

Position Statement – Animals in Research

Executive summary

The Physiological Society ('The Society') and its Members recognise that research using animals is necessary for the understanding of basic physiological mechanisms, for the development of treatments for veterinary and human diseases, for understanding the impact of environmental change on wildlife, and for validation of alternatives to replace the use of animals. The Society also recognises the need for appropriate regulation of research using animals that both promotes animal welfare and supports high quality research, and it works with various organisations so as to further these principles. The Physiological Society is committed to promoting awareness of why and how animals are used in research, and is a signatory to the Concordant on Openness in Animal Research.

This document covers some of the background to the use of animals in research, and lays out The Society's current policy in this area. It also gives recommendations on the actions that The Society and its membership should take to engage with the debate, and to educate the general public, the scientific communities and policy makers in these areas.

1. Recommendations

A: Recommendations for The Society:

- 1.1 Actively promote the public understanding of the continuing need to undertake research that requires the use of animals, including by supporting and contributing to the Concordat on Openness;
- 1.2 Push for funding that permits best practice in the use of animals in the research that requires such use;
- 1.3 Work with cognate organisations that promote the responsible use of animals in research;
- 1.4 Continue to exert great care in its publications to ensure that it promotes only research that pays due attention to animal welfare and that reports the use of animals in accordance with the [ARRIVE guidelines](#);
- 1.5 Respond to calls for evidence or consultations related to the use of animals in research;
- 1.6 Be proactive in contacting those who influence policy (e.g. MPs) or seek to influence public opinion (e.g. lobbying groups) with a view to promoting and sustaining a rational debate and a viable research environment.

B: Recommendations for individual Members of The Society:

The Society's Policy Committee requires the cooperation and contribution of Members to continue the work summarised below. The Committee therefore encourages and recommends Members who are themselves active or interested in research using animals to:

- 1.7 Make themselves fully aware of the societal, political and legislative background on the use of animals in research, with a view to being better able to contribute to discussion of this area;

- 1.8 Ensure they comply with best practice in undertaking animal-based research so that physiological advances can be seen as not only being of great value, but also as being generated in a responsible manner;
- 1.9 Ensure that they are fully aware of the principles of reduction, replacement and refinement in animal research (the 3Rs) and that they adopt those principles in any animal-based research that they undertake;
- 1.10 Ensure that, if they are active in publishing work that includes animal-based research, they are open in the reporting of such work, complying with the ARRIVE Guidelines for best practice;
- 1.11 Speak in schools or to adult groups about physiological research, in the process including the role played by animal-based research in scientific, clinical and environmental insights and developments;
- 1.12 Offer comment on and help in the drafting of consultation responses and policy documents in this area (including this one);

2. Introduction

The Physiological Society supports the use of animals in research where it is essential for achieving progress. The Society promotes excellence in UK bioscience research, but also the welfare of all animals used in such research. The Society is clear that the benefits accruing from the use of animals in research outweigh the limitations of their use as models of human physiology and pathology. The Society promotes maximal openness over the balance between the benefits of research involving animals and the possible harms caused to those animals. This policy briefing provides a summary of The Society's position on this topic.

3. The need for using animals in research

Physiologists use *in vitro* experimental approaches (those not involving the use of living animals) wherever possible, for example to examine events within individual cells and tissues. However the knowledge gained from research using living animals continues to play a fundamental part in the life sciences. It has and will continue both to improve and save the lives of humans and animals around the world, and to shed light on how animals and humans are affected by our changing environment. In that light, research using animals is vital and valuable across five broad areas of investigation:

- 3.1 It is essential for our understanding of biological processes – we still have a long way to go before we can understand the interplay among molecular, genetic, biochemical and physiological mechanisms that operate within the cells and across the tissues and organ systems of the body. Many of these mechanisms are conserved across species and operate in animals in similar or identical ways to those in the human body.
- 3.2 The development of new therapies for humans requires insight into the relevant pathophysiological processes, many of which cannot be elucidated in human beings. Progress in clinical research techniques will help our understanding but cannot yet provide the whole answer to the many outstanding scientific challenges. In terms of the safety of new medicines, there is a legal requirement for tests on two different species of mammal to identify unexpected toxicities and appropriate doses before initial clinical trials in humans. Artificial human tissues and organs

will play an increasing part, but at the moment no alternative non-animal tests or research can replicate the complexity of mammalian systems.

- 3.3 Veterinary research and the development of new therapies and vaccines for animal health require studies on the target species (equivalent to clinical research and early clinical trials in humans).
- 3.4 The discovery of alternatives to animal research requires the use of animals to validate the new, non-animal methods. The development of alternatives is driven by the bioscience sector itself, based on its understanding of the benefits, limitations and costs of using animals in research.
- 3.5 In a world facing a rapidly altering environment, it is essential to understand the impact of changing climate and of human influences on our wildlife.

All these involve work that would be prevented by a blanket ban on animal research.

4. Replacement, Reduction and Refinement of animal use

The Physiological Society fully supports [the 3Rs](#) of replacement, reduction and refinement of animal use in research, and expects its Members to adopt them fully.

- Replacement – the use of non-animal methods wherever they are available to achieve the same research ends, whether by computer modelling, new *in vitro* techniques, new developments in human imaging, or improved data capture from human and animal patients.
- Reduction – reducing the number of animals used to achieve the required results, by ensuring that the best techniques are used for the question in hand and that the maximum data are gathered from those animals that need to be used.
- Refinement – enhancing animal husbandry and minimising adverse effects, coupled with maximising the results achieved.

The Society and its Members work pro-actively with various partners, including the UK's [National Centre for the 3Rs](#) to develop new technologies and techniques. The widespread adoption of 3Rs principles has contributed to stabilisation of the number of experimental procedures on animals (Figure 1) despite a major increase of biomedical research and development (Figure 2). While there has been a progressive increase in the numbers of animals used for developing and breeding genetically-modified strains, only 6% of such procedures cause more than mild adverse effects.¹ The impact of adoption of the 3Rs principles has probably also contributed to a reduction in the impact of experiments on the animals; recent Home Office figures show that 28% of all experiments are sub-threshold, and the majority of the remainder are classified as mild.

¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/537708/scientific-procedures-living-animals-2015.pdf

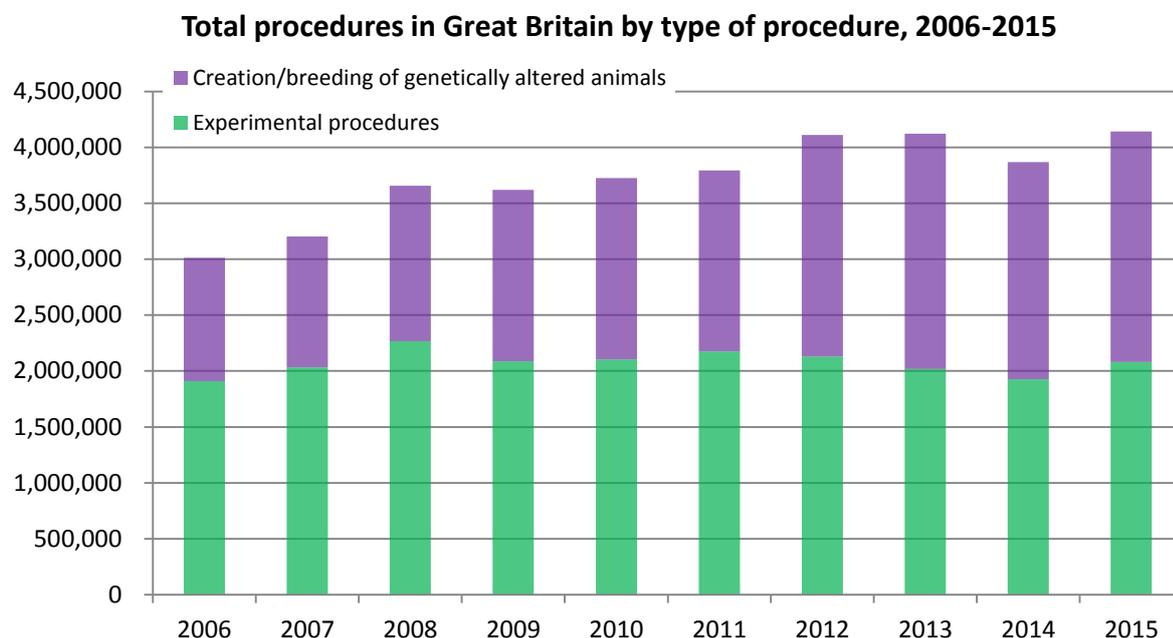


Figure 1. When the numbers of animals are broken down into those used for breeding purposes (purple) and those used in experimental procedures (green),² it is clear that breeding now represents approximately 50% of the overall recorded procedures. Note that data collection methodology was changed for 2014, meaning that year saw some under-reporting.

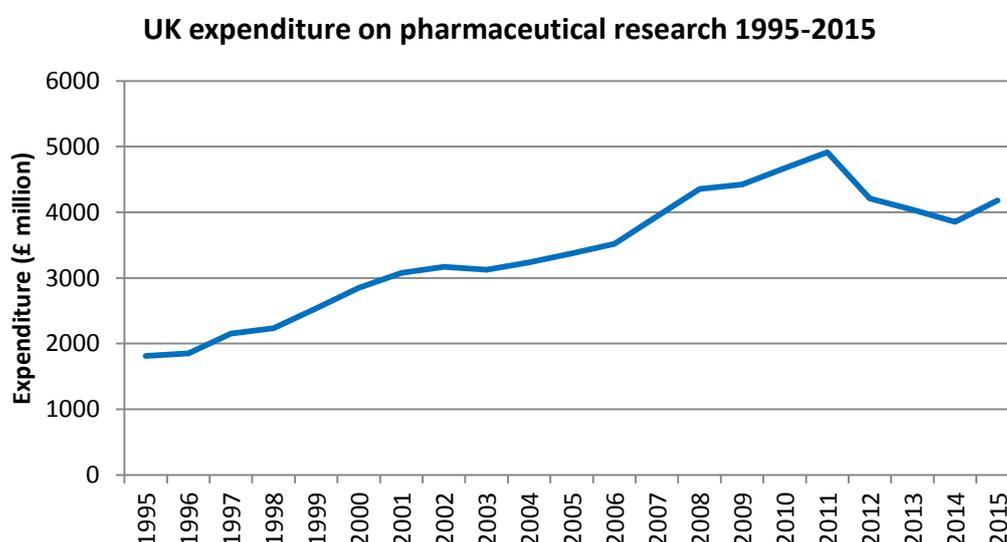


Figure 2. The spending in the UK on pharmaceutical research and development.³

The further development of 3Rs strategies and their adoption requires appropriate investment both in research facilities for animals and for the availability and training of relevant research and care staff. The

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/538758/scientific-procedures-living-animals-2015-tstabs.ods

³ <https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/timeseries/dlcd/berd>

Society will need to lobby vigorously for such investment given the ever-increasing pressures on research funding.

5. Public understanding of the use of animals in research

5.1 Evidence of lack of public insight into animal-based research

An opinion poll, originally instituted by Government, is carried out every two years to gauge public awareness and the degree of acceptance of animal-based research. The [2015 report](#) indicates a majority (65%) accept the use of animals in medical research “where there is no alternative”. However, it also shows a widespread lack of understanding of the uses to which animals are put; only 34% feel “well informed” while 35% think that animals are used in cosmetics development although this has been illegal in the UK for over 15 years. Less than 10% are aware of the government’s work on the 3Rs.

The Society has various activity strands to help address this issue, and to provide the public with accurate facts and reasoned debate about this emotive topic.

5.2 Concordat on Openness on Animal Research

The Society actively contributed to the creation of the sector’s 2014 [Concordat on Openness](#) and is a signatory to it. This is a commitment, currently signed by more than 100 organisations, to be more open with the public about both the need for and processes of animal-based research. Moreover the Concordat has developed principles of openness, practical steps and measurable objectives that will in turn underpin a more transparent approach to animal research. Progress is detailed in an [annual report](#). The Society will readily comply with the commitment to be open and to report progress on the openness agenda.

5.3 The Society’s education programme funds and runs talks in schools and at science fairs at which its Members discuss diverse aspects of physiology. In the process Members cover any use of animals that is essential to that research topic. Members also act as speakers in the Understanding Animal Research [schools programme](#), in which animal use is addressed more directly.

5.4 The Society is also active in providing evidence both to policy makers in government and to lobbying groups with differing views, so as to promote rational debate and policy outcomes that support both research and animal welfare. Without a supportive environment, both in parliament and among the public, the UK’s talented physiologists will not be able to make the advances of which they are capable.

6. Animal research and The Physiological Society’s journals

The Physiological Society publishes three journals: The [Journal of Physiology](#), [Experimental Physiology](#) and [Physiological Reports](#). All three journals publish articles in which the results of animal research may be included, provided that the use of animals adheres to the journal’s expectations^{4,5} that the work

⁴ Guidelines for the Journal of Physiology and Experimental Physiology [http://www.physoc.org/animal-experiments and Physiological Reports](http://www.physoc.org/animal-experiments-and-Physiological-Reports) <http://physreports.physiology.org/author-guidelines>

⁵ Principles and standards for reporting of animal experiments in the Journal of Physiology and the Journal of Experimental Physiology <http://onlinelibrary.wiley.com/doi/10.1113/JP270818/abstract>, Guidelines from Physiological Reports <http://physreports.physiology.org/author-guidelines>

reported aligns with the principles and standards of EU and UK legislation, irrespective of the country in which the work was undertaken.

The Physiological Society and its journals fully endorse the use of the ARRIVE (Animal Research: Reporting *In Vivo* Experiments) guidelines. Conformity with the ARRIVE guidelines means that publications should include detailed information not only on numbers of animals involved in the published work, but also, for example, on measures taken to ensure animal welfare, and any adverse effects experienced by the animals. Adherence to the ARRIVE guidelines promotes optimum value from research involving *in vivo* experiments and supports the openness agenda.

7. The regulation of animals in research and The Society's contribution to its development

The number of animals used in research accounts for around 0.2 % of all animals killed annually in the UK (c. 4m, compared to 1bn+ for food),⁶ but research animals are afforded far greater legal oversight and protection than any other use. Throughout the EU and especially in the UK, the use of animals for research is not taken lightly, especially in the few cases in which there may be material adverse effects on the animals' welfare. As a result of the revised [EU Directive](#) in 2010 the UK⁷ and Ireland⁸ have adopted yet stricter regulations governing research involving vertebrate animals and cephalopods; indeed it is illegal to use animals in research where a suitable validated alternative exists. Any research that "may have the effect of causing the animal a level of pain, suffering, distress or lasting harm equivalent to, or higher than, that caused by the introduction of a needle in accordance with good veterinary practice" requires authorisation under the [2012 update](#) of the [Animals \(Scientific Procedures\) Act 1986](#). Before any projects are approved by government regulators, the scientific and possible clinical benefits are carefully weighed by government inspectors against any effects on the animals (a harm / benefit analysis). Summaries of all projects that are approved and licenced in the UK are published on the Home Office [website](#).

The Society advocates for the highest standards of welfare for all animals used for research, both from an ethical standpoint as well as supporting the most robust science, and it therefore supports those aspects of regulation that promote good practice. At the same time it wishes to promote research, which means avoiding bureaucratic controls that do not aid welfare but that generate costs in time and money, which in turn restricts important research that could be undertaken.

To those ends, The Society is an active member and supporter of several groups that work together to address related and overlapping aspects of the promotion of bioscience research, animal welfare and an appropriate regulatory environment:

- 7.1 [The Royal Society of Biology](#), an umbrella organisation that promotes bioscience and acts as an interface with government.

⁶ <http://www.viva.org.uk/what-we-do/slaughter/slaughter-farmed-animals-uk>

⁷ The Animals (Scientific Procedures) Act 1986 Amendment Regulations 2012
http://www.legislation.gov.uk/ukdsi/2012/9780111530313/pdfs/ukdsi_9780111530313_en.pdf

⁸ S.I. 543/2012 European Union (Protection of Animals Used for Scientific Purposes) Regulations 2012
<http://www.imb.ie/images/uploaded/documents/S%20I%20No%2020543%20of%202012.pdf>

- 7.2 [The Animal Sciences Group](#), a special interest group of the Royal Society of Biology, brings together those with an interest in the use of animals across biomedical, veterinary, agricultural and zoological research. It exists to promote good science, to share best practice and to influence policy makers who can support the effective and humane use of animals in research.
- 7.3 The UK Bioscience Coalition (UKBSC), which promotes an effective and efficient regulatory environment for animal-based research. This coalition has been particularly active during the development and implementation of [EU Directive 2010/63](#) on the Protection of Animals used for Scientific Purposes; and its subsequent implementation in the UK in 2013 as a revision of the Animals (Scientific Procedures Act) 1986. UKBSC continues to work with the regulators in the [Animals in Science Regulatory Unit](#) of the Home Office to promote the most appropriate combination of a pro-research environment and support for the best practicable standards of animal welfare.
- 7.4 [Understanding Animal Research](#) provides a wealth of objective information on its website, promotes responsible reporting by the press, and arranges and/or provides speakers for groups of school students or adults.

As well as contributing to and working with these groups, The Society has [contributed](#) directly to a series of consultations during the development of the EU Directive and the revised UK legislation.

8. Conclusion

The Society and its Members continue to undertake the kinds of activity summarised above. In all such interactions The Society is adamant about promoting the best combination of good physiological science and good animal welfare.