Australian Government

National Health and Medical Research Council

Survey on the replacement, reduction and refinement of the use of animals for scientific purposes in Australia

Survey Findings Report

Appendices

MELBOURNE CANBERRA SYDNEY BRISBANE
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ORIMA RESEARCH

Australian Government

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Appendix A: Questionnaire for investigators

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ORIMA RESEARCH

Introduction

Investigators, members of animal ethics committees (AECs) and institutions involved with the care and use of animals for scientific purposes are invited to participate in this national survey which seeks to gather information about the use of the 3Rs in Australia.

The 3R principles of replacement, reduction and refinement underpin the ethical, humane and responsible care and use of animals for scientific purposes in Australia. The 3Rs are included in the governing principles of the *Australian code for the care and use of animals for scientific purposes, 2013* (the Code), which is adopted in all state and territory legislation.

There is little documented evidence about what actually happens in Australia about the use of the 3Rs and factors that enable or hinder their development and adoption. Views are therefore being sought from the following groups of people to obtain an accurate picture of current knowledge and practices:

- investigators who have been involved with the use of animals sometime during the last three years
- current members of animal ethics committees
- institutional representatives – senior people within institutions who are responsible for overall institutional governance with respect to the care and use of animals.

This survey is being conducted on behalf of the National Health and Medical Research Council (NHMRC) by ORIMA Research, an independent market and social research company.

Results from this survey will assist NHMRC to develop an information paper about the use of the 3Rs in Australia. Your honest opinions and accounts based on your recent experiences are extremely valuable as they will ensure that discussion about the use of the 3Rs in Australia, and any recommendations for improvement if required, will be informed and guided by accurate and current evidence.

Please be assured that your responses will not be used to assess your compliance with the Code, state/territory legislation or NHMRC funding conditions.

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Privacy information

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here. Should you have any questions about our privacy policy or how we will treat your information, you may contact our Privacy Officer, Liesel van Straaten on (03) 9526 9000 or by email: liesel.vanstraaten@orima.com.

Contacts

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Instructions

- Once you click on the 'Start New Survey' button, a unique password will be generated for you to enable you to return to your survey if you are unable to complete the survey in one sitting. **Please make a note of the password for your reference** – ORIMA Research will not be able to help you get back to your survey if you lose your password.
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- Please read each question carefully before you answer.
- Where there is a scale in response to the question, select the option on the scale that represents the answer you want to give. For example, if you agree that littering should be prohibited you would select 'Agree', as shown below.
    - Please note that the option '*Neither Agree nor Disagree'* should only be selected if this option truly reflects your intention to record an average or mixed-view response. It should not be selected as a default response.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Littering should be prohibited	○	○	○	◉	○

- Further information to assist you in your response is available by hovering over the 'information' icons throughout the online form. Click on the icon to keep the hover text visible.
- Please use the 'Survey Pages' and 'Missing answers' buttons at the top of each page of the online survey to monitor the completion status of your survey and/or go to specific sections of the survey.

Programming note: Display the following message each time a free-text response box is activated.

Please note: If you provide personally identifying information (e.g. names, email addresses) in your free-text response, this information will be de-identified by ORIMA Research. If you choose to provide other information that could identify you, this will be taken as your consent to the potential disclosure of this information to NHMRC.

A. Demographics

The first few questions are about you and your role with the care and use of animals for scientific purposes.

1. **[MAKE MANDATORY]** In what capacity are you participating in this survey?
   Please note: Your response to this question will allow us to tailor the survey questions to your circumstances.
   Investigators who are also a member of an AEC are encouraged to participate in their capacity as an AEC member. Investigators who fulfil both roles are also invited to participate in their capacity as an investigator. Please contact May Doan at ORIMA Research if you would like an additional survey link for this purpose by email: may.doan@orima.com.

   1 Investigator

   [**Hover text:** For the purposes of this survey, an investigator is any person who uses animals for scientific purposes. This includes researchers, teachers, undergraduate and postgraduate students involved in research projects, and people involved in product testing, environmental testing, production of biological products and wildlife surveys.]

   2 Member of an animal ethics committee (AEC)

   3 Representative from an institution

[If Q1=2 (Member of an animal ethics committee (AEC)), then a message box will appear] Unless otherwise stated, please answer all questions in terms of your own experiences, knowledge and opinions rather than that of the AEC.

2. In which state/ territory are you based?

   1 Australian Capital Territory

   2 New South Wales

   3 Northern Territory

   4 Queensland

   5 South Australia

   6 Tasmania

   7 Victoria

   8 Western Australia

A. Demographics (continued)

3. Which sector are you primarily affiliated with?
   Please note: For the purposes of this question, a research institute must have research as its primary function, whereas an organisation may conduct research but the conduct of research is not its primary function.

   1 Private hospital
   2 Private organisation
   3 Private research institute
   4 Public hospital
   5 Public organisation
   6 Public research institute
   7 University
   8 Other *[Please specify]* _____

4. What type of activity are you currently involved in where animals are used? [Please select all that apply]

   1 Health and medical research
   2 Other research
   3 Field trials
   4 Environmental studies
   5 Teaching

   [**Hover text:** Some survey questions are not suited for animal use in teaching activities, such as in primary and secondary schools and undergraduate teaching. This is because the international surveys to be used for benchmarking purposes have focussed on the use of animals in research. If your involvement with the use of animals is confined to teaching activities **only**, your views are still valuable. However, please skip those questions that are not applicable to your situation.]

   6 Diagnosis
   7 Product testing
   8 Production of biological products
   9 Other *[Please specify]* _____

5. What types of animals are used in your work? [Please select all that apply]

1 Amphibians
2 Birds (including poultry)
3 Cats
4 Cephalopods
5 Dogs
6 Fish
7 Guinea pigs
8 Livestock
9 Mice
10 Native mammals
11 Non-human primates
12 Rabbits
13 Rats
14 Other species *[Please specify]* _____
15 None [EXIT SURVEY]

[If Q5=15 (None), then a message box will appear] As you have indicated that you do not use animals in your work, you are not required to complete any further questions of this survey. You may now save and close the survey.

B. Experience

This section is about your role and experience with the care and use of animals for scientific purposes. Unless otherwise indicated, please answer each question in terms of your **current** role and experience.

6. How many years have you been working with animal-based studies?

   1 20 years or more
   2 10 years to less than 20 years
   3 5 years to less than 10 years
   4 2 years to less than 5 years
   5 Less than 2 years

7. What is your current primary role in animal-based studies?

   1 Principal Investigator

   [**Hover text:** The person who has ultimate responsibility for the care and use of animals in a project (Clause 2.4.5 of the Code).]

   2 Investigator
   3 Postgraduate student
   4 Undergraduate student
   5 Animal care staff
   6 Veterinarian
   7 Other *[Please specify]* _____

8. Do you have experience as a member or Chair of an AEC?

   1 Yes
   2 No

[If Q8=1 (Yes), then a message box will appear] If you are a current member of the AEC - While it will require more of your time, you are invited to consider completing this survey as an AEC member, once you have finished completing it as an investigator. This would contribute to the collection of the most accurate information as possible. Please contact ORIMA Research (1800 654 585 or by email: may.doan@orima.com) if you would like an additional survey link for this purpose. Thank you.

C. Knowledge

This section is about your awareness and knowledge of the 3Rs.

9. When did you **first hear** about the 3Rs?

1 More than 20 years ago
2 11 to 20 years ago
3 5 to 10 years ago
4 1 to 4 years ago
5 Within the last year
6 While completing this survey **[Skip to Section D (Attitude)]**

[If Q9=6, then a message box will appear] Even if you have not heard about the 3Rs today, we would still value your feedback to the rest of the survey. Please answer as many questions as best you can. If you are unable to answer a question, please simply skip to the next question you are able to answer.

10. Where did you first hear about the concept of the 3Rs?

1 During my education (at school or as an undergraduate)
2 From colleagues
3 During in-house training (including induction training)
4 When applying for funding
5 From scientific literature
6 From online resources
7 From the state/ territory government
8 From the National Health and Medical Research Council (NHMRC)
9 From other organisations
10 From external courses, seminars or conferences
11 Somewhere else
12 Don't remember

11. Which of the following definitions fits your understanding of **REPLACEMENT**? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS]

    1 Replacing vertebrates with invertebrates
    2 Replacing animals with in vitro techniques
    3 Redesigning experiments in order to avoid the use of animals
    4 Replacing animals with computer modelling techniques
    5 Replacing higher mammals with lower mammals

12. Which of the following definitions fits your understanding of **REDUCTION**? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS]

    1 Obtaining comparable levels of information from an experiment while using fewer animals
    2 Reducing the number of animals used per experiment
    3 Obtaining more information from an experiment while using the same number of animals
    4 Reducing the total number of animals used overall in Australia
    5 Reducing the degree of pain and suffering caused to animals by your procedures

13. Which of the following definitions fits your understanding of **REFINEMENT**? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS]

    1 Improving studies to yield better data
    2 Improving procedures so that the animals experience less pain and suffering
    3 Improving studies so that fewer animals are used
    4 Improving animal welfare by minimising suffering and providing better housing conditions
    5 Improving the conditions in which animals are kept

14. With regards to the 3Rs, in which area do you consider your knowledge/ expertise to be the weakest?

    1 Replacement
    2 Reduction
    3 Refinement
    4 No weaknesses

D. Attitude

This section is about your opinions on different aspects of the use of animals for scientific purposes and the 3Rs.

15. How helpful is your animal ethics committee (AEC) with regards to each of the following:

	Helpful	Neither helpful nor unhelpful	Unhelpful	Do not know
a. Replacing animal use	1	2	3	4
b. Reducing animal use	1	2	3	4
c. Refining animal use	1	2	3	4
d. Improving standards of animal **care**	1	2	3	4
e. Improving/ adjusting the experimental protocol	1	2	3	4

16. Please indicate the extent to which you agree or disagree with the following statements about the use of animals for scientific purposes. [RANDOMISE 16a-16e]

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a. I am reluctant to change the way I work because of the need for comparability with earlier findings	1	2	3	4	5
b. Implementing the 3Rs will be detrimental to the quality of my results	1	2	3	4	5
c. Environmental enrichment may compromise results	1	2	3	4	5
d. The extensive focus on the wellbeing of animals used for scientific purposes will hinder scientific breakthroughs	1	2	3	4	5
e. 3Rs methods will increase project costs	1	2	3	4	5

17. Please indicate the extent to which you agree or disagree with the following statements about the use of animals for scientific purposes. [RANDOMISE 17a-17c]

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a. Complete replacement of the use of animals in research and testing will never be achieved	1	2	3	4	5
b. Results from animal experiments can rarely be generalised to human beings	1	2	3	4	5
c. 3Rs methods are recognised throughout the Australian scientific community	1	2	3	4	5

18. Please indicate the extent to which you agree or disagree with the following statements about the use of animals for scientific purposes. [RANDOMISE 18a-18e]

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a. Using computer simulation may one day accurately represent whole animals	1	2	3	4	5
b. Non-stressed animals yield more valid results	1	2	3	4	5
c. Fewer animals suffering significantly is better than many animals suffering to a lesser degree	1	2	3	4	5
d. You must always optimise the experimental design to minimise harm to the animal	1	2	3	4	5
e. You must always check if there are methods to replace the use of animals before using animals for scientific purposes	1	2	3	4	5

E. 3Rs in Practice

This section is about the use of the 3Rs in your workplace or in your role. Please answer each question in terms of your experiences **in the last three years**.

19. When do you consider the 3Rs in your work? [Please select all that apply]

1 When designing an experiment
2 When applying for research funding or when allocating resources to studies
3 When preparing an application for the animal ethics committee
4 When carrying out an experiment or coming into direct physical contact with animals
5 When preparing reports required by the animal ethics committee
6 When writing up findings for publication
7 When retrospectively reviewing a program of work
8 All the time as part of my day-to-day work
9 When attending conferences and other meetings
10 When considering a compliance perspective

20. How often does each of the 3Rs play a role when you plan, conduct and review your work involving animals?

	Very frequently	Frequently	Sometimes	Rarely	Never
a. Replacement	1	2	3	4	5
b. Reduction	1	2	3	4	5
c. Refinement	1	2	3	4	5

21. **[If Q20a=1-4]** How often has consideration of replacement led to adoption of a non-animal alternative in a study, or a component of a study?

1 Very frequently
2 Frequently
3 Sometimes
4 Rarely
5 Never

22. How do you generally decide on the number of animals to use in your experiments? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-10]

1 Information from previous work in my laboratory
2 Power calculations
3 Advice from a statistician
4 Information from published papers
5 Standard practices
6 Financial cost
7 Availability of animals
8 General acceptability to peers
9 Legislation/ regulatory guidelines
10 General acceptability to regulators
11 Other *[Please specify]* _____

E. 3Rs in Practice (continued)

23. How, if at all, has consulting a statistician changed the design of your studies? [Please select all that apply]

    1 I use the same number of animals and get more data/ information
    2 I use more animals and get more data/ information
    3 I use fewer animals and get more data/ information
    4 I use more animals and get the same amount of data/ information
    5 Consulting a statistician has had no effect [Disable other options if selected]
    6 I don't consult a statistician when designing my studies [Disable other options if selected]

24. How frequently do you carry out pilot studies with a small number of animals in order to test a hypothesis, a model or a method before the larger scale study is planned and performed?

    1 Very frequently
    2 Frequently
    3 Sometimes
    4 Rarely
    5 Never

25. **[If Q24=1, 2, 3 or 4]** Have you ever cancelled parts of a planned study, or an entire planned study, based on the results of a pilot study?

    1 Yes
    2 No

26. If you have developed an **original** 3Rs technique in the last 5 years, what type of technique did you develop? [Please select all that apply] [Programming note: Please only show text box if option is selected]

    1 Replaced the use of animals
    [Please feel free to provide examples] _____
    2 Reduced the use of animals
    [Please feel free to provide examples] _____
    3 Refined the use of animals
    [Please feel free to provide examples] _____
    4 I have not developed any original 3Rs techniques in the last 5 years [Disable other options if selected]

F. Enablers/ Barriers to Implementation

Thinking about your experiences **in the last three years**, this set of questions seeks your views about factors that promote or hinder the implementation of the 3Rs.

27. What do you think are the driving factors for using 3R methods? [Please select up to 4 options] [RANDOMISE RESPONSE OPTIONS 1-11]

1 Personal ethos
2 Institutional policies
3 Animal ethics committee review process
4 Legislation
5 Funding body requirements
6 Policies in my work group
7 Discussion with, and expectations of, my colleagues
8 Social pressure
9 Pressure from animal advocacy organisations
10 Cost
11 Difficulties associated with using animals
12 Other *[Please specify]* _____
13 None [Disable other options if selected]

28. Please indicate the extent to which you agree or disagree that the following strategies or initiatives **effectively** support and facilitate the implementation of the 3Rs. [RANDOMISE 28a-28f]

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Do not know
a. Institutional policies	1	2	3	4	5	6
b. Education and training focused on the 3Rs for investigators	1	2	3	4	5	6
c. Advice and assistance offered to investigators on 3Rs assessment during planning of projects	1	2	3	4	5	6
d. Financial support for 3Rs searches	1	2	3	4	5	6
e. Information services and tools specific to the 3Rs (e.g. library, website, systematic reviews, online resources and databases)	1	2	3	4	5	6
f. Public recognition of the implementation and use of the 3Rs (e.g. awards)	1	2	3	4	5	6

F. Enablers/ Barriers to Implementation (continued)

29. Which of the following would best enable you to achieve the objectives of your work in the future without using animals? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-9]

    1 More predictive computer models
    2 Increased funding to develop replacement options
    3 A system for conducting literature searches for replacements
    4 Legislative or other regulatory change
    5 More relevant cell cultures
    6 Greater availability of human tissues
    7 Technical advances in tissue engineering
    8 Help to identify replacement techniques
    9 Access to better computing skills
    10 Other *[Please specify]* _____
    11 Nothing, my work demands that I look at the whole animal system [Disable other options if selected.]

30. Which of the following would best enable you to use fewer animals? [Please select up to 3 options] [RANDOMISE RESPONSE OPTIONS 1-12]

    1 Increased sharing of data or collaboration between institutions
    2 Statistical evidence that fewer animals would provide the required research results
    3 Greater availability of funding for 3Rs research
    4 Greater willingness from regulators to accept data from non-animal approaches
    5 Changes to legislation
    6 Increased sharing of data or collaboration between research groups
    7 Greater willingness among investigators to change their methods
    8 Other investigators being more willing to accept results obtained using non-animal methods
    9 Use of GM animals
    10 Use of stem cells
    11 Reducing availability of funding for *in vivo* research
    12 Breeding programs that are conducted by fewer, but larger, specialised establishments
    13 Other *[Please specify]* _____
    14 Nothing, investigators already adequately minimise the number of animals they use [Disable other options if selected.]

31. Which of the following would best enable you to use methods that better minimise adverse effects on the animals that you use? [Please select up to 3 options] [RANDOMISE RESPONSE OPTIONS 1-8]

    1 Increased sharing of information between institutions
    2 Increased sharing of information between research groups
    3 Greater willingness among investigators to change their methods
    4 Other investigators being more willing to accept results obtained using more refined methods
    5 Better systems for conducting literature searches for refinement methods
    6 Greater availability of funding for 3Rs research
    7 Legislative or other regulatory change
    8 Help to identify refinement methods
    9 Other *[Please specify]* _____
    10 Nothing, investigators already adequately minimise adverse effects on the animals they use [Disable other options if selected.]

32. What is the main obstacle to implementing the 3Rs in your own work? [RANDOMISE RESPONSE OPTIONS 1-5]

    1 Lack of appropriate scientific or technological innovation
    2 Comparability of data
    3 Lack of time due to other duties
    4 Insufficient funding available
    5 Legislation or regulatory requirements (e.g. for the registration of drugs or products)
    6 Other obstacle *[Please specify]* _____
    7 There are no obstacles

G. Information Access

Thinking about your experiences **in the last three years**, the next few questions are about how you find information about the 3Rs.

33. If you were to seek information about the 3Rs, which of the following sources would you typically turn to? [Please select all that apply]

    1 Own knowledge and experience
    2 Colleagues within my own work team
    3 The network within my own field of work
    4 Animal Welfare Officer or equivalent
    5 Animal ethics committee members
    6 Institutional veterinarian
    7 Animal facility staff
    8 3Rs databases
    9 Scientific publications
    10 Other *[Please specify]* _____

34. Which of the following problems, if any, have you encountered when searching for information about the 3Rs in the literature/ databases? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 2-8]

    1 No problems encountered [Disable other options if selected]
    2 No time
    3 No budget
    4 No access to sources of information
    5 Inadequate interface
    6 Too many/ few results
    7 Poor relevance of results
    8 No full access to results (i.e. full results were not published)
    9 Other *[Please specify]* _____

35. Approximately how many hours did you spend searching for information about the 3Rs, per application to the animal ethics committee?

    1 10 hours or more
    2 8 hours to less than 10 hours
    3 6 hours to less than 8 hours
    4 4 hours to less than 6 hours
    5 2 hours to less than 4 hours
    6 Less than 2 hours

36. What are your preferences concerning the best ways to make 3Rs information available? [Please select up to 3 options] [RANDOMISE RESPONSE OPTIONS 1-6]

    1 Library
    2 Education
    3 Literature service
    4 Services by animal facility
    5 Website
    6 Own responsibility
    7 Other *[Please specify]* _____

H. Training

The next set of questions is about your training on the 3Rs.

37. How have you received training on the 3Rs? [Please select all that apply]

1 As part of undergraduate courses
2 Training by supervisor/ mentor
3 Mandatory institutional training (including induction and refresher training)
4 Non-mandatory institutional training (including induction and refresher training)
5 Ad hoc training
6 Attendance at external conferences/ workshops, etc.
7 My institution does not offer training [Disable other options if selected]
8 I don't need training [Disable other options if selected]
9 I have never attended training **[Skip to Q40]** [Disable other options if selected]
10 Other *[Please specify]* _____

38. How many times have you participated in training where the 3Rs were discussed?

1 More than 10 times
2 6 to 10 times
3 3 to 5 times
4 1 to 2 times
5 Never

39. **[If Q38=1,2,3,4]** How recent was the last training session in which you participated where the 3Rs were discussed?

1 More than 5 years ago
2 3 to 5 years ago
3 1 to 2 years ago
4 Within the last year

40. How would you like to participate in training on the 3Rs? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-4]

1 Institutional training
2 Conferences/ workshops
3 Online modules
4 Own responsibility
5 Other *[Please specify]* _____

41. Please indicate the extent to which you agree or disagree with the following statements about training on the 3Rs.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a. I receive and/or am offered effective training on the 3Rs from my institution	1	2	3	4	5
b. My institution provides me with effective opportunities to attend external training on the 3Rs (e.g. workshops, conferences)	1	2	3	4	5
c. My institution provides me with effective access to relevant expertise in the 3Rs (including statisticians) if I need advice	1	2	3	4	5
d. Regular training on the 3Rs is beneficial for my work/ role	1	2	3	4	5
e. Training on the 3Rs should be mandatory for investigators	1	2	3	4	5
f. Training on the 3Rs should be mandatory for animal ethics committee members	1	2	3	4	5

I. Promotion/ Dissemination

Thinking about your experiences **in the last three years**, the next few questions are about how you communicate new information about the 3Rs to your peers.

42. In your publications, do you mention one or more of the 3Rs that you use?

    1 Yes – always
    2 Yes – sometimes
    3 No – never

43. How do you communicate lessons learned about the 3Rs in the workplace and in the scientific community? [Please select all that apply]

    1 Discussion at work meetings
    2 Presentation within my institution
    3 Conference/ workshop presentation
    4 Grant application
    5 Publication in journals
    6 Publication in science media
    7 Other *[Please specify]* _____
    8 I don't communicate lessons learned [Disable other options if selected]

Thank you for taking the time to complete the survey.

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	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Littering should be prohibited	○	○	○	◉	○

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- Please use the 'Survey Pages' and 'Missing answers' buttons at the top of each page of the online survey to monitor the completion status of your survey and/or go to specific sections of the survey.

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Please note: If you provide personally identifying information (e.g. names, email addresses) in your free-text response, this information will be de-identified by ORIMA Research. If you choose to provide other information that could identify you, this will be taken as your consent to the potential disclosure of this information to NHMRC.

A. Demographics

The first few questions are about you and your role with the care and use of animals for scientific purposes.

1. **[MAKE MANDATORY]** In what capacity are you participating in this survey?
   Please note: Your response to this question will allow us to tailor the survey questions to your circumstances.
   Investigators who are also a member of an AEC are encouraged to participate in their capacity as an AEC member. Investigators who fulfil both roles are also invited to participate in their capacity as an investigator. Please contact May Doan at ORIMA Research if you would like an additional survey link for this purpose by email: may.doan@orima.com.

   1 Investigator

   [**Hover text:** For the purposes of this survey, an investigator is any person who uses animals for scientific purposes. This includes researchers, teachers, undergraduate and postgraduate students involved in research projects, and people involved in product testing, environmental testing, production of biological products and wildlife surveys.]

   2 Member of an animal ethics committee (AEC)

   3 Representative from an institution

[If Q1=2 (Member of an animal ethics committee (AEC)), then a message box will appear] Unless otherwise stated, please answer all questions in terms of your own experiences, knowledge and opinions rather than that of the AEC.

2. In which state/ territory are you based?

   1 Australian Capital Territory

   2 New South Wales

   3 Northern Territory

   4 Queensland

   5 South Australia

   6 Tasmania

   7 Victoria

   8 Western Australia

A. Demographics (continued)

3. What type of institution is your AEC primarily associated with?
Please note: For the purposes of this question, a research institute must have research as its primary function, whereas an organisation may conduct research but the conduct of research is not its primary function.

   1 Private hospital
   2 Private organisation
   3 Private research institute
   4 Public hospital
   5 Public organisation
   6 Public research institute
   7 University
   8 Other *[Please specify]* _____

4. What type of activity does your AEC review? [Please select all that apply]

   1 Health and medical research
   2 Other research
   3 Field trials
   4 Environmental studies
   5 Teaching

   [**Hover text:** Some survey questions are not suited for animal use in teaching activities, such as in primary and secondary schools and undergraduate teaching. This is because the international surveys to be used for benchmarking purposes have focussed on the use of animals in research. If your involvement with the use of animals is confined to teaching activities **only**, your views are still valuable. However, please skip those questions that are not applicable to your situation.]

   6 Diagnosis
   7 Product testing
   8 Production of biological products
   9 Other *[Please specify]* _____

5. What types of animals are subject to review by your AEC? [Please select all that apply]

1 Amphibians
2 Birds (including poultry)
3 Cats
4 Cephalopods
5 Dogs
6 Fish
7 Guinea pigs
8 Livestock
9 Mice
10 Native mammals
11 Non-human primates
12 Rabbits
13 Rats
14 Other species *[Please specify]* _____

B. Experience

This section is about your role and experience with the care and use of animals for scientific purposes. Unless otherwise indicated, please answer each question in terms of your **current** role and experience.

6. How much experience do you have working as a member or Chair of an AEC?

   1 10 years or more

   2 5 years to less than 10 years

   3 2 years to less than 5 years

   4 1 year to less than 2 years

   5 Less than 1 year

7. What is your current role on the AEC as per Clauses 2.2.2–2.2.6 of the Code?

   1 Chair

   2 Category A member [**Hover text:** A person with qualifications in veterinary science that are recognised for registration as a veterinary surgeon in Australia, and with experience relevant to the institution's activities or the ability to acquire relevant knowledge.]

   3 Category B member [**Hover text:** A suitably qualified person with substantial and recent experience in the use of animals for scientific purposes relevant to the institution and the business of the AEC. This must include possession of a higher degree in research or equivalent experience. If the business of the AEC relates to the use of animals for teaching only, a teacher with substantial and recent experience may be appointed.]

   4 Category C member [**Hover text:** A person with demonstrable commitment to, and established experience in, furthering the welfare of animals, who is not employed by or otherwise associated with the institution, and who is not currently involved in the care and use of animals for scientific purposes. Veterinarians with specific animal welfare interest and experience may meet the requirements of this category. While not representing an animal welfare organisation, the person should, where possible, be selected on the basis of active membership of, and endorsement by, such an organisation.]

   5 Category D member [**Hover text:** A person not employed by or otherwise associated with the institution and who has never been involved in the use of animals in scientific or teaching activities, either in their employment or beyond their undergraduate education. Category D members should be viewed by the wider community as bringing a completely independent view to the AEC, and must not fit the requirements of any other category.]

   6 Person responsible for the routine care of animals [**Hover text:** In some jurisdictions, this may be described as a Category E member.]

   7 Other *[Please provide details **including voting status**]* _____

8. Approximately how many hours per month do you spend on AEC-related business?

1 40 hours or more

2 30 hours to less than 40 hours

3 20 hours to less than 30 hours

4 10 hours to less than 20 hours

5 5 hours to less than 10 hours

6 Less than 5 hours

C. Knowledge

This section is about your awareness and knowledge of the 3Rs.

9. When did you **first hear** about the 3Rs?

1 More than 20 years ago
2 11 to 20 years ago
3 5 to 10 years ago
4 1 to 4 years ago
5 Within the last year
6 While completing this survey **[Skip to Section D (Attitude)]**

[If Q9=6, then a message box will appear] Even if you have not heard about the 3Rs today, we would still value your feedback to the rest of the survey. Please answer as many questions as best you can. If you are unable to answer a question, please simply skip to the next question you are able to answer.

10. Where did you first hear about the concept of the 3Rs?

1 During my education (at school or as an undergraduate)
2 From colleagues
3 During in-house training (including induction training)
4 Through the AEC
5 From scientific literature
6 From online resources
7 From the state/ territory government
8 From the National Health and Medical Research Council (NHMRC)
9 From other organisations
10 From external courses, seminars or conferences
11 Somewhere else
12 Don't remember

11. Which of the following definitions fits your understanding of **REPLACEMENT**? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS]

    1 Replacing vertebrates with invertebrates
    2 Replacing animals with in vitro techniques
    3 Redesigning experiments in order to avoid the use of animals
    4 Replacing animals with computer modelling techniques
    5 Replacing higher mammals with lower mammals

12. Which of the following definitions fits your understanding of **REDUCTION**? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS]

    1 Obtaining comparable levels of information from an experiment while using fewer animals
    2 Reducing the number of animals used per experiment
    3 Obtaining more information from an experiment while using the same number of animals
    4 Reducing the total number of animals used overall in Australia
    5 Reducing the degree of pain and suffering caused to animals by your procedures

13. Which of the following definitions fits your understanding of **REFINEMENT**? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS]

    1 Improving studies to yield better data
    2 Improving procedures so that the animals experience less pain and suffering
    3 Improving studies so that fewer animals are used
    4 Improving animal welfare by minimising suffering and providing better housing conditions
    5 Improving the conditions in which animals are kept

14. With regards to the 3Rs, in which area do you consider your knowledge/ expertise to be the weakest?

    1 Replacement
    2 Reduction
    3 Refinement
    4 No weaknesses

D. Attitude

This section is about your opinions on different aspects of the use of animals for scientific purposes and the 3Rs.

15. Please indicate the extent to which you agree or disagree with the following statements about the use of animals for scientific purposes. [RANDOMISE 15a-15c]

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a. Complete replacement of the use of animals in research and testing will never be achieved	1	2	3	4	5
b. Results from animal experiments can rarely be generalised to human beings	1	2	3	4	5
c. 3Rs methods are recognised throughout the Australian scientific community	1	2	3	4	5

16. Please indicate the extent to which you agree or disagree with the following statements about the use of animals for scientific purposes. [RANDOMISE 16a-17e]

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a. Using computer simulation may one day accurately represent whole animals	1	2	3	4	5
b. Non-stressed animals yield more valid results	1	2	3	4	5
c. Fewer animals suffering significantly is better than many animals suffering to a lesser degree	1	2	3	4	5
d. Experimental design must always be optimised to minimise harm to the animal	1	2	3	4	5
e. The availability of methods to replace the use of animals must always be checked before using animals for scientific purposes	1	2	3	4	5

17. If an application has been peer reviewed, which of the following do you think the AEC should be able to question? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-5]

    1 The scientific or educational merit of an application

    2 The experimental design with respect to replacement

    3 The experimental design to achieve reduction

    4 The statistical design to achieve reduction

    5 The methods used to achieve refinement

    6 None of the above [Disable other options if selected]

E. 3Rs in Practice

This section is about the use of the 3Rs in your workplace or in your role. Please answer each question in terms of your own experiences **in the last three years**.

18. How are you generally assured of the scientific or educational merit of the applications that you review? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-6]

    1 I trust the expertise of other members of the AEC
    2 I have sufficient expertise to assess the merit
    3 Independent external review
    4 Institutional review
    5 Peer review by a funding body
    6 I assume the applications have merit if they are before an AEC
    7 Other *[Please specify]* _____

19. How are you generally assured of the competency of investigators in applications that you review? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-7]

    1 The application usually provides sufficient information about the competency of the investigator
    2 Peer review by a funding body
    3 Own knowledge and experience
    4 Formal certification of competence provided by the institution
    5 Discussions with the investigator
    6 Reports from AEC inspections
    7 Advice from other party (e.g. Animal Welfare Officer)
    8 Other *[Please specify]* _____

The next few questions are about your views on how often the 3Rs are discussed by AECs and how they play a role in the decisions of AECs. **Providing estimates in your response is acceptable, if required,** and the questions are not intended to act as a check of your AEC's compliance with the Code or legislation.

20. How frequently do you think your AEC discusses each of the following during consideration of an application?

	Very frequently	Frequently	Sometimes	Rarely	Never
a. Use of non-animal alternatives in all or part of the project	1	2	3	4	5
b. Choice of species (for example, with respect to level of sentience)	1	2	3	4	5
c. Statistical design	1	2	3	4	5
d. Experimental design	1	2	3	4	5
e. Sharing of tissues or other biological material from other animals that have been humanely killed	1	2	3	4	5
f. Minimisation of harm, including pain and distress	1	2	3	4	5
g. Humane endpoints and intervention points	1	2	3	4	5
h. Animal handling	1	2	3	4	5
i. Animal care and management, including housing	1	2	3	4	5
j. Duration of activities involving an individual animal	1	2	3	4	5
k. Competence of investigators and animal carers	1	2	3	4	5

21. How often do you think your AEC approves applications without modification?

1 Very frequently

2 Frequently

3 Sometimes

4 Rarely

5 Never

22. How often do you think the following factors result in your AEC requiring a modification of an application?

	Very frequently	Frequently	Sometimes	Rarely	Never
a. There is a replacement option available	1	2	3	4	5
b. The animal species chosen is not appropriate	1	2	3	4	5
c. Animal numbers can be reduced	1	2	3	4	5
d. Animal numbers need to be increased to satisfy good statistical design	1	2	3	4	5
e. The techniques proposed can be refined to minimise the adverse impact on the animals involved	1	2	3	4	5
f. Intervention points or humane endpoints require modification	1	2	3	4	5
g. Animal care, management, housing requires modification	1	2	3	4	5
h. Competency of investigators requires clarification or is insufficient	1	2	3	4	5

E. 3Rs in Practice (continued)

23. Has your AEC ever not approved parts of a planned study, or an entire planned study, based on the results of a pilot study?

    1 Yes
    2 No
    3 Do not know

24. What do you think your AEC relies on for assurance about the statistical design of a study? [Please select all that apply]

    1 Scientific peer review
    2 Expertise of the investigator
    3 Advice from a statistician
    4 Expertise amongst AEC members
    5 My expertise
    6 The requirements of a regulatory authority
    7 Statistical design is not important provided that overall harm to the animals is minimised
    8 Statistical design is not important provided that harm to individual animals is minimised

25. Does your AEC have access to a statistician to advise on optimal animal numbers?

    1 Yes – a statistician assists with every application
    2 Yes – a statistician assists as needed
    3 Yes – but we rarely seek advice of the statistician
    4 No – it is not necessary as members of my AEC have sufficient statistical expertise
    5 No
    6 Do not know

26. Please indicate the extent to which you agree or disagree with the following statements about the application of the 3Rs.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a. I do my own investigation of the 3Rs when I am considering an application	1	2	3	4	5
b. I am confident in my knowledge of the 3Rs in relation to the applications I consider	1	2	3	4	5
c. I trust advice from other AEC members about the application of the 3Rs	1	2	3	4	5
d. I trust advice from the Animal Welfare Officer (or equivalent) about the application of the 3Rs	1	2	3	4	5

Compared to the AEC, I think that …	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
e. Investigators are more qualified to know about the application of **REPLACEMENT** in their work	1	2	3	4	5
f. Investigators are more qualified to know about the application of **REDUCTION** in their work	1	2	3	4	5
g. Investigators are more qualified to know about the application of **REFINEMENT** in their work	1	2	3	4	5

27. How well do you think the design of the AEC application form meets your information needs about the application of the 3Rs in a proposed project?

1 The design of the form ensures I receive adequate information about the application of the 3Rs from the investigator

2 The design of the form means that I receive limited or inconsistent information about the application of the 3Rs

3 The design of the form means I do not get the information I need to assess the application of the 3Rs

F. Enablers/ Barriers to Implementation

Thinking about your experiences **in the last three years**, this set of questions seeks your views about factors that promote or hinder the implementation of the 3Rs.

28. What do you think are the driving factors for using 3R methods? [Please select up to 4 options] [RANDOMISE RESPONSE OPTIONS 1-11]

1 Personal ethos
2 Institutional policies
3 Animal ethics committee review process
4 Legislation
5 Funding body requirements
6 Policies in research laboratories or workplaces
7 Social pressure
8 Pressure from animal advocacy organisations
9 Cost
10 Difficulties associated with using animals
11 Other *[Please specify]* _____
12 None [Disable other options if selected]

29. Please indicate the extent to which you agree or disagree that the following strategies or initiatives **effectively** support and facilitate the implementation of the 3Rs. [RANDOMISE 29a-28f]

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Do not know
a. Institutional policies	1	2	3	4	5	6
b. Education and training focused on the 3Rs for investigators	1	2	3	4	5	6
c. Advice and assistance offered to investigators on 3Rs assessment during planning of projects	1	2	3	4	5	6
d. Financial support for 3Rs searches	1	2	3	4	5	6
e. Information services and tools specific to the 3Rs (e.g. library, website, systematic reviews, online resources and databases)	1	2	3	4	5	6
f. Public recognition of the implementation and use of the 3Rs (e.g. awards)	1	2	3	4	5	6

F. Enablers/ Barriers to Implementation (continued)

30. Which of the following do you think would best enable investigators to achieve their scientific/educational objectives in the future without using animals? [Please select up to 3 options] [RANDOMISE RESPONSE OPTIONS 1-9]

    1 More predictive computer models
    2 Increased funding to develop replacement options
    3 A system for conducting literature searches for replacements
    4 Legislative or other regulatory change
    5 More relevant cell cultures
    6 Greater availability of human tissues
    7 Technical advances in tissue engineering
    8 Help to identify replacement techniques
    9 Access to better computing skills
    10 Other *[Please specify]* _____

31. Which of the following do you think would best enable investigators to use fewer animals? [Please select up to 3 options] [RANDOMISE RESPONSE OPTIONS 1-12]

    1 Increased sharing of data or collaboration between institutions
    2 Statistical evidence that fewer animals would provide the required research results
    3 Greater availability of funding for 3Rs research
    4 Greater willingness from regulators to accept data from non-animal approaches
    5 Changes to legislation
    6 Increased sharing of data or collaboration between research groups
    7 Greater willingness among investigators to change their methods
    8 Other investigators being more willing to accept results obtained using non-animal methods
    9 Use of GM animals
    10 Use of stem cells
    11 Reducing availability of funding for *in vivo* research
    12 Breeding programs that are conducted by fewer, but larger, specialised establishments
    13 Other *[Please specify]* _____
    14 Nothing, investigators already adequately minimise the number of animals they use [Disable other options if selected.]

32. Which of the following do you think would best enable investigators to use methods that better minimise adverse effects on the animals they use? [Please select up to 3 options] [RANDOMISE RESPONSE OPTIONS 1-8]

    1 Increased sharing of information between institutions
    2 Increased sharing of information between research groups
    3 Greater willingness among investigators to change their methods
    4 Other investigators being more willing to accept results obtained using more refined methods
    5 Better systems for conducting literature searches for refinement methods
    6 Greater availability of funding for 3Rs research
    7 Legislative or other regulatory change
    8 Help to identify refinement methods
    9 Other *[Please specify]* _____
    10 Nothing, investigators already adequately minimise adverse effects on the animals they use [Disable other options if selected.]

33. What do you think is the main obstacle to implementing the 3Rs in the work that your AEC reviews? [RANDOMISE RESPONSE OPTIONS 1-5]

    1 Lack of appropriate scientific or technological innovation
    2 Comparability of data
    3 Pressure of time/ other duties on investigators
    4 Insufficient funding available
    5 Legislation or regulatory requirements (e.g. for the registration of drugs or products)
    6 Other obstacle *[Please specify]* _____
    7 There are no obstacles

G. Information Access

Thinking about your experiences **in the last three years**, the next few questions are about how you find information about the 3Rs.

34. If you were to seek information about the 3Rs, which of the following sources would you typically turn to? [Please select all that apply]

1 Own knowledge and experience
2 Colleagues within my own work team
3 The network within my own field of work
4 Animal Welfare Officer or equivalent
5 Animal ethics committee members
6 Institutional veterinarian
7 Animal facility staff
8 3Rs databases
9 Scientific publications
10 Other *[Please specify]* _____

35. Please indicate your level of satisfaction with the following:

	Very satisfied	Satisfied	Neither satisfied nor dissatisfied	Dissatisfied	Very dissatisfied
a. Availability of information on replacement, reduction and refinement	1	2	3	4	5
b. Accessibility of information on replacement, reduction and refinement	1	2	3	4	5
c. The effort needed compared to the output of a 3Rs search	1	2	3	4	5

H. Training

The next set of questions is about your training on the 3Rs.

36. How have you received training on the 3Rs? [Please select all that apply]

1 As part of undergraduate courses
2 Training by supervisor/ mentor
3 Mandatory institutional training (including induction and refresher training)
4 Non-mandatory institutional training (including induction and refresher training)
5 Ad hoc training
6 Attendance at external conferences/ workshops, etc.
7 My institution does not offer training [Disable other options if selected]
8 I don't need training [Disable other options if selected]
9 I have never attended training **[Skip to Q39]** [Disable other options if selected]
10 Other *[Please specify]* _____

37. How many times have you participated in training where the 3Rs were discussed?

1 More than 10 times
2 6 to 10 times
3 3 to 5 times
4 1 to 2 times
5 Never

38. **[If Q37=1,2,3,4]** How recent was the last training session in which you participated where the 3Rs were discussed?

1 More than 5 years ago
2 3 to 5 years ago
3 1 to 2 years ago
4 Within the last year

39. How would you like to participate in training on the 3Rs? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-4]

1 Institutional training
2 Conferences/ workshops
3 Online modules
4 Own responsibility
5 Other *[Please specify]* _____

40. Please indicate the extent to which you agree or disagree with the following statements about training on the 3Rs.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a. I receive and/or my institution offers effective training on the 3Rs from my institution	1	2	3	4	5
b. My institution provides me with effective opportunities to attend external training on the 3Rs (e.g. workshops, conferences)	1	2	3	4	5
c. My institution provides me with effective access to relevant expertise in the 3Rs (including statisticians) if I need advice	1	2	3	4	5
d. Regular training on the 3Rs is beneficial for my work/ role	1	2	3	4	5
e. Training on the 3Rs should be mandatory for investigators	1	2	3	4	5
f. Training on the 3Rs should be mandatory for animal ethics committee members	1	2	3	4	5

Thank you for taking the time to complete the survey.

Australian Government

National Health and Medical Research Council

Survey on the replacement, reduction and refinement of the use of animals for scientific purposes in Australia

Survey Findings Report

Appendix C: Questionnaire for institutional representatives

MELBOURNE CANBERRA SYDNEY BRISBANE
www.orima.com

ORIMA RESEARCH

Introduction

Investigators, members of animal ethics committees (AECs) and institutions involved with the care and use of animals for scientific purposes are invited to participate in this national survey which seeks to gather information about the use of the 3Rs in Australia.

The 3R principles of replacement, reduction and refinement underpin the ethical, humane and responsible care and use of animals for scientific purposes in Australia. The 3Rs are included in the governing principles of the *Australian code for the care and use of animals for scientific purposes, 2013* (the Code), which is adopted in all state and territory legislation.

There is little documented evidence about what actually happens in Australia about the use of the 3Rs and factors that enable or hinder their development and adoption. Views are therefore being sought from the following groups of people to obtain an accurate picture of current knowledge and practices:

- investigators who have been involved with the use of animals sometime during the last three years
- current members of animal ethics committees
- institutional representatives – senior people within institutions who are responsible for overall institutional governance with respect to the care and use of animals.

This survey is being conducted on behalf of the National Health and Medical Research Council (NHMRC) by ORIMA Research, an independent market and social research company.

Results from this survey will assist NHMRC to develop an information paper about the use of the 3Rs in Australia. Your honest opinions and accounts based on your recent experiences are extremely valuable as they will ensure that discussion about the use of the 3Rs in Australia, and any recommendations for improvement if required, will be informed and guided by accurate and current evidence.

Please be assured that your responses will not be used to assess your compliance with the Code, state/territory legislation or NHMRC funding conditions.

Further information about this survey can be found in the Information Sheet [Link to PDF to be provided by NHMRC].

This survey should take around 10 to 20 minutes to complete, depending on which participant group you belong to.

Privacy information

Your responses to this survey are entirely anonymous. ORIMA Research will conduct the analysis and reporting of the results, and will provide the non-identifiable survey dataset to NHMRC.

ORIMA Research respects and upholds your rights under the Australian Privacy Principles contained in the Privacy Act 1988. ORIMA Research also adheres to the Privacy (Market and Social Research) Code 2014, as well as relevant state and territory legislation. To read ORIMA's full privacy policy, please click

here. Should you have any questions about our privacy policy or how we will treat your information, you may contact our Privacy Officer, Liesel van Straaten on (03) 9526 9000 or by email: liesel.vanstraaten@orima.com.

Contacts

Should you have any problems regarding the online survey, or require further information, please do not hesitate to contact May Doan at ORIMA Research on 1800 654 585 or by email: may.doan@orima.com.

Instructions

- Once you click on the 'Start New Survey' button, a unique password will be generated for you to enable you to return to your survey if you are unable to complete the survey in one sitting. **Please make a note of the password for your reference** – ORIMA Research will not be able to help you get back to your survey if you lose your password.
- If you have already started the survey, and are now returning to complete it, you should use the 'Continue Survey' button below. You will then be asked to provide your survey password, and will be returned to your previously saved responses.
- Please read each question carefully before you answer.
- Where there is a scale in response to the question, select the option on the scale that represents the answer you want to give. For example, if you agree that littering should be prohibited you would select 'Agree', as shown below.
    - Please note that the option '*Neither Agree nor Disagree'* should only be selected if this option truly reflects your intention to record an average or mixed-view response. It should not be selected as a default response.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Littering should be prohibited	○	○	○	◉	○

- Further information to assist you in your response is available by hovering over the 'information' icons throughout the online form. Click on the icon to keep the hover text visible.
- Please use the 'Survey Pages' and 'Missing answers' buttons at the top of each page of the online survey to monitor the completion status of your survey and/or go to specific sections of the survey.

Programming note: Display the following message each time a free-text response box is activated.

Please note: If you provide personally identifying information (e.g. names, email addresses) in your free-text response, this information will be de-identified by ORIMA Research. If you choose to provide other information that could identify you, this will be taken as your consent to the potential disclosure of this information to NHMRC.

A. Demographics

The first few questions are about your institution and its role with the care and use of animals for scientific purposes.

1. **[MAKE MANDATORY]** In what capacity are you participating in this survey?
   Please note: Your response to this question will allow us to tailor the survey questions to your circumstances.
   Investigators who are also a member of an AEC are encouraged to participate in their capacity as an AEC member. Investigators who fulfil both roles are also invited to participate in their capacity as an investigator. Please contact May Doan at ORIMA Research if you would like an additional survey link for this purpose by email: may.doan@orima.com.

   1 Investigator

   [**Hover text:** For the purposes of this survey, an investigator is any person who uses animals for scientific purposes. This includes researchers, teachers, undergraduate and postgraduate students involved in research projects, and people involved in product testing, environmental testing, production of biological products and wildlife surveys.]

   2 Member of an animal ethics committee (AEC)

   3 Representative from an institution

[If Q1=2 (Member of an animal ethics committee (AEC)), then a message box will appear] Unless otherwise stated, please answer all questions in terms of your own experiences, knowledge and opinions rather than that of the AEC.

2. In which state/ territory are you based?

   1 Australian Capital Territory

   2 New South Wales

   3 Northern Territory

   4 Queensland

   5 South Australia

   6 Tasmania

   7 Victoria

   8 Western Australia

A. Demographics (continued)

3. What is your institution type?
   Please note: For the purposes of this question, a research institute must have research as its primary function, whereas an organisation may conduct research but the conduct of research is not its primary function.

   1 Private hospital
   2 Private organisation
   3 Private research institute
   4 Public hospital
   5 Public organisation
   6 Public research institute
   7 University
   8 Other *[Please specify]* _____

4. What type of activity involving the use of animals is conducted at your institution? [Please select all that apply]

   1 Health and medical research
   2 Other research
   3 Field trials
   4 Environmental studies
   5 Teaching

   [**Hover text:** Some survey questions are not suited for animal use in teaching activities, such as in primary and secondary schools and undergraduate teaching. This is because the international surveys to be used for benchmarking purposes have focussed on the use of animals in research. If your involvement with the use of animals is confined to teaching activities **only**, your views are still valuable. However, please skip those questions that are not applicable to your situation.]

   6 Diagnosis
   7 Product testing
   8 Production of biological products
   9 Other *[Please specify]* _____

5. What types of animals are used at your institution? [Please select all that apply]

   1 Amphibians
   2 Birds (including poultry)
   3 Cats
   4 Cephalopods
   5 Dogs
   6 Fish
   7 Guinea pigs
   8 Livestock
   9 Mice
   10 Native mammals
   11 Non-human primates
   12 Rabbits
   13 Rats
   14 Other species *[Please specify]* _____
   15 None [EXIT SURVEY]

[If Q5=15 (None), then a message box will appear] As you have indicated that animals are not used at your institution, you are not required to complete any further questions of this survey. You may now save and close the survey.

6. Which of the following best describes your position at your institution?

   1 Chief Executive Officer
   2 Deputy Vice-Chancellor
   3 Director
   4 Executive Director
   5 General Manager
   6 Pro Vice-Chancellor
   7 Vice-Chancellor
   8 Other *[Please specify]* _____

7. Approximately how many investigators are involved in the use of animals for scientific purposes at your institution?
   [**Hover text on 'investigators':** For the purposes of this survey, an investigator is any person who uses animals for scientific purposes. This includes researchers, teachers, undergraduate and postgraduate students involved in research projects, and people involved in product testing, environmental testing, production of biological products and wildlife surveys.]

   1 More than 100

   2 51 to 100

   3 21 to 50

   4 20 or less

B. 3Rs in Practice

This section is about what currently happens about the 3Rs in your institution.

8. How does your institution currently support and facilitate the implementation of the 3Rs? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-12]

   1 Institutional policies
   2 Support at the level of the investigator group/department (or equivalent)
   3 Training for investigators
   4 Training for AEC members
   5 Collaboration/ knowledge exchange within and between institutions about the 3Rs and current best practice
   6 Assistance to investigators on 3Rs assessment during planning of projects
   7 Financial support for conducting a literature search on the 3Rs by the investigator
   8 Advice offered by a statistician(s)
   9 Advice offered by an expert(s) on the 3Rs
   10 System for sharing of tissues and other biological material from animals that are humanely killed
   11 Information services specific to the 3Rs (e.g. library, website, online resources and databases)
   12 Recognition of the implementation and use of the 3Rs (e.g. awards)
   13 Other *[Please specify]* _____

9. Does your institution provide assistance to the following groups to access information specifically about the 3Rs?

	Yes-always	Yes-upon request	No	Do not know
a. To investigators	1	2	3	4
b. To AEC members	1	2	3	4

C. Enablers/ Barriers to Implementation

This set of questions seeks your views, as a representative of your institution, about factors that promote or hinder the implementation of the 3Rs.

10. Which of the following would best enable investigators to achieve their scientific/ educational objectives in the future without using animals? [Please select up to 3 options] [RANDOMISE RESPONSE OPTIONS 1-9]

    1 More predictive computer models
    2 Increased funding to develop replacement options
    3 A system for conducting literature searches for replacements
    4 Legislative or other regulatory change
    5 More relevant cell cultures
    6 Greater availability of human tissues
    7 Technical advances in tissue engineering
    8 Help to identify replacement techniques
    9 Access to better computing skills
    10 Other *[Please specify]* _____

11. Which of the following would best enable investigators to use fewer animals? [Please select up to 3 options] [RANDOMISE RESPONSE OPTIONS 1-12]

    1 Increased sharing of data or collaboration between institutions
    2 Statistical evidence that fewer animals would provide the required research results
    3 Greater availability of funding for 3Rs research
    4 Greater willingness from regulators to accept data from non-animal approaches
    5 Changes to legislation
    6 Increased sharing of data or collaboration between research groups
    7 Greater willingness among investigators to change their methods
    8 Other investigators being more willing to accept results obtained using non-animal methods
    9 Use of GM animals
    10 Use of stem cells
    11 Reducing availability of funding for *in vivo* research
    12 Breeding programs that are conducted by fewer, but larger, specialised establishments
    13 Other *[Please specify]* _____
    14 Nothing, investigators already adequately minimise the number of animals they use [Disable other options if selected.]

12. Which of the following would best enable investigators to use methods that better minimise adverse effects on the animals they use? [Please select up to 3 options] [RANDOMISE RESPONSE OPTIONS 1-8]

    1 Increased sharing of information between institutions
    2 Increased sharing of information between research groups
    3 Greater willingness among investigators to change their methods
    4 Other investigators being more willing to accept results obtained using more refined methods
    5 Better systems for conducting literature searches for refinement methods
    6 Greater availability of funding for 3Rs research
    7 Legislative or other regulatory change
    8 Help to identify refinement methods
    9 Other *[Please specify]* _____
    10 Nothing, investigators already adequately minimise adverse effects on the animals they use [Disable other options if selected.]

13. What is the main obstacle to implementing the 3Rs at your institution? [RANDOMISE RESPONSE OPTIONS 1-5]

    1 Lack of appropriate scientific or technological innovation
    2 Comparability of data
    3 Pressure of time/ other duties on investigators
    4 Insufficient funding available
    5 Legislation or regulatory requirements (e.g. for the registration of drugs or products)
    6 Other obstacle *[Please specify]* _____
    7 There are no obstacles

D. Training

The next set of questions is about training on the 3Rs that is provided or supported by your institution.

14. What training does your institution offer on the 3Rs? [Please select all that apply]

1 As part of undergraduate courses
2 Training by supervisor/ mentor
3 Mandatory institutional training (including induction and refresher training)
4 Non-mandatory institutional training (including induction and refresher training)
5 Ad hoc training
6 Attendance at external conferences/ workshops, etc.
7 Other *[Please specify]* _____
8 My institution does not offer training [Disable other options if selected]

15. Who is targeted to attend 3Rs training? [Please select all that apply]

1 Undergraduate students
2 Masters and postgraduate students
3 Investigators
4 Senior investigators
5 Animal facility staff
6 Animal Welfare Officers or equivalent
7 AEC members
8 Other *[Please specify]* _____

E. Promotion/ Dissemination

The next few questions are about how your institution promotes and communicates about the 3Rs.

16. How does your institution promote the 3Rs? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-8]

    1 Institutional newsletters
    2 Senior executives act as 3Rs champions
    3 Investigators act as 3Rs champions at the division/ department/ school or work group level
    4 3Rs included as a regular item on laboratory meeting agendas
    5 Encouragement of inclusion of information on the 3Rs in research papers, posters and presentations as standard practice
    6 Institutional policy requires use of the PREPARE or ARRIVE Guidelines as a checklist to consider when designing or reviewing experiments
    7 Institutional policy requires compliance with the ARRIVE Guidelines when reporting animal-based studies
    8 Fostering mechanisms to ensure that the results of all animal-based studies are reported, including null or neutral results
    9 Distribution of relevant 3Rs publications
    10 Other *[Please specify]* _____
    11 My institution doesn't champion, promote or disseminate the 3Rs [Disable other options if selected]

17. How does your institution reward the development, adoption and implementation of the 3Rs? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-2]

    1 Annual 3Rs prize
    2 Sharing narratives and success stories
    3 Other *[Please specify]* _____
    4 My institution doesn't reward the development, adoption and implementation of the 3Rs [Disable other options if selected]

18. How does your institution publicly communicate the use of the 3Rs by the institution? [Please select all that apply] [RANDOMISE RESPONSE OPTIONS 1-4]

    1 By encouraging use of keywords related to the 3Rs in publications, even if the focus of the work is not one of the 3Rs

    2 By encouraging publication of open access articles on the use of the 3Rs

    3 Media communication

    4 Through an annual report or similar document

    5 Other *[Please specify]* _____

    6 We don't publicly communicate the use of the 3Rs [Disable other options if selected]

Thank you for taking the time to complete the survey.

Australian Government

National Health and Medical Research Council

Survey on the replacement, reduction and refinement of the use of animals for scientific purposes in Australia

Survey Findings Report

Appendix D: Overall frequency results

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ORIMA RESEARCH

NHMRC - Survey on the replacement, reduction and refinement of the use of animals for scientific purposes in Australia
A. Demographics - All participant groups

q1. In what capacity are you participating in this survey?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Investigator	452	61.7	61.7	61.7
	Member of an animal ethics committee (AEC)	166	22.6	22.6	84.3
	Representative from an institution	115	15.7	15.7	100.0
	Total	733	100.0	100.0	

q2. In which state/ territory are you based?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Australian Capital Territory	38	5.2	5.2	5.2
	New South Wales	168	22.9	22.9	28.1
	Northern Territory	5	.7	.7	28.8
	Queensland	158	21.6	21.6	50.3
	South Australia	51	7.0	7.0	57.3
	Tasmania	12	1.6	1.6	58.9
	Victoria	247	33.7	33.7	92.6
	Western Australia	54	7.4	7.4	100.0
	Total	733	100.0	100.0	

NHMRC - Survey on the replacement, reduction and refinement of the use of animals for scientific purposes in Australia

A. Demographics (cont.) - Investigators

q2. In which state/ territory are you based?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Australian Capital Territory	24	5.3	5.3	5.3
	New South Wales	96	21.2	21.2	26.5
	Northern Territory	3	.7	.7	27.2
	Queensland	77	17.0	17.0	44.2
	South Australia	23	5.1	5.1	49.3
	Tasmania	9	2.0	2.0	51.3
	Victoria	179	39.6	39.6	90.9
	Western Australia	41	9.1	9.1	100.0
	Total	452	100.0	100.0	

q3_INV. Which sector are you primarily affiliated with?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Private organisation	21	4.6	4.6	4.6
	Private research institute	38	8.4	8.4	13.1
	Public hospital	11	2.4	2.4	15.5
	Public organisation	17	3.8	3.8	19.2
	Public research institute	63	13.9	13.9	33.2
	University	289	63.9	63.9	97.1
	Other	13	2.9	2.9	100.0
	Total	452	100.0	100.0	

q4_INVmr. What type of activity are you currently involved in where animals are used? (Multiple Response)

		Frequency	% of respondents
Valid	Health and medical research	350	77.8%
	Other research	43	9.6%
	Field trials	33	7.3%
	Environmental studies	45	10.0%
	Teaching	53	11.8%
	Diagnosis	6	1.3%
	Product testing	15	3.3%
	Production of biological products	11	2.4%
	Other	11	2.4%
Number of Respondents		450	100.0%

q5_INVmr. What types of animals are used in your work? (Multiple Response)

		Frequency	% of respondents
Valid	Amphibians	22	4.9%
	Birds (including poultry)	26	5.8%
	Cats	15	3.3%
	Cephalopods	1	0.2%
	Dogs	17	3.8%
	Fish	26	5.8%
	Guinea pigs	17	3.8%
	Livestock	77	17.1%
	Mice	312	69.2%
	Native mammals	31	6.9%
	Non-human primates	14	3.1%
	Rabbits	23	5.1%
	Rats	125	27.7%
	Reptiles	13	2.9%
	Other species	16	3.5%
	None	3	0.7%
Number of Respondents		451	100.0%

NHMRC - Survey on the replacement, reduction and refinement of the use of animals for scientific purposes in Australia

B. Experience - Investigators

q6_INV. How many years have you been working with animal-based studies?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 years or more	199	44.0	44.7	44.7
	10 years to less than 20 years	140	31.0	31.5	76.2
	5 years to less than 10 years	51	11.3	11.5	87.6
	2 years to less than 5 years	36	8.0	8.1	95.7
	Less than 2 years	19	4.2	4.3	100.0
	Total	445	98.5	100.0	
Missing	System	7	1.5		
Total		452	100.0		

q7_INV. What is your current primary role in animal-based studies?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Principal Investigator	277	61.3	62.2	62.2
	Investigator	114	25.2	25.6	87.9
	Postgraduate student	34	7.5	7.6	95.5
	Undergraduate student	2	.4	.4	96.0
	Animal care staff	3	.7	.7	96.6
	Veterinarian	2	.4	.4	97.1
	Other	13	2.9	2.9	100.0
	Total	445	98.5	100.0	
Missing	System	7	1.5		
Total		452	100.0		

q8_INV. Do you have experience as a member or Chair of an AEC?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	81	17.9	18.5	18.5
	No	358	79.2	81.5	100.0
	Total	439	97.1	100.0	
Missing	System	13	2.9		
Total		452	100.0		

q9_INV. When did you first hear about the 3Rs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 20 years ago	84	18.6	19.3	19.3
	11 to 20 years ago	168	37.2	38.5	57.8
	5 to 10 years ago	108	23.9	24.8	82.6
	1 to 4 years ago	43	9.5	9.9	92.4
	Within the last year	14	3.1	3.2	95.6
	While completing this survey	19	4.2	4.4	100.0
	Total	436	96.5	100.0	
Missing	System	16	3.5		
Total		452	100.0		

q10_INV. Where did you first hear about the concept of the 3Rs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	During my education (at school or as an undergraduate)	85	18.8	20.4	20.4
	From colleagues	36	8.0	8.6	29.0
	During in-house training (including induction training)	162	35.8	38.8	67.9
	When applying for funding	11	2.4	2.6	70.5
	From scientific literature	12	2.7	2.9	73.4
	From online resources	10	2.2	2.4	75.8
	From the state/ territory government	5	1.1	1.2	77.0
	From the National Health and Medical Research Council (NHMRC)	18	4.0	4.3	81.3
	From other organisations	9	2.0	2.2	83.5
	From external courses, seminars or conferences	6	1.3	1.4	84.9
	Somewhere else	20	4.4	4.8	89.7
	Don't remember	43	9.5	10.3	100.0
	Total	417	92.3	100.0	
Missing	System	35	7.7		
Total		452	100.0		

q11_INVmr. Which of the following definitions fits your understanding of REPLACEMENT? (Multiple Response)

		Frequency	% of respondents
Valid	Replacing vertebrates with invertebrates	56	13.5%
	Replacing animals with in vitro techniques	293	70.4%
	Redesigning experiments in order to avoid the use of animals	336	80.8%
	Replacing animals with computer modelling techniques	261	62.7%
	Replacing higher mammals with lower mammals	52	12.5%
Number of Respondents		416	100.0%

q12_INVmr. Which of the following definitions fits your understanding of REDUCTION? (Multiple Response)

		Frequency	% of respondents
Valid	Obtaining comparable levels of information from an experiment while using fewer animals	348	83.5%
	Reducing the number of animals used per experiment	248	59.5%
	Obtaining more information from an experiment while using the same number of animals	180	43.2%
	Reducing the total number of animals used overall in Australia	133	31.9%
	Reducing the degree of pain and suffering caused to animals by your procedures	75	18.0%
Number of Respondents		417	100.0%

q13_INVmr. Which of the following definitions fits your understanding of REFINEMENT? (Multiple Response)

		Frequency	% of respondents
Valid	Improving studies to yield better data	172	41.5%
	Improving procedures so that the animals experience less pain and suffering	309	74.6%
	Improving studies so that fewer animals are used	202	48.8%
	Improving animal welfare by minimising suffering and providing better housing conditions	240	58.0%
	Improving the conditions in which animals are kept	179	43.2%
Number of Respondents		414	100.0%

q14_INV. With regards to the 3Rs, in which area do you consider your knowledge/ expertise to be the weakest?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Replacement	110	24.3	26.5	26.5
	Reduction	33	7.3	8.0	34.5
	Refinement	116	25.7	28.0	62.4
	No weaknesses	156	34.5	37.6	100.0
	Total	415	91.8	100.0	
Missing	System	37	8.2		
Total		452	100.0		

q15a_INV. Replacing animal use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Helpful	95	21.0	26.2	26.2
	Neither helpful nor unhelpful	183	40.5	50.4	76.6
	Unhelpful	85	18.8	23.4	100.0
	Total	363	80.3	100.0	
Missing	Do not know	63	13.9		
	System	26	5.8		
	Total	89	19.7		
Total		452	100.0		

q15b_INV. Reducing animal use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Helpful	161	35.6	42.9	42.9
	Neither helpful nor unhelpful	149	33.0	39.7	82.7
	Unhelpful	65	14.4	17.3	100.0
	Total	375	83.0	100.0	
Missing	Do not know	51	11.3		
	System	26	5.8		
	Total	77	17.0		
Total		452	100.0		

q15c_INV. Refining animal use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Helpful	198	43.8	52.5	52.5
	Neither helpful nor unhelpful	123	27.2	32.6	85.1
	Unhelpful	56	12.4	14.9	100.0
	Total	377	83.4	100.0	
Missing	Do not know	48	10.6		
	System	27	6.0		
	Total	75	16.6		
Total		452	100.0		

q15d_INV. Improving standards of animal care

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Helpful	277	61.3	72.3	72.3
	Neither helpful nor unhelpful	70	15.5	18.3	90.6
	Unhelpful	36	8.0	9.4	100.0
	Total	383	84.7	100.0	
Missing	Do not know	42	9.3		
	System	27	6.0		
	Total	69	15.3		
Total		452	100.0		

q15e_INV. Improving/ adjusting the experimental protocol

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Helpful	159	35.2	41.3	41.3
	Neither helpful nor unhelpful	136	30.1	35.3	76.6
	Unhelpful	90	19.9	23.4	100.0
	Total	385	85.2	100.0	
Missing	Do not know	41	9.1		
	System	26	5.8		
	Total	67	14.8		
Total		452	100.0		

q16a_INV. I am reluctant to change the way I work because of the need for comparability with earlier findings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	18	4.0	4.3	4.3
	Agree	69	15.3	16.3	20.6
	Neither agree nor disagree	83	18.4	19.6	40.2
	Disagree	178	39.4	42.1	82.3
	Strongly disagree	75	16.6	17.7	100.0
	Total	423	93.6	100.0	
Missing	System	29	6.4		
Total		452	100.0		

q16b_INV. Implementing the 3Rs will be detrimental to the quality of my results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	7	1.5	1.7	1.7
	Agree	30	6.6	7.1	8.8
	Neither agree nor disagree	65	14.4	15.4	24.2
	Disagree	211	46.7	50.1	74.3
	Strongly disagree	108	23.9	25.7	100.0
	Total	421	93.1	100.0	
Missing	System	31	6.9		
Total		452	100.0		

q16c_INV. Environmental enrichment may compromise results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	14	3.1	3.3	3.3
	Agree	54	11.9	12.8	16.1
	Neither agree nor disagree	95	21.0	22.5	38.5
	Disagree	159	35.2	37.6	76.1
	Strongly disagree	101	22.3	23.9	100.0
	Total	423	93.6	100.0	
Missing	System	29	6.4		
Total		452	100.0		

q16d_INV. The extensive focus on the wellbeing of animals used for scientific purposes will hinder scientific breakthroughs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	26	5.8	6.1	6.1
	Agree	57	12.6	13.5	19.6
	Neither agree nor disagree	61	13.5	14.4	34.0
	Disagree	167	36.9	39.5	73.5
	Strongly disagree	112	24.8	26.5	100.0
	Total	423	93.6	100.0	
Missing	System	29	6.4		
Total		452	100.0		

q16e_INV. 3Rs methods will increase project costs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	15	3.3	3.6	3.6
	Agree	64	14.2	15.2	18.7
	Neither agree nor disagree	118	26.1	28.0	46.7
	Disagree	177	39.2	41.9	88.6
	Strongly disagree	48	10.6	11.4	100.0
	Total	422	93.4	100.0	
Missing	System	30	6.6		
Total		452	100.0		

q17a_INV. Complete replacement of the use of animals in research and testing will never be achieved

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	191	42.3	45.6	45.6
	Agree	145	32.1	34.6	80.2
	Neither agree nor disagree	41	9.1	9.8	90.0
	Disagree	38	8.4	9.1	99.0
	Strongly disagree	4	.9	1.0	100.0
	Total	419	92.7	100.0	
Missing	System	33	7.3		
Total		452	100.0		

q17b_INV. Results from animal experiments can rarely be generalised to human beings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	13	2.9	3.1	3.1
	Agree	49	10.8	11.7	14.8
	Neither agree nor disagree	62	13.7	14.8	29.6
	Disagree	176	38.9	42.0	71.6
	Strongly disagree	119	26.3	28.4	100.0
	Total	419	92.7	100.0	
Missing	System	33	7.3		
Total		452	100.0		

q17c_INV. 3Rs methods are recognised throughout the Australian scientific community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	79	17.5	18.8	18.8
	Agree	221	48.9	52.6	71.4
	Neither agree nor disagree	79	17.5	18.8	90.2
	Disagree	38	8.4	9.0	99.3
	Strongly disagree	3	.7	.7	100.0
	Total	420	92.9	100.0	
Missing	System	32	7.1		
Total		452	100.0		

q18a_INV. Using computer simulation may one day accurately represent whole animals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	11	2.4	2.6	2.6
	Agree	77	17.0	18.2	20.8
	Neither agree nor disagree	79	17.5	18.7	39.5
	Disagree	149	33.0	35.2	74.7
	Strongly disagree	107	23.7	25.3	100.0
	Total	423	93.6	100.0	
Missing	System	29	6.4		
Total		452	100.0		

q18b_INV. Non-stressed animals yield more valid results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	184	40.7	43.4	43.4
	Agree	148	32.7	34.9	78.3
	Neither agree nor disagree	75	16.6	17.7	96.0
	Disagree	12	2.7	2.8	98.8
	Strongly disagree	5	1.1	1.2	100.0
	Total	424	93.8	100.0	
Missing	System	28	6.2		
Total		452	100.0		

q18c_INV. Fewer animals suffering significantly is better than many animals suffering to a lesser degree

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	15	3.3	3.6	3.6
	Agree	42	9.3	10.0	13.5
	Neither agree nor disagree	187	41.4	44.3	57.8
	Disagree	147	32.5	34.8	92.7
	Strongly disagree	31	6.9	7.3	100.0
	Total	422	93.4	100.0	
Missing	System	30	6.6		
Total		452	100.0		

q18d_INV. You must always optimise the experimental design to minimise harm to the animal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	264	58.4	62.3	62.3
	Agree	141	31.2	33.3	95.5
	Neither agree nor disagree	13	2.9	3.1	98.6
	Disagree	5	1.1	1.2	99.8
	Strongly disagree	1	.2	.2	100.0
	Total	424	93.8	100.0	
Missing	System	28	6.2		
Total		452	100.0		

q18e_INV. You must always check if there are methods to replace the use of animals before using animals for scientific purposes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	185	40.9	43.8	43.8
	Agree	190	42.0	45.0	88.9
	Neither agree nor disagree	35	7.7	8.3	97.2
	Disagree	9	2.0	2.1	99.3
	Strongly disagree	3	.7	.7	100.0
	Total	422	93.4	100.0	
Missing	System	30	6.6		
Total		452	100.0		

q19_INVmr. When do you consider the 3Rs in your work? (Multiple Response)

		Frequency	% of respondents
Valid	When designing an experiment	380	90.5%
	When applying for research funding or when allocating resources to studies	239	56.9%
	When preparing an application for the animal ethics committee	375	89.3%
	When carrying out an experiment or coming into direct physical contact with animals	291	69.3%
	When preparing reports required by the animal ethics committee	252	60.0%
	When writing up findings for publication	122	29.0%
	When retrospectively reviewing a program of work	167	39.8%
	All the time as part of my day-to-day work	160	38.1%
	When attending conferences and other meetings	72	17.1%
	When considering a compliance perspective	163	38.8%
Number of Respondents		420	100.0%

q20a_INV. Replacement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	64	14.2	15.2	15.2
	Frequently	114	25.2	27.1	42.4
	Sometimes	122	27.0	29.0	71.4
	Rarely	89	19.7	21.2	92.6
	Never	31	6.9	7.4	100.0
	Total	420	92.9	100.0	
Missing	System	32	7.1		
Total		452	100.0		

q20b_INV. Reduction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	111	24.6	26.4	26.4
	Frequently	204	45.1	48.5	74.8
	Sometimes	82	18.1	19.5	94.3
	Rarely	15	3.3	3.6	97.9
	Never	9	2.0	2.1	100.0
	Total	421	93.1	100.0	
Missing	System	31	6.9		
Total		452	100.0		

q20c_INV. Refinement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	143	31.6	34.1	34.1
	Frequently	178	39.4	42.5	76.6
	Sometimes	70	15.5	16.7	93.3
	Rarely	20	4.4	4.8	98.1
	Never	8	1.8	1.9	100.0
	Total	419	92.7	100.0	
Missing	System	33	7.3		
Total		452	100.0		

q21_INV. How often has consideration of replacement led to adoption of a non-animal alternative in a study, or a component of a study?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	11	2.4	2.8	2.8
	Frequently	26	5.8	6.7	9.5
	Sometimes	126	27.9	32.5	42.0
	Rarely	139	30.8	35.8	77.8
	Never	86	19.0	22.2	100.0
	Total	388	85.8	100.0	
Missing	System	64	14.2		
Total		452	100.0		

q22_INVmr. How do you generally decide on the number of animals to use in your experiments? (Multiple Response)

		Frequency	% of respondents
Valid	Information from previous work in my laboratory	294	69.8%
	Power calculations	313	74.3%
	Advice from a statistician	213	50.6%
	Information from published papers	214	50.8%
	Standard practices	159	37.8%
	Financial cost	121	28.7%
	Availability of animals	122	29.0%
	General acceptability to peers	88	20.9%
	Legislation/ regulatory guidelines	54	12.8%
	General acceptability to regulators	42	10.0%
	Other	38	9.0%
Number of Respondents		421	100.0%

q23_INVmr. How, if at all, has consulting a statistician changed the design of your studies? (Multiple Response)

		Frequency	% of respondents
Valid	I use the same number of animals and get more data/ information	101	24.6%
	I use more animals and get more data/ information	65	15.8%
	I use fewer animals and get more data/ information	91	22.1%
	I use more animals and get the same amount of data/ information	28	6.8%
	Consulting a statistician has had no effect	80	19.5%
	I don't consult a statistician when designing my studies	118	28.7%
Number of Respondents		411	100.0%

q24_INV. How frequently do you carry out pilot studies with a small number of animals in order to test a hypothesis, a model or a method before the larger scale study is planned and performed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	92	20.4	22.4	22.4
	Frequently	143	31.6	34.8	57.2
	Sometimes	120	26.5	29.2	86.4
	Rarely	34	7.5	8.3	94.6
	Never	22	4.9	5.4	100.0
	Total	411	90.9	100.0	
Missing	System	41	9.1		
Total		452	100.0		

q25_INV. Have you ever cancelled parts of a planned study, or an entire planned study, based on the results of a pilot study?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	287	63.5	74.4	74.4
	No	99	21.9	25.6	100.0
	Total	386	85.4	100.0	
Missing	System	66	14.6		
Total		452	100.0		

q26_INVmr. If you have developed an original 3Rs technique in the last 5 years, what type of technique did you develop? (Multiple Response)

		Frequency	% of respondents
Valid	Replaced the use of animals	48	11.7%
	Reduced the use of animals	95	23.1%
	Refined the use of animals	120	29.2%
	I have not developed any original 3Rs techniques in the last 5 years	237	57.7%
Number of Respondents		411	100.0%

q27_INVmr. What do you think are the driving factors for using 3R methods? (Multiple Response)

		Frequency	% of respondents
Valid	Personal ethos	247	59.4%
	Institutional policies	123	29.6%
	Animal ethics committee review process	288	69.2%
	Legislation	148	35.6%
	Funding body requirements	73	17.5%
	Policies in my work group	48	11.5%
	Discussion with, and expectations of, my colleagues	68	16.3%
	Social pressure	84	20.2%
	Pressure from animal advocacy organisations	111	26.7%
	Cost	87	20.9%
	Difficulties associated with using animals	59	14.2%
	Other	23	5.5%
	None	3	0.7%
Number of Respondents		416	100.0%

q28a_INV. Institutional policies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	44	9.7	10.9	10.9
	Agree	236	52.2	58.7	69.7
	Neither agree nor disagree	76	16.8	18.9	88.6
	Disagree	39	8.6	9.7	98.3
	Strongly disagree	7	1.5	1.7	100.0
	Total	402	88.9	100.0	
Missing	Do not know	9	2.0		
	System	41	9.1		
	Total	50	11.1		
Total		452	100.0		

q28b_INV. Education and training focused on the 3Rs for investigators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	80	17.7	19.9	19.9
	Agree	232	51.3	57.6	77.4
	Neither agree nor disagree	54	11.9	13.4	90.8
	Disagree	30	6.6	7.4	98.3
	Strongly disagree	7	1.5	1.7	100.0
	Total	403	89.2	100.0	
Missing	Do not know	11	2.4		
	System	38	8.4		
	Total	49	10.8		
Total		452	100.0		

q28c_INV. Advice and assistance offered to investigators on 3Rs assessment during planning of projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	82	18.1	21.0	21.0
	Agree	205	45.4	52.4	73.4
	Neither agree nor disagree	66	14.6	16.9	90.3
	Disagree	26	5.8	6.6	96.9
	Strongly disagree	12	2.7	3.1	100.0
	Total	391	86.5	100.0	
Missing	Do not know	20	4.4		
	System	41	9.1		
	Total	61	13.5		
Total		452	100.0		

q28d_INV. Financial support for 3Rs searches

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	41	9.1	11.6	11.6
	Agree	129	28.5	36.4	48.0
	Neither agree nor disagree	108	23.9	30.5	78.5
	Disagree	57	12.6	16.1	94.6
	Strongly disagree	19	4.2	5.4	100.0
	Total	354	78.3	100.0	
Missing	Do not know	56	12.4		
	System	42	9.3		
	Total	98	21.7		
Total		452	100.0		

q28e_INV. Information services and tools specific to the 3Rs (e.g. library, website, systematic reviews, online resources and databases)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	45	10.0	11.6	11.6
	Agree	192	42.5	49.6	61.2
	Neither agree nor disagree	92	20.4	23.8	85.0
	Disagree	45	10.0	11.6	96.6
	Strongly disagree	13	2.9	3.4	100.0
	Total	387	85.6	100.0	
Missing	Do not know	27	6.0		
	System	38	8.4		
	Total	65	14.4		
Total		452	100.0		

q28f_INV. Public recognition of the implementation and use of the 3Rs (e.g. awards)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	30	6.6	8.0	8.0
	Agree	106	23.5	28.1	36.1
	Neither agree nor disagree	117	25.9	31.0	67.1
	Disagree	95	21.0	25.2	92.3
	Strongly disagree	29	6.4	7.7	100.0
	Total	377	83.4	100.0	
Missing	Do not know	34	7.5		
	System	41	9.1		
	Total	75	16.6		
Total		452	100.0		

q29_INVmr. Which of the following would enable you to achieve the objectives of your work in the future, without using animals? (Multiple Response)

		Frequency	% of respondents
Valid	More predictive computer models	90	21.8%
	Increased funding to develop replacement options	128	31.1%
	A system for conducting literature searches for replacements	23	5.6%
	Legislative or other regulatory change	17	4.1%
	More relevant cell cultures	123	29.9%
	Greater availability of human tissues	142	34.5%
	Technical advances in tissue engineering	126	30.6%
	Help to identify replacement techniques	116	28.2%
	Access to better computing skills	48	11.7%
	Other	29	7.0%
	Nothing, my work demands that I look at the whole animal system	152	36.9%
Number of Respondents		412	100.0%

q30_INVmr. Which of the following would best enable you to use fewer animals? (Multiple Response)

		Frequency	% of respondents
Valid	Increased sharing of data or collaboration between institutions	96	23.4%
	Statistical evidence that fewer animals would provide the required research results	170	41.5%
	Greater availability of funding for 3Rs research	62	15.1%
	Greater willingness from regulators to accept data from non-animal approaches	53	12.9%
	Changes to legislation	12	2.9%
	Increased sharing of data or collaboration between research groups	124	30.2%
	Greater willingness among investigators to change their methods	47	11.5%
	Other investigators being more willing to accept results obtained using non-animal methods	60	14.6%
	Use of GM animals	27	6.6%
	Use of stem cells	25	6.1%
	Reducing availability of funding for in vivo research	6	1.5%
	Breeding programs that are conducted by fewer, but larger, specialised establishments	31	7.6%
	Other	30	7.3%
	Nothing, investigators already adequately minimise the number of animals they use	88	21.5%
Number of Respondents		410	100.0%

q31_INVmr. Which of the following would best enable you to use methods that better minimise adverse effects on the animals that you use? (Multiple Response)

		Frequency	% of respondents
Valid	Increased sharing of information between institutions	96	23.5%
	Increased sharing of information between research groups	130	31.8%
	Greater willingness among investigators to change their methods	86	21.0%
	Other investigators being more willing to accept results obtained using more refined methods	64	15.6%
	Better systems for conducting literature searches for refinement methods	32	7.8%
	Greater availability of funding for 3Rs research	61	14.9%
	Legislative or other regulatory change	22	5.4%
	Help to identify refinement methods	164	40.1%
	Other	23	5.6%
	Nothing, investigators already adequately minimise adverse effects on the animals they use	105	25.7%
Number of Respondents		409	100.0%

q32_INV. What is the main obstacle to implementing the 3Rs in your own work?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lack of appropriate scientific or technological innovation	109	24.1	26.8	26.8
	Comparability of data	66	14.6	16.2	43.0
	Lack of time due to other duties	14	3.1	3.4	46.4
	Insufficient funding available	40	8.8	9.8	56.3
	Legislation or regulatory requirements (e.g. for the registration of drugs or products)	18	4.0	4.4	60.7
	Other obstacle	44	9.7	10.8	71.5
	There are no obstacles	116	25.7	28.5	100.0
	Total	407	90.0	100.0	
Missing	System	45	10.0		
Total		452	100.0		

q33_INVmr. If you were to seek information about the 3Rs, which of the following sources would you typically turn to? (Multiple Response)

		Frequency	% of respondents
Valid	Own knowledge and experience	170	41.7%
	Colleagues within my own work team	168	41.2%
	The network within my own field of work	186	45.6%
	Animal Welfare Officer or equivalent	208	51.0%
	Animal ethics committee members	194	47.5%
	Institutional veterinarian	180	44.1%
	Animal facility staff	159	39.0%
	3Rs databases	111	27.2%
	Scientific publications	215	52.7%
	Other	13	3.2%
Number of Respondents		408	100.0%

q34_INVmr. Which of the following problems, if any, have you encountered when searching for information about the 3Rs in the literature/ databases? (Multiple Response)

		Frequency	% of respondents
Valid	No problems encountered	172	43.5%
	No time	60	15.2%
	No budget	28	7.1%
	No access to sources of information	35	8.9%
	Inadequate interface	27	6.8%
	Too many/ few results	65	16.5%
	Poor relevance of results	117	29.6%
	No full access to results (i. e. full results were not published)	53	13.4%
	Other	21	5.3%
Number of Respondents		395	100.0%

q35_INV. Approximately how many hours did you spend searching for information about the 3Rs, per application to the animal ethics committee?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10 hours or more	17	3.8	4.2	4.2
	8 hours to less than 10 hours	8	1.8	2.0	6.2
	6 hours to less than 8 hours	14	3.1	3.5	9.7
	4 hours to less than 6 hours	54	11.9	13.4	23.1
	2 hours to less than 4 hours	97	21.5	24.1	47.1
	Less than 2 hours	213	47.1	52.9	100.0
	Total	403	89.2	100.0	
Missing	System	49	10.8		
Total		452	100.0		

q36_INVmr. What are your preferences concerning the best ways to make 3Rs information available? (Multiple Response)

		Frequency	% of respondents
Valid	Library	22	5.4%
	Education	137	33.7%
	Literature service	68	16.7%
	Services by animal facility	203	49.9%
	Website	290	71.3%
	Own responsibility	82	20.1%
	Other	10	2.5%
Number of Respondents		407	100.0%

q37_INVmr. How have you received training on the 3Rs? (Multiple Response)

		Frequency	% of respondents
Valid	As part of undergraduate courses	60	14.6%
	Training by supervisor/ mentor	100	24.3%
	Mandatory institutional training (including induction and refresher training)	269	65.5%
	Non-mandatory institutional training (including induction and refresher training)	85	20.7%
	Ad hoc training	107	26.0%
	Attendance at external conferences/ workshops, etc.	69	16.8%
	My institution does not offer training	7	1.7%
	I don't need training	6	1.5%
	I have never attended training	49	11.9%
	Other	13	3.2%
Number of Respondents		411	100.0%

q38_INV. How many times have you participated in training where the 3Rs were discussed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 10 times	38	8.4	10.6	10.6
	6 to 10 times	35	7.7	9.7	20.3
	3 to 5 times	135	29.9	37.6	57.9
	1 to 2 times	136	30.1	37.9	95.8
	Never	15	3.3	4.2	100.0
	Total	359	79.4	100.0	
Missing	System	93	20.6		
Total		452	100.0		

q39_INV. How recent was the last training session in which you participated where the 3Rs were discussed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 5 years ago	65	14.4	18.8	18.8
	3 to 5 years ago	83	18.4	24.1	42.9
	1 to 2 years ago	102	22.6	29.6	72.5
	Within the last year	95	21.0	27.5	100.0
	Total	345	76.3	100.0	
Missing	System	107	23.7		
Total		452	100.0		

q40_INVmr. How would you like to participate in training on the 3Rs? (Multiple Response)

		Frequency	% of respondents
Valid	Institutional training	229	56.3%
	Conferences/ workshops	78	19.2%
	Online modules	222	54.5%
	Own responsibility	107	26.3%
	Other	13	3.2%
Number of Respondents		407	100.0%

q41a_INV. I receive and/or am offered effective training on the 3Rs from my institution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	60	13.3	14.8	14.8
	Agree	170	37.6	41.9	56.7
	Neither agree nor disagree	81	17.9	20.0	76.6
	Disagree	75	16.6	18.5	95.1
	Strongly disagree	20	4.4	4.9	100.0
	Total	406	89.8	100.0	
Missing	System	46	10.2		
Total		452	100.0		

q41b_INV. My institution provides me with effective opportunities to attend external training on the 3Rs (e.g. workshops, conferences)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	26	5.8	6.4	6.4
	Agree	91	20.1	22.5	28.9
	Neither agree nor disagree	151	33.4	37.3	66.2
	Disagree	104	23.0	25.7	91.9
	Strongly disagree	33	7.3	8.1	100.0
	Total	405	89.6	100.0	
Missing	System	47	10.4		
Total		452	100.0		

q41c_INV. My institution provides me with effective access to relevant expertise in the 3Rs (including statisticians) if I need advice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	52	11.5	12.8	12.8
	Agree	156	34.5	38.5	51.4
	Neither agree nor disagree	95	21.0	23.5	74.8
	Disagree	79	17.5	19.5	94.3
	Strongly disagree	23	5.1	5.7	100.0
	Total	405	89.6	100.0	
Missing	System	47	10.4		
Total		452	100.0		

q41d_INV. Regular training on the 3Rs is beneficial for my work/ role

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	41	9.1	10.1	10.1
	Agree	158	35.0	39.0	49.1
	Neither agree nor disagree	122	27.0	30.1	79.3
	Disagree	58	12.8	14.3	93.6
	Strongly disagree	26	5.8	6.4	100.0
	Total	405	89.6	100.0	
Missing	System	47	10.4		
Total		452	100.0		

q41e_INV. Training on the 3Rs should be mandatory for investigators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	119	26.3	29.2	29.2
	Agree	195	43.1	47.9	77.1
	Neither agree nor disagree	50	11.1	12.3	89.4
	Disagree	29	6.4	7.1	96.6
	Strongly disagree	14	3.1	3.4	100.0
	Total	407	90.0	100.0	
Missing	System	45	10.0		
Total		452	100.0		

q41f_INV. Training on the 3Rs should be mandatory for animal ethics committee members

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	172	38.1	42.3	42.3
	Agree	178	39.4	43.7	86.0
	Neither agree nor disagree	39	8.6	9.6	95.6
	Disagree	13	2.9	3.2	98.8
	Strongly disagree	5	1.1	1.2	100.0
	Total	407	90.0	100.0	
Missing	System	45	10.0		
Total		452	100.0		

q42_INV. In your publications, do you mention one or more of the 3Rs that you use?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes - always	31	6.9	7.7	7.7
	Yes - sometimes	138	30.5	34.3	42.0
	No - never	233	51.5	58.0	100.0
	Total	402	88.9	100.0	
Missing	System	50	11.1		
Total		452	100.0		

q43_INVmr. How do you communicate lessons learned about the 3Rs in the workplace and in the scientific community? (Multiple Response)

		Frequency	% of respondents
Valid	Discussion at work meetings	254	63.0%
	Presentation within my institution	104	25.8%
	Conference/ workshop presentation	87	21.6%
	Grant application	75	18.6%
	Publication in journals	98	24.3%
	Publication in science media	12	3.0%
	Other	18	4.5%
	I don't communicate lessons learned	82	20.3%
Number of Respondents		403	100.0%

q2. In which state/ territory are you based?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Australian Capital Territory	7	4.2	4.2	4.2
	New South Wales	48	28.9	28.9	33.1
	Northern Territory	2	1.2	1.2	34.3
	Queensland	32	19.3	19.3	53.6
	South Australia	25	15.1	15.1	68.7
	Tasmania	1	.6	.6	69.3
	Victoria	42	25.3	25.3	94.6
	Western Australia	9	5.4	5.4	100.0
	Total	166	100.0	100.0	

q3_AEC. What type of institution is your AEC primarily associated with?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Private organisation	7	4.2	4.2	4.2
	Private research institute	12	7.2	7.2	11.4
	Public hospital	7	4.2	4.2	15.7
	Public organisation	18	10.8	10.8	26.5
	Public research institute	16	9.6	9.6	36.1
	University	99	59.6	59.6	95.8
	Other	7	4.2	4.2	100.0
	Total	166	100.0	100.0	

q4_AECmr. What type of activity does your AEC review? (Multiple Response)

		Frequency	% of respondents
Valid	Health and medical research	121	73.3%
	Other research	58	35.2%
	Field trials	77	46.7%
	Environmental studies	89	53.9%
	Teaching	106	64.2%
	Diagnosis	17	10.3%
	Product testing	43	26.1%
	Production of biological products	22	13.3%
	Other	10	6.1%
Number of Respondents		165	100.0%

q5_AECmr. What types of animals are subject to review by your AEC? (Multiple Response)

		Frequency	% of respondents
Valid	Amphibians	92	55.8%
	Birds (including poultry)	111	67.3%
	Cats	43	26.1%
	Cephalopods	41	24.8%
	Dogs	64	38.8%
	Fish	113	68.5%
	Guinea pigs	53	32.1%
	Livestock	96	58.2%
	Mice	134	81.2%
	Native mammals	101	61.2%
	Non-human primates	22	13.3%
	Rabbits	74	44.8%
	Rats	125	75.8%
	Reptiles	16	9.7%
	Other species	11	6.7%
Number of Respondents		165	100.0%

q6_AEC. How much experience do you have working as a member or Chair of an AEC?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10 years or more	53	31.9	32.7	32.7
	5 years to less than 10 years	43	25.9	26.5	59.3
	2 years to less than 5 years	39	23.5	24.1	83.3
	1 year to less than 2 years	15	9.0	9.3	92.6
	Less than 1 year	12	7.2	7.4	100.0
	Total	162	97.6	100.0	
Missing	System	4	2.4		
Total		166	100.0		

q7_AEC. What is your current role on the AEC as per Clauses 2.2.2–2.2.6 of the Code?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chair	19	11.4	11.6	11.6
	Category A member	26	15.7	15.9	27.4
	Category B member	38	22.9	23.2	50.6
	Category C member	29	17.5	17.7	68.3
	Category D member	30	18.1	18.3	86.6
	Person responsible for the routine care of animals	8	4.8	4.9	91.5
	Other	14	8.4	8.5	100.0
	Total	164	98.8	100.0	
Missing	System	2	1.2		
Total		166	100.0		

q8_AEC. Approximately how many hours per month do you spend on AEC-related business?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	40 hours or more	11	6.6	6.7	6.7
	30 hours to less than 40 hours	7	4.2	4.3	11.0
	20 hours to less than 30 hours	29	17.5	17.7	28.7
	10 hours to less than 20 hours	56	33.7	34.1	62.8
	5 hours to less than 10 hours	46	27.7	28.0	90.9
	Less than 5 hours	15	9.0	9.1	100.0
	Total	164	98.8	100.0	
Missing	System	2	1.2		
Total		166	100.0		

q9_AEC. When did you first hear about the 3Rs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 20 years ago	49	29.5	30.2	30.2
	11 to 20 years ago	51	30.7	31.5	61.7
	5 to 10 years ago	35	21.1	21.6	83.3
	1 to 4 years ago	20	12.0	12.3	95.7
	Within the last year	4	2.4	2.5	98.1
	While completing this survey	3	1.8	1.9	100.0
	Total	162	97.6	100.0	
Missing	System	4	2.4		
Total		166	100.0		

q10_AEC. Where did you first hear about the concept of the 3Rs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	During my education (at school or as an undergraduate)	31	18.7	19.7	19.7
	From colleagues	4	2.4	2.5	22.3
	During in-house training (including induction training)	22	13.3	14.0	36.3
	Through the AEC	58	34.9	36.9	73.2
	From scientific literature	7	4.2	4.5	77.7
	From online resources	5	3.0	3.2	80.9
	From the state/ territory government	2	1.2	1.3	82.2
	From the National Health and Medical Research Council (NHMRC)	8	4.8	5.1	87.3
	From other organisations	7	4.2	4.5	91.7
	From external courses, seminars or conferences	5	3.0	3.2	94.9
	Somewhere else	1	.6	.6	95.5
	Don't remember	7	4.2	4.5	100.0
	Total	157	94.6	100.0	
Missing	System	9	5.4		
Total		166	100.0		

q11_AECmr. Which of the following definitions fits your understanding of REPLACEMENT? (Multiple Response)

		Frequency	% of respondents
Valid	Replacing vertebrates with invertebrates	40	25.6%
	Replacing animals with in vitro techniques	111	71.2%
	Redesigning experiments in order to avoid the use of animals	133	85.3%
	Replacing animals with computer modelling techniques	115	73.7%
	Replacing higher mammals with lower mammals	22	14.1%
Number of Respondents		156	100.0%

q12_AECmr. Which of the following definitions fits your understanding of REDUCTION? (Multiple Response)

		Frequency	% of respondents
Valid	Obtaining comparable levels of information from an experiment while using fewer animals	129	82.2%
	Reducing the number of animals used per experiment	108	68.8%
	Obtaining more information from an experiment while using the same number of animals	71	45.2%
	Reducing the total number of animals used overall in Australia	52	33.1%
	Reducing the degree of pain and suffering caused to animals by your procedures	23	14.6%
Number of Respondents		157	100.0%

q13_AECmr. Which of the following definitions fits your understanding of REFINEMENT? (Multiple Response)

		Frequency	% of respondents
Valid	Improving studies to yield better data	70	44.6%
	Improving procedures so that the animals experience less pain and suffering	133	84.7%
	Improving studies so that fewer animals are used	61	38.9%
	Improving animal welfare by minimising suffering and providing better housing conditions	109	69.4%
	Improving the conditions in which animals are kept	91	58.0%
Number of Respondents		157	100.0%

q14_AEC. With regards to the 3Rs, in which area do you consider your knowledge/ expertise to be the weakest?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Replacement	53	31.9	34.2	34.2
	Reduction	18	10.8	11.6	45.8
	Refinement	39	23.5	25.2	71.0
	No weaknesses	45	27.1	29.0	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q15a_AEC. Complete replacement of the use of animals in research and testing will never be achieved

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	40	24.1	25.5	25.5
	Agree	64	38.6	40.8	66.2
	Neither agree nor disagree	17	10.2	10.8	77.1
	Disagree	29	17.5	18.5	95.5
	Strongly disagree	7	4.2	4.5	100.0
	Total	157	94.6	100.0	
Missing	System	9	5.4		
Total		166	100.0		

q15b_AEC. Results from animal experiments can rarely be generalised to human beings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	3	1.8	1.9	1.9
	Agree	21	12.7	13.4	15.3
	Neither agree nor disagree	29	17.5	18.5	33.8
	Disagree	87	52.4	55.4	89.2
	Strongly disagree	17	10.2	10.8	100.0
	Total	157	94.6	100.0	
Missing	System	9	5.4		
Total		166	100.0		

q15c_AEC. 3Rs methods are recognised throughout the Australian scientific community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	31	18.7	19.7	19.7
	Agree	90	54.2	57.3	77.1
	Neither agree nor disagree	19	11.4	12.1	89.2
	Disagree	15	9.0	9.6	98.7
	Strongly disagree	2	1.2	1.3	100.0
	Total	157	94.6	100.0	
Missing	System	9	5.4		
Total		166	100.0		

q16a_AEC. Using computer simulation may one day accurately represent whole animals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	11	6.6	7.0	7.0
	Agree	46	27.7	29.3	36.3
	Neither agree nor disagree	30	18.1	19.1	55.4
	Disagree	54	32.5	34.4	89.8
	Strongly disagree	16	9.6	10.2	100.0
	Total	157	94.6	100.0	
Missing	System	9	5.4		
Total		166	100.0		

q16b_AEC. Non-stressed animals yield more valid results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	83	50.0	53.2	53.2
	Agree	57	34.3	36.5	89.7
	Neither agree nor disagree	12	7.2	7.7	97.4
	Disagree	2	1.2	1.3	98.7
	Strongly disagree	2	1.2	1.3	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q16c_AEC. Fewer animals suffering significantly is better than many animals suffering to a lesser degree

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	3	1.8	1.9	1.9
	Agree	15	9.0	9.6	11.5
	Neither agree nor disagree	51	30.7	32.7	44.2
	Disagree	61	36.7	39.1	83.3
	Strongly disagree	26	15.7	16.7	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q16d_AEC. Experimental design must always be optimised to minimise harm to the animal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	125	75.3	80.1	80.1
	Agree	27	16.3	17.3	97.4
	Neither agree nor disagree	2	1.2	1.3	98.7
	Disagree	2	1.2	1.3	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q16e_AEC. The availability of methods to replace the use of animals must always be checked before using animals for scientific purposes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	114	68.7	72.6	72.6
	Agree	37	22.3	23.6	96.2
	Neither agree nor disagree	3	1.8	1.9	98.1
	Disagree	3	1.8	1.9	100.0
	Total	157	94.6	100.0	
Missing	System	9	5.4		
Total		166	100.0		

q17_AECmr. If an application has been peer reviewed, which of the following do you think the AEC should be able to question? (Multiple Response)

		Frequency	% of respondents
Valid	The scientific or educational merit of an application	121	77.1%
	The experimental design with respect to replacement	143	91.1%
	The experimental design to achieve reduction	146	93.0%
	The statistical design to achieve reduction	135	86.0%
	The methods used to achieve refinement	152	96.8%
	None of the above	1	0.6%
Number of Respondents		157	100.0%

q18_AECmr. How are you generally assured of the scientific or educational merit of the applications that you review? (Multiple Response)

		Frequency	% of respondents
Valid	I trust the expertise of other members of the AEC	125	79.6%
	I have sufficient expertise to assess the merit	88	56.1%
	Independent external review	34	21.7%
	Institutional review	47	29.9%
	Peer review by a funding body	64	40.8%
	I assume the applications have merit if they are before an AEC	18	11.5%
	Other	18	11.5%
Number of Respondents		157	100.0%

q19_AECmr. How are you generally assured of the competency of investigators in applications that you review? (Multiple Response)

		Frequency	% of respondents
Valid	The application usually provides sufficient information about the competency of the investigator	95	61.3%
	Peer review by a funding body	19	12.3%
	Own knowledge and experience	66	42.6%
	Formal certification of competence provided by the institution	84	54.2%
	Discussions with the investigator	89	57.4%
	Reports from AEC inspections	81	52.3%
	Advice from other party (e.g. Animal Welfare ...	101	65.2%
	Other	16	10.3%
Number of Respondents		155	100.0%

q20a_AEC. Use of non-animal alternatives in all or part of the project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	13	7.8	8.4	8.4
	Frequently	31	18.7	20.0	28.4
	Sometimes	67	40.4	43.2	71.6
	Rarely	42	25.3	27.1	98.7
	Never	2	1.2	1.3	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q20b_AEC. Choice of species (for example, with respect to level of sentience)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	10	6.0	6.5	6.5
	Frequently	26	15.7	16.8	23.2
	Sometimes	45	27.1	29.0	52.3
	Rarely	64	38.6	41.3	93.5
	Never	10	6.0	6.5	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q20c_AEC. Statistical design

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	35	21.1	22.4	22.4
	Frequently	65	39.2	41.7	64.1
	Sometimes	37	22.3	23.7	87.8
	Rarely	15	9.0	9.6	97.4
	Never	4	2.4	2.6	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q20d_AEC. Experimental design

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	56	33.7	35.9	35.9
	Frequently	69	41.6	44.2	80.1
	Sometimes	21	12.7	13.5	93.6
	Rarely	9	5.4	5.8	99.4
	Never	1	.6	.6	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q20e_AEC. Sharing of tissues or other biological material from other animals that have been humanely killed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	19	11.4	12.3	12.3
	Frequently	39	23.5	25.3	37.7
	Sometimes	73	44.0	47.4	85.1
	Rarely	17	10.2	11.0	96.1
	Never	6	3.6	3.9	100.0
	Total	154	92.8	100.0	
Missing	System	12	7.2		
Total		166	100.0		

q20f_AEC. Minimisation of harm, including pain and distress

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	115	69.3	73.7	73.7
	Frequently	39	23.5	25.0	98.7
	Sometimes	2	1.2	1.3	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q20g_AEC. Humane endpoints and intervention points

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	101	60.8	64.7	64.7
	Frequently	44	26.5	28.2	92.9
	Sometimes	5	3.0	3.2	96.2
	Rarely	5	3.0	3.2	99.4
	Never	1	.6	.6	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q20h_AEC. Animal handling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	76	45.8	48.7	48.7
	Frequently	66	39.8	42.3	91.0
	Sometimes	13	7.8	8.3	99.4
	Rarely	1	.6	.6	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q20i_AEC. Animal care and management, including housing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	87	52.4	55.8	55.8
	Frequently	57	34.3	36.5	92.3
	Sometimes	11	6.6	7.1	99.4
	Rarely	1	.6	.6	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q20j_AEC. Duration of activities involving an individual animal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	75	45.2	48.1	48.1
	Frequently	61	36.7	39.1	87.2
	Sometimes	16	9.6	10.3	97.4
	Rarely	3	1.8	1.9	99.4
	Never	1	.6	.6	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q20k_AEC. Competence of investigators and animal carers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	71	42.8	45.5	45.5
	Frequently	63	38.0	40.4	85.9
	Sometimes	19	11.4	12.2	98.1
	Rarely	2	1.2	1.3	99.4
	Never	1	.6	.6	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q21_AEC. How often do you think your AEC approves applications without modification?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	1	.6	.6	.6
	Frequently	28	16.9	17.9	18.6
	Sometimes	64	38.6	41.0	59.6
	Rarely	61	36.7	39.1	98.7
	Never	2	1.2	1.3	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q22a_AEC. There is a replacement option available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	1	.6	.6	.6
	Frequently	7	4.2	4.5	5.2
	Sometimes	33	19.9	21.4	26.6
	Rarely	89	53.6	57.8	84.4
	Never	24	14.5	15.6	100.0
	Total	154	92.8	100.0	
Missing	System	12	7.2		
Total		166	100.0		

q22b_AEC. The animal species chosen is not appropriate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	1	.6	.6	.6
	Frequently	2	1.2	1.3	1.9
	Sometimes	22	13.3	14.3	16.2
	Rarely	91	54.8	59.1	75.3
	Never	38	22.9	24.7	100.0
	Total	154	92.8	100.0	
Missing	System	12	7.2		
Total		166	100.0		

q22c_AEC. Animal numbers can be reduced

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	7	4.2	4.5	4.5
	Frequently	34	20.5	21.9	26.5
	Sometimes	85	51.2	54.8	81.3
	Rarely	25	15.1	16.1	97.4
	Never	4	2.4	2.6	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q22d_AEC. Animal numbers need to be increased to satisfy good statistical design

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Frequently	15	9.0	9.7	9.7
	Sometimes	74	44.6	47.7	57.4
	Rarely	57	34.3	36.8	94.2
	Never	9	5.4	5.8	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q22e_AEC. The techniques proposed can be refined to minimise the adverse impact on the animals involved

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	26	15.7	16.8	16.8
	Frequently	70	42.2	45.2	61.9
	Sometimes	51	30.7	32.9	94.8
	Rarely	7	4.2	4.5	99.4
	Never	1	.6	.6	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q22f_AEC. Intervention points or humane endpoints require modification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	25	15.1	16.1	16.1
	Frequently	69	41.6	44.5	60.6
	Sometimes	38	22.9	24.5	85.2
	Rarely	21	12.7	13.5	98.7
	Never	2	1.2	1.3	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q22g_AEC. Animal care, management, housing requires modification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	18	10.8	11.7	11.7
	Frequently	46	27.7	29.9	41.6
	Sometimes	72	43.4	46.8	88.3
	Rarely	16	9.6	10.4	98.7
	Never	2	1.2	1.3	100.0
	Total	154	92.8	100.0	
Missing	System	12	7.2		
Total		166	100.0		

q22h_AEC. Competency of investigators requires clarification or is insufficient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequently	16	9.6	10.3	10.3
	Frequently	38	22.9	24.5	34.8
	Sometimes	73	44.0	47.1	81.9
	Rarely	21	12.7	13.5	95.5
	Never	7	4.2	4.5	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q23_AEC. Has your AEC ever not approved parts of a planned study, or an entire planned study, based on the results of a pilot study?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	79	47.6	50.3	50.3
	No	28	16.9	17.8	68.2
	Do not know	50	30.1	31.8	100.0
	Total	157	94.6	100.0	
Missing	System	9	5.4		
Total		166	100.0		

q24_AECmr. What do you think your AEC relies on for assurance about the statistical design of a study? (Multiple Response)

		Frequency	% of respondents
Valid	Scientific peer review	66	42.0%
	Expertise of the investigator	108	68.8%
	Advice from a statistician	85	54.1%
	Expertise amongst AEC members	142	90.4%
	My expertise	32	20.4%
	The requirements of a regulatory authority	28	17.8%
	Statistical design is not important provided that overall harm to the animals is minimised	5	3.2%
	Statistical design is not important provided that harm to individual animals is minimised	6	3.8%
Number of Respondents		157	100.0%

q25_AEC. Does your AEC have access to a statistician to advise on optimal animal numbers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes - a statistician assists with every application	10	6.0	6.4	6.4
	Yes - a statistician assists as needed	29	17.5	18.6	25.0
	Yes - but we rarely seek advice of the statistician	32	19.3	20.5	45.5
	No - it is not necessary as members of my AEC have sufficient statistical expertise	26	15.7	16.7	62.2
	No	29	17.5	18.6	80.8
	Do not know	30	18.1	19.2	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q26a_AEC. I do my own investigation of the 3Rs when I am considering an application

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	30	18.1	19.4	19.4
	Agree	81	48.8	52.3	71.6
	Neither agree nor disagree	21	12.7	13.5	85.2
	Disagree	21	12.7	13.5	98.7
	Strongly disagree	2	1.2	1.3	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q26b_AEC. I am confident in my knowledge of the 3Rs in relation to the applications I consider

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	24	14.5	15.5	15.5
	Agree	101	60.8	65.2	80.6
	Neither agree nor disagree	18	10.8	11.6	92.3
	Disagree	10	6.0	6.5	98.7
	Strongly disagree	2	1.2	1.3	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q26c_AEC. I trust advice from other AEC members about the application of the 3Rs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	33	19.9	21.3	21.3
	Agree	105	63.3	67.7	89.0
	Neither agree nor disagree	12	7.2	7.7	96.8
	Disagree	4	2.4	2.6	99.4
	Strongly disagree	1	.6	.6	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q26d_AEC. I trust advice from the Animal Welfare Officer (or equivalent) about the application of the 3Rs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	55	33.1	35.3	35.3
	Agree	77	46.4	49.4	84.6
	Neither agree nor disagree	20	12.0	12.8	97.4
	Disagree	3	1.8	1.9	99.4
	Strongly disagree	1	.6	.6	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q26e_AEC. Investigators are more qualified to know about the application of REPLACEMENT in their work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	8	4.8	5.2	5.2
	Agree	39	23.5	25.2	30.3
	Neither agree nor disagree	55	33.1	35.5	65.8
	Disagree	51	30.7	32.9	98.7
	Strongly disagree	2	1.2	1.3	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q26f_AEC. Investigators are more qualified to know about the application of REDUCTION in their work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	3	1.8	1.9	1.9
	Agree	29	17.5	18.7	20.6
	Neither agree nor disagree	62	37.3	40.0	60.6
	Disagree	58	34.9	37.4	98.1
	Strongly disagree	3	1.8	1.9	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q26g_AEC. Investigators are more qualified to know about the application of REFINEMENT in their work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	1	.6	.6	.6
	Agree	19	11.4	12.3	12.9
	Neither agree nor disagree	57	34.3	36.8	49.7
	Disagree	68	41.0	43.9	93.5
	Strongly disagree	10	6.0	6.5	100.0
	Total	155	93.4	100.0	
Missing	System	11	6.6		
Total		166	100.0		

q27_AEC. How well do you think the design of the AEC application form meets your information needs about the application of the 3Rs in a proposed project?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	The design of the form ensures I receive adequate information about the application of the 3Rs from the investigator	115	69.3	77.2	77.2
	The design of the form means that I receive limited or inconsistent information about the application of the 3Rs	29	17.5	19.5	96.6
	The design of the form means I do not get the information I need to assess the application of the 3Rs	5	3.0	3.4	100.0
	Total	149	89.8	100.0	
Missing	System	17	10.2		
Total		166	100.0		

q28_AECmr. What do you think are the driving factors for using 3R methods? (Multiple Response)

		Frequency	% of respondents
Valid	Personal ethos	54	34.4%
	Institutional policies	69	43.9%
	Animal ethics committee review process	131	83.4%
	Legislation	93	59.2%
	Funding body requirements	31	19.7%
	Policies in research laboratories or workplaces	47	29.9%
	Social pressure	39	24.8%
	Pressure from animal advocacy organisations	35	22.3%
	Cost	37	23.6%
	Difficulties associated with using animals	28	17.8%
	Other	4	2.5%
	None	1	0.6%
Number of Respondents		157	100.0%

q29a_AEC. Institutional policies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	34	20.5	22.2	22.2
	Agree	87	52.4	56.9	79.1
	Neither agree nor disagree	20	12.0	13.1	92.2
	Disagree	12	7.2	7.8	100.0
	Total	153	92.2	100.0	
Missing	Do not know	1	.6		
	System	12	7.2		
	Total	13	7.8		
Total		166	100.0		

q29b_AEC. Education and training focused on the 3Rs for investigators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	43	25.9	28.7	28.7
	Agree	84	50.6	56.0	84.7
	Neither agree nor disagree	9	5.4	6.0	90.7
	Disagree	14	8.4	9.3	100.0
	Total	150	90.4	100.0	
Missing	Do not know	6	3.6		
	System	10	6.0		
	Total	16	9.6		
Total		166	100.0		

q29c_AEC. Advice and assistance offered to investigators on 3Rs assessment during planning of projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	35	21.1	24.0	24.0
	Agree	83	50.0	56.8	80.8
	Neither agree nor disagree	19	11.4	13.0	93.8
	Disagree	9	5.4	6.2	100.0
	Total	146	88.0	100.0	
Missing	Do not know	10	6.0		
	System	10	6.0		
	Total	20	12.0		
Total		166	100.0		

q29d_AEC. Financial support for 3Rs searches

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	13	7.8	10.2	10.2
	Agree	41	24.7	32.3	42.5
	Neither agree nor disagree	44	26.5	34.6	77.2
	Disagree	24	14.5	18.9	96.1
	Strongly disagree	5	3.0	3.9	100.0
	Total	127	76.5	100.0	
Missing	Do not know	26	15.7		
	System	13	7.8		
	Total	39	23.5		
Total		166	100.0		

q29e_AEC. Information services and tools specific to the 3Rs (e.g. library, website, systematic reviews, online resources and databases)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	18	10.8	12.6	12.6
	Agree	74	44.6	51.7	64.3
	Neither agree nor disagree	31	18.7	21.7	86.0
	Disagree	19	11.4	13.3	99.3
	Strongly disagree	1	.6	.7	100.0
	Total	143	86.1	100.0	
Missing	Do not know	13	7.8		
	System	10	6.0		
	Total	23	13.9		
Total		166	100.0		

q29f_AEC. Public recognition of the implementation and use of the 3Rs (e.g. awards)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	10	6.0	7.4	7.4
	Agree	44	26.5	32.4	39.7
	Neither agree nor disagree	43	25.9	31.6	71.3
	Disagree	33	19.9	24.3	95.6
	Strongly disagree	6	3.6	4.4	100.0
	Total	136	81.9	100.0	
Missing	Do not know	18	10.8		
	System	12	7.2		
	Total	30	18.1		
Total		166	100.0		

q30_AECmr. Which of the following do you think would best enable investigators to achieve their scientific/educational objectives in the future without using animals? (Multiple Response)

		Frequency	% of respondents
Valid	More predictive computer models	51	32.9%
	Increased funding to develop replacement options	88	56.8%
	A system for conducting literature searches for replacements	23	14.8%
	Legislative or other regulatory change	30	19.4%
	More relevant cell cultures	32	20.6%
	Greater availability of human tissues	38	24.5%
	Technical advances in tissue engineering	63	40.6%
	Help to identify replacement techniques	73	47.1%
	Access to better computing skills	4	2.6%
	Other	19	12.3%
Number of Respondents		155	100.0%

q31_AECmr. Which of the following do you think would best enable investigators to use fewer animals? (Multiple Response)

		Frequency	% of respondents
Valid	Increased sharing of data or collaboration between institutions	65	41.7%
	Statistical evidence that fewer animals would provide the required research results	72	46.2%
	Greater availability of funding for 3Rs research	36	23.1%
	Greater willingness from regulators to accept data from non-animal approaches	36	23.1%
	Changes to legislation	19	12.2%
	Increased sharing of data or collaboration between research groups	73	46.8%
	Greater willingness among investigators to change their methods	41	26.3%
	Other investigators being more willing to accept results obtained using non-animal methods	20	12.8%
	Use of GM animals	9	5.8%
	Use of stem cells	11	7.1%
	Reducing availability of funding for in vivo research	10	6.4%
	Breeding programs that are conducted by fewer, but larger, specialised establishments	13	8.3%
	Other	7	4.5%
	Nothing, investigators already adequately minimise the number of animals they use	6	3.8%
Number of Respondents		156	100.0%

q32_AECmr. Which of the following do you think would best enable investigators to use methods that better minimise adverse effects on the animals they use? (Multiple Response)

		Frequency	% of respondents
Valid	Increased sharing of information between institutions	54	34.6%
	Increased sharing of information between research groups	78	50.0%
	Greater willingness among investigators to change their methods	81	51.9%
	Other investigators being more willing to accept results obtained using more refined methods	33	21.2%
	Better systems for conducting literature searches for refinement methods	18	11.5%
	Greater availability of funding for 3Rs research	35	22.4%
	Legislative or other regulatory change	29	18.6%
	Help to identify refinement methods	85	54.5%
	Other	8	5.1%
	Nothing, investigators already adequately minimise adverse effects on the animals they use	4	2.6%
Number of Respondents		156	100.0%

q33_AEC. What do you think is the main obstacle to implementing the 3Rs in the work that your AEC reviews?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lack of appropriate scientific or technological innovation	39	23.5	25.0	25.0
	Comparability of data	16	9.6	10.3	35.3
	Pressure of time/ other duties on investigators	26	15.7	16.7	51.9
	Insufficient funding available	9	5.4	5.8	57.7
	Legislation or regulatory requirements (e.g. for the registration of drugs or products)	14	8.4	9.0	66.7
	Other obstacle	25	15.1	16.0	82.7
	There are no obstacles	27	16.3	17.3	100.0
	Total	156	94.0	100.0	
Missing	System	10	6.0		
Total		166	100.0		

q34_AECmr. If you were to seek information about the 3Rs, which of the following sources would you typically turn to? (Multiple Response)

		Frequency	% of respondents
Valid	Own knowledge and experience	65	42.2%
	Colleagues within my own work team	49	31.8%
	The network within my own field of work	55	35.7%
	Animal Welfare Officer or equivalent	108	70.1%
	Animal ethics committee members	105	68.2%
	Institutional veterinarian	62	40.3%
	Animal facility staff	60	39.0%
	3Rs databases	76	49.4%
	Scientific publications	92	59.7%
	Other	15	9.7%
Number of Respondents		154	100.0%

q35a_AEC. Availability of information on replacement, reduction and refinement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very satisfied	10	6.0	6.5	6.5
	Satisfied	84	50.6	54.9	61.4
	Neither satisfied nor dissatisfied	40	24.1	26.1	87.6
	Dissatisfied	17	10.2	11.1	98.7
	Very dissatisfied	2	1.2	1.3	100.0
	Total	153	92.2	100.0	
Missing	System	13	7.8		
Total		166	100.0		

q35b_AEC. Accessibility of information on replacement, reduction and refinement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very satisfied	10	6.0	6.5	6.5
	Satisfied	81	48.8	52.6	59.1
	Neither satisfied nor dissatisfied	42	25.3	27.3	86.4
	Dissatisfied	19	11.4	12.3	98.7
	Very dissatisfied	2	1.2	1.3	100.0
	Total	154	92.8	100.0	
Missing	System	12	7.2		
Total		166	100.0		

q35c_AEC. The effort needed compared to the output of a 3Rs search

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very satisfied	4	2.4	2.6	2.6
	Satisfied	44	26.5	28.9	31.6
	Neither satisfied nor dissatisfied	76	45.8	50.0	81.6
	Dissatisfied	25	15.1	16.4	98.0
	Very dissatisfied	3	1.8	2.0	100.0
	Total	152	91.6	100.0	
Missing	System	14	8.4		
Total		166	100.0		

q36_AECmr. How have you received training on the 3Rs? (Multiple Response)

		Frequency	% of respondents
Valid	As part of undergraduate courses	23	14.8%
	Training by supervisor/ mentor	30	19.4%
	Mandatory institutional training (including induction and refresher training)	79	51.0%
	Non-mandatory institutional training (including induction and refresher training)	53	34.2%
	Ad hoc training	49	31.6%
	Attendance at external conferences/ workshops, etc.	96	61.9%
	My institution does not offer training	2	1.3%
	I don't need training		
	I have never attended training	12	7.7%
	Other	12	7.7%
Number of Respondents		155	100.0%

q37_AEC. How many times have you participated in training where the 3Rs were discussed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 10 times	30	18.1	21.3	21.3
	6 to 10 times	29	17.5	20.6	41.8
	3 to 5 times	43	25.9	30.5	72.3
	1 to 2 times	36	21.7	25.5	97.9
	Never	3	1.8	2.1	100.0
	Total	141	84.9	100.0	
Missing	System	25	15.1		
Total		166	100.0		

q38_AEC. How recent was the last training session in which you participated where the 3Rs were discussed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 5 years ago	19	11.4	13.6	13.6
	3 to 5 years ago	27	16.3	19.3	32.9
	1 to 2 years ago	38	22.9	27.1	60.0
	Within the last year	56	33.7	40.0	100.0
	Total	140	84.3	100.0	
Missing	System	26	15.7		
Total		166	100.0		

q39_AECmr. How would you like to participate in training on the 3Rs? (Multiple Response)

		Frequency	% of respondents
Valid	Institutional training	92	59.4%
	Conferences/ workshops	104	67.1%
	Online modules	101	65.2%
	Own responsibility	42	27.1%
	Other	5	3.2%
Number of Respondents		155	100.0%

q40a_AEC. I receive and/or my institution offers effective training on the 3Rs from my institution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	18	10.8	11.9	11.9
	Agree	61	36.7	40.4	52.3
	Neither agree nor disagree	30	18.1	19.9	72.2
	Disagree	35	21.1	23.2	95.4
	Strongly disagree	7	4.2	4.6	100.0
	Total	151	91.0	100.0	
Missing	System	15	9.0		
Total		166	100.0		

q40b_AEC. My institution provides me with effective opportunities to attend external training on the 3Rs (e.g. workshops, conferences)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	27	16.3	18.0	18.0
	Agree	50	30.1	33.3	51.3
	Neither agree nor disagree	34	20.5	22.7	74.0
	Disagree	29	17.5	19.3	93.3
	Strongly disagree	10	6.0	6.7	100.0
	Total	150	90.4	100.0	
Missing	System	16	9.6		
Total		166	100.0		

q40c_AEC. My institution provides me with effective access to relevant expertise in the 3Rs (including statisticians) if I need advice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	16	9.6	10.7	10.7
	Agree	66	39.8	44.3	55.0
	Neither agree nor disagree	34	20.5	22.8	77.9
	Disagree	26	15.7	17.4	95.3
	Strongly disagree	7	4.2	4.7	100.0
	Total	149	89.8	100.0	
Missing	System	17	10.2		
Total		166	100.0		

q40d_AEC. Regular training on the 3Rs is beneficial for my work/ role

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	38	22.9	25.0	25.0
	Agree	80	48.2	52.6	77.6
	Neither agree nor disagree	23	13.9	15.1	92.8
	Disagree	11	6.6	7.2	100.0
	Total	152	91.6	100.0	
Missing	System	14	8.4		
Total		166	100.0		

q40e_AEC. Training on the 3Rs should be mandatory for investigators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	98	59.0	64.1	64.1
	Agree	44	26.5	28.8	92.8
	Neither agree nor disagree	7	4.2	4.6	97.4
	Disagree	4	2.4	2.6	100.0
	Total	153	92.2	100.0	
Missing	System	13	7.8		
Total		166	100.0		

q40f_AEC. Training on the 3Rs should be mandatory for animal ethics committee members

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	86	51.8	55.8	55.8
	Agree	58	34.9	37.7	93.5
	Neither agree nor disagree	5	3.0	3.2	96.8
	Disagree	5	3.0	3.2	100.0
	Total	154	92.8	100.0	
Missing	System	12	7.2		
Total		166	100.0		

q2. In which state/ territory are you based?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Australian Capital Territory	7	6.1	6.1	6.1
	New South Wales	24	20.9	20.9	27.0
	Queensland	49	42.6	42.6	69.6
	South Australia	3	2.6	2.6	72.2
	Tasmania	2	1.7	1.7	73.9
	Victoria	26	22.6	22.6	96.5
	Western Australia	4	3.5	3.5	100.0
	Total	115	100.0	100.0	

q3_INS. What is your institution type?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Private organisation	14	12.2	12.2	12.2
	Private research institute	5	4.3	4.3	16.5
	Public hospital	5	4.3	4.3	20.9
	Public organisation	9	7.8	7.8	28.7
	Public research institute	8	7.0	7.0	35.7
	University	46	40.0	40.0	75.7
	Other	28	24.3	24.3	100.0
	Total	115	100.0	100.0	

q4_INSmr. What type of activity involving the use of animals is conducted at your institution? (Multiple Response)

		Frequency	% of respondents
Valid	Health and medical research	68	59.1%
	Other research	18	15.7%
	Field trials	18	15.7%
	Environmental studies	35	30.4%
	Teaching	73	63.5%
	Diagnosis	10	8.7%
	Product testing	9	7.8%
	Production of biological products	4	3.5%
	Other	5	4.3%
Number of Respondents		115	100.0%

q5_INSmr. What types of animals are used at your institution? (Multiple Response)

		Frequency	% of respondents
Valid	Amphibians	38	33.0%
	Birds (including poultry)	46	40.0%
	Cats	13	11.3%
	Cephalopods	13	11.3%
	Dogs	14	12.2%
	Fish	41	35.7%
	Guinea pigs	24	20.9%
	Livestock	39	33.9%
	Mice	69	60.0%
	Native mammals	27	23.5%
	Non-human primates	7	6.1%
	Rabbits	25	21.7%
	Rats	69	60.0%
	Reptile	1	0.9%
	Other species	10	8.7%
	None	2	1.7%
Number of Respondents		115	100.0%

q6_INS. Which of the following best describes your position at your institution?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chief Executive Officer	4	3.5	3.7	3.7
	Deputy Vice-Chancellor	1	.9	.9	4.6
	Director	7	6.1	6.4	11.0
	Executive Director	1	.9	.9	11.9
	General Manager	11	9.6	10.1	22.0
	Pro Vice-Chancellor	1	.9	.9	22.9
	Other	84	73.0	77.1	100.0
	Total	109	94.8	100.0	
Missing	System	6	5.2		
Total		115	100.0		

q7_INS. Approximately how many investigators are involved in the use of animals for scientific purposes at your institution?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 100	37	32.2	33.6	33.6
	51 to 100	23	20.0	20.9	54.5
	21 to 50	11	9.6	10.0	64.5
	20 or less	39	33.9	35.5	100.0
	Total	110	95.7	100.0	
Missing	System	5	4.3		
Total		115	100.0		

q8_INSmr. How does your institution currently support and facilitate the implementation of the 3Rs? (Multiple Response)

		Frequency	% of respondents
Valid	Institutional policies	50	51.0%
	Support at the level of the investigator group/department (or equivalent)	34	34.7%
	Training for investigators	53	54.1%
	Training for AEC members	37	37.8%
	Collaboration/ knowledge exchange within and between institutions about the 3Rs and current best practice	36	36.7%
	Assistance to investigators on 3Rs assessment during planning of projects	34	34.7%
	Financial support for conducting a literature search on the 3Rs by the investigator	1	1.0%
	Advice offered by a statistician(s)	20	20.4%
	Advice offered by an expert(s) on the 3Rs	26	26.5%
	System for sharing of tissues and other biological material from animals that are humanely killed	32	32.7%
	Information services specific to the 3Rs (e.g. library, website, online resources and databases)	38	38.8%
	Recognition of the implementation and use of the 3Rs (e.g. awards)	20	20.4%
	Other	8	8.2%
Number of Respondents		98	100.0%

q9a_INS. To investigators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes – always	34	29.6	43.0	43.0
	Yes – upon request	34	29.6	43.0	86.1
	No	11	9.6	13.9	100.0
	Total	79	68.7	100.0	
Missing	Do not know	19	16.5		
	System	17	14.8		
	Total	36	31.3		
Total		115	100.0		

q9b_INS. To AEC members

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes – always	33	28.7	45.8	45.8
	Yes – upon request	26	22.6	36.1	81.9
	No	13	11.3	18.1	100.0
	Total	72	62.6	100.0	
Missing	Do not know	23	20.0		
	System	20	17.4		
	Total	43	37.4		
Total		115	100.0		

q10_INSmr. Which of the following would best enable investigators to achieve their scientific/ educational objectives in the future without using animals? (Multiple Response)

		Frequency	% of respondents
Valid	More predictive computer models	22	25.0%
	Increased funding to develop replacement options	42	47.7%
	A system for conducting literature searches for replacements	13	14.8%
	Legislative or other regulatory change	15	17.0%
	More relevant cell cultures	11	12.5%
	Greater availability of human tissues	12	13.6%
	Technical advances in tissue engineering	16	18.2%
	Help to identify replacement techniques	38	43.2%
	Access to better computing skills	5	5.7%
	Other	23	26.1%
Number of Respondents		88	100.0%

q11_INSmr. Which of the following would best enable investigators to use fewer animals? (Multiple Response)

		Frequency	% of respondents
Valid	Increased sharing of data or collaboration between institutions	25	28.4%
	Statistical evidence that fewer animals would provide the required research results	26	29.5%
	Greater availability of funding for 3Rs research	20	22.7%
	Greater willingness from regulators to accept data from non-animal approaches	15	17.0%
	Changes to legislation	6	6.8%
	Increased sharing of data or collaboration between research groups	23	26.1%
	Greater willingness among investigators to change their methods	17	19.3%
	Other investigators being more willing to accept results obtained using non-animal methods	10	11.4%
	Use of GM animals	3	3.4%
	Use of stem cells		

q11_INSmr. Which of the following would best enable investigators to use fewer animals? (Multiple Response)

		Frequency	% of respondents
	Reducing availability of funding for in vivo research	3	3.4%
	Breeding programs that are conducted by fewer, but larger, specialised establishments	16	18.2%
	Other	10	11.4%
	Nothing, investigators already adequately minimise the number of animals they use	18	20.5%
Number of Respondents		88	100.0%

q12_INSmr. Which of the following would best enable investigators to use methods that better minimise adverse effects on the animals they use? (Multiple Response)

		Frequency	% of respondents
Valid	Increased sharing of information between institutions	25	28.4%
	Increased sharing of information between research groups	25	28.4%
	Greater willingness among investigators to change their methods	28	31.8%
	Other investigators being more willing to accept results obtained using more refined methods	21	23.9%
	Better systems for conducting literature searches for refinement methods	11	12.5%
	Greater availability of funding for 3Rs research	21	23.9%
	Legislative or other regulatory change	6	6.8%
	Help to identify refinement methods	34	38.6%
	Other	6	6.8%
	Nothing, investigators already adequately minimise adverse effects on the animals they use	19	21.6%
Number of Respondents		88	100.0%

q13_INS. What is the main obstacle to implementing the 3Rs at your institution?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lack of appropriate scientific or technological innovation	16	13.9	18.2	18.2
	Comparability of data	10	8.7	11.4	29.5
	Pressure of time/ other duties on investigators	11	9.6	12.5	42.0
	Insufficient funding available	16	13.9	18.2	60.2
	Legislation or regulatory requirements (e.g. for the registration of drugs or products)	2	1.7	2.3	62.5
	Other obstacle	10	8.7	11.4	73.9
	There are no obstacles	23	20.0	26.1	100.0
	Total	88	76.5	100.0	
Missing	System	27	23.5		
Total		115	100.0		

q14_INSmr. What training does your institution offer on the 3Rs? (Multiple Response)

		Frequency	% of respondents
Valid	As part of undergraduate courses	7	8.0%
	Training by supervisor/ mentor	38	43.2%
	Mandatory institutional training (including induction and refresher training)	34	38.6%
	Non-mandatory institutional training (including induction and refresher training)	22	25.0%
	Ad hoc training	39	44.3%
	Attendance at external conferences/ workshops, etc.	28	31.8%
	Other	7	8.0%
	My institution does not offer training	11	12.5%
Number of Respondents		88	100.0%

q15_INSmr. Who is targeted to attend 3Rs training? (Multiple Response)

		Frequency	% of respondents
Valid	Undergraduate students	26	31.7%
	Masters and postgraduate students	36	43.9%
	Investigators	57	69.5%
	Senior investigators	32	39.0%
	Animal facility staff	34	41.5%
	Animal Welfare Officers or equivalent	22	26.8%
	AEC members	30	36.6%
	Other	16	19.5%
Number of Respondents		82	100.0%

q16_INSmr. How does your institution promote the 3Rs? (Multiple Response)

		Frequency	% of respondents
Valid	Institutional newsletters	15	17.2%
	Senior executives act as 3Rs champions	1	1.1%
	Investigators act as 3Rs champions at the division/ department/ school or work group level	14	16.1%
	3Rs included as a regular item on laboratory meeting agendas	6	6.9%
	Encouragement of inclusion of information on the 3Rs in research papers, posters and presentations as standard practice	10	11.5%
	Institutional policy requires use of the PREPARE or ARRIVE Guidelines as a checklist to consider when designing or reviewing experiments	14	16.1%
	Institutional policy requires compliance with the ARRIVE Guidelines when reporting animal-based studies	8	9.2%
	Fostering mechanisms to ensure that the results of all animal-based studies are reported, including null or neutral results	13	14.9%
	Distribution of relevant 3Rs publications	20	23.0%
	Other	20	23.0%
	My institution doesn't champion, promote or disseminate the 3Rs	21	24.1%
Number of Respondents		87	100.0%

q17_INSmr. How does your institution reward the development, adoption and implementation of the 3Rs? (Multiple Response)

		Frequency	% of respondents
Valid	Annual 3Rs prize	12	14.3%
	Sharing narratives and success stories	9	10.7%
	Other	7	8.3%
	My institution doesn't reward the development, adoption and implementation of the 3Rs	59	70.2%
Number of Respondents		84	100.0%

q18_INSmr. How does your institution publicly communicate the use of the 3Rs by the institution? (Multiple Response)

		Frequency	% of respondents
Valid	By encouraging use of keywords related to the 3Rs in publications, even if the focus of the work is not one of the 3Rs	1	1.2%
	By encouraging publication of open access articles on the use of the 3Rs	5	5.9%
	Media communication	5	5.9%
	Through an annual report or similar document	22	25.9%
	Other	8	9.4%
	We don't publicly communicate the use of the 3Rs	48	56.5%
Number of Respondents		85	100.0%

Australian Government

National Health and Medical Research Council

Survey on the replacement, reduction and refinement of the use of animals for scientific purposes in Australia

Survey Findings Report

Appendix E: Verbatim comments

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ORIMA RESEARCH

Investigators

Demographics

q3_INV$. Which sector are you primarily affiliated with? (Other)	
No. of Comments	16

ID	Comment
26	University and public hospital (50%:50%)
54	Education consultants
57	Independent Koala population ecology expert
72	Secondary School
103	Secondary School
135	government
210	State government
279	State High School
439	Secondary Education
475	Naturalist Club
488	Volunteer Incorporated Association
582	consultancy
628	Private corporation
632	Private Secondary School
642	Beef consulting company
658	Field naturalists club

q4.9_INV$. What type of activity are you currently involved in where animals are used? (Other)	
No. of Comments	11

ID	Comment
13	none
57	Environmental education / raising awareness
195	Pharmaceutical research and development
202	Animal health research
214	Changed occupations approximately 6 months ago but was previously involved in health and medical research using animals
218	Pen trials
299	Wildlife research
463	Veterinarian in clinical practice
475	Wildlife survey
531	Animal nutrition

ID	Comment
643	observational

q5.14_INV$. What types of animals are used in your work? (Other species)

No. of Comments 51

ID	Comment
4	sheep
17	Ferrets Non-human primates
23	turtles and crocodiles
24	Spiny mice Sheep
25	Reptiles
37	Sheep. Pigs
50	Nematodes
57	Conservation detection dogs
65	Pigs
75	Horses
79	Caenorhabditis elegans
98	Lizards
108	pig
111	Equine species
119	Horses
125	horses
128	Native reptiles
135	invertebrates
137	Native birds (not poultry), reptiles. Introduced rats and mice are commonly captured but not target species.
138	Native reptiles
142	Horses
149	Decapods
152	Reptiles
166	Pigs, Sheep
173	All wild living native species
177	Native reptiles
210	Frogs
214	Ferrets
223	pigs
336	camera traps to observe whatever animals are in the environment
357	ferret
361	Pigs
405	Crocodiles
417	REptiles

ID	Comment
438	Ferrets
443	Drosophila Melanogaster (Fruit Fly)
475	Reptiles
476	Hamsters, Lamas
505	Pigs sheep
519	Horses
563	All native and introduced wildlife
564	Pigs, sheep
568	sheep
582	reptiles
643	marine mammals
645	fox,
650	Reptiles
705	Sheep
706	pigs
728	Spiny mice (Acomys cahirinus)
773	Sheep

Experience

q7_INV$. What is your current primary role in animal-based studies? (Other)	
No. of Comments	13

ID	Comment
34	Statistician
120	Science technician
125	principal investigator and vet
196	PhD
214	Changed occupations 6 months ago but was previously research veterinarian/ investigator in studies using animals
406	Research assistant
418	Laboratory manager and animal care staff
452	Laboratory Leader
471	Facility Manager
551	Teaching medical procedures
645	manager
681	bioinformatics of rna-seq data produced from animal model studies
733	I collaborate with researchers that do the animal-based studies

3Rs in Practice

q22.11_INV$. How do you generally decide on the number of animals to use in your experiments? (Other)	
No. of Comments	37

ID	Comment
15	Previous experience on what is required to generate significant findings.
46	After more than 20 years in mouse genetics, the overriding consideration in for us is how many mice are required to generate robust, reproducible, interpretable data. I view the AEC as a hindrance to progress, one that makes the time and financial cost of medical research vastly greater than it needs to be, whilst providing no benefit whatsoever to animal welfare above and beyond that which could be provided by having qualified animal husbandry staff and a vet overseeing the animal house and all procedures conducted within it.
47	Usually consider the minimum of animals that might be needed to confirm a particular outcome
48	minimal numbers always - using statistics where needed
57	For our work with the detection dogs, whether we take one or both for the fieldwork part of our studies largely depends on meteorological conditions as well as length of the fieldwork.
67	class size for teaching purposes
75	Depends on whether clinical research, or no/low stress.
77	When I'm convinced that the results are true and reliable.
137	With field studies of wildlife it is very difficult to tell exactly how many individual animals may be used eg. numerous Bush Rats may be photographed by a surveillance camera over several nights.
138	To ensure rigour of results
173	Since my work revolves around free-living populations of native species, the number of animals used will depend on the number of encounters that occur given a variable landscape and environmental conditions. As these variables are not fixed it is hard to put an figure on the number that will be used.
179	working with endangered species we hardly ever meet the required numbers for tagging etc.
210	Field survey practicality (logistics) often determines number of animals observed/ tagged
214	I previously worked in a high-containment facility where number of animals was limited by the capacity of the facility and operational logistics/ staff safety considerations, as well as resourcing to adequately manage animal welfare impacts. Many of the studies I carried out were with limited numbers of animals and focus on observational findings rather than an emphasis on statistical/ powered studies, and this was a generally accepted limitation of the nature of this work among peers.
279	space available
315	The number of animals encountered in the wild
338	My and others' preclinical multi-centre randomised confirmatory trial approach, ideally preceded by systematic review and meta-analysis
391	We do a lot of pilots so there is a lot of guess work and trial and error

ID	Comment
402	I have used power analysis calculations when I have replicated an experiment, but because they are based on small/single experiments the numbers generated are not realistic. I try to use a balance between the components of a power analysis and my experience/literature on the likely effect sizes and group sizes needed etc. Piloting in small groups first can also save using large numbers in the first instance. I think this approach should be more widely used, it usually leads to refinement and reduction!
405	Working in industry has the disadvantage of needing to use many 'fixed' features; however this also gives real-life outcomes
439	Ratio required for student engagement
462	For ethics applications, we greatly increase the number required (to make sure we won't run out), but vary rarely reach this number (which makes everyone happy)
463	Only study naturally occurring diseases in my patient population - numbers are dependent on how many animals present to hospital.
475	Not relevant
519	I work with animals for teaching not experiments. Numbers used for each class is determind by looking at what they are being used, how long, stress factors and is it painful.
529	Someone else decides this. The lab head makes this decision. There is no system for information flow back 'up' to the lab head.
543	For the use of animals in teaching: number of students per class
550	Working outside of the laboratory, looking at the interactions between plants and animals, it's almost impossible to determine the number of animals that are interacting with or impacted by experiments we run within our fieldsites, particularly when our focus is often on limiting certain wild animals access to plants.
551	Using animals to teach uncommon but life saving medical procedures - the number is based on the number of doctors being taught
563	We trap animals for ecological studies so we can never predict how many will voluntarily enter traps.
564	as required for teaching purposes
643	observational studies based on animal individuals
645	we undertake camera monitoring for population and understanding of native fauna species.
691	logistics of conducting the experiment
714	Previous experience and availability of mice from in house breedings
717	Fecundity
747	A statistical assessment of the variation found in the data produced by the particular experiment.

q26.1_INV$. If you have developed an original 3Rs technique in the last 5 years, what type of technique did you develop? (Replaced the use of animals)

No. of Comments 37

ID	Comment
4	Computational software for pharmacokinetic predictions (this also led to reduced animal usage by allowing focus on compounds with highest potential)

ID	Comment
15	You could say we have replaced animals in some mathematical modeling work we have done, but it was not intended to replace animals, it was meant to get to an answer that would be difficult to get to without using hundreds of animals and extensive labor. People do mathematical modelling because it is not feasible to do massive scale analyses without it.
19	Involved in an Adverse Outcome Pathway for inflammation studies. This is designed to reduce animal use in toxicology testing of new chemicals.
23	Development of computational models
24	use of cell culture
37	Conducted experiment using in vitro cell culture rather than whole animal model
38	moving to a cell culture model in order to define several aspects of cell biology - I note they are then validated in mice, but fewer mice need to be analysed for confirmation
42	Developed unique cell lines and short term organoid culture for disease subtypes that previously could only be modelled in xenografts
47	Part of a consortium to test the validity of an in vitro technique that was designed to replace a well established animal transplantation study
102	always use in vitro methods prior to any animal work; always check if any tissue sharing source is available via collaboration
137	On many field studies I have used surveillance cameras instead of cage traps. On numerous surveys I have used a bat detector instead of harp trapping.
166	I have utilised a 3D co-culture invitro model of skin rather than animals.
188	Tissue culture experiments to look specifically at one cell type and its response to various stimuli
195	Developed 'in vitro' laboratory assays to replace animal testing
205	we will be starting up experiments using human induced pluripotent stem cells as a 'disease in a dish model' to replace some and complement some of our existing in vitro and in vivo animal models
326	Used in vitro models instead
347	I don't know what 'original' means in this context
349	Move to in vitro systems to test hypothesis
433	In vitro models to replace the use of animals
437	In vitro mode-of-action assay
443	3D organotypic cultures of primary tissues from humans
454	I did not actually get to complete this study - I was just a lab assistant at the time, and the head of the lab ended up using the equipment for other research - but I got quite far along in designing physical, heated, oxygen-consuming/CO2-producing models that would replace animals in methodological studies involving infrared thermography and respirometry. Similar models have been used in research before, but I think not in that particular configuration.
522	Use of scavenged discarded tissue from dog spay surgeries (uterine smooth muscle and arteries) for use in teaching of pharmacology (replacing the killing of rats).
523	Developed a 3D virtual sheep to reduce overall requirement for cadavers in teaching
543	For teaching veterinary students: replacement with models, videos, computer programs etc
546	replaced teaching lab with video (please note this is still in place but students have complained about degradation of student experience)
553	Developed cell-based assays for screening of potentially successful drug conmpounds to progress to animal efficacy experiments.

ID	Comment
591	We used an acoustic camera to monitor fish behaviour instead of trapping them to assess behaviour.
597	use of an in-house developed ELISA to replace the Serum Neutralisation test in Mice
623	Use cell lines instead of animaks
670	I developed an in vitro technique to include an intestine model with both epithelial cells and a microbial biofilm to reflect that of a human/animal. We are now able to carry out more preliminary work on cells before moving to animals, sometimes even whole experiments can be done without animals using this model.
694	Developing a method to replace Xenopus laevis oocyte expression system
698	Phagocytosis of bacteria was able to be done using cell lines derived from different mouse strains
705	Using computational modeling to answer questions that cannot be answered experimentally
707	Used cell culture models to measure synaptic plasticity rather than an animal model of memory.
712	Suggesting cases where direct study in humans is possible. Re-analysing / modelling old and published data to provide results [rather than perform new experiments].
786	We have developed several in vitro assays that complement and strengthen our in vivo data on mechanisms of action. Now we perform pilot experiments first to ensure all assays are working then the big experiment with more mice per group to have greater statistical significance and publication impact. This has resulted in 4 patents and 1 successful clinical trial to improve leukaemia therapy while lessening treatment side-effects of cancer therapy in last 5 years which has already saved lives.

q26.2_INV$. If you have developed an original 3Rs technique in the last 5 years, what type of technique did you develop? (Reduced the use of animals)

No. of Comments 62

ID	Comment
5	Developing in vitro models of tissue structures, 1st with primary cells from animals to compare to cell lines, with the aim of moving to cell lines
6	Developed guidelines for various disease induction methods, outcome measures and reporting that improves reproducibility of studies, with resulting reduction in animal numbers/use and better comparison of between labs/groups
21	Used multiple sites for a local skin response experiment on the same animal to give two time points per animal and halve the number of mice used.
23	Use of power calculations based on pilot data
25	Modified sample size based on pilot studies
26	Published several methods papers on new techniques reducing the number of animals for in vivo CTL experiments and was recipient of the Global 3Rs award from AAALAC in 2016
28	Reached experimental power earlier than designed in a pilot trial, reducing animal usage.
42	Implemented continuous data collection and custom visualisation that maintains blinding for lab staff but allows early termination of studies during cohort accumulation if statistically significant negative results occur.
53	Pilot experiment revealed the concept was wrong

ID	Comment
64	In consultation with the ethics committee we can now repurpose animals bred to carry particular homozygous genetic traits that test heterozygous for that trait to other experiments, where previously they were simply culled
94	Moved our pharmacokinetic study taking terminal blood samples from multiple mice, to a new method to take multiple blood samples from the same mouse.
102	use minimum number of animals to achieve significance; collect tissue without immediate use and store in a lab tissue bank for later use in other projects
134	luciferase imaging of virus infections
137	During amphibian studies, if a frog is positively identified by its advertisement call, no attempt is made to also catch the frog, unless a clear requirement of the contract eg. to check for Chytrid fungus. During reptile surveys binoculars are used to scan possible basking sites. If a basking skink or dragon is positively identified then no attempt is made to also capture the animal.
152	Use of Ump study to quantify acute oral toxicity of a compound
166	I have created more wounds on each animal to reduce the total number of animals used for an experiment. I have combined different treatments in the same study with the same controls to reduce the total number of animals use.
195	Biometrician will always power every study to ensure correct animal numbers are used in a study. Combine multiple efficacy outcomes in a single study to reduce animal numbers such as using a same negative controls.
240	We use meta-analyses to identify required gaps for animal trials in the literature which hopefully reduces the number of animal trials conducted in areas that are not required
248	randomise treatment allocation for each cage to create blocking factors collect additional samples for future testing (blood)
283	With the advice of our institute vet, I have optimised our anaesthesia so we lose fewer animals in surgery, reducing our overall use of animals.
288	We always use a statistical power calculation to determine the number of animals. This may have the effect of decreasing the number of animals. Alternatively, it may cause the number of animals used to indrease
301	Use of pigs prior to euthanasia to test vaccine transfer efficiency into the skin. Animals were part of immunogenicity studies and applying our device to determine vaccine transfer to the skin 'reduced' the use of other live animals for that sole purpose.
319	We introduced microtechniques which required less primary cells such as platelets so we used a reduced number of animals.
326	Used power calculations to determine the minimum numbers of animals to use per group so as to be able to detect significant differences between treatments.
341	Developed methods for increasing the amount of information extracted from each experiment.
349	Move to in vitro systems. Use of statistical power to reduce animal numbers
356	Sharing tissues among investigators so that less animals are required. Doing longitudinal studies in mice and using equipment to obtain data, and only euthanising at the final time-point (rather than multiple time-points).
376	using primary cells for studies
380	Sharing organs at harvest between different experiments
420	reduced the use animals by measuring more outcomes from individual mice without compromising welfare of animal
442	Reduced numbers based on previous, in-house data

ID	Comment
443	More focussed studies and sometimes advice of statistician
445	Using animals from one experiment in multiple pilot studies for other experimental designs, minimising the need for other animals to undergo major surgery (EEG experiments)
465	For new anti-cancer drugs, I have conducted a dose escalations tolerance study with a small number of animals to identify a maximum tolerated dose (with a low threshold for defining this), prior to commencing a larger study with cancer bearing animals
482	Instigating use of animal tissue bank
509	Combine control groups to increase statistical power
524	Longitudinal imaging of the same animal drastically reducing the the number of animals needed in a study. Also leads to refinement as we are now better able to define experimental endpoints and limit suffering.
543	Optimised research questions and study, based on power calculations reduced numbers.
546	collected more data per animal.
553	Use of power calculations has reduced the number of animals per group required to design a sound experiment.
563	Taking students to work on research projects to teach them wildlife management and animal handling techniques, so animals captured for research are also used to teach
572	We only use very small number of animals with no repititions of groups depending on statistical powers and data from previous studies
586	Improving a method to improve yield (in production of parasites from a colony) so that fewer infestations/ collection episodes are required, and using fewer animals. Improving a parasite count assessment method so that the counts were higher and therefore the results were more powerful and fewer animals required per group.
591	We measured information like the length and weight of fish by only taking a sub-sample (e.g. 100 fish) of individual species, instead of measuring all fish caught to reduce the overall numbers of fish handled and still provides the same usable information about the population.
640	used smaller volume sampling
670	see above
685	Developed ways to get more information from the same number of animals by minaturising of techniques.
687	I have only used animals to test a product to see the efficacy, because we would like to test the product in human. I have designed my experiments in such a way that I got the maximum information by using small number of animals.
693	i make primary cell cultures. i have changed my experimental designs to allow me to grow cells in 96 well plates rather than 24 well plates which increases the number of experiments i can perform and reducing animal numbers
698	Able to use statistical methods to reduce the animals per group based on previous data to attain the same confidence
699	Used power statistics to define minimum number of animals required.
705	Using computational modeling to avoid doing more difficult experiments
712	Power analysis again and again [note this may increase or decrease numbers required [compared to 'gut feel'], but even when it increases numbers, it hopefully does so only on the basis that it is more likely to lead to meaningful results.
717	designed breeding strategies to maximise the proportion of useful genotypes used cell culture models to narrow hypotheses and thus design directed animal studies

ID	Comment
728	Increased efficacy of embryo transfer reducing the number of females required as embryo recipients.
734	Agitated to move to an invitro product release test. Difficulty is acceptability to the regulator.
748	When I cull untreated control mice I notify my colleagues they can scavenge from these mice. That way they don't need to order mice for their own studies and my institute uses less mice.
756	Using statistical methods to allow the pooling of data across experiments improving statistical power.
759	We now contact other laboratories to see if they can use other parts of the euthanised animal. This has encouraged others to use our parts of our valuable transgenic animals.
773	At postmortem, we collect a sample of all organs and fix and freeze. When designing future studies, we access this tissue bank to perform mechanistic studies and publish this data so that we do not need to run an additional cohort. If we identify a target pathway, we would then use animals to test if changing this pathway improves outcomes. We have accessed scavenged tissue from collaborators and provided scavenged tissue to others to reduce the need to use more animals.
775	Created online data repository that allows free access to full datasets and analysis tools; this has enabled colleagues to obtain required information without the need to conduct new experiments
786	Insisted on greater control of our dedicated breeding colonies so less un-wanted un-necessary mice were generated by our facility.

q26.3_INV$. If you have developed an original 3Rs technique in the last 5 years, what type of technique did you develop? (Refined the use of animals)

No. of Comments 83

ID	Comment
6	Developed guidelines for various disease induction methods that reduces morbidity and improves reproducibility of studies.
11	Established new models eg. local injection of compounds rather than systemic to minimise impact on wellbeing
15	We have developed approaches to minimize suffering after specific types of surgery.
21	Changed the bedding of mice that develop an arthritis phenotype to minimise discomfort.
23	Changes to the use of anesthetic and analgsic agents
24	altered anaesthesia and postoperative analgesia
25	Introduction of enrichment, analgesia and anaesthesia, along with refined and shortened endpoints
28	Reduced mortality (down 35%) in an animal model of critical illness, but retained genetic changes in the gut we were investigating.
32	Developed methods to increase consumption and palatability of speciality diets to prevent excess weight loss in mice.
41	Enriched the mouse cage environment with hides
75	EE
77	Modified surgical techniques.

ID	Comment
81	Drug administration via use of daily jelly feeding rather than need for repetitive gavage as we deemed this to be too invasive to the animals.
87	I developed a protocol to measure EEG in awake, conscious dogs using a minimally-invasive technique.
101	modified experimental protocols to reduce stress and infections
102	proper screen of the literature and consultation with the vet and other peers to always use the least invasive and pain free experimental approach while obtaining useful data
106	I have used more animals to ensure that the approach has the required statistical power to robustly test the hypothesis rather than use less animals.
134	non-invasive virus inoculations
137	If harp trapping is conducted during the bat breeding season, trapping is only done during the evening session, so that all bats (especially lactating females) are released by mid-night and all harp traps are closed for the rest of the night. Various types of small-mammal refuges are placed in pitfall buckets including polystyrene cups and cardboard refuges. An external rain cover is always placed over pitfall traps. Small, shallow containers filled with water are placed in funnel traps overnight as refuges for captured frogs. When conducting surveys for Pseudomys mice, a small container with canary seed is placed in the bottom of each pitfall bucket. When using Elliott traps for small mammals, a section of cardboard is placed at the rear of the trap for insulation.
142	Able to conduct a blind prospective positive control study in a clinical racing environment
146	Better experimental protocols for recording guppy male colour patterns--less time in anaesthetic.
166	I have optimised pain medication protocols to ensure animals receive the best pain relief, optimised post-anaesthetic recovery procedures, and trialed different enrichment methods.
172	We adopted different marking techniques. Can I say this survey is very lab-biased, and as a field worker many of these questions are difficult to answer.
188	Optimised surgical techniques to reduce invasiveness and time of surgery
210	We are focusing on one waterbird species in one significant breeding site to test the colour banding approach and its effectiveness for long-term monitoring of site fidelity and re-use in subsequent breeding events. If successful we will develop the project further and refine the methods to apply the technique in other sites and other colonial waterbird species (if applicable).
214	Modified approach to remote assessment of temperature via scanning chips with reduced requirement to restraint and handle animals.
231	a post graduate grazing trial. Rotation of a limited number of animals on a plot using a randomised design so that less sheep were used, carry-over effects were minimised and environmental effects were minimised.
240	We have adopted the use of different labour saving technologies to maximise the amount of data captured while minimising animal handling
242	Replacement of surgical techniques with minimally-invasive ones.
248	use of anesthesia for intramuscular injection
283	Improved anaesthesia and post-op care has improved the welfare of our animals.
298	Refined capture and handling techniques of wild animals
309	Designed a weak link for a tracking collar

ID	Comment
311	(1) A behavioural test involved food restriction to the 85% of the freely fed body weight as a form of motivation to complete the task using food rewards, however, I have found that the level of restriction could be reduced to 90-95%, and still have the same motivation. (2) A learning and memory task normally required mouse to be trained for 30-40days. The task, however, was optimised, without defining the purpose of testing, to 10-15days.
312	helped write standard operating procedures (SOPs) for a number of expetrimental procedures involving animals
319	We shared our animals with other investigators for organ harvesting to efficient use of the animals with other investigators.
327	maximised tissue usage from experiments
338	see before pRCT and SR-MA
349	Use of pilot study to test hypothesis and methods
351	made improvements to a surgical wound model to improve welfare and outcomes
352	Step by step protocol to habituate animals to experimental equipment to reduce stress and increase result yield - mainly in duck, sheep, and alpacas
356	Trying to ensure that the animals are housed in a stress-free environment and making necessary changes to their housing and management to ensure this happens
360	Established a refined rodent model where the general animal health was superior to that described in published papers in work by others
365	included anaesthesia into standard protocol to decrease suffering and increases success of experiment
376	better monitoring and reduced numbers of procedures per animal
389	Better planning of experiments to get more data from the same cohort of animals.
394	Developed novel analgesic regimes (fentanyl patch) to reduce pain after spinal cord injury surgery in rodents
399	developing lower impact sampling/measurement procedures; increasing outcome measures on an existing cohort of animals by adding no impact measurements
402	Reducing suffering post-surgery through a variety of techniques including multiple forms/time schedules of analgesia to reduce pain and implemented additional care strategies such as warmed cabinets, jelly packs and soft food. I have tested the effects of mild environmental enrichment on behaviour in a way that I thought was sustainable for animal care staff and published this study. This included pair-housing using larger cages (normally for 4 rats), running wheels, houses and bedding. This leads to a range of behaviours not possible in a small, empty cage. I would like to see more enrichment used, however confirming it doesn't induce more variability/cost is difficult.
425	individually tag animals to ensure follow up and monitoring of each animal, as clinical signs (weight loss) was averaged in the past.
426	Designed new / optimised tools to minimise the impact of surgery.
429	We use animals to study fracture healing. Implementation of any fracture model in our laboratory will involve pre-planning, discussion with a vet and surgical practice on cadaver mice to ensure when the model is implemented in live mice the impact on these mice is as minimal as feasible.
442	Refined procedures to reduce invasive procedures, stress and pain, and improved housing to provide higher standards of care
443	Through interactions with vets and AEC with applications and through pilot studies
465	I have modified experimental endpoints to define early endpoints that occur prior to stress or weight loss in experimental animals as a replacements for later disease endpoints based on tumour size or significant weight loss

ID	Comment
468	use camera trap more
471	improvement of behavioural enrichment to reduce stress responses during anaesthetic procedures.
505	Developed better analgesia
508	Currently testing new anaesthesia agents that have been reported to have less stressful response in similar animal species than the current international standard.
515	Using more sensitive pain scale specifically developed for the species studied and for the work done
543	We often deal with client-owned animals; to reduce anxiety in animals we have clients present, examine in areas that are not stressful, use stress-relievers such as sedation, pheromone spray etc
553	Improved techniques and increased training to refine / reduce conditions / stress on the animal.
586	Convinced companies to accept more liberal housing and management conditions and found that the results were still robust, so they became part of the normal protocol. Eg regular sessions in group outdoor exercise in large paddocks, longer periods of access to external pen component, housing in pairs rather than singly ... obviously all of these things depend on the nature of the particular study.
591	we continually aim to improve handling methods and reduce stress where possible (e.g. process fish ins smaller batches, improved aeration and sedation techniques, etc) that we learn from experience doing these studies. This is done both to reduce stress but also improve the chance that the data we get is more realistic and less affected by stress responses of the subjects.
597	Replaced a challenge test in guinea pigs with a serology test in guinea pigs
628	Changed the way we sample for colostrum intake (no longer collect blood sample but rather collect two weights) to minimise distress
640	developed new technology for less invasive sampling
646	Refined surgical technique, pain management and after surgery care to reduce experiment impact on subject.
680	We use the oral drug administration technique of gavage because of its more immediate clinical translatability. We use the technique frequently and repetitively on individual animals for prolonged studies (months). We regularly encounter resistance to our proposed use of the technique. Thus, we have refined the technique (mainly via extensive training of new staff and students) and we can prove that with appropriate training, frequent, repetitive gavaging for extended periods is a safe, accurate and reliable technique for drug administration.
685	Refining surgical techniques to provide quicker recovery and minimising restrain to animals during testing.
687	I have used very simple feeding techniques to do infection, colonisation and antibiotic curing studies in mice. Usually people use gavage and injection but I have used to deliver bacteria, antibiotics with sucrose containing drinking water. So, there is no pressure, pain and distress on them and I only collected faeces to examine the output instead of collecting blood and organs.
699	Euthanasia 3when animals are suffering.
705	Using computational modeling to get more information from the data gathered
709	handling technique for new research species
712	Recommended against invasive sampling, arguing results would not have sufficient statistical power anyway, and stress would upset other parts of experiments.
717	strain selection to remove/decrease frequency of co-morbidities ot under study

ID	Comment
728	Increased efficacy of embryo transfer reducing the number of females required as embryo recipients.
753	We have developed humanised mouse models, these have been extensively refined over a 6 year period to minimise intervention and maximise animal wellbeing and to improve experimental design
756	Developing an animal model of infection that allows parameters of pathogenesis to be measured in the absence of systemic signs of illness.
759	We now use ketamine during euthanasia, since we discovered this improves the viability of brain slices by reducing excitotoxicity.
773	We have modified the drugs used for induction of anesthesia and post-operative pain relief in the past 5 years.
775	Use of newly developed tracer substances allowed to obtain 4 samples per animal instead of 2 without compromising data quality.
786	Have developed several surrogate assays on blood and faeces that allow us to measure multiple timepoints in whole live animal without needing to euthansie batches of mice at each specific timepoint.

Enablers / Barriers to Implementation

q27.12_INV$. What do you think are the driving factors for using 3R methods? (Other)	
No. of Comments	23

ID	Comment
11	I find advice and assistance offered generally patronising and unhelpful especially as we are doing pain research and an element of pain and suffering is therefore unavoidable
32	Animal Facility Staff
46	Animal research costs a fortune and I have never met a scientist who is interested in conducting animal experiments for fun or to deliberately harm animal welfare. Thus, the 3Rs are intuitive, driven by external (cost) and internal (personal ethos) factors that have nothing to do with BAW or NHMRC policies. The latter simply formalise and bureaucratize those principles, thereby creating a pointless, time consuming maze of process that serves the interest of nobody including the animals.
75	Everybody should be implementing the 3Rs through their own intrinsic motivation. While I think some AECs do drive the 3Rs methods, many do not or do not do enough.
134	Getting more physiologically relevant data.
158	publication practices requiring details of animal use, eg ARRIVE guidelines.
166	My moral stance on animal use has become stronger, the longer I work with animals - I don't want to work with animals any more if I can avoid it.
214	Responsibility to work colleagues - working with high welfare impact animal disease models under high biocontainment => psychological safety is a priority and empowering animal carers to make welfare decisions and champion for continued application of 3Rs is a very significant way to protect people who work with experimental animals.
223	scientific rigour
298	National Park permits
312	The personal wish to do the correct thing with respect to the welfare of animals

ID	Comment
315	It is a privilege to encounter and work with marine mammals in the wild. How we operate around these animals can impact their behaviour for the period of time that we are working with them and possibly beyond.
328	generation of data that suggests alternative methods, or need for altered methods of validating data
342	Getting the most valid results
389	No life should be wasted unnecessarily.
391	I think people mostly think about it in situations where their work will be reviewed by an outside body. I think its mostly thought about in relation to self interest rather than for the benefit of animals
429	There is a higher degree of biological variation in animals that suffer from pain & distress. Hence good animal welfare = good science.
442	Consideration of researchers for animals under their care
501	Improving experimental design to produce valid (i.e., clinically & statistically meaningful) results with appropriate power.
591	in some cases, it can provide better data from the studies.
670	I like to think that it's more socially aware investigators/ethics committees/legislative bodies who are all now realising that everything that you do to or near an animal has an impact
683	The AEC receives pressure from advocacy groups
685	Researchers use animals to provide the best possible information in living animals. The fewer animals they use, the better. No researcher aims to use more animals than necessary or aims to deliberately cause animals to suffer.

q29.10_INV$. Which of the following would best enable you to achieve the objectives of your work in the future without using animals? (Other)

No. of Comments 29

ID	Comment
11	There is NO conceivable way that translationally meaningful research in my field can be carried out without using animals.
42	understanding the molecular basis that actively selects against the cancer mutations we study in culture, but not xenografts.
54	We are teaching practical field techniques. It can't be done electronically.
57	The only thing that could replace our detection dogs would be 'e-Nose' technology, unfortunately that technology is currently decades away from application to wildlife studies (if it can ever achieve same results as professional detection dogs).
83	Change the attitude of journals and peer reviewers - thinking that animal studies have more value than in vitro studies.
89	I am studying sepsis, a horrible human condition. I can't use humans for my experiments! I have to use mice.
138	None of these. I work in wildlife ecology and research on the distribution and ecology of wildlife requires observations of actual animals. Note that most of the techniques in my research are observational, or have minimal effect on animals (capture and release).

ID	Comment
202	As much of our works not only assesses the disease reduction impact on production animals but the impact on production it is almost impossible to replace animals to obtain valid results. In addition most of the interventions are currently normal practice in routine husbandry so there is no particular welfare reason to reduce animal use. Some diseases we are investigating have only just had Koch's postulates fulfilled and we have only just developed a challenge model in the farm animal spp. concerned and the disease is unique to the particular physiology of these animals so an in-vitro technique to study the disease is unlikely to be developed within the next 20 years.
210	Advancement in technology
214	Improved acceptance of alternatives to animal models; changes in dogma
255	Cell cultures can help and will improve but for a large part of my work whole animal studies are required.
288	We use animals to study the whole animal's response to infection. There is no model for this
315	Our core research focuses on marine mammals in the wild
326	Although many journals now advocate the importance of the ethical use of animals, the reality is that reviewers (and some editors) are often dissatisfied with data from in vitro models alone and have no qualms in requesting extensive animal experimentation. An example of this are journals of the Nature press group (particularly those of high impact) which request extensive information re. animal ethics approvals, power calculations etc
357	It will be difficult to recapitulate an evolving virus infection in vitro, as multiple components of the immune system are activated sequentially to limit and then clear the infection.
360	None of the above
361	Looking at the whole immune response to transplanted tissue or autoimmune responses is complex and demands a whole animal system. However, designing better mouse models can increase the information obtained which in turn reduces pressure on using non-human primates and other higher mammals.
374	Peer acceptance - whether or not a substitute is accepted for publication
389	Unfortunately, I do not think that development of drugs for stroke and cardiac events (my work) can be completely done without animals.
405	My research is in an emerging industry so we are still developing baselines; these alternatives would be ideal but need money to create.
439	What a ridiculous question!
454	Nothing - my work demands that I look at the whole animal system, *but* certain minor elements of it could be done without animals. For those, the options that apply are 1) access to better computing skills, 3) more predictive computer models, 6) a system for conducting literature searches for replacements, 8) help to identify replacement techniques, and 9) increased funding to develop replacement options
529	The ability to create a medicine for a patient without using animals. Presently, all medicines must be developed in animals before moving to humans. Given that an effective rat poison is a therapeutic in humans, rat and mouse models aren't very good. We need a better system to allow us to study. This better system does not yet exist.
610	not relevant
643	observational studies only
693	i make primery cells from transgeneic animals: there is no substitute, in addition, the cell lines avaialble are poor for the cells i investigate. i also do in vivo work where there is no alternative

ID	Comment
712	data sharing, so we can analyse data of others rather than generate our own.
714	You can't study multi-organ communication with out in vivo (ie animal models). As More people these days suffer for more than one disease we need to explore multi-disease interactions. Australia needs to wake up and realize that of we want to make a difference to health basic research is essential. We are an isolated country and already have many obsticals impeding research, we don't need the government to take a further ultra-conservative approach that puts us further behind.
775	More widespread use of electronic data repositories. these need to be made useful not just a series of notes from a lab; hence funding for specific collaborations between scientists and web designers would be important

q30.13_INV$. Which of the following would best enable you to use fewer animals? (Other)

No. of Comments 30

ID	Comment
23	Improved computational models of integrative physiology
30	better equipment for the end measurement e.g. using more expensive blood pressure radiotelemetry implants in conscious mice gives more accurate data with fewer animals. Cost is the issue.
37	Change in consent legislation to allow easier access to human biological samples if there is no risk of harm to the individual
38	This is about getting relevant, high quality scientific data. This question does not appear to be aligned with this motivation
42	development of in vitro culture systems that allow culture of our cancer cells, increasing replacement of xenografts.
51	The options in the previous question seem better suited to answering this question than those provided. Greater availability of human tissues would be the strongest driver for us to use fewer animals.
57	Question not really applicable to our use of animals for scientific purposes. Our professional detection dogs enable us to find evidence of threatened animals that we could not otherwise uncover without them.
163	use of organotypic hippocampus cultures
173	A hard question to answer for wildlife researchers not based in labs. Difficult to quantify in free-living populations.
210	Technological advancements for tracking animals that are non -invasive that give reliable information on movements with fewer animals
214	Increased willingness to view insight gained from smaller numbers of animals as of value with less emphasis on statistical significance being the only outcome of interest. Greater willingness of regulators to accept data from smaller animal numbers and greater willingness of regulators to allow for ongoing refinement of humane endpoints and selecting an endpoint that is appropriate to the objective (i.e. reduced rigidness around the idea that a fixed, previously-defined endpoint is a fixed, defining feature of the animal model).
245	the development of non-animal alternative models for behavioural and intact brain studies
315	We are already keep the number of surveys conducted to a minimum to reduce our 3R's and impacts on the animals.

ID	Comment
326	The development of a simple on-line tool to facilitate power calculations. This would need to avoid statistical jargon as much as possible and basically ask a series of questions of the investigator, allowing them to work out the parameters for their particular experiment and to punch the relevant values into an algorithm and get an answer. On-line tools exist but they tend to be heavy in statistical jargon, have a high level of assumed knowledge and generally target clinical research applications. Most non-clinical researchers are fairly clueless about power calculations and just stumble along swithout really knowing what they are doing.
345	A more agile and adaptable ethics framework. Generally though, we adequately minimise use.
361	You can use in vitro techniques just to reduce animal numbers. The evidence is judged for what it is. If it does not provide the same information as a whole animal system then it is inferior, regardless of everyone's desire to use less animals.
365	acceptance from reviewers for fewer animals or a reduced requirement for results to be significant to be worthy for publication
378	Proof that an alternative model was just a good and relevant.
437	Just highlighting the last point - greater acceptability from regulators to accept non-animal methods ... at the moment, health regulators (including the NHMRC) do not accept animal replacement methods with anywhere near the level of gospel that is placed on whole animal tests.
524	My new techniques being adopted by other labs
552	I work with native frogs - very little precedent data to justify sample size etc. No way to substitute the real thing
566	Have groups actually publish the initial group size, not just the subset they used to gain data for their figures
589	I already adequately minimise the number of animals I use
611	My group actively seeks out ways to reduce animal usage.
643	observational studies only
680	For the first option above, I believe considerable reduction in the number of animals used can be attained by more efficient breeding programs. But I cannot see that this will ever be attained by the use of fewer but larger specialised establishments. So I agree with the sentiment in this option, but I am not convinced it can be attained as described. Better support for existing individual establishments (i.e. the ones in which the people are familiar with the local research) would be a better option.
684	This question in badly worded! It asks what would enable “you” to use fewer animals but then poses solutions of a systemic nature, For me personally, the correct answer is “nothing” because I already minimise the number of animals I use but my work necessarily involves study of the whole animal BUT the “nothing” option below qualifies this answer by stating :”investigators already etc”. I am not speaking for all other investigators - just me.
722	greater willingness for reviewers of journal articles to accept fewer repeats of experiments
734	Regulatory acceptance of non-animal tests. Educate the regulators!
761	Free consult with a biostatistician

q31.9_INV$. Which of the following would best enable you to use methods that better minimise adverse effects on the animals that you use? (Other)

No. of Comments 23

ID	Comment
42	funding to develop and validate new in vitro methods
47	Specific funding for animal house staff to ensure animals are given more attention
51	Again, a strange set of options.
56	the work I complete already minimizes adverse events and is not reflected by other investigators intentions
89	None of the above. I am using a mouse model which no one else has ever used. Nobody can share the data with me.
135	funding for more remote cameras - less intrusive technique than trapping to obtain indication of presence and abundance
138	Note that my research relates to wildlife ecology and conservation and the techniques we use general have no effect (observational studies) or limited effects (e.g. capture and release, radiotracking) on animals. There is increased use of technologies that provide effective observational data (e.g. remote cameras rather than traps) but these do not necessarily provide all data required.
173	A hard question to answer for wildlife researchers not based in labs. Difficult to quantify in free-living populations.
210	Greater training in animal care and welfare
214	Better resource support to implement the infrastructure changes that would be needed (specific to the facility I worked in) to change the way that animals are housed, accommodated, handled and instrumented for experiments. Support from management to prioritise refinement and actively seek out ways to implement. More empowerment of staff working with animals to develop and implement welfare improvements. Mandatory institutional requirements for reporting on deliveries of the 3Rs from their researchers and funding of work involving animals contingent within institutions on continued excellence in this space.
301	Easier access to veterinary staff for procedures that involve anaesthesia. Or certification of researchers in the use of anaesthetics protocols and equipment. This specially for researchers with a science/biology background.
351	More investment in upgrading our animal facility and implementing systems like thermocouples for monitoring
360	None of the above
361	improvements in anesthesia delivery and animal care.
405	We are still trying to determine what 'adverse' effects are to a great extent but we are always trying to minimise these effects based on best judgement if no formal data has been generated.
529	A feedback system. Presently, if a researcher thinks of a way to minimise adverse effects, there is no system to consider nor implement a new system. The system is designed by lab heads and committees. The researchers are not listened to. There is no formal way to raise an 'opportunity for improvement'
559	better experimental design
566	allow publishing of negative results, so we can see what not to do
589	I already adequately minimise adverse affects on the animals I use
643	observational studies only

ID	Comment
684	Ditto for this question. I believe I do a good job in refinement, but can't speak for other investigators by choosing the "nothing" option.
717	Greater willingness of institutional ethics committee to adopt practices based on scientific publications that compare methods and objectively measure animal welfare
756	Institutional animal ethics policies , practices and people with expertise in research and a greater focus on helping investigators improve and less on simple approaches to ensuring compliance.

q32_INV$. What is the main obstacle to implementing the 3Rs in your own work? (Other obstacle)

No. of Comments 44

ID	Comment
19	Studying new anti-inflammation therapies requires using sub-optimal pain relief in disease models to avoid invalidating the study.
37	No viable alternative to answer the types of questions that need to be answered
47	Lack of models that read out the same information that is obtained from animal transplantation experiments.
48	willingness of colleagues to use animals & weakness of ethics committees
56	I do implement 3Rs in my own work
57	There is currently no technology that can replace professional detection dogs for use in wildlife studies.
64	Training of younger scientists in good experimental design
87	I do research into dog behaviour and cognition, so we need to use entire, living dogs. We opt to work only with pet dogs living in human homes, in order to improve welfare outcomes for the dogs and also to ensure that the life experience of the subjects is 'typical'. A laboratory dog will not be representative of the general dog population, so we use pets.
103	Historical practises of the demonstrating teachers
106	Better technology used by animal care services to assist with accurately documenting the number of animals being agisted. Better communication between animal care services and investigators.
129	working with endangered and cryptic species you are working with very limited numbers in the first place
134	Over-regulation encourages conservative practices. E.g. investigators do not want to change their approaches because it means more paperwork and submissions for approval.
149	Most of the work that I do involves sampling of wild assemblages to understand variability in the environment. There are no alternatives to physically sampling animals to get that information in most cases due to a lack of data to develop models, for example.
202	As above in Q29, other than with respect to reducing numbers where possible, but a lot of our research involves using currently commercially available products so there is no additional harm to animals as a result of the studies.
214	Institutional rot: lack of management and senior support; lack of empowerment of staff; lack of respect for domain expertise.
218	The need to use a whole animal to test our prototype vaccines.
245	Lack of availability of models for behaviour and intact brain studies

ID	Comment
255	Inability to answer the scientific questions with fewer/no animals.
298	Requesting a reduction in the number of wild animals is often unfeasible
316	Research on infectious animal disease cannot easily be replaced by an in vitro model. It must be undertaken in the affected species.
323	Bad relationship between animal house staff ad researchers
326	Insufficient time, too many other demands and no help. Ethics committees, funding bodies, institutions etc want to ensure that researchers implement the 3Rs, but provide no means of help or support.
328	lack of effective alternative options for testing of new vaccines and drugs and holistic studies of responses
335	Knowledge on how to obtain, use, and difficulties obtaining human brain tissue to replace my animal brain tissue. The main difficulty in replacing animals in my research is that I examine psychological factors and underlying neural mechanisms which require whole living animals so often the scientific questions cannot be answered yet with computer modelling, tissue or human research.
349	Requirement for complex, whole animal systems and infection models
387	colleagues and superiors not willing to compromise and prioritising results over welfare
391	pressure from supervisors to get results fast for my postgrad studies, time pressure for thesis submission date, working 70+ hours per week - I feel like sometimes I put my own needs before those of the animals
405	Lack of baseline knowledge
454	Culture of my research group/the field in general. I'm a postgraduate student. Unsurprisingly, my supervisors' attitudes towards handling animals tend more towards the traditional than mine do. As a result, I experience some pressure to perform experiments that I know are less refined, in the 3Rs sense, than they could be. There is also pressure to skip certain things, like doing proper power analyses in the planning stage (reduction), to make the work proceed faster.
529	If I think of a way to better improve our 3Rs, it remains as a thought. There is no way to lodge an idea. There is no system to have an idea considered.
531	In all my projects I need to examine an animal as a whole organism interacting with the environment and dietary treatments.
550	Information/strategies available are not necessarily useful when designing and implementing studies in natural systems with native animals
594	Lack of regulatory felxibility at local to federal levels. eg. some OTGR laws
611	We refine and reduce. We study complex neural processes and these cannot be replaced - at least not in the moderate future.
642	Experimental production studies need to reflect current practices and conditions. Current models cannot account for all variables.
649	unreasonable requests from the Animal Ethics Committee
660	Inability to replicate interplay between complex physiological systems in any in vitro or computer model
693	In one experiment, we used to anaesthetise our animals with pentobarb, as many of the other anaesthetics interfered with our results. since pentobarb is not available in Australia any more, i can not perform these studies or even compare other agents to pentobarb. hence these studies are being performed by collaborators overseas. this actually hampens the research as more animal colonies are being bred here and overseas just to do these experiments
694	Requirements of journals

ID	Comment
707	It is very difficult to model animal behaviour in vitro, therefore research into important behavioural problems will continue to rely on animal research.
712	lack of data sharing. Sometimes we could test our experimental plans with the data of others, and either show it is not worth pursuing, or show it is, and provide power calculation.
738	Not an option given the area of study - already optimised
744	Refinement techniques proposed by AEC are often detrimental to the quality of scientific data obtained.
785	I am looking at a multi-organ disease - at the moment we can't model that in an in vitro setting

Information Access

q33.10_INV$. If you were to seek information about the 3Rs, which of the following sources would you typically turn to? (Other)

No. of Comments 13

ID	Comment
47	The internet.....
57	We keep an eye on the development of e-Nose technology.
134	web
150	internet
202	Sate Government SVO for welfare
298	Definitely not a veterinarian- they generally do not understand wild animal systems
326	On-line searches of relevant websites and databases, such as those of the NIH
365	google/internet
531	Animal science professors and experts at my university and perhaps other universities as well
672	NHMRC documents
680	On-line institutional resources
700	The Code
717	International expertise on 3Rs

q34.9_INV$. Which of the following problems, if any, have you encountered when searching for information about the 3Rs in the literature/ databases? (Other)

No. of Comments 21

ID	Comment
43	Dont search databases for this information, it is readily at hand from local sources
46	In more than 20 years I have never felt compelled to search for information about the 3Rs.
81	Lack of experimental detail in publications

ID	Comment
103	Literature often describes why it is best to perform 3Rs but not the alternatives that are functional
106	Not enough literature written from the perspective of the investigator. Pragamatic approaches/advice would be welcome.
149	Inaccurate or impractical advice (e.g. to anaethetise larval fish rather than simply handle them to minimise stress which is clearly more likely to result in animal death than the handling in the first place and requires the handling to obtain weights before dosing with the anaesthetic anyway, as one example)
166	I don't even know where to start to specifically look for that information
186	-
202	No searches undertaken
240	I have not attempted to search as others have not attempted the type of studies we are currently conducting
316	Not searched.
323	Have not searched for information
326	Difficulty in searching the relevant databases. Some information is either institution- and/or country-specific.
391	Haven't looked - just go with lab practices
442	Incomplete description of methods or adverse events in publications
476	Poor quality of evidence i.e., opinion is frequently the basis for advocation, not evidence.
485	have not tried to search it
589	Colleagues rarely publish the problems they have encountered or mistakes they have made while working with animals
627	I havent searched
643	don't always cover aspects adequately
680	Surprisingly, most studies I've found which specifically aim to address a component of the 3Rs (especially for refinement) provide pretty clear evidence that the groups doing the work aren't actually very good at doing research involving animals. For example, studies that aim to investigate whether gavaging is safe reporting 50% mortality due to the technique after 2 weeks. Seriously? It's almost as if they reported the results to deliberately make gavage a banned technique.

q36.7_INV$. What are your preferences concerning the best ways to make 3Rs information available? (Other)

No. of Comments 10

ID	Comments
75	Should be mandatory via AEC
90	Develop a 3R introduction kit for AEC to distribute, include sources of additional information
138	Through institutional animal ethics committee and processes
326	Anything that is easy to use, not time-consuming and relevant
391	When writing ethics application
553	AEC
643	more specific compulsory questions in every ethics application

ID	Comments
700	Information circulated by the AEC
705	Nearly all applications should combine experiments with computational modeling of the system being investigated to maximize the information value of the data collected
734	Educate the regulators- APVMA, TGA and push for them to change policies. This will roll down to Pharmaceutical companies.

Training

q37.10_INV$. How have you received training on the 3Rs? (Other)	
No. of Comments	13

ID	Comment
137	I currently train students at two higher educational institutions in all animal welfare issues relevant to wildlife field studies, including the 3Rs.
149	Discussions with colleagues
202	AVAWE newsletter/emails (Australian Vet Association Welfare and Ethics special interest group)
279	Agriculture Teacher's Network (NATA and QATA)
433	No formal training but through own experience and scientific literature. Information and events organised by organisations such as the NC3Rs in UK.
442	Reading publications
582	ethics committee training
630	Online institutional training module
697	animal ethics committee member in previous job
717	Mandatory national training when working in other countries
748	I did my PhD training in the Netherlands and there you were required to talk to the animal welfare officer before putting in an animal ethics application.
754	Interaction with AEC (including AEC documentation)
765	website

q40.5_INV$. How would you like to participate in training on the 3Rs? (Other)	
No. of Comments	13

ID	Comment
43	Not necessary in my case
46	I would not. I would prefer that the NHMRC recognised the ESSENTIAL VALIDITY of conducting medical research studies on animals and concentrated on dismantling the vast bureaucracy that 'regulates' animal ethics in this country. It is an impediment to progress that adds nothing to animal welfare and negatively affects those the NHMRC claims to be concerned with: patients.

ID	Comment
75	I'm writing this here as there is no option at the end for further comment: I strongly feel that some AEC members require training, and that there is a lot of peer pressure from some committee members for too many projects to be granted approval. Veterinarians do not know everything about everything and are given too much power on some committees.
83	podcast
98	I find this whole survey really difficult because I nearly always work on small numbers of non-model native organisms. I don't do experiments, I only ever obtain dead animals as part of someone elses' research and I nearly never get anything useful out of training and teaching resources because they are so focused on rodent research where sample sizes and statistical power analyses are crucial - they simply are not for what I do and I often find myself filling in forms that do not fit my research at all.
137	Q 41. Some of the parts of the next question don't really cover my situation. Whilst most of my work is as a wildlife consultant, I also conduct training in animal welfare issues with two educational institutions. I personally don't need the training - I am the trainer!
188	I don't believe mandatory refresher courses are useful. As scientists, we are always discussing protocols with AEC personnel and colleagues with respect to the 3Rs. These discussions are much better than some re-hashed training that is offered over and over again.

ID	Comment
326	Now I understand the hidden agenda for this survey! It is about the NHMRC wanting to justify why they need to impose yet another form of bureaucracy on researchers, with the onus being yet again on the researchers and not the organisation! I recently applied for a US grant and experienced their requirements re. the '3Rs' in animal ethics applications. Although their system is more demanding in terms of the information required, it is in no ways better than ours. Despite receiving a list of databases for information, the searches were difficult and more often than not contained information that was either irrelevant or not useful. I spent several days just looking for information on 'refinement'. The alternative procedures were either technically challenging, involving surgery and therefore, more not less pain to animals, or inappropriate for the types of long-term studies I need to undertake. It was a complete waste of time. The reality is that, in most cases, PIs use the lowest numbers of animals possible because they have done the power calculations and know the minimum numbers required for a particular experiment, not to mention that they wish to reduce costs and researchers' work loads. Replacement is also rarely an option. e.g. if you are studying host immune responses to infection, it is very difficult to mimic the in vivo situation using cell culture models. In short, burdening researchers with more bureaucracy is going to have little to no benefit for animals. If you want to improve animal husbandry in medical research, I would 1) start by making animal ethics requirements the same across ALL institutions in the country. At present, every institution, and even committees within a single institution, have different requirements! 2) work towards lightening the bureaucracy (but not requirements), as this and not more red tape, will lead to better outcomes for animals. 3) provide researchers with support, such as easy-to-use on-line tools to address for ex. 3Rs issues (and I'm not talking about 100+ page PDF documents with everything from the legislation to useless links, like the information guides that the NHMRC provides for grant applications!)
399	increased access to statistical advice for experimental design phase to ensure meaningful results
421	We have to do training every 2 years, but once you have done it several times I think that the frequency could be reduced
424	direct (specific) interaction with animal welfare officer
594	Is there a problem with current avenues. Its cultural.
717	Non-institutional/national program - to ensure consistency across institutes and that 'best practice' is taught rather than fetishes of a local ethics committee

Promotion / Dissemination

q43.7_INV$. How do you communicate lessons learned about the 3Rs in the workplace and in the scientific community? (Other)	
No. of Comments	18

ID	Comment
46	As a mouse genetics laboratory, every member of the team is schooled in the practices of good animal husbandry, animal welfare and experimental design. They are also taught to understand the essential contribution of animal experimentation to medical research progress, to not be ashamed of this type of work, but equally not to be cavalier. Respect for animals is mandatory. We experiment with them because there is no other choice. It is a grim but honourable duty. In none of this do I ever discuss the 3Rs. They are infantile cliches that add nothing to intelligent debate and take as their starting point the view that animal experimentation is, bad, and ultimately, should be stopped. I fundamentally disagree with that notion, as does every researcher I know, and I suspect, the vast majority of the Australian public. It would be a refreshing change if the NHMRC were to show some gumption and take a leading role in the public debate and actually help, rather than hinder, medical research in this country.
47	I'm writing this here because there was no where else to say it! Generally, all my colleagues only use animals as a last option - we are always searching for ways to avoid using them. When alternatives become available, these are usually adopted very quickly. No one I know likes doing experiments on animals. This landscape means that although people don't couch there behaviour in terms of the three Rs, the truth is that most researchers subconsciously approach animal experiments in a way that fits with the three Rs mantra. For this reason, many of your questions in this questionnaire don't really make sense. That is, if you read these questions from the point of view of someone who really doesn't want to do experiments on animals, then asking them whether they consider reduction when they plan there experiments is non sensical. Thanks.
68	Mandatory annual reports to Animal Ethics section. However, those do not appear to be made freely available.
77	Discussions with lab co-workers, students and staff.
137	With students studying Diploma of Conservation and Land Management at two educational institutions.
214	Presentations/ communication to institutional Animal Ethics Committee on outcomes of animal studies.
326	Animal ethics applications
334	This is a badly designed survey with leading questions that make prior assumptions, e.g. consulting with a statistician is not necessary if I know more than the duty statistician!
336	I have left a lot blank as the 3 Rs dont apply to observing animals in the wild with cameras - and its frustrating to sit through mandatory training on animal ethics that is all about the 3 Rs but no training on the actual research I do is included. I was a minor investigator on a mouse study once but did not make major decisions about study design.
338	Online database for negative results, pre-clinicaltrials.org
402	In practice - By mentoring/training people in the planning/techniques we use. This is probably the place where the 3Rs are passed on to investigators most effectively as there are concrete examples of how we apply the principles.

ID	Comment
442	Training of my staff and students, and sharing with my research colleagues
468	this questionnaire is basically irrelevant to wildlife research-
533	Most often articulated in rebuttal response to either grants or manuscripts when reviewers ask for additional experiments.
648	Sometimes reviewers ask unnecessary replication of experiments that are already replicated and well established in the literature - I highlight that it's an unethical use of animals.
735	I have trained students in refinement practices implemented. I have also provided extensive positive feedback to animal facility staff who have suggested refinements that have been adopted into protocols that have improved experimental and animal welfare outcomes.
753	reports to animal ethics committee, animal house staff
773	Annual report to ethics committee

AEC Members

Demographics

q3_AEC$. What type of institution is your AEC primarily associated with? (Other)	
No. of Comments	13

ID	Comment
118	Government organization
133	University and State Government
191	Government organisation
192	Wildlife and unaffiliated researchers
204	The AEC I am on oversees research undertaken by 3 groups, 2 being Government research providers, 1 being a private organisation, as well as research being undertaken by independent licence holders not attached to existing AEC
233	Government
257	CSIRO
260	School
280	High School
317	Primary and secondary schools
375	High school
588	State Govt Research Institute
633	Government

q4.9_AEC$. What type of activity does your AEC review? (Other)

No. of Comments 10

ID	Comment
118	Agricultural production
155	Generation of GM rodents
215	Evolutionary biology, conservation biology
233	wildlife and animal research, no human research
235	Production and companion animals, UQ
285	Animal research.
303	Veterinary research Agricultural research
344	Ex situ conservation and ecology research
516	Biological research
620	Pest identification and destruction

q5.14_AEC$. What types of animals are subject to review by your AEC? (Other species)

No. of Comments 35

ID	Comment
73	Sheep
123	All native species
155	Reptiles
165	reptiles
174	Reptiles (wildlife species)
184	Any animals used in research. For example, cephalopods are missing from this list, wildlife from other continents are also included (e.g. Antarctica).
191	Lobster
203	Native mammals laboratory
208	All native and non native wildlife
233	all wildlife, native and non-native, marine and freshwater, including invertebrates
270	exotic animals, eg zoo species
307	Pigs
368	reptile
396	Reptiles
408	Pigs
410	Reptiles
415	reptiles
446	pigs
467	Reptiles
497	Horses sometimes.
514	horses

ID	Comment
520	Pigs
534	ferrets
605	Sheep , cattle , horses
609	Reptiles
620	Deer, bats
651	Horses, reptiles
653	lizards, turtles
656	Sheep (may also fall under livestock)
667	Native reptiles.
673	whales, lizards
678	sheep, pigs
763	Native reptiles, non-native mammals (eg foxes)
769	Pigs
784	Reptiles, invasive species (feral goats, foxes)

Experience

q7_AEC$. What is your current role on the AEC as per Clauses 2.2.2–2.2.6 of the Code? (Other)

No. of Comments 14

ID	Comment
97	Consultant Veterinary Officer
133	Category C both committees and Executive on University ACEC
157	Secretary
168	Executive officer
192	Exec officer
199	Executive Officer, non-voting
227	Advisor (non-voting)
257	e no vote
280	Order the toads and rats for dissections in school
320	Secretary (no voting power)
541	Executive Officer with no voting rights
542	Ex officio, non-voting
629	Animal Welfare Officer, non voting member.
678	Ex-officio as Chair of the management committee of the animal facility

3Rs in Practice

q18.7_AEC$. How are you generally assured of the scientific or educational merit of the applications that you review? (Other)

No. of Comments 18

ID	Comment
118	this question is difficult to answer because members of AEC bring different types of expertise. I would rely on, and ask questions of, the scientists and veterinarians on the committee, but bring expertise in the form of an independent and lay perspective.
121	I have enough expertise in a few areas but do rely on the expertise of others on the Committee
133	I have some expertise for certain applications and long experience of a wide range of applications but certainly rely a great deal on colleagues. Funding bodies can be reassuring if they don't have a direct vested interest.
165	Although I do not have 'expertise' per se, I believe I have a good feel for the merits of protocols and have no hesitation in voicing my opinion if I do not think it has merit.
215	Seek out information in the literature for relevance of work/ background; consideration of articulation of need and impact/ importance of the work through application process
321	Veterinarians are critical to committee for identifying scientific merit when using animals.
375	Ours are non-harmful use of animals in schools, for education.
396	I look for similar studies online
441	Sometimes I'm not assured of the scientific merit, in which case I ask for further explanation.
453	questioning of researcher, external review if required, literature
516	Via the aims indicated in the application - are these of merit, are the methods likely to achieve the stipulated aims.
528	I am on 3 AEC commitees and different criteria are met at each
634	Internal peer review
639	head of school authorises
665	I rely on the expertise & integrity of Cat B members with the technical aspects and then make a judgement.
763	Note: For first point i.e. 'I have sufficient expertise . . . ': For somethings I do (thanks to training etc provided by the AEC). On other occasions, I rely on the other methods indicated, particularly the expertise of the Cat A & B members when well explained.
769	Members selected for their experience and expertise in their category. Working together on AEC leads to knowledge of individual strengths
788	I would prefer that independent external review occurs for projects that are not funded by, e.g., ARC, NHMRC.

q19.8_AEC$. How are you generally assured of the competency of investigators in applications that you review? (Other)

No. of Comments 16

ID	Comment
118	If there were any question on this point, the committee would seek more information.
126	There is an assumption that the investigator is competent. I was not aware that it was the role of the committee to question the competence of the investigator
133	University ACEC requires a range of reports which inform the committee re researcher competence (breeding; adverse events, use of animals etc)
143	I have no way of being assured of the competency of investigators
306	Generally I do not agree that there is assurance.
321	It is not possible to 'assure' practical competency without direct visual assessment. Therefore this is delegated to AWO/other experienced staff. AEC can assess training methodology.
396	It can be very challenging assessing competence of investigators if we don't meet or see them.
408	In-house training program and regular yearly checking of skill set
446	Visual assessment
453	information from other committee members that know the applicant
516	Prior experience listed in the application.
539	Competency check sheets are used by those who train but AEC does not see these sheets. It is an area of concern for me unless AWO and or Univ committee member has confirmed at a meeting competency. Some investigators go further than ticking the box on applications and explain how competency will be ensured but not all.
620	Quality of the application (especially statistical validity, suitability of the proposed techniques)
629	sometimes not assured at all especially with respect to field work.
654	When necessary to send the applications back to the researchers to explain or improve application...this is done before any approval is given and can be done more thatn once.
665	Regarding own knowledge I rely on past applications, annual reports, inspections & adverse incidents reports

Enablers / Barriers to Implementation

q28.11_AEC$. What do you think are the driving factors for using 3R methods? (Other)	
No. of Comments	4

ID	Comment
118	This one is difficult to answer, but main drivers are outside ones - eg overarching driver is the legislation and government policy. Combined, these hamstring AECs and act as a type of 'lowest common denominator' for researchers. Unless the legislation is considerably tightened researchers will generate research that furthers their careers and only consider the wellbeing of animals to a limited extent. Currently there is no incentive to make the 3Rs operational. As long as researchers can demonstrate how the 3Rs have been considered and justify the use of animals, their project will go ahead. It is rarely a case of whether the project should go ahead, but how it can go ahead.
133	Peak welfare bodies - International standards
304	Good scientific practice
474	best welfare outcomes

q30.10_AEC$. Which of the following do you think would best enable investigators to use fewer animals? (Other)	
No. of Comments	19

ID	Comment
93	I don't believe that it is possible to replace animals in all experiments, e.g. those that are studying interactions between different organs or different systems, such as the nervous and immune systems.
118	Also important is a data base of animal research which does not result in a publication. eg if an experiment has not succeeded it is unlikely to be published, meaning that the same experiment may be duplicated, using more animals in the process.
132	The research concerns the ecology and life histories of wildlife so artificial tools will never replace the use of free-living wild animals in this area of research.
133	Education of funding and peer review bodies. As I understand it from ACEC related anecdote these bodies tend to focus on standard animal models in proposals and are not keen to approve of novelty. This is a barrier for researchers willing to try new 3R's related methods.
143	For much research, there is no alternative but to use animals - e.g. grazing research of cattle, movement of native animals in the landscape
224	Given that many of our applications are studies of the animals themselves (ecology, environmental science), I do not think that it is realistic to think in terms of 'without using animals'.
257	I believe that there will always be a need for animals in scientific research
317	Public pressure to stop animal experimentation.
321	Acceptance that animal suffering is more important than human medical advancements.
441	I develop computer models of brain function. Developing these models explicitly requires animal experiments to constrain the models, but having more predictive computer models can't ever replace testing in animals.

ID	Comment
444	None of the above. Unfortunately, isolated tissues or cell culture cannot replicate the complex interplay between organs and environment that whole animal experimentation can. Furthermore, even the best computer algorithms can only replicate what we already know and therefore cannot uncover new knowledge.
516	Animal behaviour type research requires the use of live animals - but an increase in less intrusive, more field based techniques rather than laboratory, manipulative experiments would be an improvement (i.e., refinement, more so than replacement, with reduction where possible.
565	I don't think that there is a way to enable investigators to achieve scientific/educational objectives without using animals; I think animal use is essential.
567	Although it should be recognised that sometimes animals cannot be replaced.
620	Note that mathematical simulations (computer models) must be validated against animals before they are useful. Tissue and cell cultures have limited applicability in many biological system investigations (e.g. wildife censuses, agricultural studies)
634	Not very relevant for environmental studies which require field work
673	Although it's plausible that animal use could be greatly reduced by improved cell culture and in silica modelling, I cannot foresee any plausible replacement for the use of animals in physiology and particularly neuroscience experiments.
678	I do not think complete replacement is possible across medical research.
769	AEC projects only approve research projects for animal production and death is never an endpoint. All procedures follow legislation and welfare codes

q31.13_AEC$. Which of the following do you think would best enable investigators to use fewer animals? (Other)

No. of Comments 7

ID	Comment
164	Please note, that usually investigators too few animals according to statistical power analyses.
174	a. More use of human volunteers and human clinical trials without as many prior animal pre-clinical trials. b) In general, investigators already adequately minimise numbers of animals required for biomedical or animal production or veterinary studies.
321	Acceptance that animal suffering is more important than human medical advancements.
364	Regarding mouse based medical research. Researchers usually pursue the most efficient methods for obtaining their results. Animal work is difficult and costly and usually is only done when needed. Educating researchers about alternatives is the most powerful solution but typically won't substantially reduce the OVERALL NUMBER used because there are infinite questions that will be pursued. Overall numbers are principally limited by resources. So actively reducing numbers just reduces research, in which case the ethical argument is self-defeating. The ideal solution is to do more, higher quality research with the same number of animals.

ID	Comment
516	I have been answering these questions in relation to straight biological research (my area of involvement) - clearly my answers would be different if I was suggesting ways to reduce the numbers of animals used in medical trials.
542	More publication of negative results, preventing inadvertent repetition of protocols that have already been shown to not work
673	Researchers have huge incentives to use non-animal models that yield equally valid scientific data; animal use comes with huge costs, not just financial but also in terms of speed, efficiency, expertise requirement and complexity. I am convinced that researchers already adopt the technologies that are most compatible with efficient achievement of scientific goals.

q32.9_AEC$. Which of the following do you think would best enable investigators to use methods that better minimise adverse effects on the animals they use? (Other)

No. of Comments 8

ID	Comment
73	Assurance that high quality data can still be generated using the modified methods
133	Education of researchers in the range of averse events for species involved and how to minimise these.
143	Don't know
165	better reporting of null results to prevent repeats of already tested substances/studies
215	Mandatory institutional requirements for researchers to implement 3Rs and excellence in animal welfare to access funding/ resources to carry out animal studies. Mandatory reporting requirements of peer-review journals for animal welfare considerations and how study design/ execution aligns with the 3Rs. Changes in dogmatic thinking. Actually considering how treatment groups, interventions and other aspects of experimental design achieve the objectives and not just going through the motions (dogmatic use of 'control' group animals without any question as to what these animals add to the study or how data from these animals will be used is a perfect example of this).
321	Increased input by veterinarians on ethics applications both prior to and during AEC meeting.
364	Advice from AWO's and other researchers sharing information can constantly drive very substantial improvements in this space. Most important is that it be delivered in a pragmatic way - administrative burdens reduce co-operation and interaction between investigators and AECs.
673	I think that the pressure for productivity (reduced PhD scholarships, the huge workload on senior researchers, the poor availability of funding) are probably barriers to refinement; it's hard for people to take time out from their productive research stream to invest in training or to attempt to modify experiments that were already working OK.

q33_AEC$. What do you think is the main obstacle to implementing the 3Rs in the work that your AEC reviews? (Other obstacle)

No. of Comments 25

ID	Comment
80	Researchers can be very reluctant to change a method they have used previously even if a more humane option is available. They worry about the time to establish a new technique or if the change will result in different data than the previous method. Even minor changes suggested by AEC can result in backlash from researchers as it can be seen as interfering in how they design their experiments.
118	Main problem is the legislation and its 'tick the box' approach that does not provide sufficient incentives to implement 3Rs. There should be a separate funding stream for research that does not involve animals.
132	Nature of the research: ecology and life histories of free-living wildlife,
133	I feel my ACEC does a good job with the 3R's and the only way to improve this would be to formalise the approach to this issue. In my opinion an ACEC has limited resources of expertise and time and must, except where an issue is obvious to the committee, accept much of a researchers assertions.
167	lack of emphasis by researchers
193	lack of education within University departments to the importance of the 3Rs
215	Unwillingness to change. Lack of impetus to change. Awareness of the 3R principles but no apparent desire to implement. Lack of institutional drive to foster culture of change. A bit of an attitude problem among researchers (perceive questions from the AEC as a challenge) .
306	Little State Regulator oversight
317	Attitudes.
321	Insufficient Cat A and C members within AEC.
346	The inflexible nature of approval requiring experiments to be terminated if they do not go precisely as outlined in the application.
364	Ineffective communication between AECs, institutional support groups and investigators.
369	Lack of appropriate knowledge of experimental design and statistical analysis by investigators
375	We teach agriculture, live animals are a good thing for us. We could replace them with models but that wouldn't be giving the students useful experiences.
396	One is simply that investigators have a skill set eg oral gavage. They pursue projects using these because they are good at them and institutionally rewarded. Also the drive to publish.
444	Lack of knowledge around improved techniques.
497	Combination of things including: research for the sake of research (students having to complete a project for example) resulting in laziness/lack of care, lack of knowledge of different (3R) approaches, insufficient/inadequate supervision and mentoring, lack of willingness to challenge established approaches, resistance to change from some older researchers (usually supervisors), and time pressure resulting in insufficient planning/researching prior to designing project. In some (rare) cases lack of care by some researchers (they are 'only fish/mice' attitude) affecting other researchers and students.

ID	Comment
532	Investigators see the 3Rs as a formality for ethics approval and not an integral component of the research design and analysis. I feel this is mostly because groups are able to obtain significant funding prior to approval of their study design. Committees then feel obligated to facilitate the research rather than place barriers despite the fact that 3Rs is not assessed in most funding applications and the research methods are most likely glossed over. However at the ethics committee level far more description is expected and scrutinised. A this point though, ethics committees are seen as obstructionist and are dismissed by investigators that think they know better. As a result, the investigator with their large funding has the power in the relationship, and for the sake of the committee throws some text that looks like consideration of the 3 Rs so that the committee accepts an ill-considered submission, and chooses to focus on areas that they feel more powerful to review - animal welfare, which does come under refinement but reduction and replacement is largely ignored
539	Time available for the Project Supervisor to review an Investigator's application/project and investigators leaving AEC applications as 'last minute'. Investigators not really understanding what the AEC is most concerned about i.e. as opposed to what is required in a grant (this is improving). Perhaps the AEC application form itself.
541	an unwillingness to change from procedures that they have used for years
619	lack of interest by investigators - most totally focussed on their research - animals are test tubes with tails
620	Studies of ecology and many studies with agricultural animals (e.g. breeding/reproduction, disease and nutrition) must be done with animals and so replacement is not an option. Often there is limited, or no, capacity to reduce the number of animals involved in an experiment (e.g. censuses clearly require a count of all, or at least a substantial proportion, of animals in a population), and experiment designs which reduce the number of animals used do this at the expense of increased time in the expriment and exposure to lengthier treatment conditions for those animals which are used. Effects due to changes in season, age and physiological status can also negate the use of some designs which would otherwise reduce the number of animals used. Replacement is not possible when working with animal populations or investigating whole-animal questions or studying interactions between animals. However, more awareness of experimental design methods can help to improve refinement.
621	insufficient ethical training
661	pressure to publish or perish
671	The 3R's should be of paramount importance when evaluating any study involving the use of animals

Information Access

q34.10_AEC$. If you were to seek information about the 3Rs, which of the following sources would you typically turn to? (Other)	
No. of Comments	15

ID	Comment
118	There is much good material on the Internet, especially from the UK - eg https://www.nc3rs.org.uk/the-3rs .

ID	Comment
123	Google
133	Internet search
183	independent organisations like ANZCCART
229	Overseas websites
321	Veterinarian
369	PREPARE and ARRIVE guidelines
467	Government Dept responsible for oversight of animal welfare
497	Internet. Would use 3Rs database if there was one (not aware of any and if there is I don't where it is and whether I can access it). I am also not aware if I have access to scientific publications (not being University staff member or student).
516	Publications from the animal welfare government department.
532	The UK NC3Rs
562	Internet search
621	code of practice
661	google search
678	Search of internet for publications and resources

Training

q36.10_AEC$. How have you received training on the 3Rs? (Other)	
No. of Comments	12

ID	Comment
126	an overview of the principals in one lecture
133	Code of Practice: ACEC discussion: internet
174	Self-motivated ongoing enquiries and CPD.
285	Quality Assurance Management and Auditing training
306	Overseas veterinary training in laboratory animal medicine and laboratory animal science.
321	Self directed reading
440	AEC online induction modules
516	Training when joining as a member of the ACEC.
562	Internet search
605	Grad certificate animal welfare (Monash university) MANCVS. (animal welfare) andBVsc
661	as component of institutional employment
763	Discussions with other AEC members

q39.5_AEC$. How would you like to participate in training on the 3Rs? (Other)	
No. of Comments	5

ID	Comment
229	Institutional networking
306	State Regulator and NHMRC training
396	I would like our AEC actively doing CPD together - even a 15 min presentation at each meeting.
497	1. Live webinars would be beneficial as our AEC budget is limited and we are not located near a big city. Would also encourage questions/discussions, and possibly networking, which is not possible with online modules. 2. Workshops/networking opportunities at least once a year with other AEC members, e.g. 1/2 to 3/4 day workshops, with topics to be agreed upon beforehand by participants, for discussion/networking. Would require facilitation by experienced/knowledgeable people. Would need to be groups that are not too big otherwise would not be manageable. Could target similar AECs encountering similar issues e.g. smaller Universities etc. 3. Practical Courses, e.g. on application of 3Rs, animal welfare (with practical example not theoretical approaches), latest research/euthanasia techniques, etc.
562	Internet search

Institutional Representatives

Demographics

q3_INS$. What is your institution type? (Other)	
No. of Comments	29

ID	Comment
61	School
70	High School
88	Private School (non-Government)
92	School
114	Local Government
226	MRI
261	High School
262	Public Secondary School
263	Education department
264	Public School
265	school
272	Catholic Girls High School
273	state highschool
275	Environmental Education Centre
276	State School

ID	Comment
278	Secondary Education
284	High School
310	Secondary School
318	Private School
353	High School
427	Private college- P-12
527	NGO
581	Private school
583	Independent School
587	Independent School
590	School
593	School
647	Private School
782	School

q4.9_INS$. What type of activity involving the use of animals is conducted at your institution? (Other)

No. of Comments 5

ID	Comment
114	Pest animal surveys
261	Dissection
263	Displays for students
284	Ducks in a Sustainability Precinct at our High School
677	None. We use a third party for animal studies.

q5.14_INS$. What types of animals are used at your institution? (Other species)

No. of Comments 18

ID	Comment
70	Crayfish
88	Cane Toads
92	Chickens
112	Pig
113	Decapods
114	Feral Deer
117	sheep mini-pigs
127	All native and introduced wildlife
139	pigs
264	Toads

ID	Comment
275	Reptiles and Echinoderms
277	Bees
295	Invasive species
353	Cane Toad
525	other small mammals
537	Ferrets
603	Sheep
745	Other rodent species

q6_INS$. Which of the following best describes your position at your institution? (Other)

No. of Comments 83

ID	Comment
55	Animal Ethics Officer
59	Animal research Ethics Coordinator
61	Head of Science Faculty
66	Animal Welfare Officer
70	Lab manager
74	Department Head
84	Field Team Member
88	Lab Manager
92	Head of Pre-Preparatory Centre
95	professional staff
104	researcher
112	Medical Science Liaison
113	Animal Welfare/Veterinary Adviser
117	Head of School
127	Executive officer
130	Animal facility manager
139	collaborator mice research, associate of research institute, prior ARRP of DPI panel 5 years, replacement advisor
153	Senior Animal Ethics Officer
154	Ethics & Integrity Manager
178	University veterinarian
200	Research ethics team member
201	Supervisor within Research Office
220	Executive Officer
226	Research Director
236	Animal Technician
247	College Research Committee Chair Project grant Chief Investigator
261	head of department

ID	Comment
262	Head of Faculty
263	Science operation officer
272	Teacher
273	teacher
274	Head of Faculty
275	Teacher
276	Head of Department
277	Teacher
278	Ag teacher
281	Teacher
284	Teacher
293	Animal Welfare Officer
297	Animal Welfare Officer
300	Animal Welfare Officer
310	Science Operations Officer
314	Principal Veterinary Officer
318	Scientific Officer
325	Production Manager
348	Coordinator
353	Laboratory Technical
370	Manager of Animal Facility
381	Researcher
383	Animal Tech
413	Secretary of the AEC
427	Laboratory Technician
428	Research officer
435	Ethics Manager
450	Facility manager
466	Facilities and Laboratory Coordinator
469	Ethics Coordinator
477	Technician
495	Animal Technician
510	Senior animal technician
525	senior technician
537	BRF Area Supervisor and Acting Deputy Manager
540	Animal Facility Manager
569	scientist
571	Senior Ecologist
575	Senior Ecologist
581	WHSO
583	Head of Junior School
587	Head of Faculty
593	Department head

ID	Comment
599	Technician
603	Manager of animal area
624	Head of Science Department (school)
647	Vice Principle
652	Animal Technician
659	Veterinarian
664	educator
668	Administration Officer
674	Training manager
725	A/Prof high end animal user and board member of small animal imaging committee
727	Post Doc
770	Research fellow
782	Agriculture teacher

3Rs in Practice

q8.13_INS$. How does your institution currently support and facilitate the implementation of the 3Rs? (Other)

No. of Comments 8

ID	Comment
92	Chicken hatching program
113	Institution has worked to ensure high standards and has held AAALAC accreditation status since 2015. Regular newsletter; face to face training and project auditing; specific standardised animal wellbeing monitoring package including training video; portable anaesthetic machine for use outwith facilities; veterinary anaesthetist on staff for training and advice. AEC resolutions for best practice (particularly animal housing standards); Licence holder directives to increase scrutiny of use of animals in teaching, with particular emphasis on applying the 3Rs. Sharing resources Online and didactic training available free for use by other institutions; Regular Institutional internal reviews of processes and practices. including use of animals in teaching, use of rabbits in research, Application of 3Rs to breeding projects. Review of education and training standards in Australia and New Zealand, in collaboration with ANZCCART. Extensive compendium of SOPS for animal procedures and practices.
139	refinement observed, reduction policy in practice is limited to statistical advice, some sharing of animal tissue replacement - not considered
189	Training of AEC members would be really good as their knowledge in certain case is insufficient
263	No we do not run the 3R's.
277	None
284	I don't know which applies, but we allow students to assist in the maintenance and upkeep associated with breeding and running ducks on campus.
495	Im not sure

Enablers / Barriers to Implementation

q10.10_INS$. Which of the following would best enable investigators to achieve their scientific/ educational objectives in the future without using animals? (Other)	
No. of Comments	22

ID	Comment
36	Would need to ask investigators. I would have chosen more than 3 options here if possible.
59	A desire to change 'what we've always done'
66	Funding for awards for investigators implementing the 3Rs, particularly HDR students
92	NA
112	N/A teaching modules only
114	Enabling non-invasive surveys to be excluded from AEC approvals
127	Improved technology for wildlife surveys
189	Tox assessment is to be done on intact organisms at the certain point. Replacement of animal models is not in sight
265	Program would not be possible without animals
269	None of the above, in rural and veterinary industry animals are essential for demonstration and of particular skills necessary to provide services necessary in many animal husbandry industries.
273	none. Agricultural science requires students to complete livestock work.
276	Animals are currently used in industry based training for future employment in the industry.
277	None
284	Doesn't seem like this survey si geared toward Schools breeding and running ducks, like us.
290	Changes in regulatory requirements for new chemical and biological entities required downstream in drug approvals
302	complex question - not easily answered.
318	Current curriculum requires dissection as a desired experience for students. There is nothing else.that can realistically provide that experience.
450	development of technology that would reasonably replace animals
459	2 additional ways to achieve what is required: 1 - A centralised national database / system which could support investigators to implement the 3Rs (replacement) 2 - Address the 3Rs in the funding / grant application stages (prior to seeking ethics approval). Once the funding has been awarded, it is difficult for the AECs to say no to the researcher proposed. I believe the responsibility lies with the funding agencies first, then the institutions. This needs to be addressed at a higher level and nationally rather than per institute.
583	Excursion out of school
647	virtual reality
674	non of the above

q11.13_INS$. Which of the following would best enable investigators to use fewer animals? (Other)

No. of Comments 10

ID	Comment
36	would need to ask investigators
66	NB reducing funding for in vivo research is already having an effect however the result is no research being done so not exactly a good outcome
74	Pre-clinical research is already criticized for too few numbers. More randomisation and blinding is required. This may require more animal numbers. The number of animals to get a definitive result is what is important.
112	N/A teaching use only
220	Greater willingness from publications to accept data from non-animal approaches
277	None
284	Again, this question has no relevance to what we presently do with Ducks at our High School
359	Better databases and information technology services to identify available animals and permit sharing of animals
459	2 additional ways to achieve what is required: 1 - A centralised national database / system which could support investigators to implement the 3Rs (reduction) 2 - Address the 3Rs in the funding / grant application stages (prior to seeking ethics approval). Once the funding has been awarded, it is difficult for the AECs to say no to the researcher proposed. I believe the responsibility lies with the funding agencies first, then the institutions. This needs to be addressed at a higher level and nationally rather than per institute.
652	More education and awareness on the benefits and success of cryopreserving a strain *and* not continnuing to maintain the strain anyway 'just in case' - cryopreserving alone is enough.

q12.9_INS$. Which of the following would best enable investigators to use methods that better minimise adverse effects on the animals they use? (Other)

No. of Comments 6

ID	Comment
36	Would need to ask investigators
66	Honest and thorough reporting of animal methods, adverse events and failures in publications. So many times when new models are attempted for the first time in a new institution, many animals are used in model development and problems solving because the published model didn't report in enough detail or outline adverse events. Sharing of this information between groups would also help
113	Education on, and demonstration of, other methods; Change management- help to change to alternative methods and support forimplement e.g professional (e.g veterinary) support to manage transition to new methods
284	Ok, this is becoming a waste of my time.
359	Better funding for higher levels of training and utilisation of refined technologies

ID	Comment
459	2 additional ways to achieve what is required: 1 - A centralised national database / system which could support investigators to implement the 3Rs 2 - Address the 3Rs in the funding / grant application stages (prior to seeking ethics approval). Once the funding has been awarded, it is difficult for the AECs to say no to the researcher proposed. I believe the responsibility lies with the funding agencies first, then the institutions. This needs to be addressed at a higher level and nationally rather than per institute.

q13_INS$. What is the main obstacle to implementing the 3Rs at your institution? (Other obstacle)

No. of Comments 10

ID	Comment
59	lack of desire/pressure to get funding/pressure to publish
113	Resistance to change -too embedded in custom and practice. 'This is the way we've always done it and never had a problem' Don't see the potential benefits. Doubt that improved practices will achieve comparable or more reliable results.
139	Animal based researchers only know how to perform animal based research. They often cannot suddenly learn a new replacement technique which may be very far from their ingrained method and are often not interested in the problem of 3Rs
153	Publication restrictions for researchers
160	All of the above
178	Lack of understanding/willingness to accept impacts of experimental procedures
241	lack of willingness from the investigators to apply 3R along with the time and other duty restraint for the investigators
302	Clear evidence and precedent that 3R experiments will deliver scientifically valid results that can be interpreted and have direct impact in are of study
318	Curriculum requirements
587	no real substitute for using the living organisms in conducting trials

Training

q14.7_INS$. What training does your institution offer on the 3Rs? (Other)

No. of Comments 7

ID	Comment
117	training through practice - ie learning through feedback
139	part of each of these is true, however degree of involvement is optional, and the institute has a heavy tradition of animal-based research
277	None

ID	Comment
295	Providing international websites as there is currently no real support in Australia. Governing bodies provie guides / legislation that we should be implementing the 3Rs whereever possible but offer no funding, mentoring, databases to support 3Rs research in Australia. We have to provide websites internationally like the NC3Rs (https://nc3rs.org.uk/funding) who provide not only information on their website but also funding. This needs to happen in Australia if we want to progress with the result of the world.
297	As part of animal ethics approval, the 3Rs must be considered.
495	Im not sure
745	Annual Animal Ethics and Welfare Seminar (in addition to online and f2f training)

q15.8_INS$. Who is targeted to attend 3Rs training? (Other)

No. of Comments 16

ID	Comment
112	Medical training workshop coordinators
114	Pest animal management staff
139	All. But optional to such a degree, that is simply reflected in the rising number of animals used
265	everyone involved in the program
269	Our institution doesn't offer 3Rs training.
273	teachers
277	None
281	N/A
284	Refer to previous answer to Q14
318	No one
450	none
569	staff
581	High School Science teachers
583	Teachers
647	Science Teachers
659	unsure

Promotion / Dissemination

q16.10_INS$. How does your institution promote the 3Rs? (Other)

No. of Comments 19

ID	Comment
36	through AEC reviews and previews
66	training, in AEC applications and review by the AEC

ID	Comment
112	medical teaching only - institution policy describes 3R principles and approval process requires adherence
113	Promoted through annual 3Rs award (which includes assessment of publication impact and adherence to ARRIVE guidelines) and is awarded as part of the Institution's 'Research Excellence Awards'. Also promoted extensively through mandatory and optional education and training, AEC resolutions,
127	AEC application form
153	Inclusion as criteria on AEC application form.
160	Training
178	Information provided on Research Ethics website
241	Art piece inside that facility that states 4Rs (Refinement, Reduction, Replacement and Respect) Protocol application asks whether 3R has been considered
269	We use an industry based and best practice approach to the use of animals within our institution. We also use a common sense approach to the use of our animals. As many of our students come from rural and farming backgrounds students are taught the basic skills in how to best manage the animals husbandry practices necessary for ethical and humane production of the enterprises that students may find themselves employed in.
277	It does not
290	annual award for 3Rs
295	I have concerns about the expectancy of the above: **reporting of null, neutral results - journals will not accept these types of papers. The journals that do accept these types of results cost a lot to submit to the journal. **If there is an institutional policy requiring compliance with the ARRIVE guidelines when reporting - this does not mean anything if the journals do not accept this and have limited word count. *** NHMRC should consider setting up a database (similar to what occurs in Clinical Trails) where all animal based studies (or at least NHMRC funded studies) need to be registered prior to commencement and provided information at the close of the study. This would go along way to supporting the 3Rs and implementing the NHMRC Best Practice Methodology Guidelines.
302	Annual award for 3Rs; identified expert advisor to AEEC and attends all meetings.
427	Part of lesson content
495	Im not sure
587	inclusion in animal ethics applications
745	Annual Animal Ethics and Welfare Seminar
755	We find that many of these recommendations do not align with the realities of research e.g.points,3,4,5,7

q17.3_INS$. How does your institution reward the development, adoption and implementation of the 3Rs? (Other)	
No. of Comments	6

ID	Comment
69	As integral part of AEC applications, researchers receive approval to conduct research using animals by considering the 3Rs.
112	N/A teaching modules only
113	To accord appropriate status to the importance of the 3Rs award it is presented as part of the Institution's 'Research Excellence Awards'.
269	Demonstration of best practice methods for animal production enterprises.
281	N/A
297	This is factored into our AEC submission process.

q18.5_INS$. How does your institution publicly communicate the use of the 3Rs by the institution? (Other)

No. of Comments 7

ID	Comment
66	Website and LibGuide (pending)
69	The 3R considerations and requirements for researchers and AECs are publicly available on the institutional animal ethics website.
160	Via the animal ethics website
269	We prepare and exhibit animals for the observation of our general public population.
459	We don't currently publicly communicate animal research projects at all. Something that we are planning to change and communicate more broadly with the public. This would include the 3Rs
495	Im not sure
587	part of the approval form submitted to AEC