



## Session 2.4

# Non-human primates-housing, enrichment, positive reinforcement training

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### Lecture

## Primates in laboratories: Standardisation, variation and science

*Hannah M. Buchanan-Smith*

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Many animals are bred specifically for use in laboratories; the genetic variation between individuals is minimised, and housing and husbandry is standardised. The rationale is to increase the validity of scientific findings, and allow a reduction in number of animals used. Non-human primates used in laboratories present a very different case. For each primate species commonly used (*Macaca mulatta*, *Macaca cynomolgus* and *Callithrix jacchus*), there is great variation in rearing practices, housing, enrichment and training both among, and often within, facilities. In some cases, the consequences of the variations have been quantified (e.g. upper- and lower-tier housing) and the impact upon the scientific findings is known (e.g. in restrained versus

unrestrained sampling), but in many cases the impact is not known (size of gang groups; rotational hand-rearing in *Callithrix*). While a degree of standardisation should be the aim in certain situations to ensure an acceptable level of welfare, reduced variation in the scientific output, and therefore fewer study animals, standardisation should not necessarily be the aim for keeping primates in laboratories. For example, individuals may respond to a specific enrichment device, housing system or training protocol quite differently. In this paper, I use examples to illustrate that housing, enrichment, and training should be tailored to individual needs of primates to ensure their welfare is maximised, and the science is not compromised.



## Lecture

# Dialogue as a powerful tool to deal with the delicacy of primate research

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Whenever and wherever, nonhuman primate research will stimulate heated debate. For many researchers in this field, that is just the reason to stay low profile. For some this will be a life long decision. In the Netherlands we started an unique experiment to design and execute a dialogue trajectory that brought the primate researchers, governmental administrators and animal welfare advocates together. This process, that took more than two years, consisted of 3 highly structured, closed (dialogue) meetings to build bridges of mutual understanding. Central in this approach was the explicit willingness of the participants to meet each other on neutral grounds and to commit one self to an “objective” deliberation of the complexity of pro and cons of primate research. This resulted in a map that visualises the inter-

relationships of all the problems experienced by the stakeholders to reduce, refine or replace primate research. This map represents the common ground shared by the participating stakeholders. This milestone was subsequently used to formulate several policy scenarios to facilitate Three Rs initiatives in primate research. The Dutch Society for Laboratory Animal Science, installed a special workgroup (with members of the Animal Welfare Organisation) to keep close contact with the implementation of the policy scenarios. In the paper the methodology and the pitfalls will be described to inspire others to follow a road that might turn the spiral of secrecy and violence into a constructive situation, beneficial for the animals.

## Poster

# Campaign for a legal ban on primate experiments

*Corina Gericke*

People for Animal Rights Germany / Doctors Against Animal Experiments Germany, Braunschweig, Germany

**Introduction:** Primates are sentient beings with high cognitive abilities. It is increasingly recognised by both the public and scientists that their use in experiments is ethically not justifiable.

**Methods:** People for Animal Rights Germany have started a campaign in October 2004 which aims for an amendment of the German Animal Welfare Law to outlaw primate experiments. The campaign includes informing the public, petitions and also work on a juridical and political level.

**Results:** In some EU countries (Austria, Sweden, Netherlands) experiments at least on great apes have been made illegal. In Germany no experiments on great apes have been conducted since 1991. Our campaign wants to see all primate exper-

iments included in a future ban.

**Discussion:** Our campaign is also seen in the light of the currently ongoing amendment of the Directive 86/609. A ban on primate experiments should not be limited to one country, although it would be useful for the work on European level, if one country took the lead. The difficulties we are facing arise from the powerful pro-vivisection lobby who often predict the end of medical research, if experiments on primates would be outlawed. That this is a) not true and b) even if so, primate experiments would ethically be not justifiable, is the message of the campaign.



## Lecture

# Environmental enrichment objects for the improvement of locomotion of caged rhesus macaques (*Macaca mulatta*)

Judith Heller-Schmidt<sup>1</sup>, Roland Plesker\*<sup>1</sup> and Hansjoachim Hackbarth<sup>2</sup>

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This study focussed on two aims: First, to examine whether the locomotion behaviour of caged rhesus macaques at the Paul-Ehrlich-Institute was reduced compared to rhesus macaques in their natural environment. Second, to investigate whether locomotion of caged rhesus macaques could be improved by using two locomotive objects: Tread-mill and rotary barrel.

For this purpose two groups of caged laboratory monkeys (5/6 individuals, mixed sex and age) were used. Data were collected using a scan sampling method.

A time schedule figured out that the reduction of locomotion in caged rhesus monkeys was considerably less than expected

compared to free living individuals. Using either a metal treadmill or a rotating wooden barrel, both objects were able to increase the locomotion of the examined groups. Although all animals used both, the wheel and the barrel, the adult animals did so to a considerably lesser extent than the young monkeys. None of the objects were used preferentially. A continuous supply of the objects, as oppose to a discontinuous supply, did not influence the frequency of use. A frequently available object remained of steady interest. The increase in locomotion due to the objects resulted in both, a reduction in social interaction and in aggressive behaviour.

## Lecture

# Positive reinforcement training: A lesson in refining animal studies

Michelle Hudson

Fund for the Replacement of Animals in Medical Experiments, Nottingham, UK

Many of the routine husbandry practices and repetitive experimental procedures to which laboratory animals are subjected during the course of a single study may cause considerable distress and suffering even in the absence of any lasting visible physical trauma. This is because many animals may not like to be handled, restrained, removed from home cages or kept in isolation. Equally, an animal may become distressed if it learns to associate any one of the above activities with painful or invasive procedures such as surgical implants or the fitting of monitoring devices that may follow.

Positive Reinforcement Training (PRT) is a simple and effective way to greatly refine laboratory practices. This involves teaching animals to co-operate with researchers by using a system of rewards. In turn, this permits procedures to be conducted

under calmer conditions thus allowing, for instance, blood samples to be taken quickly and safely, with less risk of injury to the animal or to the technician.

Working with, rather than against, animals in research labs is not only safer but is necessary to buffer or eliminate stress reactions that reflect impaired well-being and that could invalidate “scientific” research data, and increase animal usage. Indeed, it is now recognised that stress can dramatically affect responses to drugs, and alter disease progression and susceptibilities to many infections and illnesses.

This poster aims to illustrate how PRT can benefit both animal welfare and science by referring to its advantages and disadvantages as seen in small animal and primate research.



## Lecture

# Training laboratory-housed non-human primates: A survey of current practice in the UK

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Laboratory-housed non-human primates may experience a range of potentially stressful interactions with humans, including physical restraint, venepuncture, injection, catching and cage-change. Training the animals to co-operate using positive reinforcement is one means by which staff can significantly reduce or eliminate the adverse impact of such procedures and, therefore, is a refinement technique. Use of training can enhance not only animal welfare but also quality of science, because suffering in animals can result in physiological changes that are, at least, likely to increase variability in experimental data and, at worst, may invalidate research findings. We surveyed use of training in over half of UK establishments using and breeding primates, utilising a mixed-mode questionnaire. The survey demonstrated that there is widespread awareness of training as a

refinement technique, and appreciation of its diverse benefits, but that training is not used as widely or as fully as it might be. This is due to real constraints (e.g. staff, time and a lack of confidence in ability to train), but also perceived constraints which can be overcome through information sharing and education (e.g. supposed lack of information on how to train, and overestimation of the time investment needed). There is also variation between establishments in the purposes of training and the techniques used, with a reliance on negative reinforcement in some. We conclude that there is considerable scope for refinement of common scientific, veterinary and husbandry procedures through use of positive reinforcement training, and refer to some resources designed to help establishments take action.

## Poster

# To improve the well-being of captive primates: The new primate centre of the C.N.R. in Rome

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The Primate Centre of the C.N.R. of Rome, since 1984 hosts a colony of about 30 tufted capuchin monkeys (*Cebus apella*), living in social groups. In our centre the monkeys are utilised exclusively for ethological studies. After 20 years we have built a new facility that was opened in November 2004 and consists of 820 square metres divided into four large exhibits designed for tree-living primates and a small service area. The shape and dimensions of the exhibits varies to reflect the needs and social groupings of the species on display. The most important characteristics of the new structure are: More space per animal, fresh air, grass and ground instead of concrete substrate. The outdoors of the exhibit is enriched by landscaping with trees, bushes, logs, stones, ropes. All these permit the monkeys to show more natural behaviours.

The new structure was planned based on advanced theories in the field which are extremely functional for the well-being of the animals and the needs of the research.

The new centre carries out an important scientific didactic and divulgation activity in primatology. In fact, we have produced books and CD-ROMs for students. Now we have set up a permanent multimedia information point (Totem) and didactic panels for the visitors of the Centre. This is an attempt to transfer to a huge audience numerous pieces of information about biology and behaviour of nonhuman primates and to clarify the significance of the biological and psychological similarities differences between human and nonhuman primates.