities.

This presentation will outline the rationale, process and content of the Standards and reflect on the resulting challenges and benefits.

Joint Working Group on Refinement report – refinements in primate husbandry, care and common procedures

Dr Mark Prescott
National Centre for the Replacement, Refinement and Reduction of Animals in Research

The British Veterinary Association Animal Welfare Foundation (BVAAWF), Fund for the Replacement of Animals in Medical Experiments (FRAME), Royal Society for the Prevention of Cruelty to Animals (RSPCA) and Universities Federation for Animal Welfare (UFAW) convene a Joint Working Group on Refinement to produce reports on refining aspects of laboratory animal use and care. The ninth report in the series sets out guidance on refining the husbandry and care of non-human primates and on minimising the adverse effects of some scientific procedures, and is soon to be published as a supplement to Laboratory Animals.

The guidance in the report is based on the existing literature, current good practice and the professional experience and views of an expert group. Topics covered include practical refinements in housing (including housing post-surgery and in biological safety level category 3 and 4 facilities), and refinements in common procedures (such as restraint, identification, and sampling of blood and other body fluids). Comprehensive advice is given on issues such as primate communication, assessing and facilitating primate well-being, establishing and maintaining social groups, environmental and nutritional enrichment, and quarantine. The most commonly used species are the key focus of the report, but its recommendations are generally applicable to other species, provided that relevant species characteristics are taken into account.

The report is intended to complement and interpret the existing legal and professional guidelines on primate use and care. It should thus be useful for a wide range of laboratory personnel, in particular scientists, animal technicians and veterinarians who are responsible for caring for laboratory primates and/or carrying out scientific procedures. Much of the information is also relevant for those involved in designing experiments or managing studies. It should provide guidance for members of bodies such as ethical review processes and institutional animal care and use committees, as well as demonstrating the benefits of refinement to those who provide the necessary financial and other resources.

Break-out groups - NC3Rs Primate Welfare Meeting 2007

Group A - Housing considerations for successful science

- Which experimental designs might require single-housing and how can the need for single housing be avoided and its effects mitigated? (e.g. observing the eating habits of group-housed animals and closely monitoring their body weights might suffice to identify treatment effects that reduce appetite, rather than singly-housing animals for quantitative measurement of food consumption).
- Many experiments require primates to be caught and handled/restrained, e.g. for dosing. What housing and husbandry adaptations can be made to achieve this with minimum distress for the animals and avoid data confounding stress responses?
- What logistical problems arise when trying to improve housing to address primates' needs without compromising science (e.g. economics, staff resource)? What are the potential solutions?

Group B- Housing considerations for successful animal training

- What housing and husbandry adaptations can be made to facilitate successful training of primates to co-operate with husbandry and procedures (e.g. small group sizes, minimal disturbance)?
- Temporary separation of group-housed primates can be critical for successful training of individual animals (especially low-ranking animals that are prevented from coming forward to the front of the cage by threats from high-ranking animals). How can this temporary separation best be achieved?
- Does provision of enrichment (e.g. play areas) affect training success in any way? If there are issues, how might these be addressed?

Group C - Managing social housing

- What housing and husbandry features can be used to maximise group stability and minimise aggression in group-housed primates (e.g. visual barriers, additional space, appropriate sex ratio)?
- Is it possible to ensure that aggression is identified and dealt with quickly? What systems can be used to facilitate this (e.g. CCTV, record keeping)?
- Sometimes it is necessary for one animal of a pair to be euthanased before the other. What can be done to compensate for the loss of the pair-mate?

Group D- Meeting the needs of different age classes and long-term housing

- It is important for captive primates to be socialised with humans. What housing features can be used to facilitate positive human-animal interactions throughout the animal's lives (e.g. positioning food at the front of the enclosure to encourage animals to come forward)?
- How do the housing needs of young (e.g. infant and juvenile) and old (e.g. adult and geriatric) primates differ? How can their needs be met in the same enclosure (e.g. breeding groups)?
- Some primates are housed in the laboratory for many years, either as breeding or experimental animals. What factors need to be taken into account when setting limits on how long primates should be kept in the laboratory?

Group E - Evaluating housing and enrichments

- What techniques should be used to evaluate new housing designs and environmental enrichments (e.g. preference testing)? Which behaviours are important to record?
- Which aspects of primate housing need to be investigated with further research (i.e. what are the important research questions)?
- Are successful housing designs and enrichment devices shared within the laboratory primate community? What is the best route for ensuring such information is disseminated?