



MRC

Medical
Research
Council

MRC Ethics Guide
Best practice in the accommodation and care of
primates used in scientific procedures

2004

Please note that throughout this document the term 'primate' is used to refer to non-human primates.

Contents		Page No.
1.	Introduction	2
2.	Source of primates	4
3.	Experimental design	5
4.	Accommodation and environment	6
4.1	Accommodation	6
4.2	Social housing	7
4.3	Environmental enrichment	8
4.4	Foraging	9
5.	Handling, restraint and training of primates	10
6.	Veterinary care	11
7.	Staff	12
8.	Fate of the animals	14
9.	Implementing the 3Rs	15

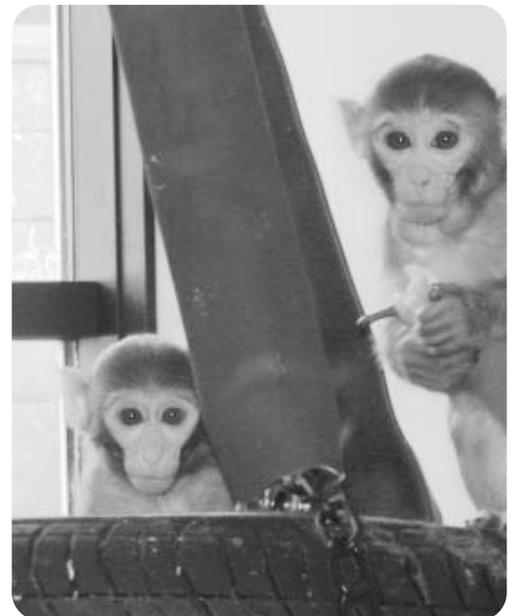
I. Introduction

The Medical Research Council (MRC) supports the principles of the 3Rs¹ and expects high standards of housing and care for the animals used in the research which it funds. All MRC-funded research using animals must comply with the Animals (Scientific Procedures) Act 1986 (ASPA) and its associated Codes of Practice². However, the Council is also committed to exceeding minimum legal requirements and to introducing and implementing standards which reflect contemporary best practice.

Use of primates in MRC-funded research

A small proportion of MRC-funded research involves the use of primates: marmosets (*Callithrix jacchus*) and macaques (*Macaca mulatta*, *fascicularis*, *arctoides*). The MRC does not support research involving great apes and will not normally fund work using wild-caught primates.

The MRC recognises concerns about the use of primates in research, and the difficulties associated with meeting the environmental, behavioural and social needs of these highly intelligent animals in a laboratory environment.



¹ The replacement, reduction and refinement of laboratory animal use.

² Animals (Scientific Procedures) Act 1986 Code of Practice for the Housing and Care of Animals Used in Scientific Procedures.

To help address these important issues, the Centre for Best Practice for Animals in Research (CBPAR) has produced the following guidelines on best practice in the accommodation and care of primates used in scientific procedures.

The guidelines apply to any research involving primates that the MRC funds in the UK and through collaborations abroad. They complement the MRC's peer review process for research involving primates, which takes into account welfare and implementation of the 3Rs.

The scope of the guidelines

The CBPAR has developed the guidelines by reviewing the published literature and through consultation with the scientific community, veterinary and animal care staff, the Animals (Scientific Procedures) Inspectorate, and animal welfare organisations. The guidelines represent a framework for applying and reviewing the MRC's expectations in the humane use of primates. They set out contemporary best practice in the use of primates in biomedical research and include principles relating to the source, housing, handling, restraint and training of primates, and the provision of technical and veterinary care and support. They are readily applicable to the majority of MRC-funded research programmes using primates and specifically relate to the use of macaques and marmosets in neurosciences, immunology and reproductive biology, and in the breeding programmes that support this research. However, the MRC accepts that there may be rare circumstances, for example to protect staff or animals, in which it may not be possible to fully implement the guidelines.

Putting the guidelines into practice

Researchers (MRC staff and grant-holders) and their host establishments are responsible for applying the guidelines. The ethical review process (ERP) plays a key role in ensuring high standards of animal welfare. It is therefore recommended that the ERP should be central to implementing the guidelines. The MRC will provide an annual review checklist to help those involved in the ERP. The CBPAR will then review the responses annually and report to the MRC's Council. CBPAR staff will visit primate facilities regularly to monitor implementation of the guidelines.

2. Source of primates

The source and transport of primates are important factors in the overall impact on the animals.

- 2.1 All primates should be captive-bred and come from a source in the UK whenever possible.
- 2.2 Establishments breeding primates should consider the principles set out in the Laboratory Animal Science Association/MRC statement on *Key considerations in the Breeding of Macaques and Marmosets for Research Purposes*.
- 2.3 All MRC-funded researchers using rhesus macaques are required to obtain their animals from the Centre for Macaques (CFM). In the future, it is intended that the CFM will provide a procurement service for other species of macaques.
- 2.4 Where it is necessary to import macaques or marmosets from breeding establishments overseas, the Home Office must agree the source. Ideally these should be second generation animals to avoid using wild-caught primates as breeding stock. Every effort should be taken to minimise the journey times and any associated distress caused by transport.
- 2.5 The MRC will not normally fund research involving the use of wild-caught animals. Applicants proposing to use wild-caught primates must make a special case justifying why captive-bred animals cannot be used.

3. Experimental design

Experimental design is an important consideration for ethical, scientific and economic reasons.

- 3.1 All applications for MRC funding must include full justification for the numbers and species of primates required for the study, and describe how the principles of the 3Rs have been implemented.
- 3.2 A statistician or other appropriate expert in study design should be consulted to ensure robust experimental design and statistical analysis.
- 3.3 The CBPAR can provide access to a statistician.



4. Accommodation and environment

Primates must be provided with a complex and stimulating environment that promotes good health and psychological well-being and provides full opportunity for social interactions, exercise and to express a range of behaviours appropriate to the species.

The ERP should review the accommodation and environment annually to ensure that the principles described below are applied.

4.1 Accommodation

- 4.1.1 The accommodation should provide primates with sufficient space to carry out their normal locomotor and behavioural repertoire. For example, resting, running, climbing, leaping, foraging and social interactions.
- 4.1.2 The Home Office Codes of Practice¹ set out minimum, rather than optimal, space allocations. Every effort should be placed on exceeding minimum space allocations in order to provide primates with a complex and varied environment and greater opportunity for exercise and expression of normal behaviours.



¹ Animals (Scientific Procedures) Act 1986 Code of Practice for the Housing and Care of Animals Used in Scientific Procedures.

- 4.1.3 The volume and height of the cage (or enclosure) are particularly important for macaques and marmosets, which flee upwards when alarmed. Their cages and enclosures should be floor-to-ceiling high wherever possible, allowing the animals to move up to heights where they feel secure.
- 4.1.4 Double-tiered cages should not be used since they restrict the amount of vertical space available to the animals.
- 4.1.5 Special justification should be given for using cages with grid floors (eg, compelling scientific or veterinary reasons) as this restricts the opportunity to provide substrate and foraging.
- 4.1.6 In the case of macaques, cages should be linked to a 'play' area or enclosure which increases the opportunities for exercise and social interaction. They should have unlimited access to this area unless it is necessary to confine them for scientific, husbandry, veterinary or welfare purposes.
- 4.1.7 Where security permits, the accommodation should have natural light.

4.2 Social housing

- 4.2.1 Social interactions are one of the most important factors influencing the well-being of primates. Social housing promotes a wide range of species-specific behaviours and reduces the frequency of abnormal behaviours.
- 4.2.2 Primates should be socially housed as compatible pairs or groups, depending on their age and sex and the nature of the scientific procedures or study.
- 4.2.3 Careful monitoring and management is necessary to ensure harmonious pairings or groupings and to minimise any aggression. Housing should be designed to minimise the impact of aggressive encounters and to ensure that dominant animals cannot restrict their cage mates' access to other parts of the cage or enclosure.

4.2.4 Primates should not be singly housed unless there is exceptional scientific or veterinary justification. Where this is unavoidable, it must be for the shortest possible time. The MRC will require full justification for any procedure or study which requires single housing, and details of the additional resources which will be provided for the welfare of these animals. Single housing should not be used as a justification for reducing the animals' space allowance.

4.3 Environmental enrichment

4.3.1 Cages and enclosures should be furnished to encourage primates to express their full range of behaviours. Depending on the species, this should normally include provision for resting, running, climbing, leaping and foraging, and should provide the animals with a degree of control and choice over their environment.

4.3.2 The vertical and horizontal dimensions of the cage and enclosure should be exploited fully by incorporating, for example, shelves, logs, ladders, climbing structures, branches, hammocks, swings, ropes and objects to manipulate.

4.3.3 Shelves, ladders and branches should be made from wood wherever possible even though they will have to be replaced more often. Wooden furniture for gnawing and scent-marking is particularly important for marmosets.

4.3.4 The cage and enclosure should provide the animals with an area of privacy. For resting, macaques should be provided with fixed elevated shelving and marmosets with nest boxes or equivalents.

4.3.5 A varied diet should be provided as a source of enrichment.

4.3.6 To help prevent boredom, novelty should be regularly introduced into the environment, for example, by re-arranging some of the cage furnishings.

4.3.7 The impact of the environmental enrichment programme and any new forms of enrichment provided should be regularly and critically reviewed for their effectiveness.



4.4 Foraging

- 4.4.1 Foraging enhances welfare and minimises the expression of abnormal behaviours.
- 4.4.2 All primates should be given the opportunity to forage daily, by scattering food in litter or substrate on the floor, or in a tray, and by using devices that encourage foraging activity (eg, puzzle feeders). For marmosets, foraging devices should be provided in the upper parts of the cage or enclosure.
- 4.4.3 In studies where food restriction or management is unavoidable, consideration should be given to how the animals can be provided with daily foraging without compromising scientific objectives (eg, by providing foraging material of a low calorific value, or after the animals have completed any procedures).
- 4.4.4 The MRC will require justification for the use of scientific procedures that restrict the opportunity to forage.

5. Handling, restraint and training of primates

Ensuring that animals are familiar and well-socialised with humans can provide significant benefits both for animal welfare and for meeting scientific objectives. The ERP should review the methods of handling, restraint and training of the primates every year to ensure the principles described below are applied.

- 5.1 Methods of handling, restraint and training should seek to minimise any stress to the animals.
- 5.2 Positive reinforcement techniques should be used to train primates to cooperate with catching, handling, restraint and research procedures. The routine use of squeeze-back cages and nets should be actively discouraged. Where restraint is necessary, it should be for the shortest possible time.



6. Veterinary care

All primates should receive the highest standards of veterinary care, which should be reviewed annually by the ERP.

- 6.1 This annual review should include research protocols (eg, anaesthesia, analgesia and humane endpoints) and be carried out by the Named Veterinary Surgeon (NVS) and Named Animal Care and Welfare Officer (NACWO) in conjunction with the ERP. It should also include confirmation that the facilities are suitably equipped for the procedures undertaken.
- 6.2 Veterinary care staff should have appropriate training and experience in primate health and welfare. Resources should be provided to allow continuing professional development.

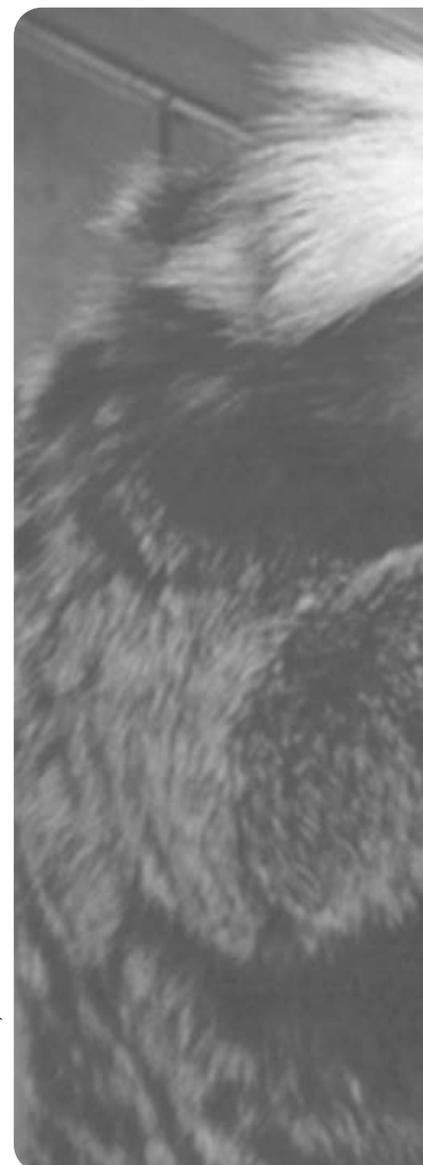


7. Staff

Ensuring that staff have the proper attitude, training, motivation and skills is key to maintaining a 'culture of care'. The annual review by the ERP should include staff numbers, training and professional development.

- 7.1 Staff at all levels should be knowledgeable about the natural history and biology of the species they are working with or caring for. They should have a good understanding of how the laboratory environment and scientific procedures can affect primate well-being, so that appropriate care can be given to provide the best possible quality of life and to minimise any suffering.
- 7.2 Staff should be trained to recognise early indicators of abnormal behaviour and to deal with them promptly.
- 7.3 Facilities should have sufficient trained and competent technical and veterinary staff to ensure high standards of care and welfare at all times.

Photo courtesy of GlaxoSmithKline



- 7.4 Sufficient time and resources should be allocated to allow regular review of all aspects of primate care (health, procedures, handling, socialisation, training and environmental enrichment).
- 7.5 All staff should receive appropriate training for the duties they are required to perform. Their competence and the level of supervision and support required should be regularly assessed and recorded.



- 7.6 There should be a well-resourced programme of continuing professional development for all staff.
- 7.7 Staff should be actively encouraged to extend their knowledge and experience, and to spread good practice by visiting other establishments and attending meetings and symposia on primate care and welfare.
- 7.8 Information on appropriate training courses and meetings can be obtained from the CBPAR.

8. Fate of the animals

Careful consideration should be given at the project planning stage to the fate of the animals at the end of the programme of work.

- 8.1 Where an animal is to be euthanased, every effort should be made to utilise and share tissues and blood products.
- 8.2 The MRC supports the retirement of animals wherever possible and appropriate, provided that all statutory requirements (eg, ASPA) are met; a high-quality, well-resourced and secure environment can be found to provide long-term accommodation and care; and it is the opinion of the NVS and NACWO that the animal will adapt well to the new conditions.

9. Implementing the 3Rs

The MRC fully supports the principles of the 3Rs.

- 9.1 Developments in the 3Rs should be widely disseminated to colleagues and peers, ideally through publication in an appropriate journal.
- 9.2 MRC staff and grant-holders should include details of how they have implemented the 3Rs in their publications and final/progress reports.
- 9.3 The MRC will recognise the publishing of significant and original contributions to the development of the 3Rs in quinquennial reviews of MRC establishments and in progress reports on grants. Such recognition may be rewarded through the MRC providing additional funds for equipment or attendance of staff at conferences.
- 9.4 The MRC encourages its researchers to work with animal welfare scientists and ethologists to develop a programme of primate-welfare research.



Further reading

An up-to-date reading list can be found at www.mrc.ac.uk/public-cbpar

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