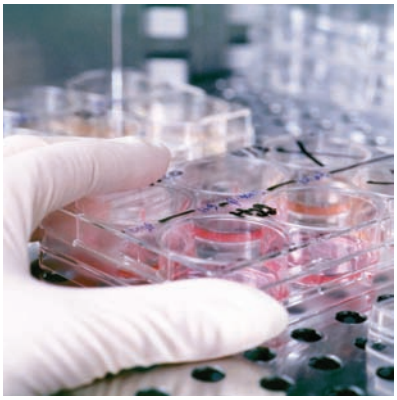
NC3Rs

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

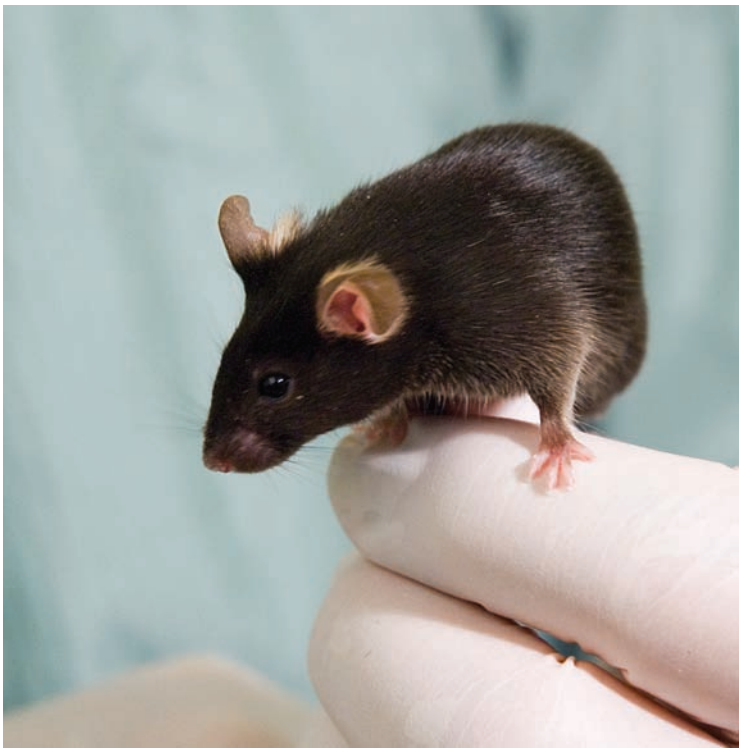
VIEWS ON THE 3Rs

Survey Report 2008



VIEWS ON THE 3Rs

The NC3Rs has conducted a survey to provide information on how scientists who use animals understand and implement the 3Rs. This is the first survey of scientists to focus on the 3Rs and the results provide information for benchmarking progress and the development of the Centre's strategy. The results of the survey, carried out by People, Science and Policy, were collated in 2008 and highlight some interesting themes.



BACKGROUND

The use of animals in scientific procedures in the UK is regulated by the Animal (Scientific Procedures) Act 1986 (ASPA). In England, Wales and Scotland, the Act is administered by the Home Office via a three-level system of licences which cover the person carrying out the regulated procedures (the personal licence), the programme of work (the project licence) and the establishment at which the procedures are undertaken (the certificate of designation).

The 3Rs are not referred to as such in the ASPA[1], but they are implemented through requirements that a project licence cannot be granted unless the work '...*cannot be achieved satisfactorily by any other reasonably practicable method not entailing the use of protected animals*' and the procedures '...*use the minimum number of animals, involve animals with the lowest degree of neurophysiological sensitivity, cause the least pain, suffering, distress or lasting harm, and are most likely to produce satisfactory results*'. Therefore, under the regulatory framework, a project licence cannot be granted unless the 3Rs have been considered and are implemented. Personal licence holders are responsible for the welfare of the animals on which they have performed regulated procedures, and the application of the 3Rs is integral to ensuring this responsibility is put into practice.

Development and uptake of the 3Rs is also supported at the institutional level by the Ethical Review Process (ERP) which was introduced by the Home Office in 1999. Scientists with project and/or personal licences (and those who support and advise them) are a main audience for the NC3Rs and understanding their level of awareness and use of the 3Rs, and perceived barriers to implementation, provides a basis for informing the Centre's strategy and a baseline for measuring attitudes over time.

1: The 3Rs are referred to in the Guidance on the Operation of the ASPA

The survey highlights a number of trends among scientists who hold project and/or personal licences.

SUMMARY OF METHOD

The opinion survey was conducted between July and October 2007 using an online questionnaire targeted at project and personal licence holders. The questionnaire was developed following in-depth interviews with licence holders and was overseen by an expert steering group. It was distributed to all designated establishments via the Home Office's Certificate Holder's circular. Although this was identified as the most expedient distribution method, circulation to licensees was dependent on subsequent dissemination by the Certificate Holder.

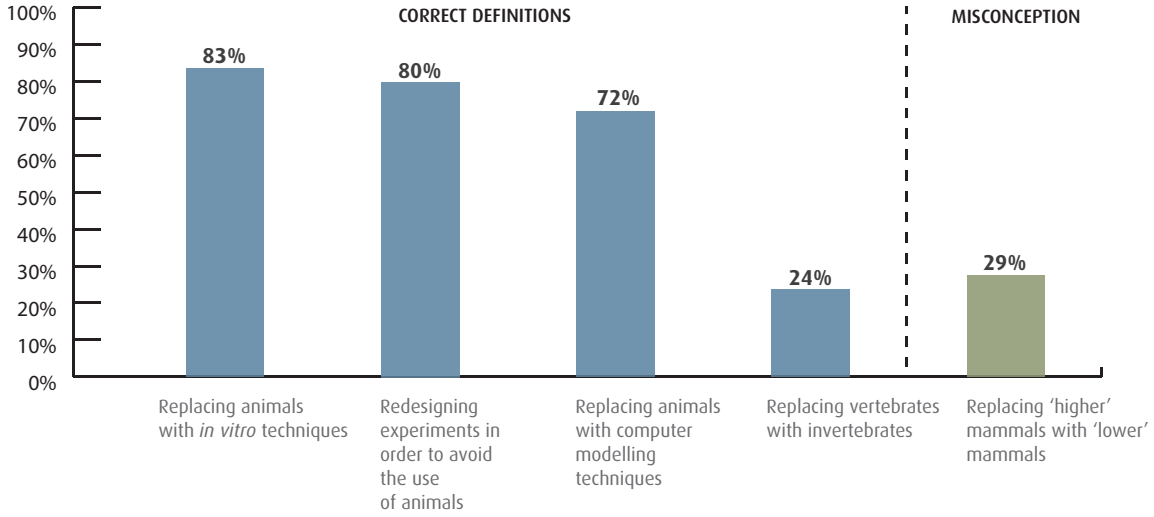
RESULTS

Responses were received from 1,955 licensees which is a response rate of approximately 14% of all possible respondents (but included responses from 27% of all project licence holders). The data gathered was weighted to reflect the overall distribution of licensees using information provided by the Home Office. A majority of those who responded (76%) were scientists (most of the remaining 24% were animal care staff); 37% of the scientists were project licence holders and 94% were personal licence holders. 74% of the scientists worked in academia and 15% in industry (most of the remaining 11% worked for Government bodies). The survey highlights a number of trends among scientists who hold project and/or personal licences which are illustrated below.

Understanding of the 3Rs

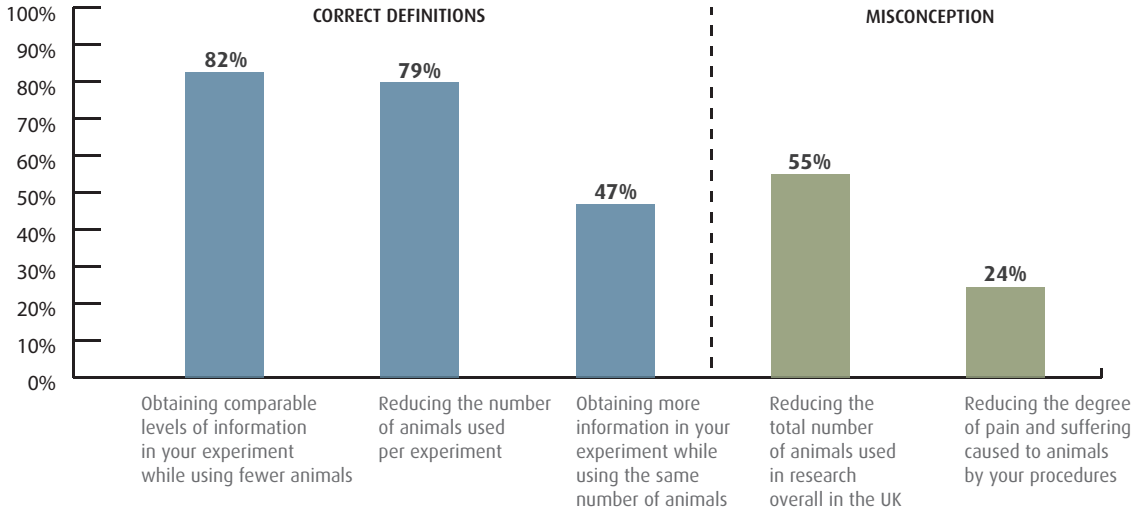
Respondents were provided with a series of definitions for replacement, reduction and refinement, including some common misconceptions and asked to identify all definitions which correspond to their understanding of the 3Rs. The results (see Q1, Q2, Q3) indicate that generally there is a good understanding of the definitions of the 3Rs. However, there is confusion over the definition of refinement with 52% of scientists incorrectly defining it as improving experiments to yield better data[2].

Q1: Which of the following definitions fits your understanding of REPLACEMENT?



Base: All scientists (1,529) Response: Tick all that apply

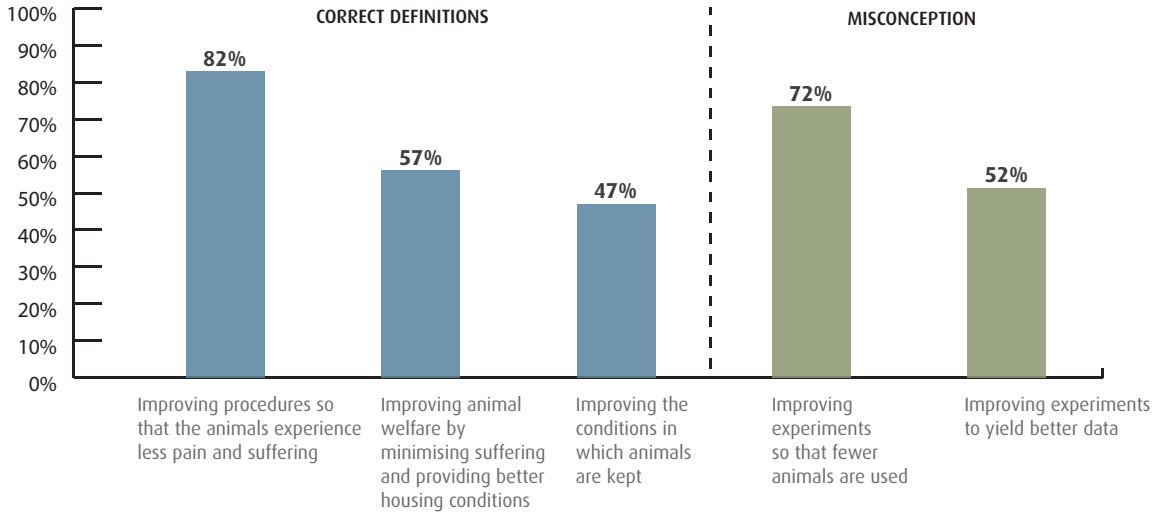
Q2: Which of the following definitions fits your understanding of REDUCTION?



Base: All scientists (1,529) Response: Tick all that apply

2: Respondents were given the correct definitions of the 3Rs before continuing with the survey

Q3: Which of the following definitions fits your understanding of REFINEMENT?

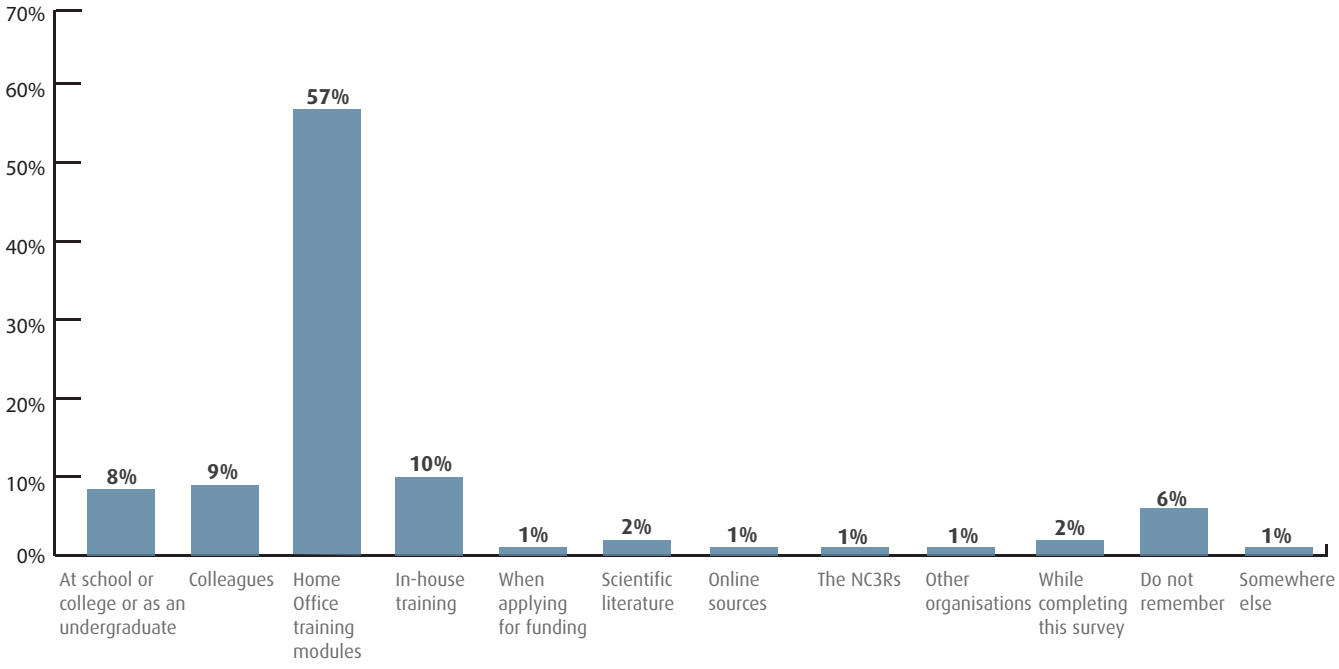


Base: All scientists (1,529) Response: Tick all that apply

Introduction to the 3Rs

Respondents were asked to indicate where they had first heard about the 3Rs by choosing a single option from the list provided. The results (see Q4) show that the modular training courses required to attain a project and personal licence often provide the first introduction to the 3Rs for scientists (57%). The courses introduce the basic principles of the 3Rs, but are not intended to replace ongoing professional development and training related to 3Rs issues. Nearly half of scientists (45%) indicated that they thought there were sufficient training courses on the 3Rs available and 39% of scientists did not know (data not shown).

Q4: Where did you first hear about the concept of the 3Rs?



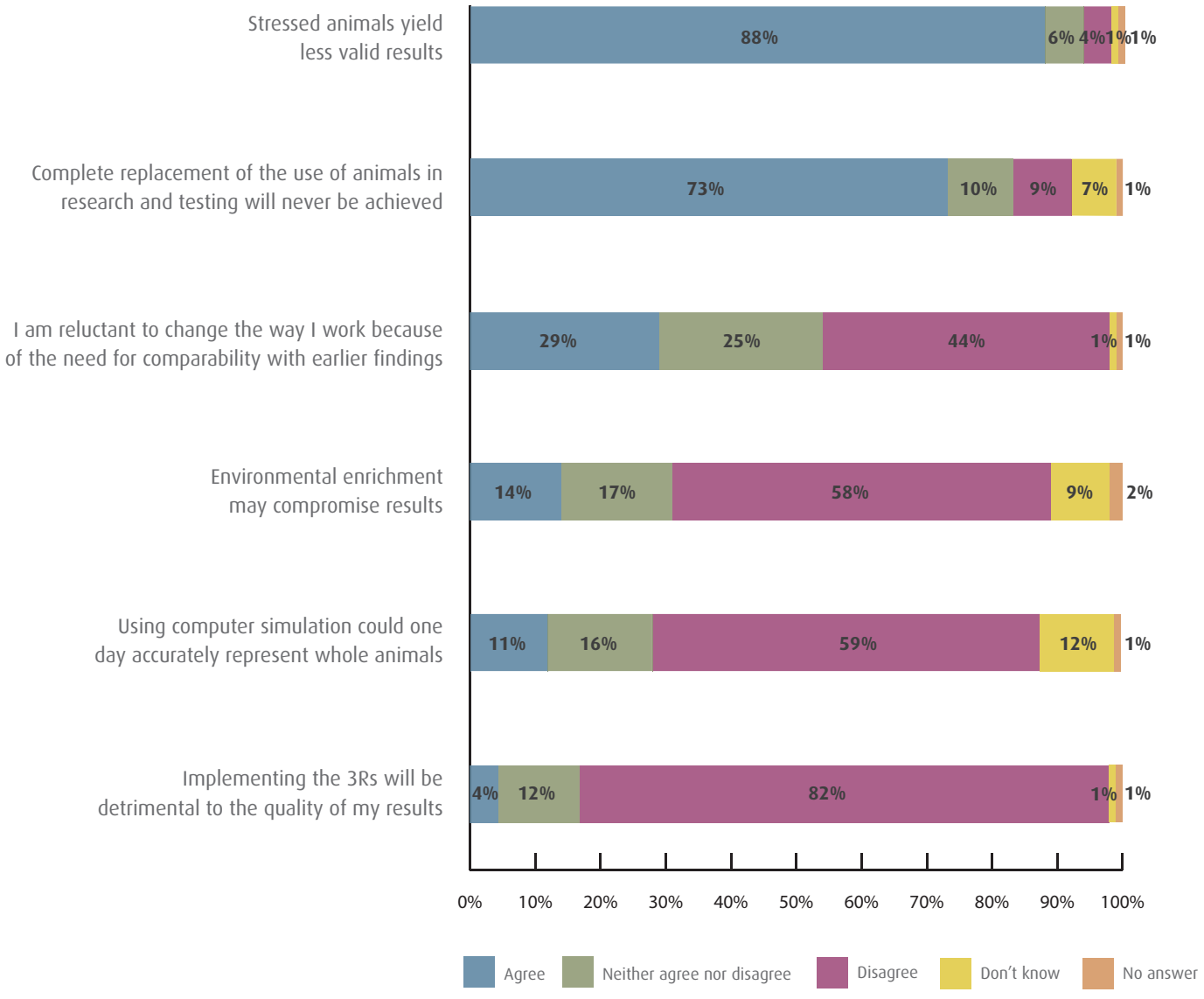
Base: All scientists (1,529) Response: Tick one answer only

NOTE: Figures do not add to 100% because of rounding

Attitudes to the 3Rs

Respondents were asked to agree or disagree [3] with each of a series of statements relating to aspects of the 3Rs, their implementation and the perceived impact on research (see Q5). The majority of scientists indicated that implementation of the 3Rs would not be detrimental to the quality of their results (82%) and that the complete replacement of animals in research and testing will never be achieved (73%).

Q5: Here are some statements about the use of animals in research.
Please indicate whether you agree or disagree with the following statements[4].



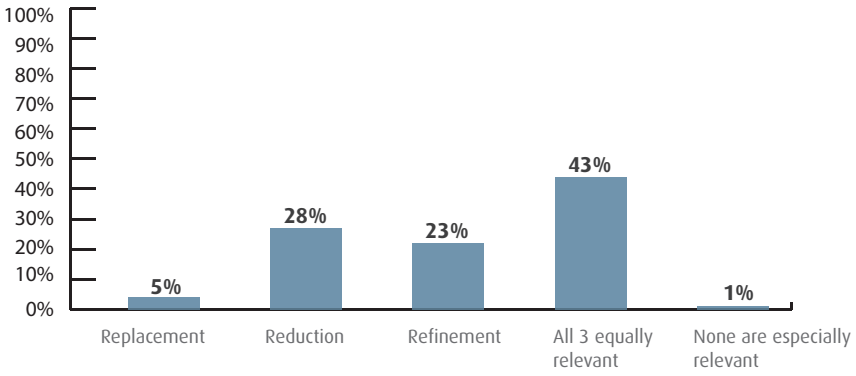
Base: All scientists (1,529) **Response: Tick one box for each statement**
NOTE: Not all responses add up to 100% because of rounding

3: Answers were on five point scale of: Strongly agree, agree, neither agree nor disagree, disagree and strongly disagree.
4: To simplify this graph, the percentage of those who 'Agree' is a combined figure of those who 'Strongly agree' or 'Agree', and 'Disagree' combines 'Strongly disagree' and 'Disagree'

Relevance of the 3Rs

Respondents were asked which of the 3Rs was most relevant to them in their work. The results (see Q6) show that more than four out of ten of the scientists (43%) consider all three 'R's to be equally relevant to their work. Of the remaining 57% of scientists, replacement was seen as the most relevant by 5%.

Q6: Using the definitions, which of the 3Rs is most relevant to you in your work?

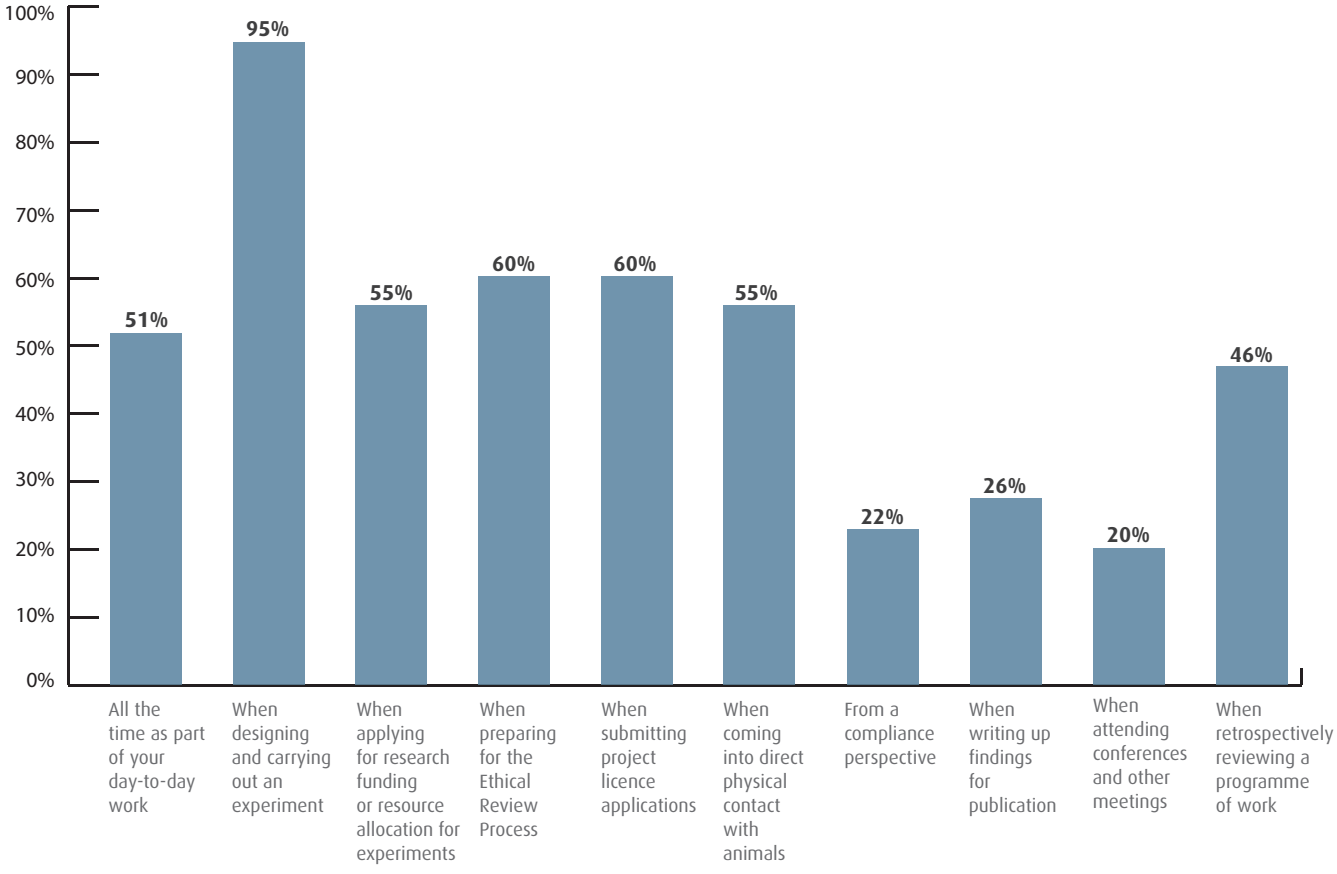


Base: All scientists (1,529) Response: Tick one answer only

Incorporating the 3Rs into the research process – from design to dissemination

Respondents were asked to indicate when they consider the 3Rs in their work from the experimental design stage through to publication (see Q7). Almost all scientists consider the 3Rs when designing and carrying out experiments (95%), however, this figure declines significantly to 26% when writing up findings for publication and 20% when attending conferences and other meetings.

Q7: When do you consider the 3Rs in your work?



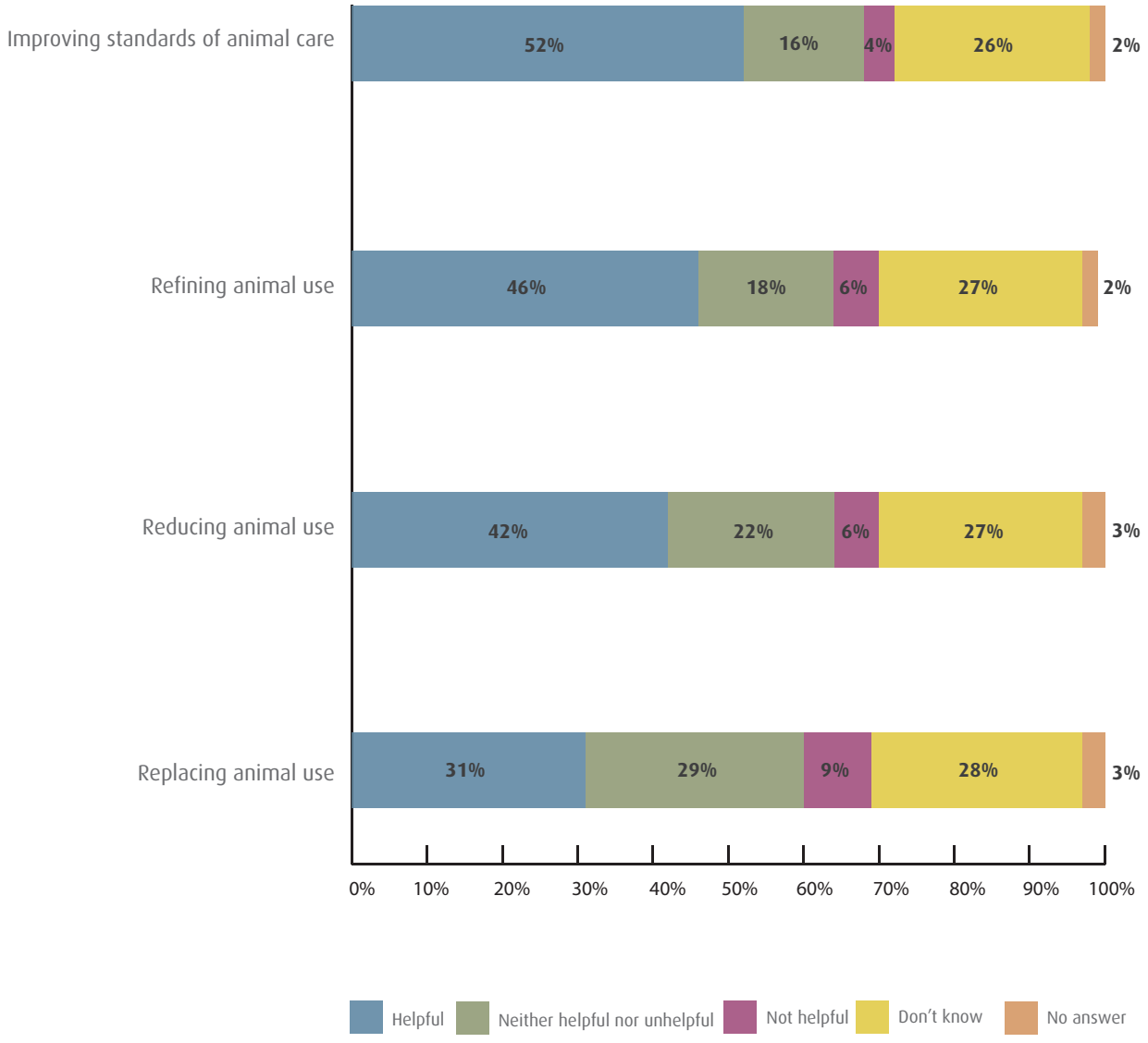
Base: All scientists (1,529) Response: Tick one box for each statement

NOTE: Not all responses add up to 100% because of rounding

The impact of the Ethical Review Process

One of the responsibilities of the ERP is to support the implementation of the 3Rs and respondents were asked how helpful the ERP is in achieving this. Less than half the scientists find the ERP helpful in replacing (31%), reducing (42%) or refining (46%) animal use.

Q8: How helpful do you find the ERP at your establishment in...?

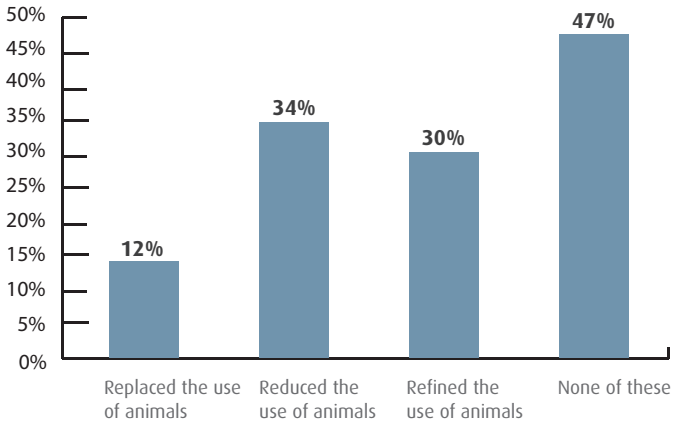


Base: All scientists who have worked on animal research in the last 12 months (1,455) Response: Tick one box for each factor

Implementing the 3Rs – opportunities and barriers

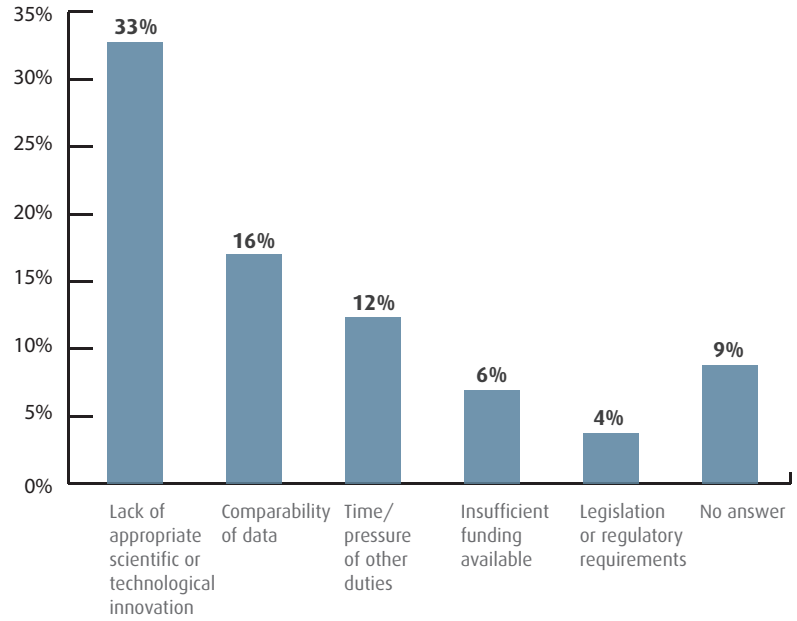
Respondents were asked a series of questions relating to the application of the 3Rs in their work, including whether they had developed a 3Rs technique, and what they considered to be the opportunities and obstacles to implementation of the 3Rs. Approximately one-third of scientists have developed techniques that reduce (34%) or refine (30%) the use of animals. This falls to 12% for replacement techniques (see Q9). Lack of scientific or technological innovation is seen as the main obstacle to implementing the 3Rs by 33% of scientists (see Q10).

Q9: Have you developed a 3Rs technique?



Base: All Scientists (1,529) Response: Tick all that apply

Q10: What is the main obstacle to implementing the 3Rs in your own research?

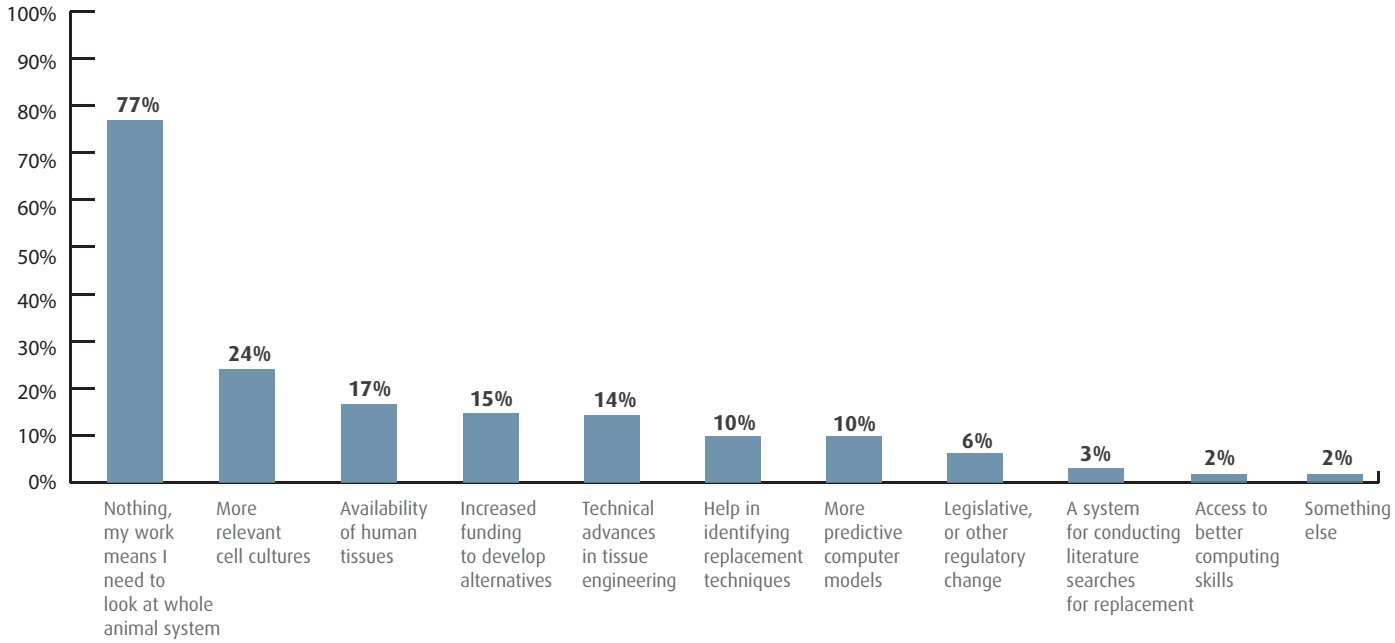


Base: Scientists who have worked on animal research in the last 12 months (1,455) Response: Tick one answer only

Note: Options with less than 4% response are not shown

More than three-quarters (77%) of scientists involved in designing experiments indicated that nothing would allow them to address their research objectives without the use of animals (see Q11). Of these, however, 20% also ticked one of the alternatives listed (data not shown).

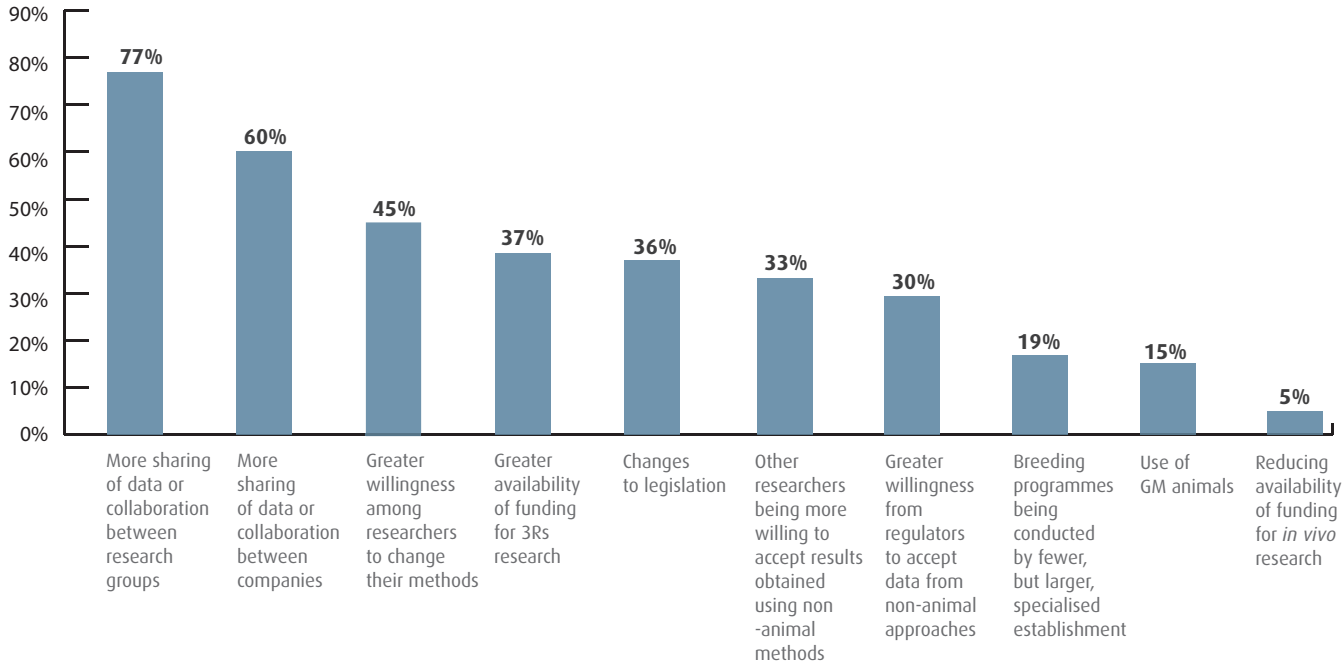
Q11: What would enable you to continue to address your research objectives without the use of animals?



Base: All scientists involved in designing experiments (1,343) Response: Tick all that apply

Most scientists identify data sharing or collaboration between research groups (77%) or companies (60%) as factors which would allow fewer animals to be used. Greater availability of funding for 3Rs research was identified by 37% of scientists (see Q12).

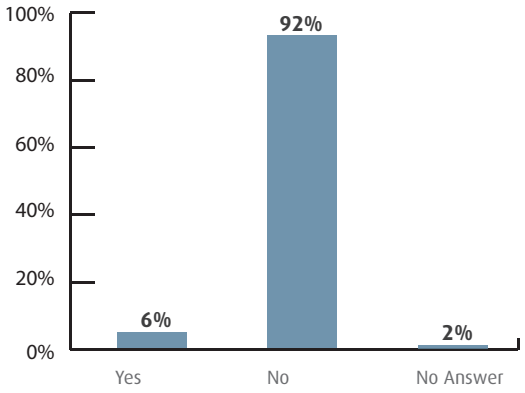
Q12: Which factors would allow scientists to use fewer animals?



Base: All scientists (1,529) Response: Tick all that apply

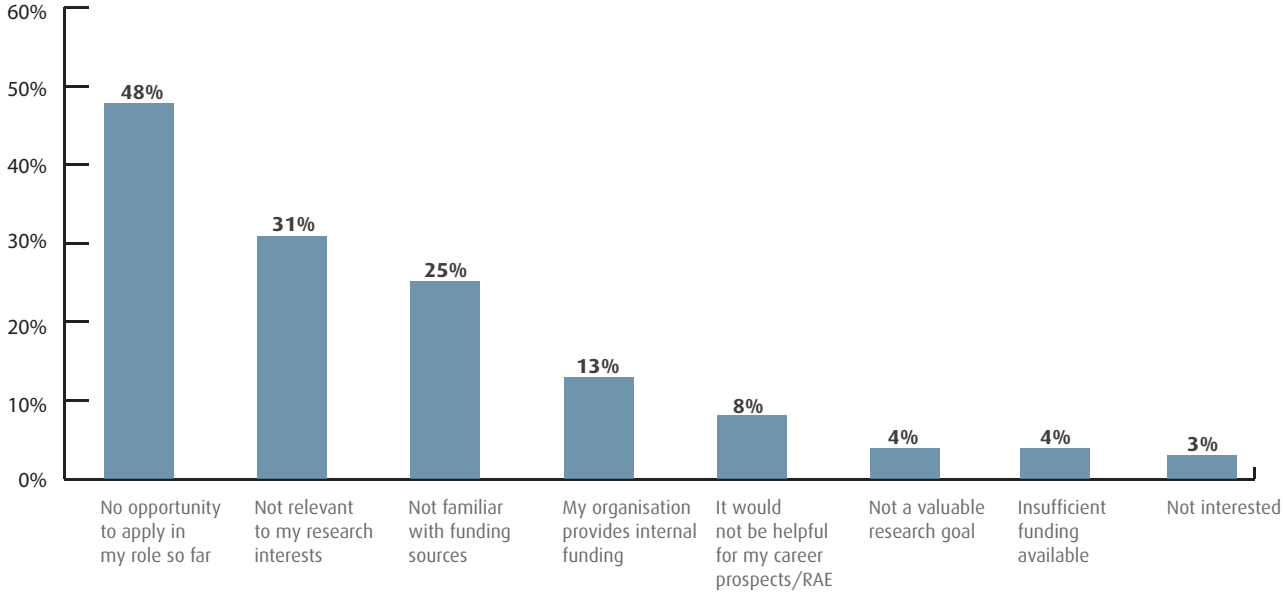
Only 6% of scientists have applied for 3Rs research funding (see Q13). The main reasons for scientists not applying for research funding (see Q14) are not having an opportunity to do so (48%), lack of relevance to research interests (31%) and unfamiliarity with funding sources (25%).

Q13: Have you ever applied for external funding to undertake 3Rs research and testing?



Base: All scientists (1,529) Response: Tick one answer only

Q14: Why have you never applied for external funding to undertake 3Rs research?

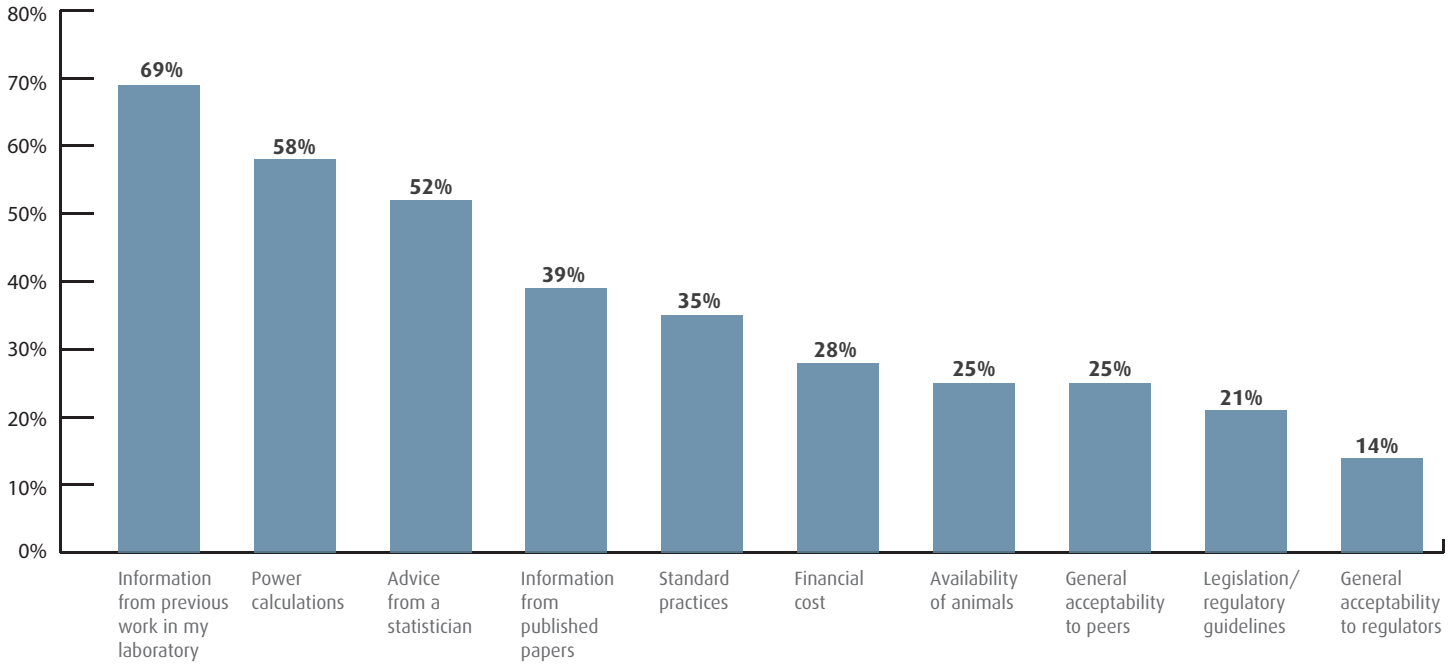


Base: All scientists who had not applied for funding (1,375) Response: Tick all that apply

Experimental design and the number of animals used

Respondents were asked a series of questions relating to the design of experiments and in particular the number of animals used and the utility of statistical advice. For scientists involved in designing experiments, information from previous work (69%), power calculations (58%) and advice from a statistician (52%) are the most common factors involved in deciding how many animals to use (see Q15).

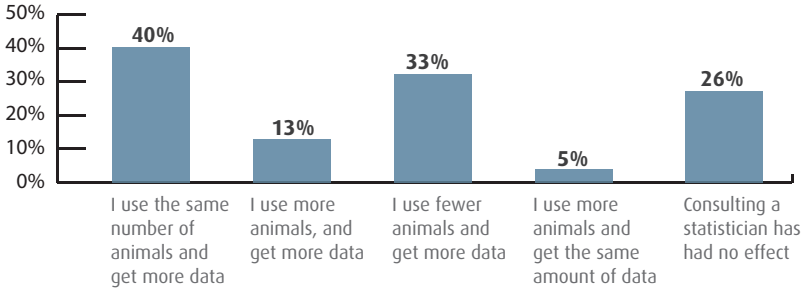
Q15: How do you decide how many animals to use in your experiments?



Base: All scientists involved in designing experiments (1,343) Response: Tick all that apply

Almost half (45%) of the scientists involved in designing experiments usually consult a statistician (data not shown) and, of those, 33% indicated that they use fewer animals and get more data and 40% use the same number of animals and get more data (see Q16).

Q16: How, if at all, has consulting a statistician changed the design of your experiments?



Base: Scientists who use statisticians in the course of their work (660) Response: Tick all that apply

SUMMARY

The survey has illustrated a number of trends in the views of UK scientists working under the ASPA to the 3Rs. These will be considered as part of the ongoing development of the NC3Rs strategy in 2009.

Attitudes to the 3Rs among scientists are good. The majority understand the terms and do not consider that implementation of the 3Rs will be detrimental to their research. Importantly, almost all scientists consider the 3Rs when designing and conducting experiments. Data sharing and collaboration are seen as important factors in reducing animal use. However, despite this comparatively positive picture, relatively few scientists have developed 3Rs techniques and only a minority have applied for 3Rs funding, even though a lack of scientific and technological innovation is seen as the main obstacle to implementation. The ERP, which is intended to have a key role in the development of the 3Rs at a local level, is considered helpful by less than half of scientists.

The survey illustrates that there is a need for the NC3Rs and others in the scientific community to consider:

- how to further align, exploit and translate recent advances in science and technology with innovation in the 3Rs
- how to encourage scientists to consider opportunities for 3Rs research
- opportunities for data sharing and collaboration to benefit the 3Rs
- how the work of the ERP can be supported in terms of delivery of its 3Rs remit.

These are important challenges if the potential of the 3Rs to support humane high quality science is to be fully realised.

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