ANZCCART

2022 Conference PROCEEDINGS

2022 ANZCCART Conference Proceedings

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Special acknowledgement to Elizabeth Mason for her creative work and formatting skills.

Developing a 3D chronic wound model to replace current would healing models for testing new wound healing therapies, in particular novel pharmaceuticals

Professor Alastair Sloan and Dr Rachael Moses, University of Melbourne

Outline

To understand the cell and molecular processes leading to the healing of wounds and assess the efficacy of novel therapeutics designed to enhance wound healing, suitable models are required. There are numerous animal models developed for such studies, however there is not one stand out preferred model and all are ethically challenging, stressful for the animal and demonstrate significant experimental variability. What is required are 3D tissue like model systems which can be used to replace these in vivo studies which are reproducible, high throughput and can be used to assess novel therapies. This presentation will look at the development of one such system and address the general need for a robust 3Rs, in particular a replacement approach to research in this and other regenerative medicine/biology fields.

Learning Objectives:

At the end of my talk attendees will understand:
(i) the current key challenges in wound healing and regenerative biology
(ii) how well designed non-animal 3D cell culture systems can be used to effectively assess novel clinical therapies and understand key cell/molecular processes during tissue repair

Summary:

This project will develop a 3D model which is representative of human skin architecture to replace rodent models to assess wound healing properties of novel therapeutics, including pharmaceuticals and to represent chronic wound healing scenarios. The model will contain fibroblasts and keratinocytes from the dermal and epidermal layers of the skin and will incorporate the strong crosstalk that occurs between these cells. A large proportion of cell-based research utilises products derived from animals, including the matrix required for establishing a 3D structure, which is derived from mouse sarcomas. This project will establish a 3D model using only animal-origin-free products with a 2-fold benefit, the replacement of animal-derived products, along with a resultant reduction in variability across experiments

Replacing animal models with human models to study neuronal connectivity alterations in schizophrenia

Dr Maria Di Biase, Professor Alice Pebay, A/Professor Andrew Zalesky and Dr Maciej Daniszewski, University of Melbourne

Outline

Schizophrenia is a debilitating brain disorder, marked by pervasive abnormalities in perception, mood, and cognition. Thanks to magnetic resonance imaging (MRI), we can see long-term changes taking place in the brain when someone has schizophrenia. However, these images are not detailed enough to capture changes at the level of microscopic cells. To overcome this challenge, we can combine information from MRI—to map large changes in the entire brain—with new capabilities in stem cell technology—to map small changes in cells—in the same group of individuals with schizophrenia. This approach can replace current animal models and lead to new treatments that directly target the sources of brain changes in people with schizophrenia. In this talk, I will provide a brief primer on what we have learnt from neuroimaging studies about brain changes in schizophrenia and discuss the potential of human stem cell disease model systems to replace animal models and improve our understanding of brain changes in schizophrenia.

Learning Objectives:

At the end of my talk, attendees will understand:
1. Key changes in brain structure observed by neuroimaging in individuals with schizophrenia
2. The key advantages of stem cell disease models (miniature developing brain-like structures that can be studied in a dish) over current animal models

Paper for Proceedings:

Schizophrenia is a debilitating psychiatric disorder that currently affects ~90,000 Australians. Despite the high prevalence and burden of schizophrenia, major pharmaceutical companies, such as Pfizer, Lilly and AstraZeneca, have reduced schizophrenia-related drug trials by 59%. The primary reason for this is a failure of research to identify new biological targets for drug development. In this talk, I will discuss recent work that aims to address this gap by pinpointing brain-based biomarkers in schizophrenia (see below list of research articles that will be summarised). I will then describe the potential utility of induced pluripotent stem cell studies to provide new scientific knowledge about the poorly understood pathways and cellular mechanisms driving the earliest signs of disease manifestation in schizophrenia. Collectively, I will demonstrate how these human-based platforms may overcome certain limitations inherent to animal studies and can ultimately support critical drug discovery efforts in schizophrenia.

This 15-minute lecture will summarise key research findings from the below sources:

1. Di Biase MA, Geaghan MP, Reay WR, Seidlitz J, Weickert CS, Pébay A, Green MJ, Quidé Y, Atkins JR, Coleman MJ, Bouix S, Knyazhanskaya EE, Lyall AE, Pasternak O, Kubicki M, Rathi Y, Visco A, Gaunnac M, Lv J, Mesholam-Gately RI, Lewandowski KE, Holt DJ, Keshavan MS, Pantelis C, Öngür D, Breier A, Cairns MJ, Shenton ME, Zalesky A. Cell type-specific manifestations of cortical thickness heterogeneity in schizophrenia. Mol Psychiatry. 2022 Feb 10;. doi: 10.1038/s41380-022-01460-7. [Epub ahead of print] PubMed PMID: 35145230.
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Assessing human kidney organoids as a replacement for mouse models of renal fibrosis

Dr Alex Combes, Professor Nikolic-Paterson and Dr Julie Moreau, Monash Biomedicine Discovery Institute, Monash University and Monash Medical Centre

Outline

Kidney organoids derived from adult tissues or pluripotent stem cells have been used to study various kidney diseases with a strong genetic component. However, the potential to investigate common disorders without clear genetic associations, such as acute kidney injury and chronic kidney disease are only just beginning to be tested. Although human organoids are a reductionist model, they contain clinically relevant cell populations that may help to elucidate human-specific pathogenic mechanisms. Thus organoids may complement or replace animal models of kidney disease. This presentation will review whether kidney organoids are suitable models for complex kidney disease and discuss their potential to accelerate the development of new therapies.

Learning Objectives:

1) Stem-cell derived human kidney organoids replicate aspects of kidney injury and disease
2) Kidney organoids could accelerate the development of new therapies for kidney disease and reduce the reliance on animal models

Paper for Proceedings: Chronic kidney disease (CKD) affects approximately 13% of the global population. Leading causes for CKD and ultimately end-stage renal disease are diabetes and hypertension. Therapeutic strategies aiming to control glucose levels and blood pressure can slow some forms of CKD. However, patients remain at risk of cardiovascular complications and of progression to end-stage renal disease, where they will require life-long dialysis or a kidney transplant. As such, there is an urgent need to develop new treatments to halt or reverse the progression of kidney disease. Although animal models have been widely used to simulate the mechanisms of human kidney disease, differences between animal and human physiology are often cited as a reason why few preclinical animal studies lead to success in human clinical trials. Therefore, the potential of replicating human physiology in vitro with human kidney tissues derived from induced pluripotent stem cells and adult tissue has been met with great excitement. While organoids have been demonstrated to model toxicity and genetic disease, their capacity to mimic common and complex drivers of kidney disease has not been comprehensively tested. This presentation will consider emerging evidence and reflect on whether kidney organoids may be suitable to study kidney injury and aspects of chronic disease, and what role organoids may play in reducing or replacing research in animal models.

Thinking outside the box: Studying behaviour without using animals

Dr Di Evans, RSPCA, Australia.

Introduction

The need to replace the use of animals with non-animal alternatives in research and teaching is a key driver for positive change. Although the focus and urgency has mainly related to the biomedical & regulatory testing fields, there are other opportunities which should be pursued. The RSPCA is an animal welfare evidence-based organisation which reviews available scientific literature relating to specific issues. However, for some issues, there is either insufficient or questionable scientific evidence or the impacts experienced by animals are so aversive, that to replicate this in a controlled study, is not ethically justifiable.

The RSPCA covers many issues including the welfare of animals used in sport and entertainment, such as rodeos. Upon viewing video footage and examining still images, it is apparent that these animals display behaviours consistent with fear and stress. These behaviours and responses are not always obvious when observing events at a rodeo or viewing real time video footage. However, upon further examination including pausing video footage and using slow motion, the expression of behaviours indicating that these animals are experiencing a negative emotional state become more apparent.

The RSPCA is particularly interested in evaluating negative impacts on calves used in rope-and-tie events due to the extreme aversive treatment of calves who may be as young as four months of age. The rodeo industry claims that roping calves does not cause any more stress than what would be experienced as part of normal handling on cattle properties. However, routine farm animal handling does not involve chasing, choking (by a lasso), throwing and dragging along the ground. Treating calves in this manner contradicts low stress stockhandling principles where handlers are quiet, calm, gentle and patient to avoid stress and risk of injury. Calf rope-and-tie events involve a calf being released from a chute to be chased by a rider on horseback, who lassoes the calf, then dismounts to catch and restrain the calf who is then picked up and forced to the ground, to have three legs tied. Sometimes the calf is dragged by the neck along the ground. This is a timed event, with the fastest competitor winning.

Why do this research?

1.1 Lack of research of welfare impacts on animals used in sport and entertainment

Although there are increasing concerns about the treatment of animals used in sport and entertainment, very few studies have been done in areas other than horse racing. In relation to rodeos, only two peer reviewed papers (Sinclair et al 2016; Ferguson et al 2013) and one report (Fisher 2003) have been published relating to the welfare of calves used for roping. One Australian study (Sinclair et al 2016) demonstrated that calves being chased across an arena had elevated stress hormone levels (epinephrine and norephinephrine) and all showed eye white (where the eye rolls exposing 50% of the white of the eye – see Image 1) when being caught and restrained. A study by Sandem & Braastad 2005) indicated that eye white is a sign of stress in dairy cattle.

Image 1: Roped calf being restrained showing eye white

2.2 Recognition of importance of mental state in assessing welfare

With an expansion in the application of the Five Domains Model (Mellor et al 2020), there is an increasing recognition of the importance of considering the mental state of animals in terms of their overall welfare. In relation to calf roping, physical injuries may not be apparent as being prey species, calves inherently mask signs of pain, and bruising may not be immediately obvious due to coat colour and hair covering. To evaluate physical impacts of roping on calves, it would be essential to undertake a physical examination and to have access to diagnostic tools which could detect bruising. This would require significant resources and cooperation by the industry. However, welfare can also be assessed by evaluating behavioural responses but given the lack of access to animals and industry cooperation, this needed to be done without using animals directly. A recent paper by Mellor et al (2020), highlights the impact of human behaviour on the emotional state of animals including fear, panic, anxiety and hypervigilance.

Challenges

1.2 Resources

Undertaking any study requires resources and these were limited, particularly funding to cover staff time, obtaining research materials, undertaking statistical analysis and for publishing. Fortunately, through the availability of an undergraduate student (University of Sydney) to undertake the project and having access to video footage (taken with permission at the Festival of Western, Quebec, Canada), the project could proceed. Funding was essentially limited to cover publishing costs for an open access journal.

3.2 Methodology

The next challenge was to develop a methodology to utilise the video footage. Given our limited resources, the obvious choice was to undertake an exploratory study using a qualitative behavioural assessment (QBA) approach to determine its suitability for such a study and pending publication of the results, whether this might create interest for a more comprehensive QBA study to be undertaken. QBA is a method that involves observers viewing images and/or footage and then scoring, on a scale between a minimum and maximum score, using a series of descriptive terms according to how well they describe the emotional state of the animals in the images. Scores are analysed to determine common patterns between animals, treatment groups and individual observers (Wemelsfelder et al 2009). In most studies to date using QBA, the results have been correlated with other measures of animal welfare including physiological (e.g., stress hormone levels) and behavioural parameters (avoidance distance tests and forced human approach tests) (Wickham et al 2015; Minero et al 2020). However, other recent studies have not included measuring other parameters but have focused on comparing QBA results for control and treatment groups (Vindevoghel et al 2018; Maslowska

2020). It is believed that all studies using QBA to assess emotional state of animals to date, have involved the direct use of animals, therefore requiring animal ethics approval.
Due to a need to avoid observer bias, still images of only two phases of calf roping – the chase phase (after the calf leaves the chute and the prior to being lassoed) and the recovery phase (after the ropes are released and the animal is free to exit the arena) could be used (see Image 2). This was to avoid any background aspects being included which would indicate that these animals were being used in a rodeo. The chase phase was considered the treatment (aversive) whilst the recovery phase was considered the control (very little direct presence or interference by a human).

Image 2: Still images captured from video footage pre and post roping (2 images/phase for each calf)

Project outline

1.3 Objectives

The project objectives were:

- To use a QBA approach to characterize the demeanour of calves in still images from video footage at two different stages of calf roping – Chase Phase and Recovery Phase.
- To identify if the demeanour of calves varied between the two stages.
- Explore if observer scores for intensity of calves' emotional state correlated with empathy to animals.
- To add to the scientific literature by publishing the results

1.4 Qualitative Behavioural Assessment (QBA)

This was an exploratory study using a QBA approach as still images rather than video footage were utilised, and a valid statistical analysis was used, although different to that described by Wemelsfelder et al (2009). A key element of QBA is developing appropriate descriptors which are relevant to the behaviours being displayed. For this project, 12 descriptors were identified including some which reflect a positive mental state (e.g. calm, relaxed) as well as some which reflect a negative mental state (e.g. frightened, anxious) – see Table 1.

Agitated	Anxious	Calm	Confused

Contented	Energetic	Excited	Exhausted
Frightened	Inquisitive	Relieved	Stressed

Table 1: Fixed term descriptors used in the calf roping QBA study

Sixteen trained observers were used to review and score two images of the chase phase and two images of the recovery phase for 20 calves (total of 80 images) via an online platform.

1.5 Ethogram

A behavioural ethogram was developed using the video footage of the calves from which the still images were captured. For every image of the chase and recovery phase for each calf, behaviours were recorded as being present or absent (see Table 2).

- Ears – held axial; forward; backward and upward; backward and downward
- Neck - held horizontal; above horizontal; below horizontal
- Legs - at a gallop; slow run; fast walk
- Tail wagging - with a rigid motion; with a vigorous motion
- Tail - tucked behind; erect and rigidly held
- Nostrils flaring

Table 2: Behaviours recorded for each chase and recovery phase to develop ethogram

1.6 Attitudinal survey

The observers were asked to complete an online questionnaire about their demographics and attitudes towards animals with a focus on animal welfare and sentience. Questions relating to empathy towards animals were based on Paul and Podberscek's (2000) Animal Empathy Scale.

Results

The following are excerpts from the Rizzuto et al (2020) paper.

1.7 QBA

Observers thought that calves were more frightened, stressed, anxious and agitated for the chase phase compared to the recovery phase (see Figure 1a).

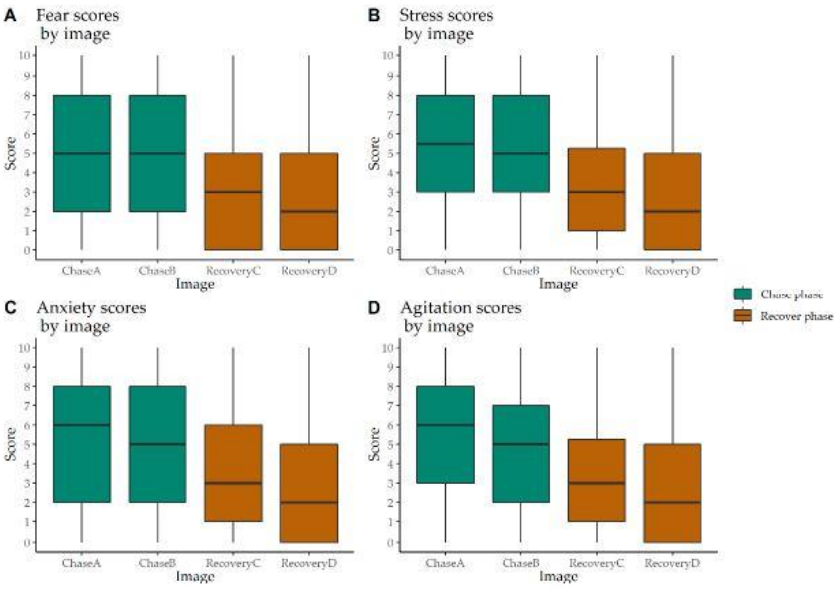

Figure 1a: QBA results - descriptors used more for chase phase compared to recovery phase

In comparison, observers perceived calves to be more relieved, calm and content in the recovery phase (see Figure 1b)

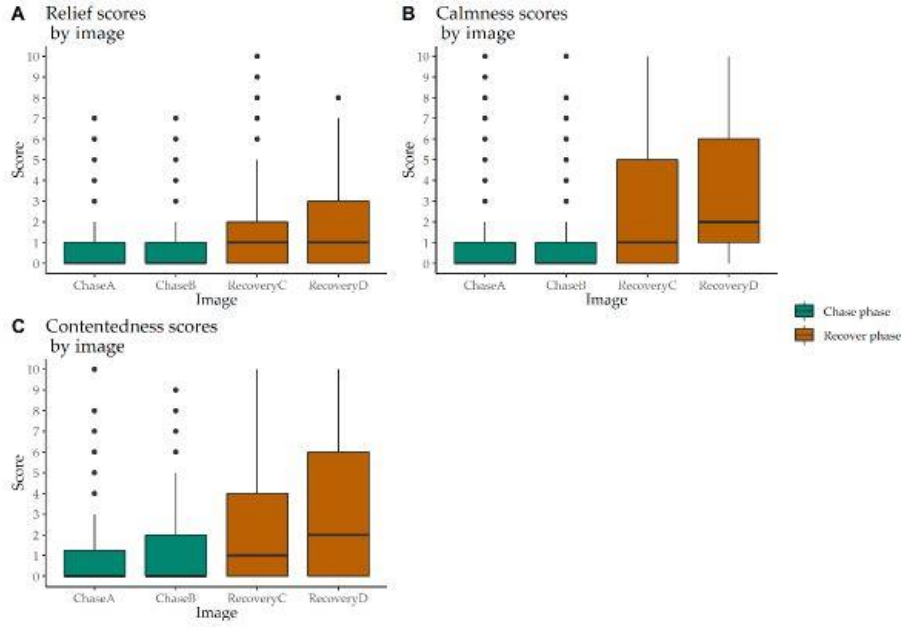

Figure 1b: QBA results - descriptors used more for recovery phase compared to chase phase

1.8 Ethogram

Binary logistic regression modelling was used to identify the most prevalent behaviours for each phase (see Table 3).

- Chase – legs at a gallop; tail held rigid
- Recovery – legs slow run; legs fast walk; ears forward; ears axial

Table 3: Most common behaviours identified for chase and recovery phases

1.9 Attitudinal survey

Respondents who strongly agreed with the following statements had significantly higher scores for negative emotional states (agitated, anxious, stressed, frightened) for the chase phase compared to those who less strongly agreed:

"I hate seeing pictures of animals used in scientific experiments"
"Seeing animals in pain upsets me"
This is an interesting finding and warrants further research.

Future studies without using animals directly

A current study being undertaken in collaboration with the University of Sydney, involves the use of video footage from Australia to develop an ethogram for all five stages of calf roping to determine the most commonly displayed behaviours during specific phases.
Another potential study is to examine the correlation between the behaviour of handlers and riders with calf behaviour during roping events. This may not be possible without setting up a controlled experimental study.

Conclusions

By necessity, to study the impact of roping on calves used in rodeos, it required thinking about achieving this without the use of animals. When faced with the original research question which was 'how do these calves feel?' when used in this way, given the limitations the only choices were to do nothing or to do something but without directly using animals.

Although, this is only an exploratory study, it has contributed to our knowledge and understanding of the emotional state experienced by calves pre and post roping. How many other studies could be done without directly using animals? The only way we will know is if we ask ourselves what can we do without specifically subjecting animals to interventions for research purposes especially those which we know will be harmful.

Whilst resources are limited and industry collaboration is unlikely, efforts will continue to identify ways to evaluate impacts of roping on rodeo calves by thinking outside the box.

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emotional state of calves in rodeos. Animals 113, doi:10.3390/ani10010113
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The benefits of rehoming animals from research

Ms Paula Wallace, Liberty Foundation Australia

Summary:

The rehoming movement for research animals now has a presence in Australia with a dedicated service that works with research establishments to provide an alternative to euthanasia or continuation in research for a range of animals.

Learning Objectives:

- This presentation will provide the following information:
- An introduction to Liberty Foundation and its work
- The benefits of rehoming animals from research and teaching
- Government recommendations and guidance on rehoming
- Advice on how to start an animal rehoming program
- The rehoming process from start to finish
- Ways of rehome: inhouse or third-party
- The outcomes being achieved for animals through rehoming

Paper on next page.

The benefits of rehoming animals from research

By Paula Wallace, Director, Liberty Foundation Australia Limited
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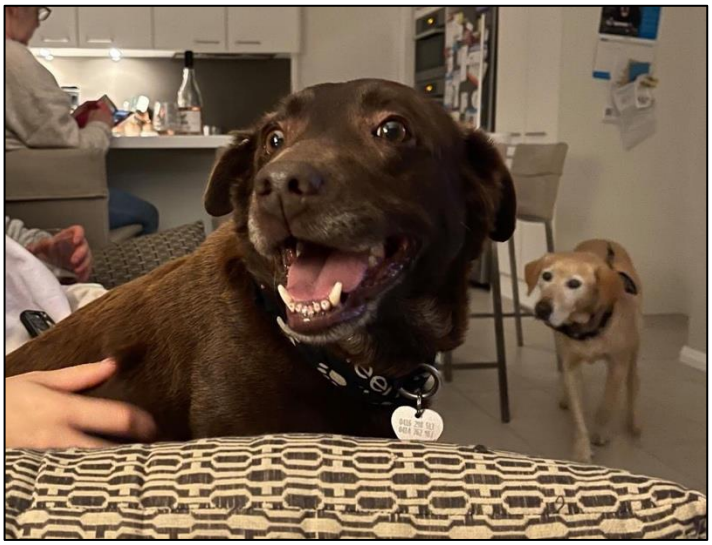
All images feature ex-research animals rehomed by Liberty Foundation in Australia



Key Information:

- An introduction to Liberty Foundation and its work
- The benefits of rehoming animals from research and teaching
- Government recommendations and guidance on rehoming
- Advice on how to start an animal rehoming program
- The rehoming process from start to finish
- Ways of rehoming: inhouse or third-party
- The outcomes being achieved for animals through rehoming

An introduction to Liberty Foundation and its work

Rehoming animals from research has taken off in the US and Europe over the last 10 years and there is now a dedicated service in Australia, for the full range of domestic animals that can become pets or companions. This service is designed to assist research establishments to provide alternatives for their animals to euthanasia or continuation in research.

Liberty Foundation Australia Limited is a registered company limited by guarantee operating as a not for profit in Australia, which means that it can work in any state or territory of Australia. It is a registered charity with the Australian Charities and Not For Profits Commission.

The charity's work is currently focused on the east coast of Australia because that is where most of the research activity takes place. And, since October 2017, the charity has rehomed more than 470 animals from research establishments with which it has Rehoming Agreements in place.

There is only one other charity dedicated to rehoming animals from research in Australia – Beagle Freedom Australia – which offers a service for dogs, cats and some farm animals.

Liberty Foundation is the only charity exclusively for ex-research animals that takes the full range of domestic species and to date has rehomed dogs, cats, rabbits, guinea pigs, rats, mice and fish. It also has the capacity to rehome farm animals that can be placed in sanctuaries.

The benefits of rehoming animals from research and teaching

The benefits of rehoming to animals, is that they have the opportunity to live out the course of their natural lives in a non-institutional setting as someone's pet and cherished companion.

The general public also benefit, through the opportunity to understand more about the use of animals in research and to provide a loving home for an animal coming out of a research setting.

The benefits to research establishments are numerous. Rehoming provides a more sustainable alternative to euthanasia or keeping animals for use in further research in some instances.

Rehoming enables the research or teaching establishment to demonstrate its commitment to animal welfare in line with the National Code and with government guidance on rehoming as a viable option for animals. It enables them to reduce or achieve zero wastage.

Rehoming activity to date in NSW and the ACT has shown that staff morale is boosted by the introduction of a rehoming program, especially for those staff directly caring for animals.

Government recommendations and guidance on rehoming

1/ The National Health & Medical Research Council is an independent statutory agency within the portfolio of the Australian Government Minister for Health and Ageing. It administers the *Australian code for the care and use of animals for scientific purposes* (the Code)[1], which governs the activities of all organisations using animals for science, research, teaching, field trials, product testing, diagnosis, the production of biological products and environmental studies.

In regard to end-of-research options for animals the Code states [emphasis added]:

> *3.4.1 Provisions for animals at the conclusion of their use must be made promptly and in accordance with the animal ethics committee (AEC) approval. Provisions may include:*
> ***(i) rehousing (rehoming) (see Clauses 3.4.2–3.4.3)***
> *(ii) return to normal husbandry conditions or natural habitat (see Clauses 3.4.4–3.4.5)*
> *(iii) humane killing (see Clauses 3.3.45–3.3.46)*
> *(iv) reuse (see Clauses 1.22, 1.24 and 2.3.15)*
> *(v) tissue sharing (see Clauses 1.26, 2.4.24 and 2.5.10).*
> ***3.4.2 Opportunities to rehome animals should be considered wherever possible, especially when the impact of the project or activity on the wellbeing of the animal has been minimal and their physiological condition and behavioural attributes indicate that they can be introduced to a new environment with minimal, transient impact on their wellbeing.***

2/ The NSW and Victorian governments have issued guidelines specifically on rehoming:

a) Research Animal Rehoming Guidelines[2]
b) Establishing a Rehoming Program for Animals Used in Research & Teaching[3]

[1] https://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes
[2] https://www.animalethics.org.au/policies-and-guidelines/animal-rehoming
[3] https://agriculture.vic.gov.au/__data/assets/pdf_file/0011/529724/Rehoming-guideline.pdf

3/ There have also been bills introduced to parliaments in NSW and Victoria in recent years calling for mandatory rehoming of dogs and cats from research – these are ongoing.

4/ The Victorian government recently convened a Taskforce on Rehoming Pets[4], which delivered its report to the government in December 2021. It recommended that the government consider mandatory retirement and retirement ages for dogs and cats at the conclusion of research. And, the provision of specific grant programs to support the rehabilitation and rehoming of animals used in research and training.

Advice on how to start an animal rehoming program

If you have animals in your organisation that you think would be suitable for rehoming, it is worthwhile speaking to your Animal Ethics Committee and asking whether the organisation has a position on rehoming; has ever participated in rehoming in the past; or has a policy on this.

All rehoming activities in Australian must be approved by an Animal Ethics Committee.

You can work within your organisation to develop a policy for rehoming that is endorsed by the management of the organisation.

Or, with Animal Ethics Committee approval, you can seek to form a Rehoming Agreement with a third party rehoming organisation, which in some cases must be endorsed by the management of the organisation.

The NSW Government's *Research Animal Rehoming Guidelines*[5] provide advice on both rehoming policies and agreements with rehoming organisations.

Liberty Foundation can also provide advice and guidance on both these matters.

[4] https://agriculture.vic.gov.au/livestock-and-animals/animal-welfare-victoria/domestic-animal-businesses/shelters-and-pounds/taskforce-on-rehoming-pets

[5] https://www.animalethics.org.au/policies-and-guidelines/animal-rehoming

The rehoming process from start to finish

The steps to rehoming are typically as follows:

1/ Sign a rehoming agreement with a rehoming organisation or develop your own in-house rehoming program.

2/ Select animals for rehoming - it's often a good idea to do this at the project approval stage so you have time to prepare the animals for rehoming.

3/ Prepare animals for rehoming – this might involve putting them in compatible pairs or groups in the case of rodents; or introducing animals to more regular handling or exposure to environmental sounds.

4/ Arrange for transfer of the animals to the rehoming service or adoptive home.

5/ Paperwork should be exchanged at the animal's point of departure from the research establishment, to transfer ownership to new owner.

6/ Follow up according to your own rehoming program or agreement with the rehoming organisation.

The NSW Government's *Research Animal Rehoming Guidelines*[6] provide detailed information on the rehoming process.

Ways of rehoming: inhouse or third-party

Considerations include whether you will be able to attract suitable homes for the number of animals you have available for rehoming and the internal resources you have to run a rehoming program.

Whether you run the rehoming program yourself or use one or more external rehoming groups, it is recommended that you nominate someone in your organisation to co-ordinate these activities.

Using an external rehoming group can offer the following advantages:

a) They can assist in attracting more adopters for animals
b) They can facilitate the adoption process including transport
c) The adoption can be done anonymously from the perspective of the research establishment
d) They provide follow up checks post-rehoming of the animal
e) They can assist where animals need an interim period in a foster home to get vet work done or acclimatise to the home environment

[6] https://www.animalethics.org.au/policies-and-guidelines/animal-rehoming

f) They can provide advice on what kind of living situation will be best suited to individual animals and identify people who can provide this.

Research establishments may choose to work with several groups depending on the number of animals they have available for adoption.

It is good to work with rehoming groups that have some procedures around their operations and knowledge of the species being rehomed. For example, Liberty Foundation has guidelines for carers of dogs, which outline the rules around foster care and offer suggestions for adopters on assisting dogs to transition to living in a home environment.

Note: Whether you are rehoming directly or using a rehoming organisation, there should always be contingency measures for failed adoptions.

The outcomes being achieved for animals through rehoming

To date, Liberty Foundation has rehomed around 470 animals from research establishments in NSW, the ACT, Victoria and Queensland. The organisation has rehoming agreements in place with numerous large research establishments.
Sometimes the process can take several weeks from the initial enquiry for the animals to be transported to their new homes, it depends on the overall numbers and species involved.
All animals received by Liberty Foundation have been placed in suitable, safe and loving homes and have thrived in these environments. There have only been a few occasions where animals have needed to come back into care, due to a person's change of circumstance or incompatibility with cage mates.

Typically, the charity attempts to rehome the animals as close to the research facility as possible, or the foster home if they are spending an interim period with a carer while they are desexed for example. However, depending on the location of the facility or location of the best adoptive home, some interstate travel may be required.

The charity can also take animals that have special needs, either physical or behavioural. Mostly, to date this has included animals that are timid of humans - dogs and pocket pets. These animals have all shown improvement in their new environments, although Liberty Foundation can call on the expertise of behaviourists and vets to assist if needed.
The charity releases videos on its YouTube channel, website and Facebook, showing many of their animals in their new homes. In most cases, these animals have exceeded expectations in regard to their ability to adapt to a different way of life and are generally more affectionate and attentive than the average pet.

Resources:
https://www.libertyfoundation.org.au
https://www.facebook.com/LibertyFoundationAustralia
https://www.instagram.com/libertyfoundationaustralia/
https://www.youtube.com/channel/UCISjfihJnJ6BCs8KVYaW_3g

For more information contact:
Paula Wallace
paula@libertyfoundation.org.au

Emulsified gels - An important refinement of oral administration of treatments in animal studies

Dr Ben Albert, University of Auckland

Summary:
In animal studies, administering drugs or nutritional treatments is challenging, particularly when the treatment is unstable or dosing must be accurate. The oral route is usually most physiologically appropriate, but incorporation of a substance into food or water, make it difficult to control the dose, and ensure the substance is given quickly. Oral gavage solves these problems but is associated with stress and risk to the animal. Flavoured gels have been used, but some substances such as lipids are difficult to incorporate into a gel. We have developed emulsified gels that can contain up to 20% lipid, demonstrated they are rapidly and completely eaten by rats, and used them in 2 major animal studies. This refinement replaced a potentially aversive treatment with an enriching one. By reducing stress that can confound behavioural and metabolic studies, the quality of the science is also improved. Gel treatments should be widely adopted.

Learning Objectives:

- Learn how treatments (including lipids) can be incorporated in to a gel that is highly acceptable to rats.
- Understand the advantages of a gel vehicle over incorporation of substances into food or water, or over more invasive ways to administer substances such as oro-gastric gavage

Paper for Proceedings:

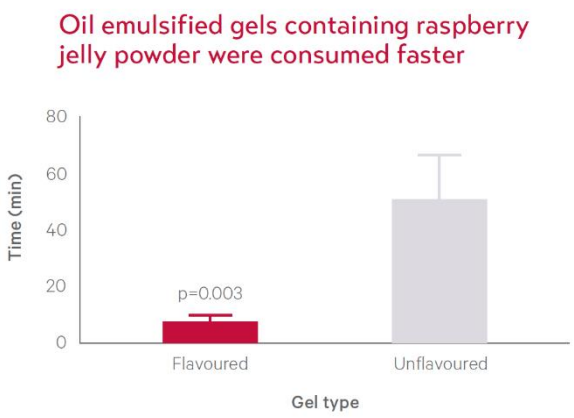
Introduction
In many studies it is necessary to administer nutritional substances or drugs to animals. How best to do this represents an important challenge with potential trade-offs between precision and the comfort and welfare of the animals being studied. When treatments are incorporated into food or water, it is impossible to precisely control the dose, and may impact on feeding, drinking and welfare. Importantly, substances such as polyunsaturated fatty acid containing oils are chemically unstable, so that the treatment could deteriorate over time.
Oro-gastric gavage, solves these problems enabling a precise dose to be given administered quickly. However, this is an invasive procedure that involves restraint of the animal. Even when expertly performed, it is expected to cause stress[1]. Stress should be avoided for animal welfare but because it may enhance toxicity and confound study results, particularly in fields interested in behaviour or metabolism. Further, there is a risk of mishap, which can cause trauma, pain, or death, which is magnified with repeat treatments. This could increasing the number of animals required to complete a study.
Incorporating the substance of interest into a flavoured gel has been recommended. However, gels are water-based, making inclusion of lipid ingredients difficult. We report a method for producing emulsified lipid gels that are easy to produce and handle, and present data showing their rapid and complete consumption in pilot studies and their successful use in 2 large preclinical studies involving rats.

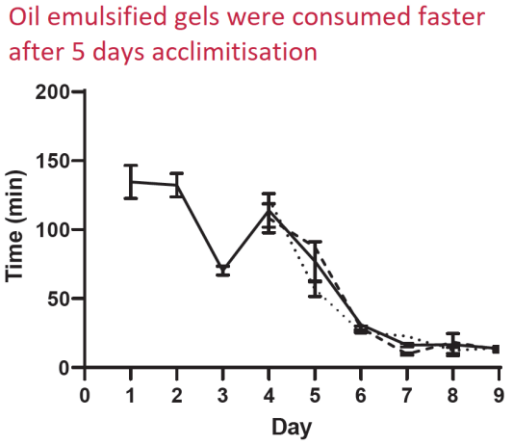
Method
Gels were produced using gelatin, raspberry jelly crystals and a non-polar starch mixed. emulsifier (n-cremer) that once dissolved in water, enabled oil to be small or 5ml gels were produced, with and without raspberry flavouring, with large amounts of oil (up to 20% by volume) and with fresh or oxidised fish oil[2].

Pilot studies were carried out investigating how quickly, and completely gels would be consumed. The first involved adult female Sprague-dawley dams consuming a chow diet, and the second dams consuming a highly palatable high fat diet.

Results

All gels were consumed completely regardless of diet or the content of the gel. There was an acclimitisation period during which consumption was slower: 3 days for chow fed rats, and 5 days for dams consuming a high fat diet. Gels containing raspberry flavouring were consumed more quickly (7.7 ± 2.5 vs 51.1 ± 15.7 minutes: p=0.003).





The gels were then used in two large studies set in rat pregnancy. All doses (4000) were completely consumed. Animals in these studies responded to researchers positively, and appeared excited to receive their gel each morning. Highly oxidised fish oil given as a gel, was less toxic in rat pregnancy, than when it was given by oro-gastric gavage (13% vs 30% newborn mortality[3, 4]).

Discussion

We have successfully produced gel treatments containing up to 20% oil that were highly acceptable to rats, appearing to be an enriching experience. They were rapidly and completely consumed so that the full dose of oil was taken, with limited time for the oils to deteriorate. This treatment replaced the aversive technique of oro-gastric gavage with an enriching one, but retained its benefits. It also prevented overestimation of toxicity, improving the robustness of scientific results.

The addition of the non-polar starch emulsifier substantially increases the range of substances that can be incorporated into gels, so that, any lipid-based treatment can also be added. The gels were easy to make at scale, easy to handle, and did not melt at room temperature. We are grateful to have received the John Schofield 3Rs award for this refinement of animal care.

1. Brown AP, Dinger N, Levine BS. Stress produced by gavage administration in the rat. J Am Assoc Lab Anim Sci. 2000;39(1):17-21.
2. Satokar VV, Vickers M, Bridge-Comer P, Cutfield W, Albert BB. Emulsified gels: a refined vehicle for accurate and rapid oral administration of lipid based preparations to rats. Animal Technology and Welfare. 2021;(August):95-103.
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4. Satokar VV, Vickers MH, Reynolds CM, Ponnampalam AP, Firth EC, Garg ML, et al. Toxicity of oxidized fish oil in pregnancy-a dose response study in rats. American Journal of Physiology-Regulatory, Integrative and Comparative Physiology. 2022.

At first I was afraid...or was I? How native Australian mammals respond to predators?

Dr Meg Edwards, University of Southern Queensland

Summary:
In Australia, introduced predators such as cats (*Felis catus*) and foxes (*Vulpes* vulpes) have been implicated in the reduction and extinction of many species from their native ranges. It is suggested that one reason for this devastating extinction record is that as Australia's native wildlife exhibit varying degrees of naivety to the threat that mammalian predators pose. We used a variety of methods to determine how native Australian mammals, such as bandicoots and possums, react to predators or their cues (such as faeces). Bandicoots appeared to have some antipredator responses towards dogs, but not other predator species. Other native mammal species appeared to display no antipredator responses towards cat or quoll cues. Therefore, innovative methods of predator control accounting for this naivety should be trialled, such as predator avoidance training, to reduce the impact of predators on our native wildlife.

Learning Objectives:
Delegates will learn about research on Australian native wildlife, and how they respond (or do not respond) to predators. This has implications for how we manage Australian wildlife and introduced predators.

Paper for Proceedings:
In Australia, introduced predators such as cats (*Felis catus*) and foxes (*Vulpes* vulpes) have been implicated in the reduction and extinction of many species from their native ranges. It is suggested that one reason for this devastating extinction record is that as Australia's native wildlife exhibit varying degrees of naivety to the threat that mammalian predators pose. We used a variety of methods to determine how native Australian mammals, such as bandicoots and possums, react to predators or their cues (such as faeces).

Firstly, wild-caught northern brown bandicoots, *Isoodon macrourus,* brought into captivity for a brief period were used as a model to test if they respond to different predators. During testing, bandicoots were exposed to either a live predator, a taxidermied predator, or predator faeces. This included: a live cat, dog, and guinea pig (control); taxidermied fox, cat, and wallaby (control); and faeces from a cat, fox, wallaby (control), python (control). Bandicoots were exposed to the predators on separate nights for two 10-minute sessions - once when they first emerged, and then again between 30 mins and three hours later. During this time, behaviours such as duration spent foraging, locomoting, being vigilant, and out of view, and the space use in the enclosure were used to determine if bandicoots significantly changed their behaviours when in the presence of a predator (or their faeces) compared with baseline data.

Bandicoots displayed multiple different behaviours when in the presence of a live dog indicating some recognition, and also displayed some different behaviours in the presence of a live cat, indicating some wariness. Bandicoots did not display any differences in behaviours when presented with any of the other predators or their cues. This indicates that bandicoots may have developed anti-predator behaviours against dogs (likely due to the presence of the dingo for the past ~5,000 years), but not other predators.

We then did further testing in the wild in three locations in south-east Queensland to determine if a variety of Australian mammals responded to the faeces of two predators – the cat, and the native spotted-tailed quoll (*Dasyurus maculatus*). A common method of determining predator recognition in the wild involves the use of Elliotts and cage traps with predator faeces present, to determine if trap success is higher in traps without predator faeces.

We combined this with camera traps to determine if there was a difference in behaviour around the two predator faeces. The presence of either cat or quoll faeces did not influence the trap success or camera success of any of the

species in the study, suggesting that these Australian native mammals didn't appear to recognise either cat or quoll faeces as a threat, and thus did not avoid traps with predator faeces present. Northern brown bandicoots (*Isoodon macrourus*) did spend significantly more time interacting with quoll faeces than cat faeces, and were more likely to be trapped if they spent longer investigating the faeces, but this was not found for any of the other species. Therefore, innovative methods of predator control accounting for this naivety should be trialled, such as predator avoidance training, to reduce the impact of predators on our native wildlife.

Identifying novel treatment targets for alcohol use disorder

Professor Andrew Lawrence, Florey Institute

Summary:
This lecture will describe my research using post-mortem human brains and animal models of aberrant alcohol use to identify and characterise novel treatment targets for alcohol use disorder. The ultimate aim is to validate compounds for clinical trials.

Learning Objectives:
This lecture will explain an approach to translational neuroscience research, and highlight the use of animal models that recapitulate key aspects of alcohol use disorder in humans

Paper for Proceedings:

Identifying novel treatment targets for alcohol use disorder

Andrew J Lawrence, Florey Institute of Neuroscience & Mental Health, University of Melbourne, Parkville, Vic 3052

Despite the enormous socioeconomic burden of alcohol use disorders (AUD), therapeutic treatment options are limited. My laboratory aims to characterize the underlying neurochemistry driving alcohol seeking to identify and evaluate novel targets. To achieve this, we first conducted genome-wide RNA sequencing in the striatum of human alcoholics and healthy controls. Analysis of the resulting data set implicated G protein-coupled receptors (GPCRs) as the most differentially expressed group of genes. We identified the muscarinic M4 acetylcholine receptor (M4 mAChR) as a novel target. Follow up studies determined that in humans with AUD M4 receptor expression was significantly decreased within the striatum specifically in the putamen, but not the caudate. Subsequently we adopted a reverse-translational approach and examined muscarinic receptor expression in the corresponding regions of rat brain following chronic alcohol consumption/withdrawal. Notably, we found analogous dysregulation of M4 mAChR expression in the rat dorsolateral striatum, the area that corresponds to the putamen in humans. Based on these concordant molecular findings between human and rat, we decided to undertake behavioural pharmacology experiments using our well-established rodent models of voluntary alcohol use and relapse. Administration of a drug that activates M4 mAChR's reduced alcohol self-administration and cue-induced relapse in rats, without effects on natural reward consumption or sedation. Discrete microinjection studies have identified anatomic loci for these effects. Our findings demonstrate the utility of rodent models to study aspects of AUD in humans. Moreover, selectively targeting mAChR's can modulate both voluntary alcohol intake and seeking, implicating mAChR's as a potential novel target for pharmacotherapies aimed at treating AUD.

Optimising Inhalation Research - Transitioning to human-relevant science

Natalie Anderson, Humane Research Australia

Summary:

This research:

1) investigated the human-relevant methods that could be used to replace acute inhalation toxicity studies using animals in inhalation research.

2) identified the scope of research being currently conducted in Australia utilising methods that could be replaced with alternative methods.

3) identified the potential barriers and gains to Australian researchers of adopting non-animal methods. The *in vitro* technology – "lung-on-a-chip" – was identified as the most promising technology to replace acute inhalation toxicity studies using the nose-only ("Forced") and whole-body methods of exposing animals to inhaled substances. Ten studies were identified conducting research in Australia using acute inhalation toxicity methods since 2014. Logistical, institutional, and economic barriers were identified as those most significant for scientists when transitioning to non-animal methods. To facilitate access to funding and resources for alternatives to animal testing in Australia, a dedicated alternatives validation centre is needed.

Learning Objectives:

- An understanding of what the forced inhalation method of exposure to aerosols/cigarette smoke looks like and why there are ethical concerns for its use
- An understanding of why the forced inhalation method of exposure to aerosols is limited, how it can be replaced with *in silico* and *in vitro,* human-relevant, methods and a real-world example of this.
- An understanding of why experimental animal (mouse) models of COPD are insufficient at replicating the human disease and why a human-relevant, systems based (integrative) approach is better.
- An understanding of the barriers scientists face when transitioning to human-relevant, non-animal methods in medical research and how to facilitate change.

Paper for Proceedings:

Optimising inhalation research – transitioning to human-relevant science

Natalie Anderson[1]

[1]*Humane Research Australia, Melbourne, Victoria, Australia.*

Background and Aims: Developed nations are experiencing a scientific revolution involving a transition to human-relevant science that does not involve the use of animals. In Australia, the industry-academia divide is hampering progress toward use of human-relevant models and methods that are available, or emerging, replacements for animal use in inhalation research. This research aimed to; 1) investigate the use of *in vitro*, human-relevant methods that could be used to replace acute inhalation toxicity studies in inhalation research; 2) identify the scope of research being currently conducted in Australia utilising methods that could be replaced with these new *in vitro* methods and; 3) identify the potential barriers and gains to Australian researchers of adopting these new methods.

Methods: Databases searched; Pubmed. Search period; 2014-present. Search terms used were; Australia, inhalation, e-cigarettes, COPD. Reference list from identified papers were also utilised and lead/senior authors on studies were also searched.

Results: The lung-on-a-chip was identified as the most promising technology to replace acute inhalation toxicity studies using the nose-only and whole-body to expose animals to inhaled substances. Ten studies were identified conducting research in Australia using acute inhalation toxicity methods since 2014. Logistical, institutional, and economic barriers were identified as those most significant to scientists when transitioning to non-animal methods. There are considerable benefits to scientists and researchers based on international evidence.

Conclusions and Significance/Impact: The potential gains to universities and research institutes – and ultimately human patients – of adopting these new models and methods, as has been demonstrated internationally, warrants a timely re-assessment and uptake of alternatives in Australia. Access to technology and resources required to transition these human-relevant alternatives is largely from international centres and will pose a significant barrier to uptake in Australia. To facilitate access to funding and resources in Australia, a dedicated alternatives validation centre and associated funding stream is needed with international collaboration.

Performance Matters: an informed approach to strategic improvement

Dr Dana Briggs, Dana Briggs Consulting

Summary:
Many organisations don't objectively know how well their animal care and use programs are performing, and as a result, they create unnecessary administrative burden and shy away from openness and transparency. The good news is that it's easy to get objective data on performance. The even better news is, you're probably already generating most of the data you need. In fact, whether it's formalised or not, you already have an internal audit program. In this talk, Dana uses post-approval monitoring (PAM) as an example of how to leverage internal audit activities into strategic improvements in your animal care and use program.

Learning Objectives:

- Why understanding program performance is important
- The objectives and activities of an internal audit program
- The two levels of performance – project and program
- Post-approval monitoring (PAM) as an example of an internal audit activity
- How to conduct PAM activities and report to the AEC
- How PAM activities contribute to informed strategic improvement

PRESENTATION

Introduction

How well is your animal care and use program performing? How do you know? The reality is many organisations don't really know how well their animal care and use program is performing or the level of risk they are carrying. As a result, they may over-regulate, create unnecessary administrative burden, direct limited resources to all the wrong places and shy away from openness and transparency. Conversely, they may incorrectly assume that the program is performing well. Understanding how the program is *actually* performing allows you to make informed decisions about what to do, and what not to do.

Performance

As a very basic model, most organisations decide what to do, and when, based on an objective assessment of the following:

Culture and values	Who we are	Stated at the organisational and perhaps department level
Business objectives	What we're trying to do	Usually related to research and teaching
Compliance obligations	Our constraints	Listed in a compliance obligations register
Risk appetite	How much risk we're willing to take	Stated in the risk appetite statement
Performance	How we're currently doing	Risk + trends + opportunities
= priorities	What to do, and when	

In most organisations, the first four are defined, at least at the organisational level. Performance cannot simply be defined, though; it must be objectively measured.

The basis of performance monitoring is an internal audit program. Whether its formalised or not, most organisations have an internal audit program comprised of the following activities:

- Facility and veterinary reports to the AEC
- Research/teaching reports to the AEC (e.g., progress and final reports)
- Application metrics – approval time, number of resubmits
- AEC Annual Report to the Institution and associated program review
- Review of the AEC meeting minutes
- Post-approval monitoring (PAM) reporting
- Review of non-compliance register
- Review of unexpected adverse events register
- Research misconduct investigations
- For-cause internal investigations
- Review of complaints register

These activities generate performance data at two levels; they tell us a lot about the conduct of an individual project, and the data can be collated to identify trends across the entire animal care and use program.

Using PAM as an example, I'll show you how to leverage internal audit data into strategic improvements in your animal care and use program.

So, what is PAM?

In Australia and NZ, the AEC is responsible for monitoring approved projects and post-approval monitoring is exactly what the name suggests - monitoring activities after approval. Best-practice PAM is multi-modal and includes all the activities that assess how the project is going.

In an ideal world, every program would be specifically resourced to hire experienced audit staff to conduct post-approval monitoring on behalf of the AEC. Increasingly, some are. However, we can all start where we're at. If your program doesn't have dedicated PAM resources, you can start with the following activities:

- Monitor aspects of projects, including via video (e.g., investigator provides the AEC with a video of a specified activity).
- Monitor a small number of projects.
- Create resources and encourage, incentivise, or require self-audits with or without reports to the AEC.
- Create resources and encourage, incentivise, or require peer audits with or without reports to the AEC.

Projects can be selected based on risk, random sampling or by representation (e.g., department, species, facility, severity, or type of work). The project selection method often matters less than having a sensible, consistent defensible method. The number of projects selected for PAM will obviously reflect capacity of the organisation and AEC.

PAM activities

Through the lens of a single project, PAM activities can include, but are not limited to:

1. Reviewing the minutes of AEC meetings to assess the AEC's deliberations and decision-making.
2. Reviewing the project application and any amendments to ensure it clearly provides the necessary information and that the application forms are effective and efficient.
3. Reviewing fulfilment of conditions of approval directed by the AEC and the AEC's actions to ensure these are

fulfilled.

4. Reviewing procedure records (including procedure and post-procedure monitoring) to assess the conduct of procedures, and whether these are in accordance with the approved project.
5. Reviewing reports to the AEC, including incident reports and progress reports, to assess the conduct of procedures, how issues were managed, whether the actual impact to the animals is as described in the application and whether investigators have fulfilled their reporting requirements.
6. Reviewing training and competency records to assess the competency of the people performing procedures and oversight by the lead investigator, and to ensure that only named investigators performed procedures.
7. Formal interviews with key project personnel using open-ended questions to assess whether the project was conducted in accordance with AEC-approval, and whether the project raised learnings that could be applied to other projects.
8. Inspection of animals in facilities to assess housing, husbandry and whether the condition of the animals is as described in the application.
9. Observation of procedures to assess whether procedures are performed competently as described in the approved project and whether the actual impact to the animals is as described in the application.

The extent of PAM activities in an organisation is a function of who performs them (e.g., an AEC member or a staff member not affiliated with the AEC), the scope of the organisation's PAM program and whether the PAM program is focussed more on individual projects or the broader animal care and use program. The latter may include assessing aspects of performance of the AEC, facility staff, AEC support staff etc, in addition to investigators.

PAM process

PAM is an audit activity, and as such, normal audit protocols apply. Audits are performed against defined criteria to ensure consistency, enable transparency (assuming audit criteria is shared) and prevent regulatory creep. Institutions can develop their own PAM checklist, borrow from more established programs, or find one online.

There is no "one way" to conduct PAM, but the following process is a good place to start:

1. Project is selected.
2. Communication to PI/CI about the process, opportunity to ask questions etc.
3. Document review.
4. Interview with key project personnel.
5. Facility inspection/observation of procedures, if appropriate.
6. Follow up questions/documents etc, if required.
7. Investigator is informed of preliminary findings and can review the draft report and raise errors for correction prior to it being submitted to the AEC.
8. Investigator can also provide a separate rebuttal etc to the AEC for consideration alongside the report.
9. Findings are reported to the AEC, who are responsible for considering and managing the findings.
10. The AEC determines whether to accept the report or require changes/more information.
11. The report is finalised or sent back for specified changes/information.
12. The AEC determines if any action is required of the investigator(s). The AEC may also provide recommendations.
13. The AEC determines whether to refer findings to the institution for consideration and management. The institution should have a mechanism to collate such information and report it to those responsible for the program and risk.

There should be an appeals and complaints process to accompany the above.

PAM reporting

Findings are often presented to the AEC in a short report including:

1. Scope and objectives (these are often standard).

2. Results/findings (may be split into project and program findings).
    a. Non-compliance (must be referenced i.e., does not comply with Section 2.3.32 of the Code)
    b. Areas for improvement
    c. Acknowledgment of satisfactory performance / Commendations
3. Recommendations (may or may not be appropriate depending on who is writing the report).
4. Conclusions.

Effective reporting happens at two levels to inform analysis and strategic improvement: project and program. At the project level the AEC manages project-specific findings and engages directly with the investigator about positive practices, required actions, and recommendations for improvement. A multi-modal post-approval monitoring program also assesses the performance of the entire animal care and use program. The findings from all the different PAM activities are collated and reported to those responsible for managing risk and performance in the animal care and use program, so that they may identify areas of risk and opportunity, identify current level of performance, and inform strategic improvement.

Leveraging PAM activities into strategic improvement

Performance data informed by PAM can be examined through the lenses of trends, opportunities, and risk.

Trends:

Trend analysis is simply collecting information and then trying to spot a pattern. PAM effectively takes a sample of projects and looks for issues such as whether folks are doing (and documenting) their post-procedure monitoring. If 80% of the sampled projects are doing this poorly then it's likely that this issue affects most approved projects and is an obvious candidate for strategic improvement. Similarly, if 80% of the sampled projects have excellent post-procedure monitoring and record-keeping then resources may be better spent on other improvement priorities.

Opportunities:

Findings from PAM may illustrate opportunities. For example, if PAM activities consistently demonstrate a high level of performance across all aspects of the animal care and use program, the organisation may be ready to pursue openness, or pursue it more aggressively. Or, if an investigator reports success with a refinement, then this learning can be shared with other groups, or published, so that others may adopt it too. It may even become accepted best practice in your organisation.

Risk:

Animal care and use for scientific purposes is an inherently risky business. Two of the main reasons for assessing performance is to identify risk and monitor how effective our risk controls are.
For example, if PAM activities show that three projects out of ten continued past their expiry, meaning that the work was unapproved, then there is a risk of prosecution and of reputational damage. Clearly, current risk controls for making sure projects stop upon expiry are not effective enough and need to be revised as a matter of urgency.
I encourage organisations to implement a formal risk management framework specific to animal care and use for scientific purposes. Of course, this should be integrated into the enterprise risk management framework, but much of it will be operationalised at the program level.

Bringing it together:

Using the principles described above, internal audit activities such as PAM provide the objective data about trends, risks, and opportunities – in other words, performance – that an organisation needs to determine its priorities in the context of its culture and values, business objectives, compliance obligations, and risk appetite.

For example, if we learn that 50% of our investigators don't properly understand and apply aseptic technique, and our culture is one of care, our business objectives relate to research quality and funding, aseptic technique is required by our compliance obligations, and our risk appetite it low, it's likely we will prioritise educating our investigators about aseptic technique. And in fact, we may do so as a matter of urgency, re-prioritising other improvement opportunities.

Or, if we introduce a new administrative AEC process, we can measure whether it helps us achieve our business objectives in a way that aligns with our culture and values, fulfils our compliance obligations, and doesn't involve more risk that we're willing to take. Based on the findings, we can then either continue with the new process, modify it, or abandon it.

Importantly, the performance data generated can, and should, be used to communicate to stakeholders about why decisions have been made, improving transparency and trust between animal care and use program stakeholders. This reinforces the value of internal audit activities and provides assurance that they are not simply an administrative or compliance exercise, but an exercise in continuous improvement that benefits everyone – including the animals in our care.

In my role as a consultant and independent reviewer, I have yet to meet a person involved in animal care and use for scientific purposes who is not dedicated to upholding a Culture of Care. So, improving the way we operate is not a matter of working harder, or caring more, it's simply a matter of using tried and tested tools to focus our limited resources on creating the best animal care and use program possible.

Mice are ok but fish are not - Australian community attitudes towards use of animals in research

Professor Rachel Ankeny

Research Survey on Australian Attitudes to Animal Research

REPORT FOR THE AUSTRALIAN & NEW ZEALAND COUNCIL FOR THE CARE OF ANIMALS IN RESEARCH AND TEACHING (ANZCCART)

DR ALEX WHITTAKER, DR EMILY BUDDLE AND PROFESSOR RACHEL ANKENY

JULY 2022

1. Introduction/Background

Animals are extensively used in contemporary biomedical research and regarded by many as essential to progress in medical science. Animals are also used in other research settings such as in the agricultural and veterinary science fields. In Australia, there is a broad awareness that there is a general support for research using animals where it is performed in a humane manner for medical research, and where other options are limited. However, the ethical status of animals has become a crucial question as environmental consciousness and awareness of animal sentience has increased amongst the Australian population. There also is an increasing disconnect between support for animal welfare and increased attention to human-animal relations, and instrumental attitudes to use of animals in medical research.

Australian state/territory governments are responsible for animal welfare regulation, including care and use of animals for scientific purposes, under a national Code (NHMRC 2013). Such use is highly regulated (Rose 2011; Rose Grant 2013), with close oversight by institutions performing research and their animal ethics committees (AECs). AECs must include community members intended to contribute independent 'societal' views (Chave, Johnson & Rose 2007), but there is no up-to-date, detailed, or comprehensive information on Australian public understandings of and values associated with animal research.

Although there is widespread international consensus about the governing principles for animal research, there is a clear gap in our understandings of Australian public views on and the values associated with animal research. The 3Rs (Replacement, Reduction, and Refinement, Russell Burch 1959) recognise the responsibilities of those involved with the care and use of animals for scientific purposes to consider and implement alternative approaches that do not use animals where possible, and if use of animals is necessary, to ensure that research is highest quality, safeguards welfare, and is designed to use the least number of animals. There have been Australian studies of researchers, AEC members, animal welfare officers, and licensing authorities about their views on the 3Rs (e.g., Chen 2017; ORIMA 2018), but no comparable work on Australian public views. Research elsewhere (the EU: Lund, Lassen & Sandøe 2012; Lund et al 2014; Crettaz von Roten, 2008, 2009, 2013, the US: Joffe et al 2016a, b, New Zealand: Williams, Decre & Elliott 2007, China: Davey Wu 2007) and global comparative research (Ormandy, Schupli & Weary 2013) is difficult to translate to the Australian context due to different levels of visibility of animal research and activism and diverse sociocultural values.

Australians also have varying levels of trust in government. Since 2007, surveys conducted by the Scanlon Institute have shown that the majority of Australians have been sceptical of politicians and

cautious in their trust of political parties. Although trust rose to 54% in July 2020 during the COVID-19 pandemic response (the highest percentage recorded since surveys started in 2007), trust in the Australian government has declined to 44% in July 2021 (Markus 2021). People between the ages of 18 to 24 and 25 to 34 showed the lowest levels of trust, with only 38% and 33% respectively indicating that they believe the Australian government can be trusted to do the right thing for the Australian people. Conversely, 55% of people over the age of 65 indicated greater levels of trust in the Australian government (Markus 2021).

The Australian regulatory framework for the care and use of animals for scientific purposes stresses that such activities should be responsible, ethical, and humane (NHMRC 2019). The Code governing such research has been revised to take account of both "changing community views and scientific developments" (NHMRC 2013, 85), yet we have limited information to inform a series of key questions including what types of organisms should be used for biomedical research (e.g. chimpanzees, domestic cats or dogs, laboratory-bred mice) and under what conditions, how to gauge when and whether animal research is 'necessary,' and whether current regulatory processes are adequate, especially as lack of transparency and openness have been noted as problematic in the Australian context (e.g. Sharman 2006; O'Sullivan 2008; Rose 2011; Whittaker 2014; Timoshanko, Marston & Lidbury 2017). Publicly available information is limited (a review noted no universities had publicly available 3R strategies, NHMRC 2019), perhaps out of concern for risk to animal researchers. What constitutes 'the public' also is not straightforward: ethnographic analysis reveals that animal welfare experts have different theories of value in relation to various publics, such as citizens and consumers, and different types of animal use (Degeling & Johnson 2015).

Hence Professor Rachel Ankeny and Dr Alexandra Whittaker from the University of Adelaide were contracted by the Australian and New Zealand Council for the Care of Animals in Research and Teaching (ANZCCART) to carry out a survey of the Australian public into the public awareness of, and attitudes towards, the use of animals in scientific research to enhance our understanding of how the Australian public views the use of animals in scientific research and to provide a baseline for future qualitative research as well as repeated surveys in the future. The survey also was designed to allow comparison to previous surveys on the same topic in the United Kingdom (Clemence & Leaman 2016). Results may also be used to compare against results from surveys conducted in other locales, such as New Zealand (Williams, Dacre & Elliot 2007). This report presents the findings of the survey which was conducted in April 2022.

Project Design/Methodology

The results detailed in this research report were derived through the use of a survey instrument which built upon existing surveys performed in the United Kingdom by the Ipsos MORI Social Research Institute for the UK Department of Business, Energy and Industrial Strategy with their permission (Clemence & Leaman 2016). The instrument was supplemented with questions specifically of relevance in the Australian context as identified through a literature review, consultation with ANZCCART, and our previous knowledge of the field. The instrument was piloted with a group of students for comprehensibility, ease of administration, and timing. Ethics clearance for research with human subjects was obtained via the University of Adelaide's HREC (H-2022-047).

The survey was performed anonymously online with recruitment occurring through an established professional panel company, McNair yellowSquares (Sydney). The use of a professional panel ensured that the sample broadly represented the Australian public in terms of key demographics, completion of the surveys in a timely fashion, and ability to easily download data for analysis. The sample size requested was 2500, based on calculations in relation to the Australian population, with oversampling to allow for sampling error. All responses were deemed appropriate for use, resulting in a total of 2694 survey responses used in the analysis.

The project was broken down into three phases:

Project Limitations

There were a few limitations to the current project which are important to highlight. Use of an established instrument from the UK was thought to be the best approach for this initial survey both for comparison of results and also because of the availability of longitudinal data in the UK context. However after conducting the survey in Australia, various limitations both of the original instrument and the limits of its applicability to the Australian context were recognised. Examples of the UK survey's limitations are as follows:

- Different background conditions, particularly less activism, as well as no centralisation and arguably less visibility of animal research regulation in Australia compared to the UK. As a result, the responses to some questions were much more difficult to interpret in the Australian context. For instance, phrasing of many questions in terms of

whether participants agree or disagree with certain statements resulted in meaningful findings in the UK, but in the Australian survey we found that a large number participants choose options in between, likely because of lack of knowledge or familiarity with processes associated with animal research, which in turn made these results difficult to interpret.

- No definitions of key terms were provided including 'replacement,' 'reduction,' 'openness,' 'transparency,' 'secretive,' and 'momentary harm,' which left many questions open to multiple interpretations by the respondents.
- There were some missing questions in the original instrument that would have been useful to include in the Australian context, particularly given the COVID-19 pandemic (e.g., no option associated with 'human health' was included in questions 9 and 10 in the survey).

The COVID-19 pandemic was also likely to have influenced these results, both positively and negatively, in light of increased conversations about medical research and vaccine development occurring in the public sphere, and continued polarisation and differences in views about vaccines. Such conversations may have altered attitudes towards animal use in research, given the recent benefit to human health, but these effects are impossible to determine via responses to a quantitative instrument such as this one.

Survey-based methodology also generally has limits. Closed-ended questions do not allow for researchers to dive deeper into why respondents answered in particular ways, nor do they allow for exploration into the social and cultural factors that may influence responses. However, a quantitative survey of the type performed for this study is appropriate to provide a baseline against which changing attitudes can be measured, as well as to help ground richer qualitative research on topics of particular interest to respondents in the future.

Results

Demographics

The survey was targeted at members of the general Australian population over the age of 18, using a representative sample based on age, gender, and location quotas. Income, ethnic heritage, and diet were used as soft quotas, as to not allow overrepresentation of any particular sub-group. No more than 11% of participants were recruited who self-described as particular types of vegetarians or vegans (see Table 3 below), with the soft quota reflecting the frequency of these dietary preferences in the general population. This factor was included as one of the soft quotas out of recognition that vegetarian or vegan preferences are often associated with stronger views on animal welfare and rights

which in turn would be likely to have flow on effects on participants' views on animal research. We did not hypothesise any other specific tendencies in terms of views on animal research in relation to the other quotas. For all statistical analyses performed, significance was taken to be *p<0.05.*

Table 1: Age and gender of participants

	Male	Female	Prefer to self-describe
18-24 years	132	163	2
25-34 years	285	251	
35-44 years	243	246	1
45-54 years	227	205	
55-64 years	184	242	
65 and over	263	250	
Total (n=2694)	***1,334***	***1,357***	***3***

Table 2: Geographical location of participants

Location	Count
Australian Capital Territory	50
Adelaide	151
South Australia other than Adelaide	47
Brisbane	264
Queensland other than Brisbane	277
Melbourne	514
Victoria other than Melbourne	168
Sydney	548
New South Wales other than Sydney	294
Perth	225
Western Australia other than Perth	63
Tasmania	61
Northern Territory	32

Table 3: Dietary preferences of participants

Dietary descriptor	Count	Percentage
Omnivore	2248	83.4 %
Flexitarian	206	7.6%
Pescatarian	51	1.9%
Lacto-ovo	55	2.0%
Lacto-vegetarian	18	0.7%
Ovo-vegetarian	8	0.3%
Vegan	50	1.9%
Other	58	2.2%

Table 4: Number of participants that were pet owners

Yes	**1709**
No	985

Table 5: Ethnic heritage of participants

Participants were able to select all that apply to them.

Ethnic Heritage	Count
Australian	1937
Aboriginal/Torres Strait Islander	45
North-West Europe	388
Southern or Eastern Europe	188
North East Asian	93
South East Asian	119
Southern Asian	81
Central Asian	9
Polynesian, Pacific Islander, Maori	20
North African or Middle Eastern	28
Sub-Saharan African	15
North American	13
South or Central American or Caribbean Islander	15
Other	40
Prefer not to say	14

Table 6: Religious affiliations of participants
Participants were able to select all that applied to them.

Religious Affiliations	Count
Christianity	1143
Hinduism	58
Buddhism	45
Islam	44
Judaism	19
Other	43
None	1286
Prefer not to say	69

Knowledge and awareness about the use of animals in scientific research

Key findings

- A large majority of participants say they care about use of animals, but don't feel well informed.
- 64% of participants were interested in finding out more about the research being done into alternatives to using animals in research, and 70% were interested in finding out more about what is being done to improve the welfare of animals used in research.
- A significant proportion of respondents were uncertain about which types of animal research were permitted in Australia (with ethics approval), ranging from 40-59% depending on the specific type of application.

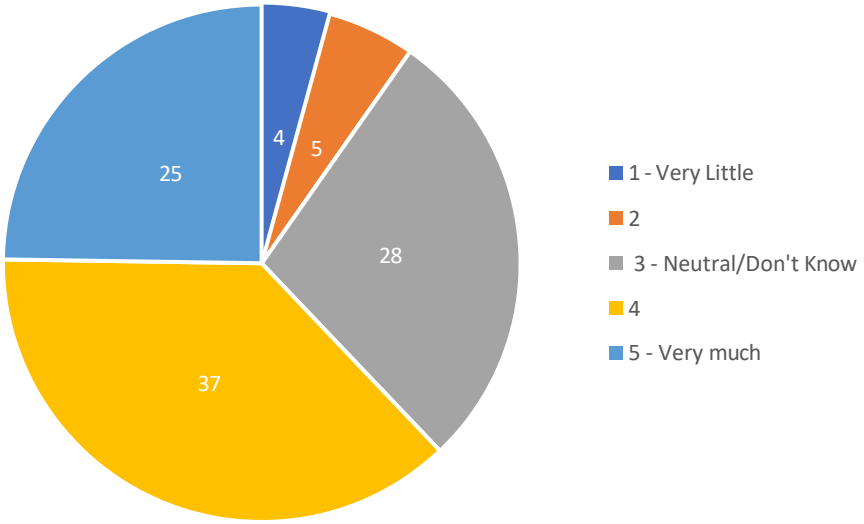

Figure 1: Responses to question 1 "The use of animals in scientific research is an issue I care about"

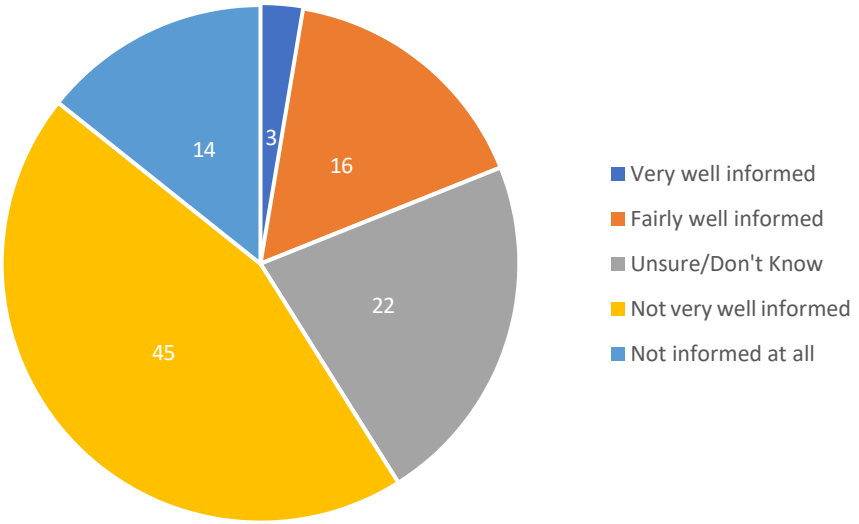

Figure 2: Responses to question 2 "How well informed do you feel, if at all, about the use of animals in scientific research in Australia?"

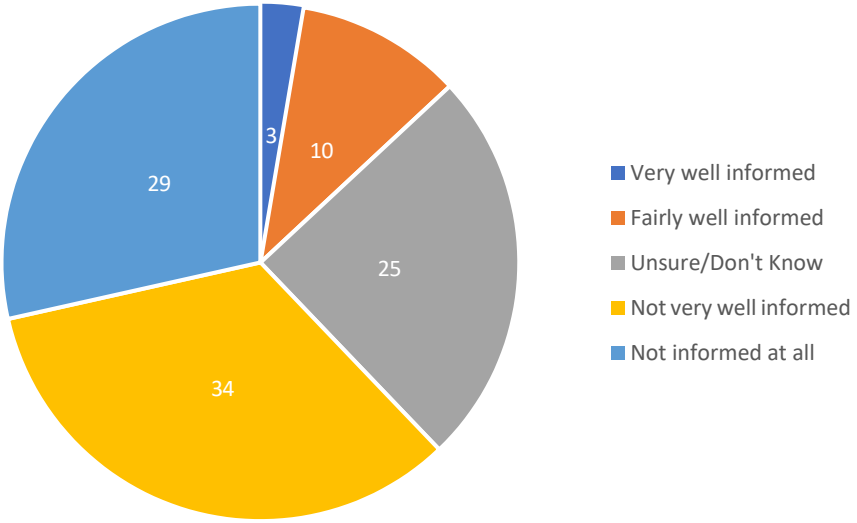

Figure 3: Responses to question 2 continued "How well informed do you feel, if at all, about the process required for scientists to gain approval for animal research in Australia?"

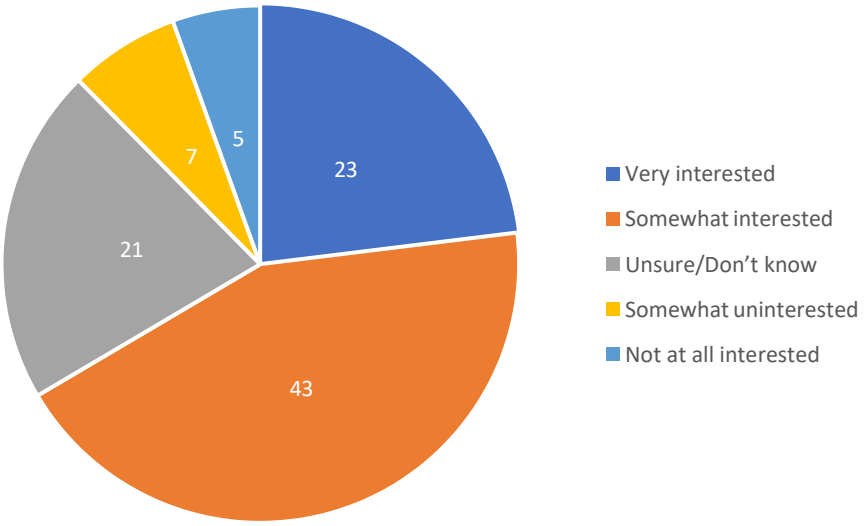

Figure 4: Responses to question 3 "How interested would you be, if at all, in finding out more about the ongoing work to find alternatives to using animals in scientific research?"

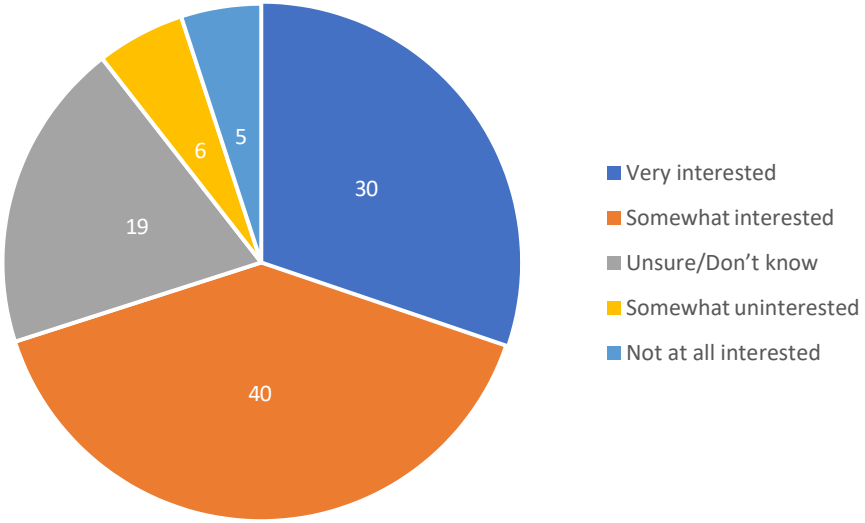

Figure 5: Responses to question 3 continued "How interested would you be, if at all, in finding out more about the ongoing work to improve the welfare of animals used in scientific research?"

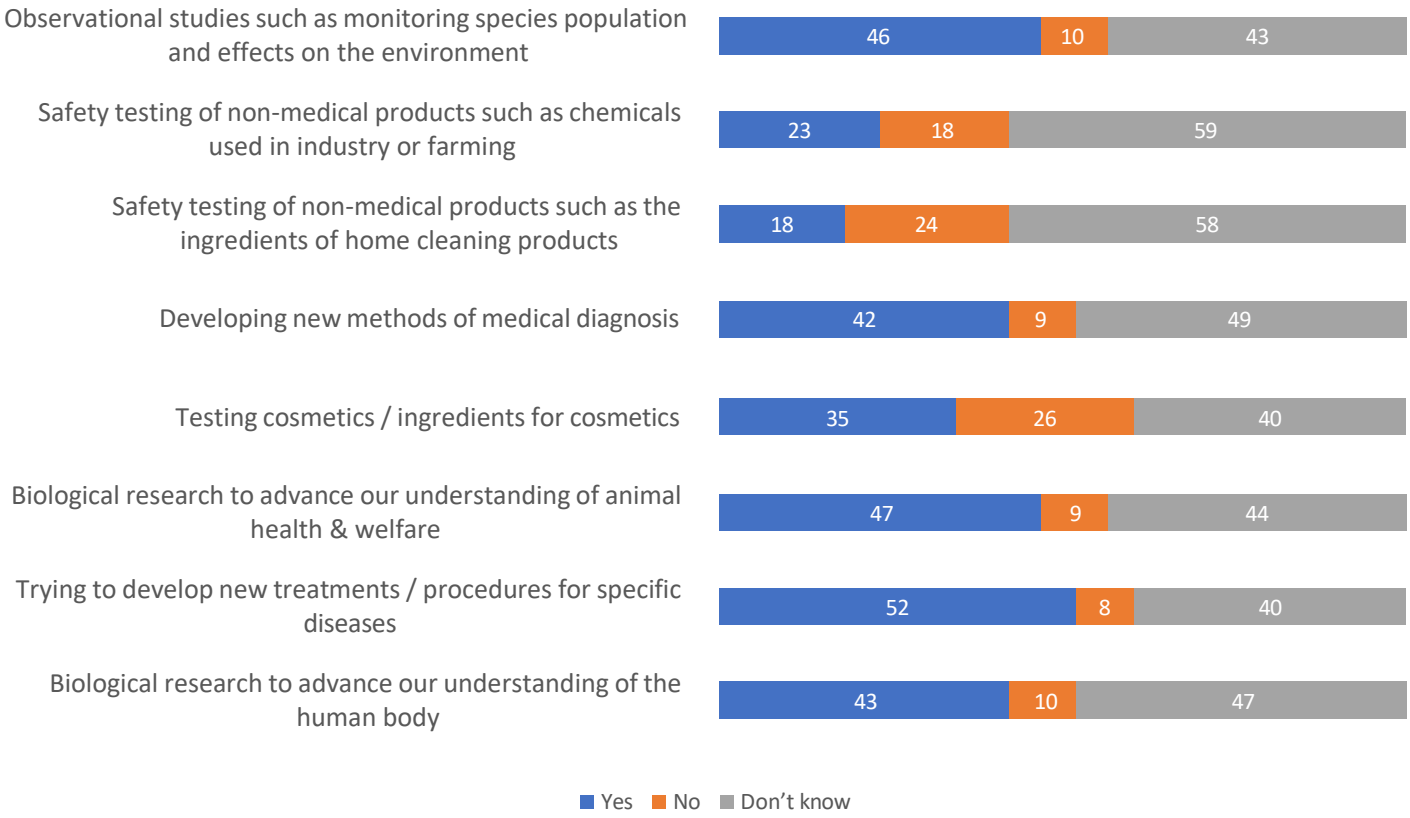

Figure 6: Responses to question 7 "As far as you know, for which of these types of research, if any, are researchers currently allowed to use animals in Australia (with the applicable approval)?"

Viewpoints on animal use in research

Key findings: Public acceptance of using animals in research

- Members of the public are unsure about animals being used in any kinds of research, but acceptability increases if research is done for medical reasons, if there are no alternatives, or if there is no unnecessary suffering to the animals.
- While there were individual variations in age-related associations between questions, as a generalisation, younger people were typically less accepting of using animals in research, and placed greater emphasis on animal welfare. Younger respondents also felt that more work was needed into alternatives to use of animals for research, and felt as though they were well- informed about the use of animals in research. This fits with previous research performed internationally with suggestions that older populations are more likely to instrumentalise animals, or responses are related to a cohort effect where those with a shared history are likely to respond similarly (see review of Ormandy and Schuppli 2014).
- 70% of participants are happy for animals to be used in scientific research so long as there is no animal suffering and no alternative, while 66% are comfortable with using animals in research for medical purposes where there are no alternatives available.
- 57% said they disagree with the statement "it does not bother me if animals are used in scientific research," with 20% saying that they neither agree nor disagree with this statement.
- Results suggest that members of the public are apprehensive and unsure about the use of animals in research, perhaps due to a lack of knowledge or confidence in the system (see highlighted results in Figures 7-9).
- In short, the use of animals in research seems to be conditional: 37% of the public agree that it is acceptable to use animals in all types of research where there is no alternative, with 30% disagreeing and 33% sitting on the fence or unsure. That the use of animals in research is conditional is further underscored by the fact that a majority of the public say that they are bothered by the use of animals in research: 57% disagree that it does not bother them that animals are used in experimentation while only 20% agree that it is of no concern to them.
- There are consistent gender differences around the willingness to accept the use of animals in research, with females being less accepting of their use (for example, when asked whether "I can accept the use of animals in scientific research as long as it is for medical research purposes where there is no alternative," Mann–Whitney U = 732875, P < 0.001 two-tailed), see Figure 8.

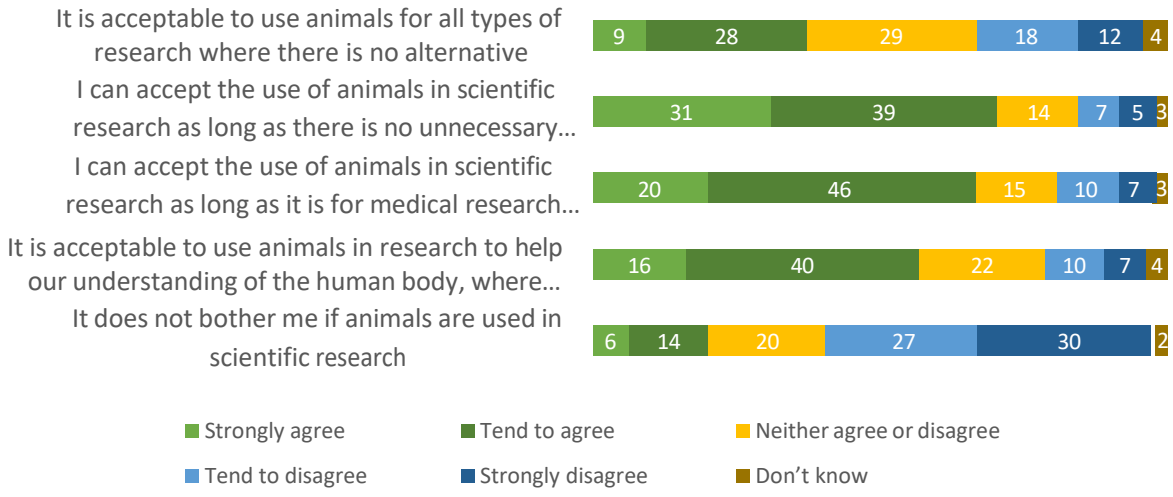

Figure 7: Responses to question 4 "How strongly do you agree or disagree with these general statements about the use of animals in scientific research in Australia?"

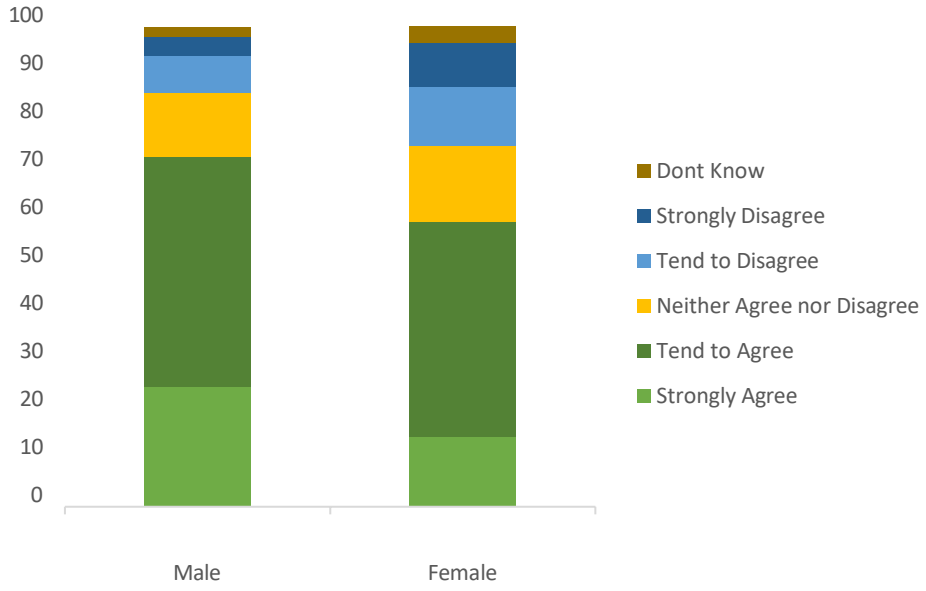

Figure 8: Gender-based responses to statement "I can accept the use of animals in scientific research as long as it is for medical research purposes where there is no alternative" in question 4

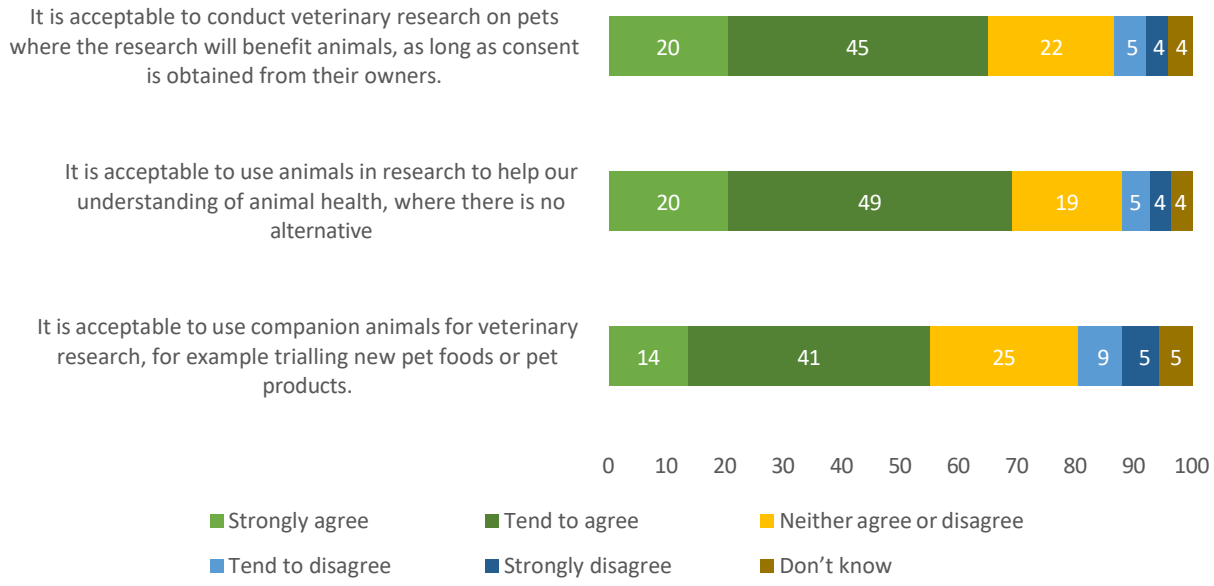

Figure 9: Responses to question 4 continued "How strongly do you agree or disagree with these general statements about the use of animals in scientific research in Australia?"

Key findings: Support for looking into alternatives to using animals

- There was overwhelming support for looking into alternatives to using animals in scientific research, with 76% of participants agreeing with the statement, with only 32% supporting a ban on animal research altogether.
- Several demographic factors clearly contributed to responses as to whether respondents agreed with the statement that 'the Australian government should ban the use of animals for any form of research'; ordinal logistic regression analysis was conducted in SPSS (version 28.0.1.0) which showed that the following factors contributed:
    1. Age (for more details, see Figure 10, overall significance $p < 0.001$)
    2. Pet ownership [ordered log-odds (Estimate)= -0.548, SE=0.07, Wald= 58.5, $p < 0.001$]. The estimated odds ratio suggested pet owners were 1.7 times more likely to *agree* with the statement compared to non-owners.
    3. Practising Hinduism [ordered log-odds (Estimate)= 0.533, SE=2.38, Wald= 5.035, $p = 0.03$]. The estimated odds ratio suggested that proponents of Hinduism were 1.7 times more likely to *disagree* with this statement compared to respondents with no religious affiliation. There were no other religions with significant associations when compared to the reference (no religious affiliation), and ethnicities also did not have significant associations.
    4. All forms of specific dietary preference led to highly significant associations ($p < 0.001$ for all) with agreement with this statement, when compared with those who identified as omnivores. Practising any of the other dietary choices articulated in the survey was associated with increased agreement with this statement with odds ratios ranging from 2.4 to 12.

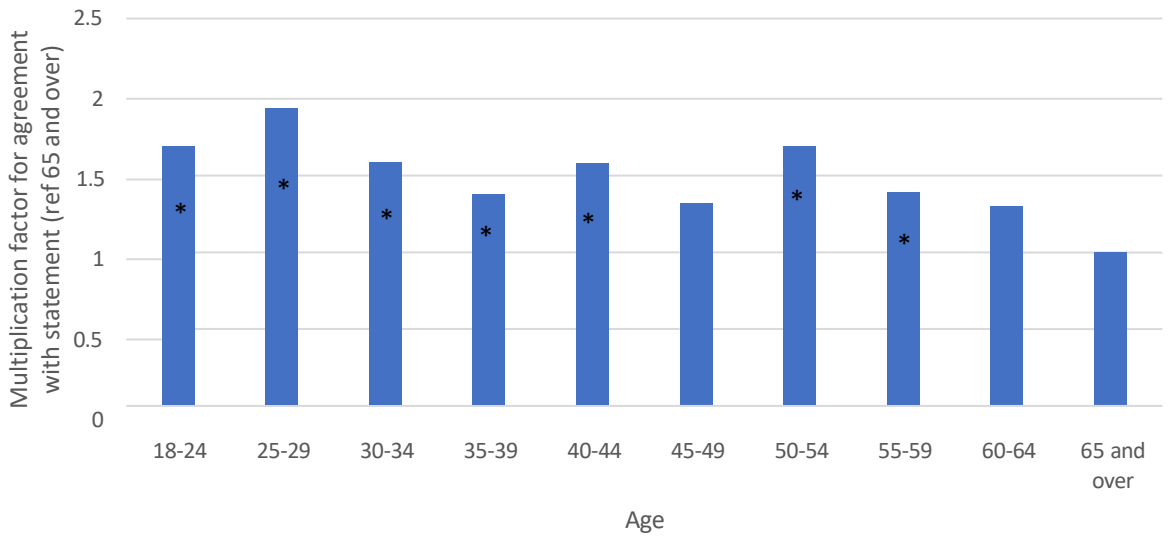

Figure 10: Differences between age groups in agreement with statement that 'The Australian government should ban the use of animals for any form of research'. The 65 and over group is taken as the reference group. * represents significance in agreement with respect to the 65 and over reference group. As an example, the 18-24 years age group are 1.7 times more likely to show agreement with this statement than the 65 and over group.

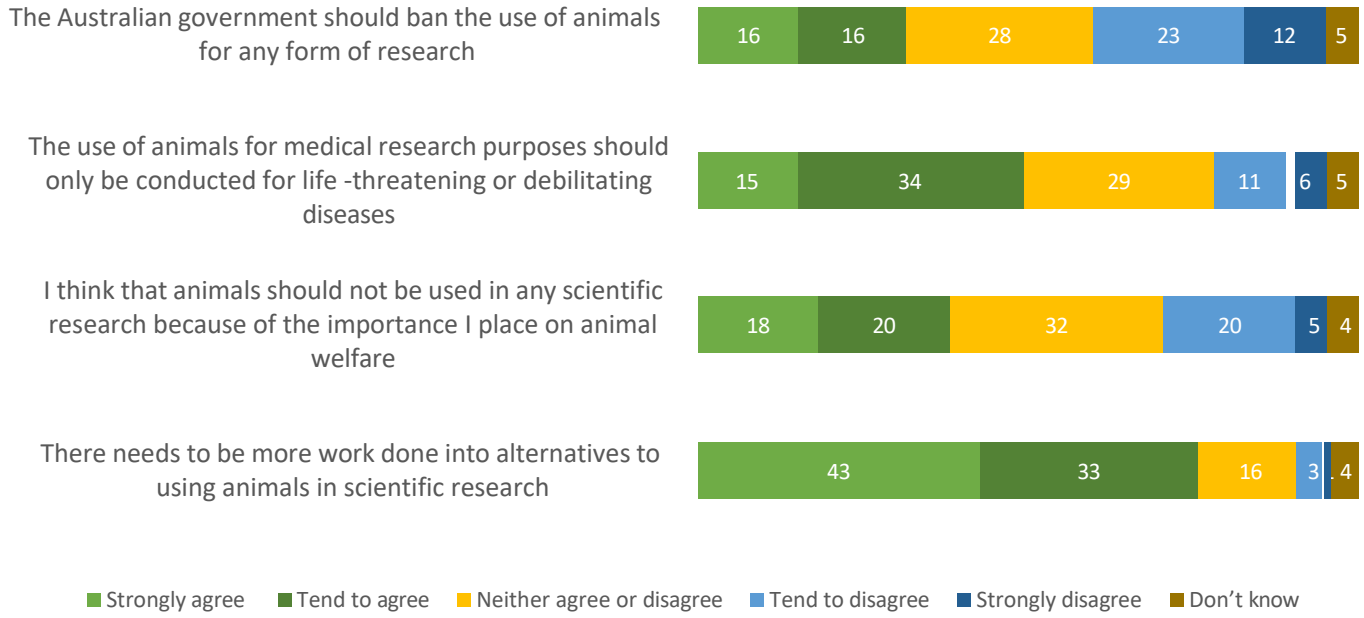

Figure 11: Responses to question 4 "How strongly do you agree or disagree with these general statements about the use of animals in scientific research in Australia?"

Key findings: Researchers could be doing more to reduce use of animals for research

- Despite up to 25% of participants indicating that they don't know about what researchers are doing to reduce using animals in their research, 69% believe they could be doing more to reduce the suffering of animals used in scientific research. 56% believe that the use of animals for medical research purposes is important for human health.
- 56% of participants believe that the use of animals for medical research purposes is important for human health. When asked about where they have heard information about the use of animals in research, many said in reporting about testing of COVID-19 vaccinations, and the high levels of reporting on COVID-19 during the period in which the survey was performed may have influenced this result.
- However many respondents indicated that they felt they didn't know, and these topics warrant more detailed exploration likely in a qualitative follow up study in order to excavate what is at issue in this domain.

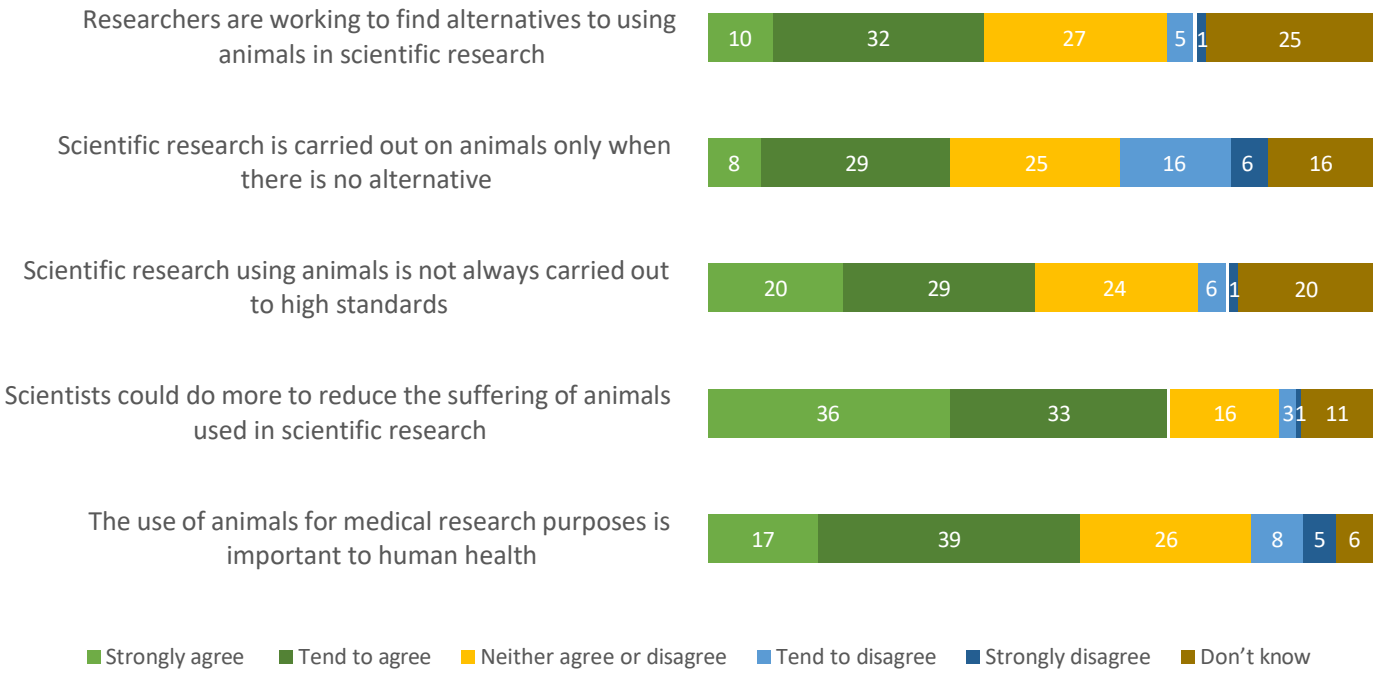

Figure 12: Responses to question 5 "How strongly do you agree or disagree with the following statements?"

Key findings: Research type acceptability and type of animal used

- Participants generally disagree with the use of animals in research exploring the harm of chemicals
- A question in the survey investigated whether public acceptance of animal research is contingent on the species of the animal used and in relation to three areas of research:
    - Medical research to benefit people
    - Research into animal health
    - Environmental research (e.g., effect of chemicals on food, health etc.)
- From the list of animals, rats and mice were the most acceptable for all types of research listed: close to 60% think it is acceptable to use rats and mice in medical research to benefit people. However, only around 40% believe it is acceptable to use rats and mice in teaching where procedures cause momentary stress or harm.
- Interestingly, the pattern seen in response to the various types of animals used in research is not necessarily related to sentience or the usual characteristics associated with ethical standards of animal research. Instead the responses in this study potentially are related to the perception of charismatic megafauna or animals, particularly those with which participants are more familiar, as being more problematic to use for research.
- There were much lower levels or acceptability in using all species for teaching purposes where procedures cause momentary stress of harm. These findings are consistent with the acceptability of research if there is no unnecessary suffering (see Figure 7).
- However, 20% of participants say they "don't know" about the use of a particular species in any of the areas of research.
- There is greater acceptability in using any species in research relating to animal health, perhaps because people can see direct applicability of research outcomes to the species or do

not envisage these types of research as potentially causing harm to the animal. Again, these topics need to be followed up with qualitative research in order to explore these issues.

- There is clear resistance to use of animals for teaching purposes but there are several things interconnected in the way the question is phrased, making it difficult to interpret, namely
    - where is the teaching taking place – participants may be thinking about high school or their own experiences
    - negative public attitudes towards universities, demonstrated elsewhere amongst responses to this survey
    - problems with the definition of "momentary harm or stress" – with the statement being too arbitrary.

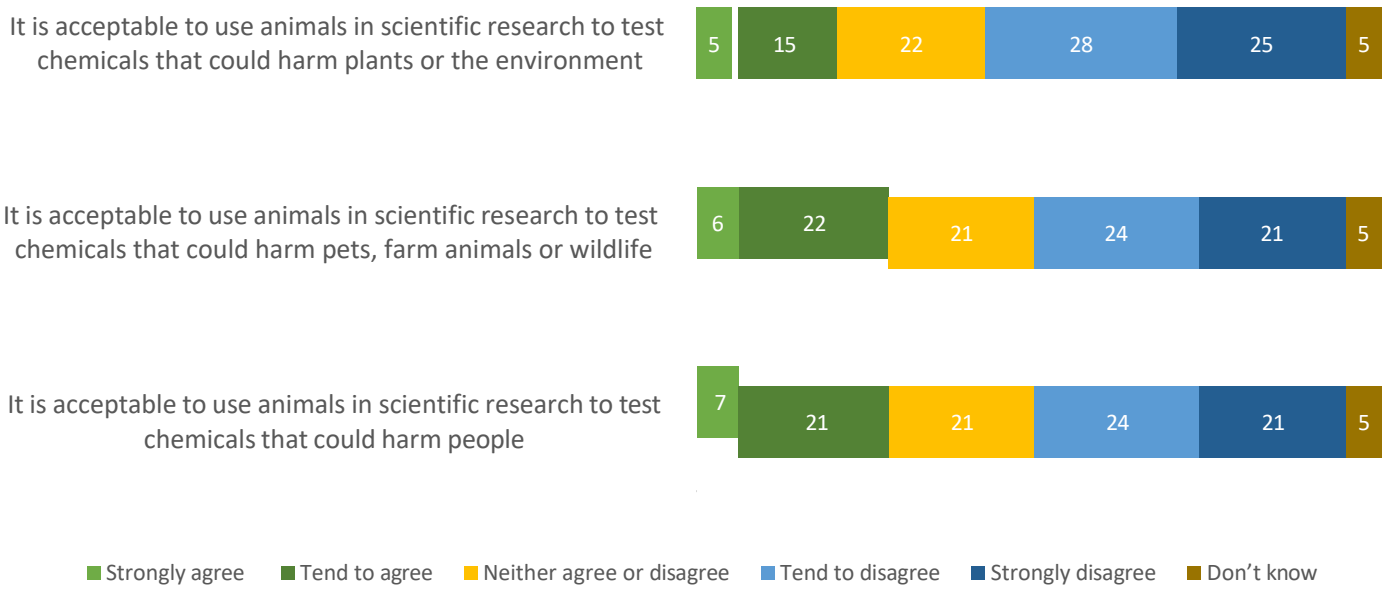

Figure 13: Responses to question 6 "How strongly do you agree or disagree with the following statements?"

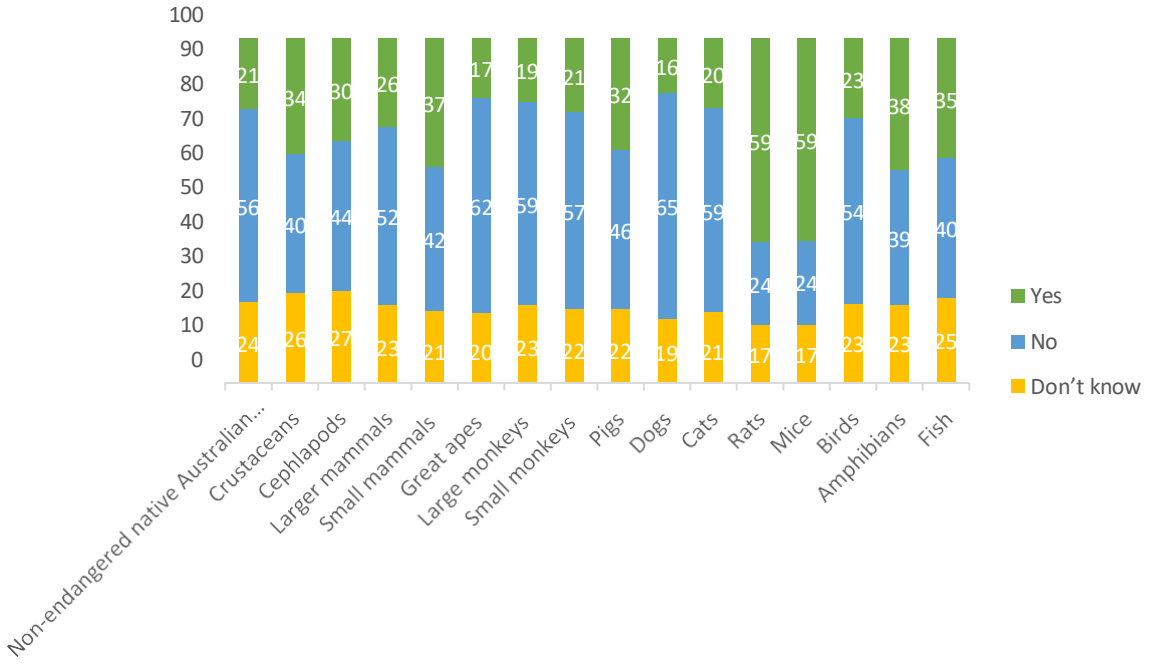

Figure 14: Responses to question 8 "Which, if any, types of animals do you think it is acceptable to use for experimental medical research to benefit people?"

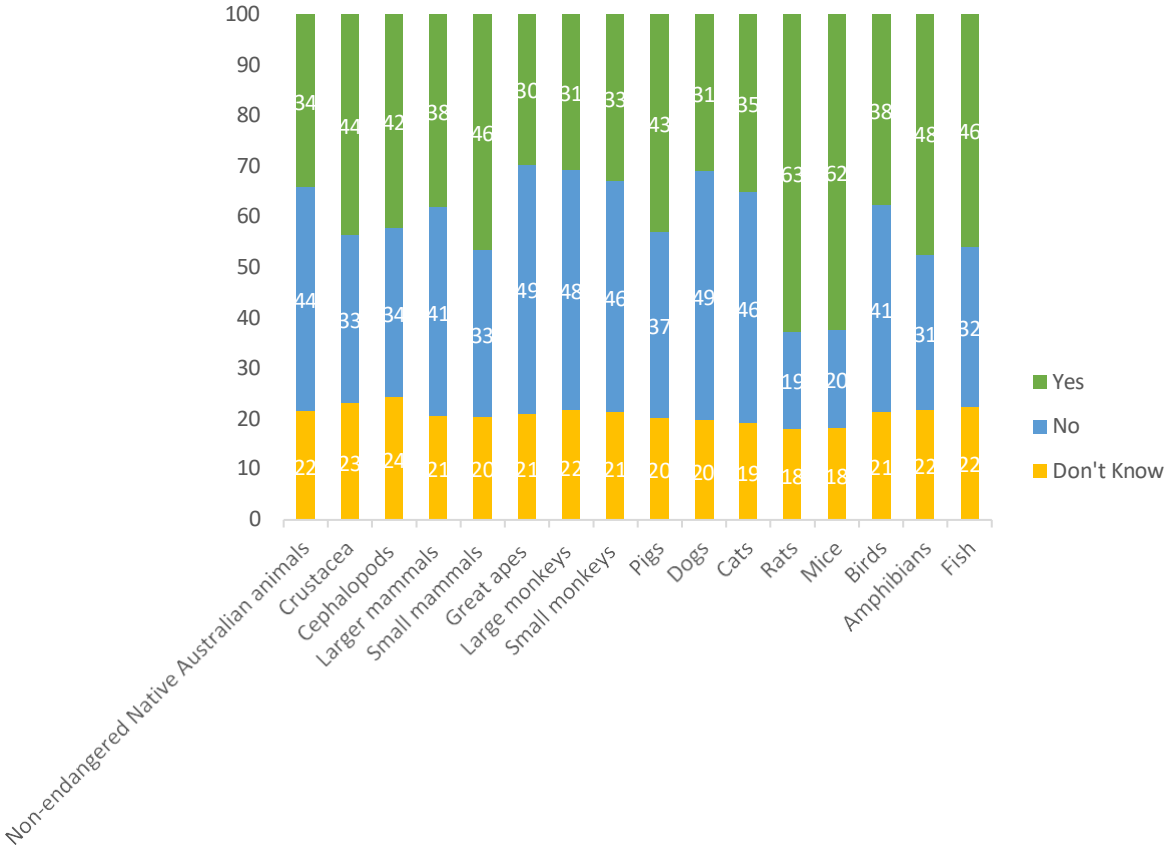

Figure 15: Responses to question 9 "Which, if any, types of animals do you think it is acceptable to use for research into animal health?"

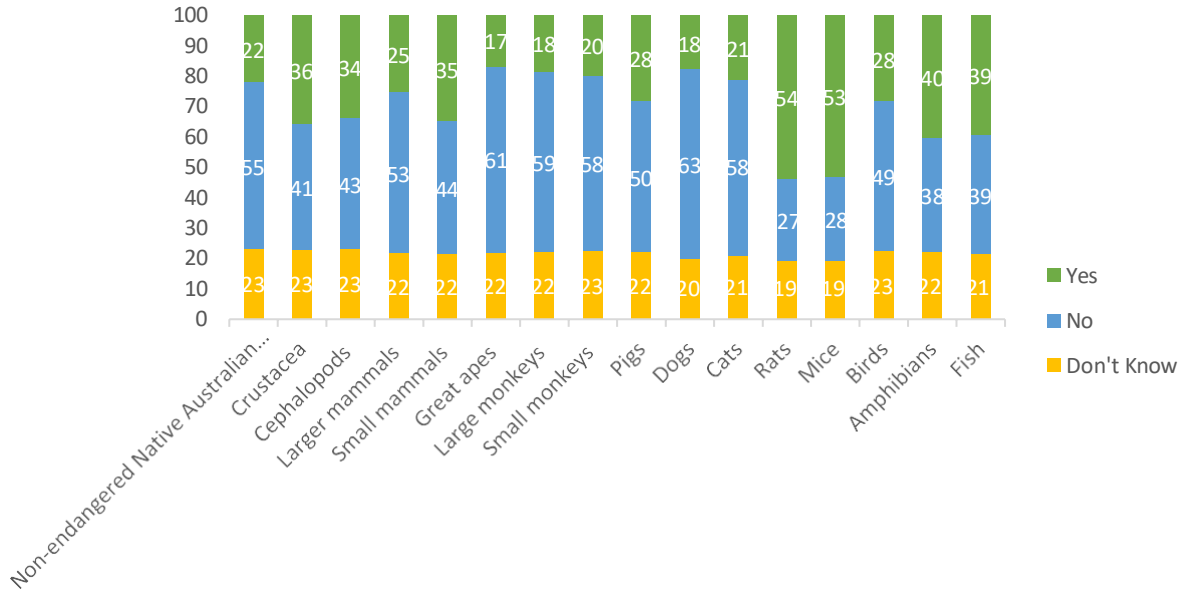

Figure 16: Responses to question 10 "Which, if any, types of animals do you think it is acceptable to use for environmental research (for example, to look at the effect of chemicals on the food chain or the effect of air pollution on health)?"

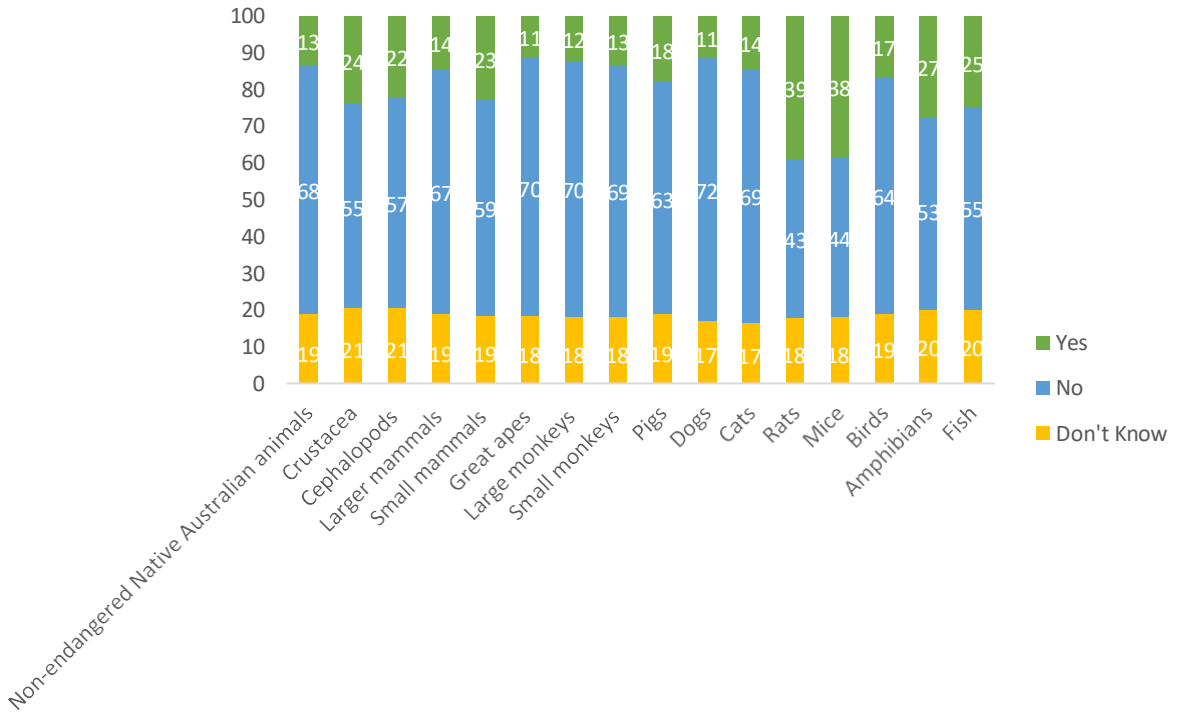

Figure 17: Response to question 11 "Which, if any, types of animals do you think it is acceptable to use for teaching where the procedures cause more than momentary harm or stress?"

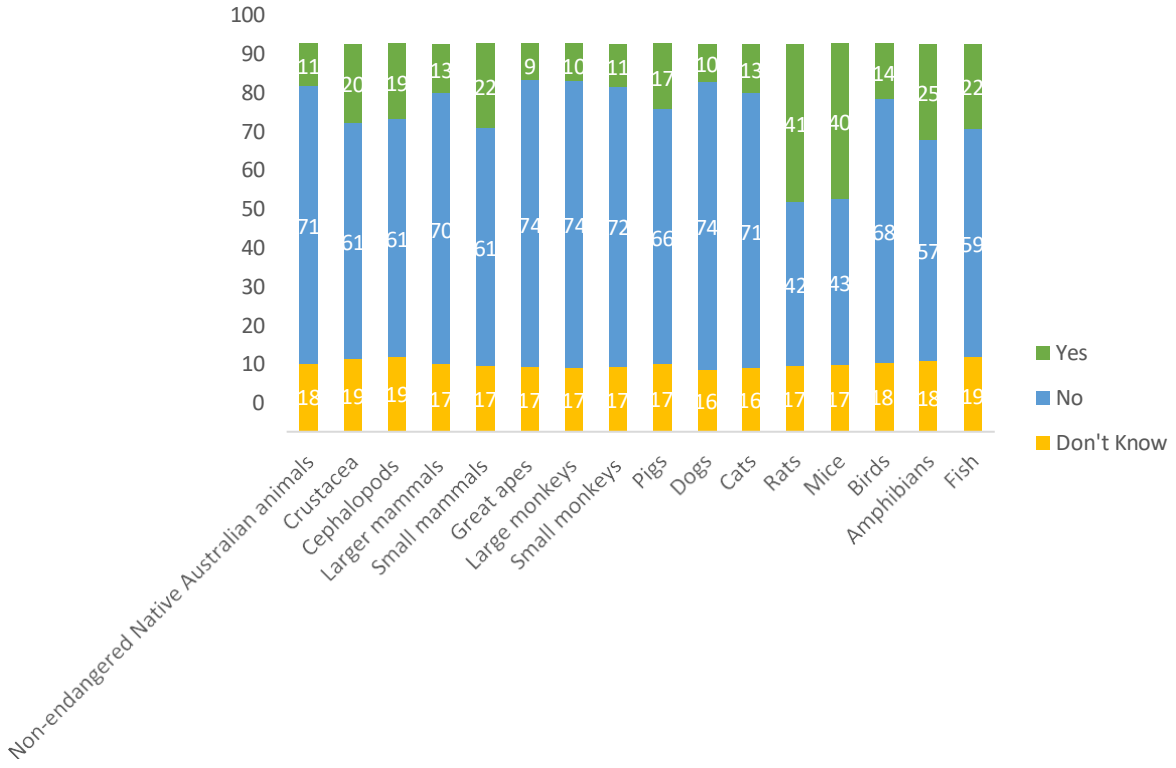

Figure 18: Responses to question 12 "Which, if any, types of animals do you think it is acceptable to use for safety testing of non-medical products? E.g., cleaning products, sanitary items, food additives"

- Ordinal logistic regression was performed to determine whether there were differences in response between pet owners and non-pet owners for acceptability of using dogs, cats or large mammals in experimental medical research (Q8). No significant differences were found. Similarly, there were no differences between these populations in consideration of the same groupings in relation to animal health research (Q9).
- Interestingly, there were no differences between those with an affiliation with Islam and non-Islamic respondents on the acceptability of using pigs in medical research (Q8h), or between Hindus and non-Hindus on using large mammals in medical research (Q8m). However, in interpreting these data consideration should be given to the small sample sizes representing Islamic and Hindu respondents.

Governance and transparency of research

Key findings

- A quarter of participants stated they neither agreed nor disagreed with the statements, except in the case where 82% of respondents wanting institutions to be more transparent about their use of animals (see Figure 19).
    - 54% of participants say they want greater involvement in the public around decision making
    - 54% also believe that the approval of animal research by an AEC, rather than government, is satisfactory
- In question 13, respondents were provided with a brief summary about the requirement of researchers applying to animal ethic committees to obtain approval to use animals in research, the membership requirements of an AEC, and the role of AECs in monitoring research.

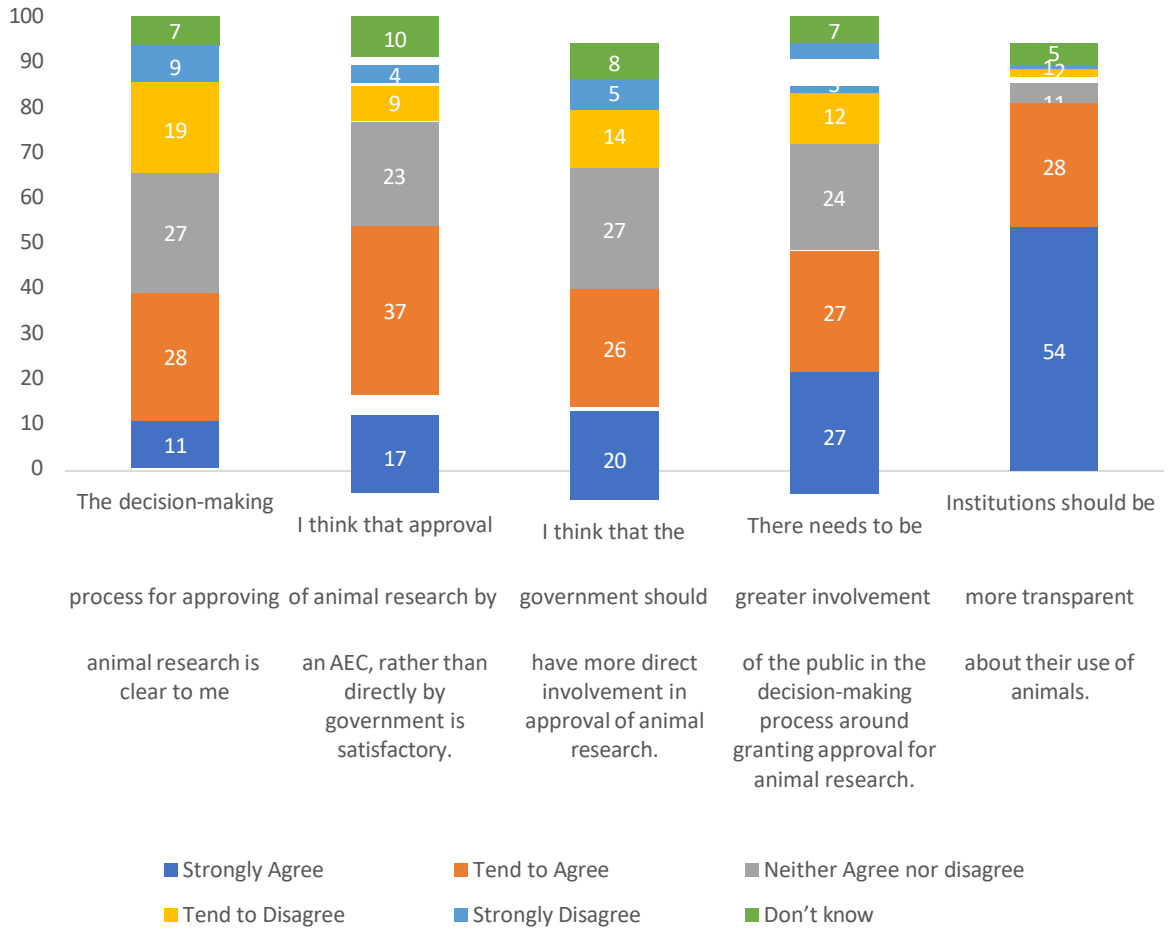

Figure 19: Responses to question 13 "How strongly do you agree with the following statements?"

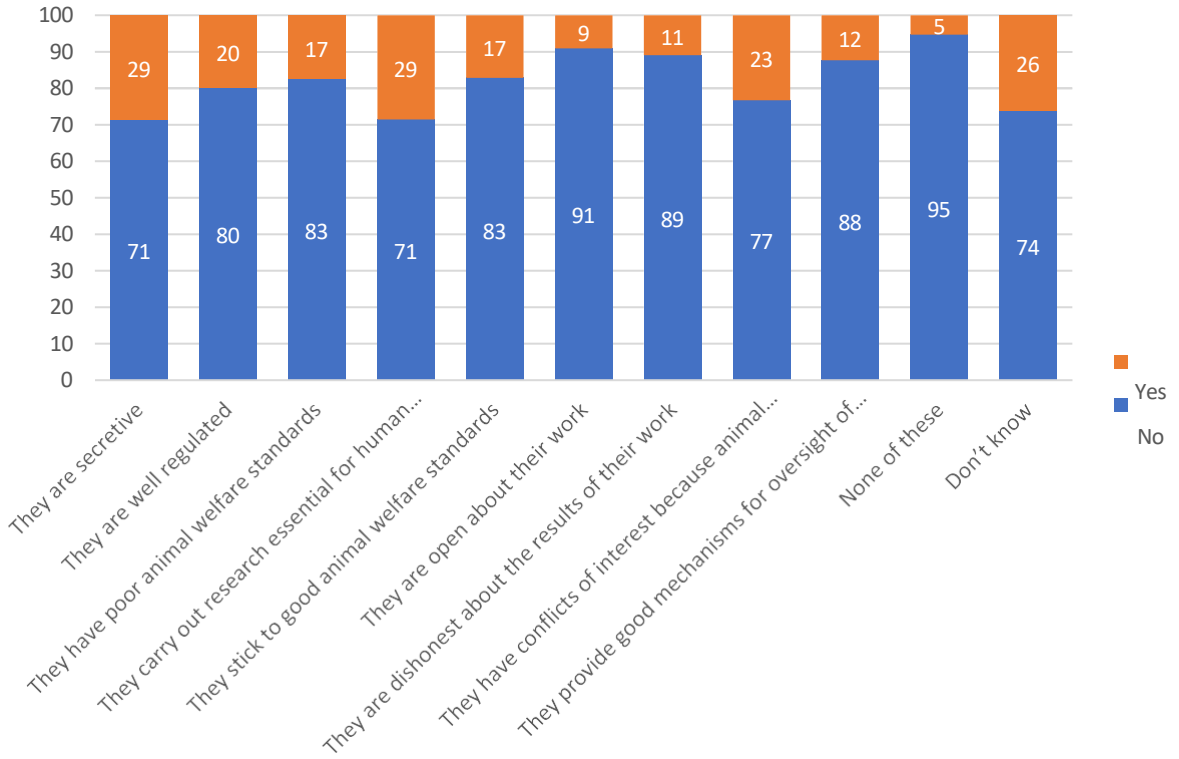

Figure 20: Responses to question 14 "Which, if any, of the following fit your view of organisations that use animals for scientific research in Australia?"

- 29% say they neither trust nor distrust the regulatory system around the use of animals in scientific research in Australia which highlights a level of uncertainty around how the regulatory system works. This is further supported by 28% saying they neither agree nor disagree that the rules on using animals in scientific research in Australia are well enforced. 21% say that they do trust the regulatory system with 37% of participants saying they do not trust the system.

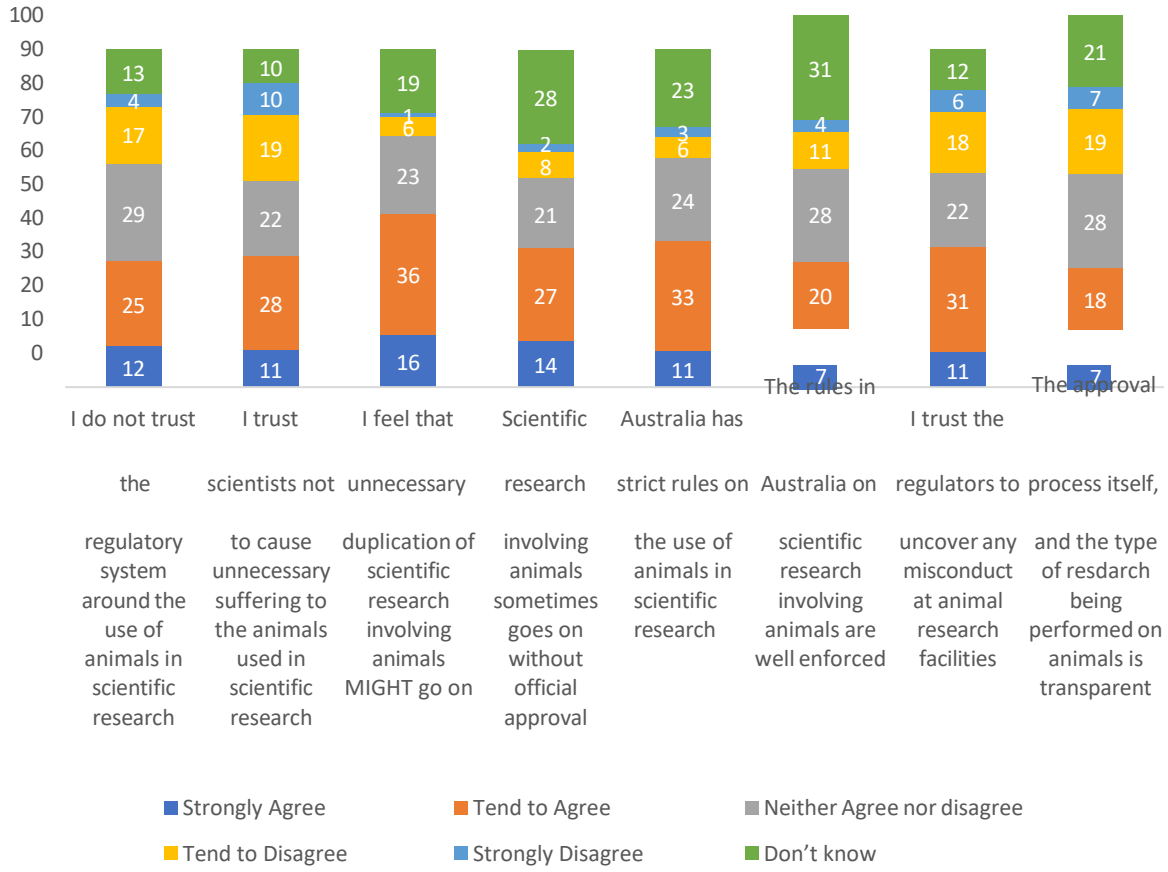

Figure 21: Responses to question 16 " How strongly do you agree or disagree with the following statements about the rules and regulations on the use of animals in scientific research in Australia?"

Sources of information and attitudes towards activism

Key findings

- Animal welfare organisations are most trusted, followed by vets. Universities and research institutions rank considerably lower down the list. It is somewhat unclear how participants define each of these types of organisations
- Qualitative research could help to tease out attitudes, for instance on whether researchers are considered to be only working in industry or also in universities/public institutions.
- Participants get their information from websites, followed by TV and social media.
- Participants favour more passive and less disruptive forms of protest such as handing out leaflets, and find active protesting or demonstrations to be more problematic.

Figure 22: Responses to question 17 "In which, if any, ways would you personally like to receive information about the use of animals in scientific research?"

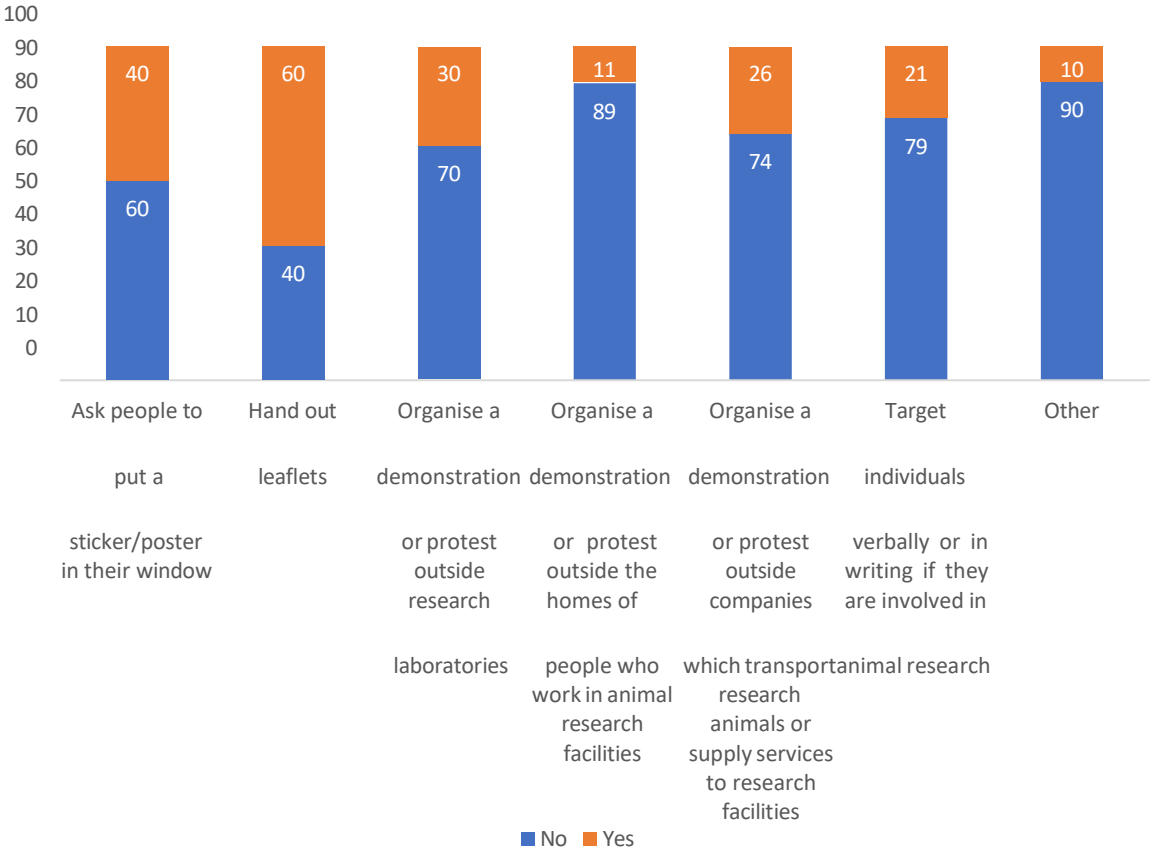

Figure 23: Responses to question 19 "Which, if any, of the following do you feel are acceptable things for organisations supporting animals to do?

Summary

The results presented here highlight some of the attitudes that Australians have towards the use of animals in research. This preliminary research provides significant opportunities for ANZCCART and others involved in animal research, including data that can help to guide increased public engagement around the following key issues:

- the organisation itself, including what it does, why, and who is involved;
- how the regulatory processes associated with animal research work, including activities based at university AECs;
- the use of different species, including more engagement about how certain species are more appropriate than others for certain purposes;
- the importance of animals for teaching purposes in certain contexts and processes in place to ensure that suffering is minimised; and
- discussions about the 3Rs, particularly replacement and reduction, including what the public thinks 'replacement' might or should involve, and how it works.

While this survey asked how respondents would like to receive information (question 18), it did not ask whether respondents would like more information or what type of information they would like (or what they would prefer not to be exposed to). We suspect (but would need to confirm this hypothesis via further research) that the type of information that members of the public want will have limits. These limits potentially will parallel findings associated with farm animal welfare and what is called the "meat paradox" (Joy 2010) where people want to know more about some things relating to animal production but not about confronting issues such as slaughter. Future research should include exploration into the type of information which the Australian public wants with regards to the use of animals in research in order to help shape communication and engagement strategies.

ANZCCART also could use this survey as a basis for development of future research activities aimed at increasing our understanding about public attitudes towards animal use in research. As previously mentioned, survey-based methodology generally has limits. Closed-ended questions do not allow researchers to explore why respondents respond in such a way, nor do they allow for exploration into the social and cultural factors that may influence responses. To gain greater insights into attitudes about the use of animals in research, it is recommended that this survey be followed up with a qualitative study using focus groups and/or interviews, or a more detailed and refined survey that includes less closed-ended response formats and also scenarios in order to develop a richer understanding of the attitudes and values expressed, and to better inform approaches to animal research and engagement about it.

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Appendix 1: Survey Questions, including survey programming instructions.

ANZCCART Australian Survey Questions

SCREENER QUESTIONS

1. What is your current age (select appropriate age bracket)? [Must be 18yrs or older to participate, Hard quotas]

18-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65+

2. What is your gender? [hard quota]

Male
Female
Prefer to self-describe [TEXTBOX]

3. What is your postcode? [Hard quota, Mix of rural and urban from across Australia]

4. In the past 5 years, have you conducted research on animals, or been involved in primary, secondary or tertiary level teaching (with the exception of being a student) that has used animals? [Must not have been involved in animal research in the past 5 years]

Yes
No

5. Which ONE of the following best describes your current diet? [No more than 11% Lacto-veg/Ovo-veg/Lacto-ovo veg/Vegan]

Omnivore (consumes both plant and animal-based foods)
Lacto-vegetarian (consumes dairy, but no meat or eggs)
Ovo-vegetarian (consumes eggs, but no meat or dairy)
Lacto-ovo vegetarian (consumes dairy and eggs, but no meat)
Pescatarian (consumes fish, but no red meat)
Vegan (consumes no food of animal origins)
Flexitarian (consumes a primarily vegetarian diet, but occasionally eats fish or meat)
Other (please specify): TEXTBOX

6. What best describes your ethnic heritage (please select all that apply)? [soft quota]
Australian
Aboriginal or Torres Strait Islander
North-West European (pop-up – UK, Ireland, Germany, France, Swiss, Scandinavia, Benelux etc)
Southern or Eastern European (pop-up – Spain, Portugal, Italy, Greece, Poland, Russian, Hungarian, Slavic, Baltic etc.)
North-East Asian (pop-up – Chinese, Japanese, Korean etc)
South-East Asian (pop-up – Thai, Vietnamese, Indonesia, Filipino)
Southern Asian (pop-up – Indian, Sri Lankan, Nepalese, Bengali, Punjabi, Pakistani etc)
Central Asian (pop-up – Armenian, Georgian, Afghan etc)
Polynesian, Pacific Islander, Maori
North African or Middle Eastern
Sub-Saharan African
North American
South or Central American or Caribbean Islander
Other (please specify): TEXTBOX
I prefer not to say
[reasonable mix]

7. Do you affiliate yourself with any of the following religions? [soft quota]
Christianity
Islam
Buddhism
Hinduism
Judaism
Other (please specify): TEXTBOX
No religious affiliation
Prefer not to say

8. Do you own or live with any pets?
Yes
No

9. Do you work with animals?
Yes
No
If yes, please select the appropriate profession DROP DOWN
Farmer
Veterinarian
Zoo/wildlife
Other

[NEW PAGE]

KNOWLEDGE AND VIEWPOINTS ABOUT USE OF ANIMALS IN SCIENTIFIC RESEARCH

1. The use of animals in scientific research is an issue I care about [5pt Likert scale from "very little" to "very much" – please indicate centre/midpoint as neutral/don't know]

2. How well informed do you feel, if at all, about [5pt Likert scale, from "very well informed" to "not informed at all" (very well informed, fairly well informed, unsure/don't know, not very well informed, not informed at all)]

- The use of animals in scientific research in Australia?
- The process required for scientists to gain approval for animal research in Australia?

3. How interested would you be, if at all, in finding out more about: [5pt Likert scale from "very interested" to "not at all interested" – please indicate centre/midpoint as neutral/don't know]
   - The ongoing work to find alternatives to using animals in scientific research
   - The ongoing work to improve the welfare of animals used in scientific research

[NEW PAGE]

4. How strongly do you agree or disagree with these general statements about the use of animals in scientific research in Australia? [5pt Likert scale, from "strongly agree" to "strongly disagree"(Strongly Agree, Tend to Agree, Neither Agree nor Disagree, Tend to Disagree, Strongly Disagree, Don't Know) – include option for "don't know"]
   - I can accept the use of animals in scientific research as long as it is for medical research purposes where there is no alternative
   - There needs to be more work done into alternatives to using animals in scientific research
   - I can accept the use of animals in scientific research as long as there is no unnecessary suffering to the animals where there is no alternative
   - I think that animals should not be used in any scientific research because of the importance I place on animal welfare
   - It does not bother me if animals are used in scientific research
   - The use of animals for medical research purposes should only be conducted for life - threatening or debilitating diseases
   - The Australian government should ban the use of animals for any form of research
   - It is acceptable to use animals in research to help our understanding of processes in the human body, where there is no alternative
   - It is acceptable to use companion animals for veterinary research, for example trialling new pet foods or pet products.
   - It is acceptable to use animals in research to help our understanding of animal health, where there is no alternative
   - It is acceptable to conduct veterinary research on pets where the research will benefit animals, as long as consent is obtained from their owners.
   - It is acceptable to use animals for all types of research where there is no

alternative

4a. In the previous question, you said you don't know how strongly you agree or disagree with some of the statements. Please explain why. [TEXT BOX, please make this question available to participants who answer "don't know" to FOUR or MORE of statements in question 4]

5. How strongly do you agree or disagree with the following statements? [5pt Likert scale, from "strongly agree" to "strongly disagree" (Strongly Agree, Tend to Agree, Neither Agree nor Disagree, Tend to Disagree, Strongly Disagree, Don't Know) – randomise statements]
   - The use of animals for medical research purposes is important to human health
   - Scientists could do more to reduce the suffering of animals used in scientific research
   - Scientific research using animals is not always carried out to high standards
   - Scientific research is carried out on animals only when there is no alternative
   - Researchers are working to find alternatives to using animals in scientific research

6. How strongly do you agree or disagree with the following statements? [5pt Likert scale, from "strongly agree" to "strongly disagree" (Strongly Agree, Tend to Agree, Neither Agree nor Disagree, Tend to Disagree, Strongly Disagree, Don't Know) - randomise statements]
   - It is acceptable to use animals in scientific research to test chemicals that could harm people
   - It is acceptable to use animals in scientific research to test chemicals that could harm pets, farm animals or wildlife
   - It is acceptable to use animals in scientific research to test chemicals that could harm plants or the environment

[NEW PAGE]

7. As far as you know, for which of these types of research, if any, are researchers currently allowed to use animals in Australia (with the applicable approval)? [Yes, No, DK responses - randomise]
   - Research to advance our understanding of processes in the human body
   - Trying to develop new treatments / procedures for specific diseases
   - Biological research to advance our understanding of animal health & welfare
   - Testing cosmetics / ingredients for cosmetics
   - Developing new methods of medical diagnosis
   - Safety testing of non-medical products such as the ingredients of home cleaning products
   - Safety testing of non-medical products such as chemicals used in industry or farming
   - Observational studies such as monitoring species population and effects on the environment

8. Which, if any, types of animals do you think it is acceptable to use for experimental medical research to benefit people? [Yes, No, DK responses - randomise]

- Fish
- Amphibians e.g. frogs, toads, newts
- Birds
- Mice
- Rats
- Cats
- Dogs
- Pigs
- Small monkeys such as marmosets
- Large monkeys such as macaques
- Great apes e.g. chimpanzees and gorillas
- Small mammals e.g. rabbits, ferrets
- Larger mammals e.g. sheep, cows
- Cephalopods e.g. octopus or squid
- Crustaceans such as lobsters, yabbies or crayfish
- Non-endangered Native Australian animals

8a. In the previous question, you said it was not acceptable to use the species listed for experimental research to benefit people. Could you please explain why you said no? [TEXT BOX Show this question only if participant answers no to all species in previous answer]

9. Which, if any, types of animals do you think it is acceptable to use for research into animal health? [Yes, No, DK responses - randomise]

- Fish
- Amphibians e.g. frogs, toads, newts
- Birds
- Mice
- Rats
- Cats
- Dogs
- Pigs
- Small monkeys such as marmosets
- Large monkeys such as macaques
- Great apes e.g. chimpanzees and gorillas
- Small mammals e.g. rabbits, ferrets
- Larger mammals e.g. sheep, cows
- Cephalopods e.g. octopus or squid
- Crustaceans such as lobsters, yabbies or crayfish
- Non-endangered Native Australian animals

9a. In the previous question, you said it was not acceptable to use the species listed for research into animal health. Could you please explain why you said no? [TEXT BOX Show this question only if participant answers no to all species in previous question]

10. Which, if any, types of animals do you think it is acceptable to use for environmental research (for example, to look at the effect of chemicals on the food chain or the effect of air pollution on health)? [Yes, No, DK responses – randomise]

- Fish
- Amphibians e.g. frogs, toads, newts
- Birds
- Mice
- Rats
- Cats
- Dogs
- Pigs
- Small monkeys such as marmosets
- Large monkeys such as macaques
- Great apes e.g. chimpanzees and gorillas
- Small mammals e.g. rabbits, ferrets
- Larger mammals e.g. sheep, cows
- Cephalopods e.g. octopus or squid
- Crustaceans such as lobsters, yabbies or crayfish
- Non-endangered Native Australian animals

10a. In the previous question, you said it was not acceptable to use the species listed for environmental research. Could you please explain why you said no? [TEXT BOX Show this question only if participant answers no to all species in previous answer]

11. Which, if any, types of animals do you think it is acceptable to use for **teaching** where the procedures cause more than momentary harm or stress? [Yes, No, DK responses – randomise]

- Fish
- Amphibians e.g. frogs, toads, newts
- Birds
- Mice
- Rats
- Cats
- Dogs
- Pigs
- Small monkeys such as marmosets
- Large monkeys such as macaques
- Great apes e.g. chimpanzees and gorillas
- Small mammals e.g. rabbits, ferrets
- Larger mammals e.g. sheep, cows

- Cephalopods e.g. octopus or squid
- Crustaceans such as lobsters, yabbies or crayfish
- Non-endangered Native Australian animals

11a. In the previous question, you said it was not acceptable to use the species listed for teaching. Could you please explain why you said no? [TEXT BOX, Show this question only if participant answers no to all species in previous answer]

12. Which, if any, types of animals do you think it is acceptable to use for safety testing of non-medical products? E.g. cleaning products, sanitary items, food additives [Yes, No, DK responses - randomise]
    - Fish
    - Amphibians e.g. frogs, toads, newts
    - Birds
    - Mice
    - Rats
    - Cats
    - Dogs
    - Pigs
    - Small monkeys such as marmosets
    - Large monkeys such as macaques
    - Great apes e.g. chimpanzees and gorillas
    - Small mammals e.g. rabbits, ferrets
    - Larger mammals e.g. sheep, cows
    - Cephalopods e.g. octopus or squid
    - Crustaceans such as lobsters, yabbies or crayfish
    - Non-endangered Native Australian animals

12a. In the previous question, you said it was not acceptable to use the species listed for safety testing of non-medical products. Could you please explain why you said no? [TEXT BOX Show this question only if participant answers no to all species in previous answer]

13. Australian law requires scientists to apply to a body known as an Animal Ethics Committee (AEC) to obtain approval to use animals for research.

The AEC is also involved in monitoring of research.

Membership of the AEC must include a veterinarian, a scientist, an animal welfare member, and a member of the public (lay person) who has never been involved in research on animals.

While the government is not directly involved in decision-making by AECs, it plays a role in the regulation of animal research through issuing licences to institutions such as universities that conduct the research, and by requiring those institutions to submit annual reports.

Based on the above, how strongly do you agree with the following statements? [5pt Likert scale, from "strongly agree" to "strongly disagree" (Strongly Agree, Tend to Agree, Neither Agree nor Disagree, Tend to Disagree, Strongly Disagree, Don't Know) – include option for "don't know" – randomise statements]

- The decision-making process for approving animal research is clear to me
- I think that approval of animal research by an AEC, rather than directly by government is satisfactory.
- I think that the government should have more direct involvement in approval of animal research.
- There needs to be greater involvement of the public in the decision-making process around granting approval for animal research.
- Institutions should be more transparent about their use of animals.

14. Which, if any, of the following fit your view of organisations that use animals for scientific research in Australia? [select more than one]

- They are secretive
- They are well regulated
- They have poor animal welfare standards
- They carry out work essential for human health

- They stick to good animal welfare standards
- They are open about their work
- They are dishonest about the results of their work
- They have conflicts of interest, because animal research is an aspect of their business
- They provide good mechanisms for oversight of animal research
- None of these
- Don't know

15. Over the past twelve months, have you seen or heard anything about the use of animals in scientific medical research in the Australia? [Yes, No]

    Where did you hear about that from? [TEXT BOX]

16. How strongly do you agree or disagree with the following statements about the rules and regulations on the use of animals in scientific research in Australia?

    [5pt Likert scale, from "strongly agree" to "strongly disagree" (Strongly Agree, Tend to Agree, Neither Agree nor Disagree, Tend to Disagree, Strongly Disagree, Don't Know) – include option for "don't know" – randomise statements]

- I do not trust the regulatory system around the use of animals in scientific research
- I trust scientists not to cause unnecessary suffering to the animals used in scientific research
- I feel that unnecessary duplication of scientific research involving animals MIGHT go on
- Scientific research involving animals sometimes goes on without an official approval
- Australia has strict rules on the use of animals in scientific research
- The rules in Australia on scientific research involving animals are well enforced
- I trust the regulators to uncover any misconduct at animal research facilities
- The approval process itself, and the type of research being performed on animals is transparent.

INFORMATION SOURCES/ACTIVISM

17. Which, if any, sources of information would you trust to give balanced information about the use of animals in scientific research? [selection boxes – randomise – can select all that apply]

- Universities
- Animal welfare organisations, such as the RSPCA
- Animal rights organisations, such as PETA

- Organisations that support the use of animals in research
- Companies and businesses which carry out the research with animals
- Companies and businesses which sell products developed from animal research
- Politicians / MPs
- Government research institutes
- Non-Government research institutes
- Environmental organisations
- People with a knowledge of the subject
- Farming organisations
- Medical research charities
- Patient groups
- Vets who look after the animals used in research
- None of these
- Other (please specify) [TEXT BOX]

18. In which, if any, ways would you personally like to receive information about the use of animals in scientific research? Please pick up to three. [selection boxes]

- Billboards / Posters
- General interest magazines
- Specialist magazines (e.g. science or medical journals)
- Local newspapers
- National newspapers
- Websites
- Local radio
- National radio
- School / College
- Social media (e.g. Twitter, Facebook, online blogs, online chat rooms, etc.)
- Meetings / public meetings / talks with experts (eg researchers, specialist charities)
- Telephone information line
- Television
- Do not want more information
- Don't Know
- Other (please specify) [TEXT BOX]

19. Which, if any, of the following do you feel are acceptable things for organisations supporting animals to do? [selection boxes – randomise – can select all that apply]

- Ask people to put a sticker / poster in their window
- Hand out leaflets
- Organise a demonstration or protest outside research laboratories
- Organise a demonstration or protest outside the homes of people who work in animal research facilities
- Organise a demonstration or protest outside companies which transport research animals or supply services to research facilities.
- Target individuals verbally or in writing if they are involved in animal research
- Other (please specify) [TEXT BOX]

Why should scientific research involving decapod crustaceans require ethical review

Dr Tony Rowe, CSIRO

Summary:
This presentation will discuss how the biology of decapod (ten-legged) crustaceans provides evidence of sentience (the capacity to perceive or feel things) and the ability to experience pain and distress, as defined by The Australian Code for the Care and Use of Animals for Scientific Purposes (The Code). It will consider the value and influence of social licence to operate, and comment on changing animal welfare policy.

Learning Objectives:

- Discuss crustacean biology
- Examine emerging evidence of sentience and the ability of decapods to experience pain and distress
- Explain what social licence to operate is and why it matters
- Consider factors that work against protection of crustaceans
- How to change animal welfare policy

Paper for Proceedings:

Decapod crustaceans are faceless, ten-legged, invertebrate seafood species. These characteristics make them difficult to empathise with and consequently legal protection of decapods is widely variable and internationally inconsistent. They are not defined as animals by The Australian Code for the Care and Use of Animals for Scientific Purposes (The Code) so scientific research with these animals in Australia is not regulated beyond state and territory animal cruelty legislation. However, The Code states institutions are responsible for determining when the use of an animal species not covered by The Code requires animal ethics approval, taking into account emerging evidence of sentience and the ability to experience pain and distress. Other considerations include social licence to operate and applying a proactive, uniform approach to animal welfare. These factors contributed to the Commonwealth Scientific and Industrial Research Organisation (CSIRO) updating its animal welfare procedure to include decapod crustaceans (such as crayfish, crabs, lobsters, prawns and shrimp) from the time they are capable of independent feeding.

The role of dogs in advancing human health and science: A brief history

Dr Bradley Smith. Central Queensland University

Summary:

The domestic dog has long been the subject of scientific inquiry. Indeed, their contribution to understanding and healing the human body, and exploring the world around us, has been remarkable. This presentation helps celebrate the dog's contribution by taking you through a wide assortment of, often unknown to scientists and dog lovers, research and experiments that have been conducted with domestic dogs in the aid of their human domesticators. I will highlight the evolution of dog experimentation, and end with a discussion about the role of dogs in modern science.

Learning Objectives:

- Gain an appreciation of the significant contribution dogs have made to our understanding of the human body and the world around us.
- Discover the details of notable scientific experiments and discoveries that have featured dogs.
- Acknowledge why dogs have, and continue to be, used in scientific studies.
- Consider how the role of dogs in scientific experimentation, and the relationship between dogs and experimenter, has changed over time.

May the code be with you. Making challenging ethical decisions easier

Dr Mandy Errington, EthiQualia

Summary:

AECs are tasked with the responsibility of making decisions impacting on the lives of animals, the livelihood of investigators and research outcomes. These decisions are rarely straightforward. A systematic approach, based on the principles of administrative decision making and focusing on the governing principles of the Australian code for the care and use of animals for scientific purposes, 8th edition, 2013 (Australian code), will help AECs make good ethical decisions with less angst and greater efficiency and clarity. Enabling AECs to devote time and energy to consider the 'big picture' costs (to the animals) and benefits. Improved efficiency frees up time for other important responsibilities that AECs are tasked with including, post approval monitoring, response to reports, facility inspections and continuous improvement in animal welfare. A systematic approach gives AECs, the human superheros of animal use in research and teaching, a superpower – may the code be with you!

Learning outcomes

This session will introduce AECs to principles of making good (valid) decisions. Attendees will have an increased understanding of how to apply these principles in a structured way, using the *Australian code for the care and use of animals for scientific purposes, 8th edition, 2013* (Australian code) as a tool to support decision making and communication. Helping AEC members with strategies to become more skilled at seeing 'the forest from the trees' and focus their attention the bigger picture ethical dilemmas they are faced with.

Lecture summary

AECs are tasked with the responsibility of making decisions impacting on the lives of animals, the livelihood of investigators and research outcomes. These decisions are rarely straightforward. A systematic approach, based on the principles of administrative decision making and focusing on the governing principles of the *Australian code for the care and use of animals for scientific purposes, 8th edition, 2013* (Australian code), will help AECs make good decisions with less angst, and greater efficiency and clarity.

This lecture introduces the concept of administrative decision making, it is not intended as a discourse on administrative law.

An administrative decision is one authorised by law. The law will specify who may make the decision and what must be considered when doing so. In Australia, AECs are authorised under law to make certain decisions, as outlined within the relevant jurisdiction's legislation. In every state and territory this includes those specified within the Australian code.

AECs are well aware of the responsibility associated with making decisions; however, experience indicates they are less aware of the legal basis under which these decisions are made. By following administrative decision-making principles, an AEC will find it easier to decide, be more confident in the validity of its decisions, and clearly communicate the reasons for its decision. A structured approach based on these principles supports transparent, consistent, and fair decisions. A good administrative decision is one that is valid under the associated law and can more readily withstand scrutiny if questioned.

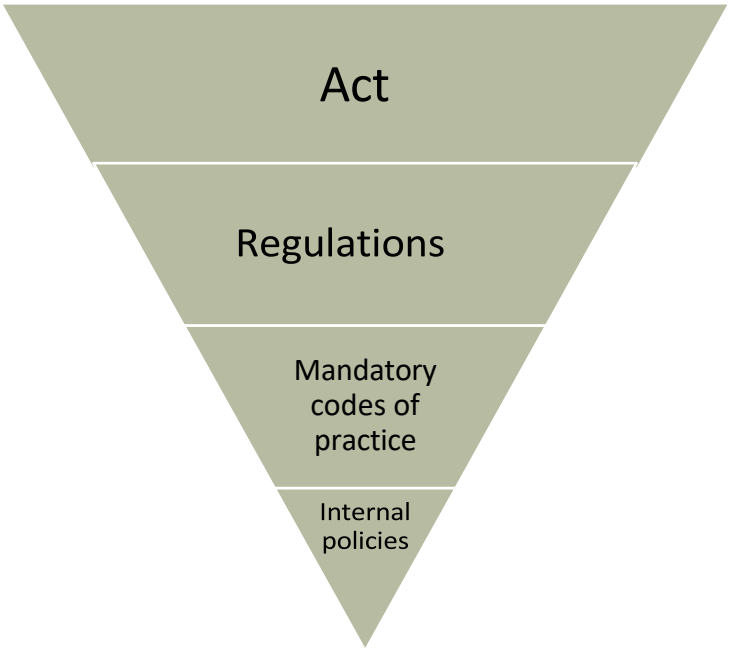
By breaking the decision into its critical components an AEC can better articulate an issue or concern and take action to resolve and approve or not-approve. It may also decide that it cannot make the requested decision at that point, this is a decision too!

Knowing the difference between an administrative and ethical decision and determining the origin of an issue or concern, aids in communication and provides an avenue to communicate the reasons impartially and factually.

Administrative decision checklist

When first applying administrative decision-making principles a checklist can help, with time it becomes second nature.

1. What is the source of the authority to make the decision? Where there are multiple sources do you understand the hierarchy? For example:



2. Do you have the authority to make the decision?
3. Have you considered everything specified within the relevant legislation in addition to the Australian code? Have you considered any relevant (internal) policies?
4. Do you have enough information to ensure all aspects are covered?
5. Have you made sure the decision is fair by making sure everyone is treated equally?
6. Have you considered only matters relevant to the decision, and where necessary sought clarification or additional information from the applicant or other sources?

Ethical decisions

Ethical decisions are not the same as administrative decisions, and AECs must do both when deciding on the outcome of a matter under its remit. This is mandated within the Australian code, 2.3.4 and 2.3.5. Ethical decisions are based on a person's own ethical judgment, by considering actions as good or bad, right, or wrong; in essence, the cost (to the animals) benefit (outcome) analysis.

Each member of the AEC is responsible for deciding whether, in their own judgement, an

application or other matter under consideration by the AEC is ethically acceptable and meets the requirements of the Australian code (Australian code 2.2.14). The ultimate decision regarding the ethical acceptability of an activity lies with the AEC and must not be overridden (Australian code, 5.6).

Deciding, recording, and communicating

Using this approach, it is only after all aspects of the administrative decision-making process have been covered and it has made an administrative decision does an AEC go on to make the ethical decision.

This approach doesn't only provide a robust decision framework, its required by the Australian code. *A judgement as to whether a proposed use of animals is ethically acceptable must be based on information that demonstrates the six principles in clause 1.1 of the governing principles and must balance whether the potential effects on the wellbeing of the animals involved is justified by the potential benefits (Australian code 1.3).*

Because the governing principles of the Australian code underpin the ethical use of animals it is uncommon for an AEC to decide, by applying the principles of administrative decision making, it may approve a matter, then go on to decide that ethically it cannot approve. By considering the administrative decision first, the AEC is making communication easier; often the AEC will find a statement(s) to describe its concern, or reasons for a decision within the Australian code. This is especially helpful when communicating a decision not to approve a project.

An ethical decision, by nature, is subjective and challenging to communicate. On the other hand, an administrative decision is founded in law, and it is from here that the facts for the basis of a decision are derived. It is these facts that will provide the AEC with its communication superpower. Frequently the reasons for a decision can be based on the governing principles of the Australian code, supported by other relevant clauses as applicable.

This approach can help AECs to articulate their concerns or the deficiencies in the information provided, reducing the amount of time spent on editorial and minor details. It provides a framework for communicating in an unbiased and impartial manner, providing clarity about what is required and thereby reducing frustration.
The Australian code specifies many responsibilities of an AEC; however, these do not include editing incomplete or poorly written applications and reports! By taking on editorial responsibility an AEC can, in good faith, unintentionally create confusion about its expectations and on occasion give the wrong impression about the potential outcome of its deliberations.

Increasing decision efficiency improves the lives of humans and animals

By increasing efficiency an AEC can devote time and energy to the 'big picture' cost (to the animals) benefit analysis and have more time for other important responsibilities AECs are tasked with, including, post approval monitoring, response to reports, facility inspections and supporting continuous improvement in animal welfare. Investigators are more likely to understand what an AEC requires to make its decision and that the basis for a decision has its origins in the law supporting

animal use. This can lead to a more collaborative understanding, better provision of information to the AEC, and faster turnaround.

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Closure of the Animal Resource Centre - the road ahead

Rachel Smith, Humane Research Australia

Summary:

In July 2021, it was announced that the Animal Resources Centre (ARC) one of Australia's major laboratory mouse and rat biomedical research suppliers, would be closing within 18 months due to financial reasons. This announcement was met with an outcry by biomedical researchers and with cautious optimism by organisations opposing animal research. Whilst the final operational status is pending, an animal breeding supply service will continue to operate. This session will present the potential consequences of the proposed closure on both medical research and animal welfare, had the original decision been upheld, refer to cases of similar closures in the UK, and within the context of the 3Rs, consider short and long-term solutions, including genetically modified breeding frameworks and adoption of new approach methodologies.

Learning Objectives:

- An understanding of the differing viewpoints of stakeholders towards the closure
- Provision of learnings from the UK where similar research breeding facilities closed
- An insight into opportunities that may result from the closure

Using drones - is it always an animal ethics issue?

Dr Katrina Whitting, Queensland University of Technology

Summary:

Drone use is rapidly increasing globally. Drones are a helpful research tool and can capture otherwise unobtainable information, increase human safety, and decrease operational costs. They provide a mechanism to observe animals without the need for human interaction or proximity, and thus are a promising method to research animals in an ethical way. However, drone technology can also have undesirable and unforeseen impacts on animal wellbeing. This warrants careful consideration irrespective of whether or not the drone use directly targets animals. We outline strategies to employ and questions to address, to ensure that the use of drones minimises any potential harm and distress to animals, regardless of the purpose of the drone work.

Learning Objectives:

Participants will learn about the impact of drones on animals, mitigation strategies to minimise the stress to animals and the ethical considerations around drone use.

Ethics from a category D perspective

Margaret Tipper, ANZCCART AEC Winner 2021

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Sustainable Compassion and well-being in the animal sciences

Dr Rebekah Scotney, University of Queensland

Wellbeing is one of many concepts employed to distinguish a person's ability to conduct a full, rich life, and includes measure such as happiness, satisfaction with life, finding meaning, and flourishing (Oades & Mossman, 2017; Keyes & Ryff, 2000). It is a combination of cognitive and emotional aspects of daily life subjectively evaluated by individuals based on their own experiences and the judgements they make about life satisfaction, and affective reactions to their life (Diener et. al., 2013). In the many animal-related workplaces there often appears to be apparent disconnect between ideals of wellbeing and actual wellbeing. More often than not, driven by an altruistic sense of devotion to animals within our care, and an absence of devotion to our own self.

It is without question that those who work in the Animal Sciences are highly motivated, driven and intelligent people when it comes to academia and the learning of intricate, and often very difficult, technically complex skills. However, the ability of an individual to apply the same positive mindset to increasing their emotional intelligence and thus, their mental wellbeing is not always pursued with as much interest and vigor. Perhaps it is a lack of understanding of the importance of self-care; the "I'm fine" dialogue that inhibits inward reflection, understanding and healing. Moving away from denial, and acknowledging our pain and hurt is like ripping the scab off a wound – denial keeps the wound covered but prevents it from healing. We must look inward at what hurts us and what depletes our resilience so that we can maintain a trajectory of sustainable wellbeing. This takes courage, persistence and dedication

Furthermore, a lack of understanding of mental illness in the workplace contributes to individual ill-being and inhibits any ability to facilitate and support self-care strategies. As an industry, we need to take a more self-nurturing, sympathetic and compassionate approach not only to ourselves, but to our colleagues and employees. We must look for ways to ameliorate the negative effects of our work; build our own bank of resilience, as well as facilitate resiliency within our workplace.

Sustainable wellbeing is positively correlated with mentally healthy workplaces. A mentally healthy workplace is one that encourages everyone to speak openly about mental health, identifies and reduces, where practicable, risks to employee mental health, supports all employees, views diversity as an organisational advantage, has low staff turnover and sick/stress leave and, has employees that are productive members of a team (WH&S Qld, 2018).

Positive Mental Health: 'a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to contribute to her or his community' (World Health Organisation, 2018).

This presentation will look at how we can build and maintain the healthy minds and active hearts of those working in the animal sciences through self-awareness and resiliency to ensure sustainable long-term wellbeing.

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Modelling Post-traumatic Stress Disorder in rodents - the ethical challenges of meaningful models

Professor Sarah Spencer, RMIT

Summary:
Traumatic events can lead to post-traumatic stress disorder (PTSD) in as many as 50% of humans who experience them. PTSD results in debilitating symptoms of memory-intrusion and trigger-avoidance, as well as disruption to the capacity to think and function. We currently do not understand why some people develop PTSD after a traumatic event and some do not. There is also no effective treatment. It is therefore imperative we take new approaches to understanding and treating PTSD. Animal models are essential for testing these approaches. Rodents are similarly susceptible to traumatic events and allow important and timely interrogation into the brain changes that occur around them. Yet, there are significant ethical issues with imposing highly stressful stimuli on experimental animal models. These will be discussed here.

Learning Objectives:

- Why experimental animal models are important in the study of PTSD
- What constitutes a model of PTSD versus a model of stress
- How existing protocols can be refined to be ethologically relevant to rodents, and translatable to humans

Paper for Proceedings:

Traumatic events in humans including rape, combat exposure, or disaster response can lead to post-traumatic stress disorder (PTSD) in as many as 50% of people who experience them. In Australia, this disorder affects ~12% of our population, including 20% of military personnel. PTSD is experienced as inappropriately enhanced retention and recall of a traumatic event[1]. This aberrant recall results in debilitating symptoms of memory-intrusion and trigger-avoidance, as well as disruption to the capacity to think and function[2]. It can lead to substance abuse, anxiety, depression, even suicide. Lifetime medical costs for a person with PTSD are at least three times that of a person without[3]. PTSD therefore has substantial health, social and economic cost in Australia and across the world. We currently do not understand why some people develop PTSD after a traumatic event and some do not. There is also no effective treatment, psychological or pharmacological. These limitations make it imperative we take new approaches to understanding and treating PTSD. Animal models are essential for testing these approaches. Rodents are similarly susceptible to traumatic events and allow important and timely interrogation into the brain changes that occur around them. Yet, there are significant ethical issues with imposing highly stressful stimuli on experimental animal models. In this lecture, I will discuss:

- *Why experimental animal models are important in the study of PTSD*

Traumatic events are by nature unpredictable, meaning that study of human PTSD populations is restricted to populations post-diagnosis. This restriction leaves a huge gap in our capacity to uncover predictive biomarkers of the disorder or even investigate how PTSD develops in the immediate aftermath of trauma. Experimental animal models allow us to investigate the contribution of characteristics prior to the trauma on PTSD development. They also allow us to test the potential efficacy of interventions in a homogenous population without the confounds of different life-experiences and genetic backgrounds.

- *What constitutes a model of PTSD versus a model of stress*

Stress, and our response to it, is normal and adaptive. Activation of the hypothalamic-adrenal-axis, the neuroendocrine stress axis, occurs in the minutes after a stressor and acts to help us combat the stressor and

to restore equilibrium. A traumatic experience for many of us triggers a stress response that after time restores to normal without inducing long-term central changes in emotional- and memory-processing brain regions to affect recall. While HPA axis function can be perturbed by chronic stress and chronic inflammation, this is independent of a single triggering event and the long-term impact on the brain does not tend to involve the fear-processing circuits. In those that develop PTSD, a traumatic event leads to hyper-activation of the HPA axis, which then drives changes in the limbic circuitry that leads to over-consolidation of the memory of the traumatic event. People (and rodent models) with PTSD will display lasting aversion to the context or cues associated with the traumatic event, hyperactive HPA axis responses to additional stress, and lasting brain changes in fear-processing regions including amygdala.

- *How existing protocols can be refined to be ethologically relevant to rodents, and translatable to humans*

The most common traumatic experiences that in humans lead to PTSD such as sexual violence, war, and bereavement may not be particularly relevant to rodents. However, wild (and laboratory) rodents undoubtedly still experience strong stressors that lead to lasting aversive memory, avoidance, HPA axis hyperactivity, and limbic changes that reflect PTSD in humans. In a laboratory setting, traditional models of PTSD in rodents have used either layered or very strong stressors, including exposure to a feline predator; underwater trauma; chronic variable stress; and social confrontations. While effective at producing PTSD-like symptoms and brain sequelae, I would argue that useful insight into the same processes can be achieved with a more mild stressor, one that, as Cohen and colleagues argue, is likely to induce PTSD-like symptoms in some but not all of the subjects, consistent with human incidence[4]. The inescapable foot shock is one more mild stressor that has been used to stimulate PTSD-like symptoms. It is sufficiently mild so as not to cause physical harm such as tissue damage to the animal; it leads to avoidance behaviour, persistent memory of the event, and limbic and HPA axis changes; and, importantly, it affects some rodents differently from others. This model of a mild inescapable stress is particularly useful when testing if particular background characteristics (e.g. sex or inflammatory status) are likely to increase the risk of PTSD-like symptoms developing. As always, care must be taken when extrapolating the findings to human populations; nonetheless, such models are essential to progress therapies and diagnostics for PTSD.

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Resilience strategies for the prevention of compassion fatigues

Paula Porter, TAFESA

Summary:
Compassion Fatigue is a workplace health and safety hazard for those working in the animal biomedical industry. This presentation will discuss resilience strategies that can be used on a personal level to reduce the risk of suffering from compassion fatigue in the workplace.

Learning Objectives:
Practical skills that can be implemented to promote wellbeing and build resilience.

Low-impact technologies, citizen science and animal 'use' in wildlife research

Dr Helen Waudby, DPIE

Summary:

Novel technologies (e.g. remote monitoring units) and techniques (e.g. citizen science programs) are changing the ways in which free-living animals (wildlife) are studied during field research, with implications for their welfare. Some of these approaches raise questions about how the impact of research on study animals is to be evaluated and what constitutes 'use' of an animal. For wildlife researchers using these, 'use' of animals can include collection of data without (or with very little) interaction with or impact on animals at all. The implications of some of these approaches for wildlife research and the welfare of study animals, are reviewed.

Learning Objectives:

Reviews the concept of animal 'use' in relation to remote data collection techniques and citizen science, and implications for animal welfare and AEC decision making

Paper for Proceedings:

Increasingly, new technologies and techniques are changing the ways in which free-living animals (wildlife) are studied during field research, with implications for the welfare of study animals. Some approaches, such as remote monitoring units (e.g. acoustic recorders; wildlife monitoring cameras), provide substantial opportunities to replace, reduce, and refine the use of animals in wildlife research. Other approaches, such as citizen science programs and associated technology (e.g. smartphone applications), provide similar opportunities, but also raise questions about how the impact of research on study animals is to be estimated and evaluated. Indeed, some methods raise questions around what constitutes 'use' of an animal. The concept of 'use' of animal in research and education is a central tenet of the Australian Code for the Care and use of Animals for Scientific Purposes (the Code). Within the Code, the definition of 'use' is broad, encompassing all types of research that require animals to answer study objectives. How animal 'use' is defined and evaluated is fundamental to animal ethics committee decision making, with implications for the implementation and administration of research projects. For conservation biologists and other wildlife researchers using these methods to study animals in the field, 'use' of animals can include collection of data without (or sometimes with very little) interaction with or impact on animals at all. I describe and discuss the implications of some of these technologies and techniques for wildlife research, the welfare of study animals and animal ethics committee decision making processes.

Identification of welfare indicators to inform decision- making at cetacean stranding events

Miss Rebecca Boys, Massey University

Summary:
Understanding of animal welfare is vital to ensure appropriate conservation and management decision-making. Live cetacean strandings occur globally and commonly involve human intervention, which should aim to optimise animal welfare. Yet there is limited empirical evidence to inform decision-making, and the welfare state and survival likelihood of these animals generally remain unknown. To ensure that decisions at strandings are informed by scientific evidence, we need to identify and evaluate practical indicators of welfare relevant to stranded cetaceans. This study identified, for the first time, a range of potential welfare status and alerting indicators that were observable and/or measurable at live cetacean stranding events using video footage. The use of these indicators in assessment frameworks will allow for holistic evaluations, ensuring the most appropriate intervention and provide the best welfare and conservation outcomes for stranded cetaceans.

Learning Objectives:
Types of cetacean stranding events and why animal welfare should be considered in strandings response.
What potential welfare indicators can be observed and/or measured in stranded cetaceans.

Paper for Proceedings:

Cetacean strandings are a global phenomenon which have occurred along the shores of most coastal nations for centuries. However, these events are set to increase during the Anthropocene, as marine mammal health continues to decline from increasing anthropogenic activities [1]. Stranding events intrigue and fascinate scientists and the public alike. Therefore, strandings response has become common in many countries both for gathering information from already dead animals as well as providing care to live animals [2,3].

At live stranding events human intervention commonly occurs due to the societal vision to ‘rescue’ and rehabilitate these charismatic megafauna, despite the fact that there is a lack of scientific evidence to support many procedures [4,5]. Stranding response procedures can involve first aid and refloatation for animals in good condition and end of life decisions, such as euthanasia, for those in poor condition. Despite these procedures being commonplace, there is a lack of robust scientific data informing these human interventions. Importantly the implications of these interventions on the welfare and survival of stranded cetaceans remains unknown. This lack of empirical evidence means that much of the strandings response may be driven by societal values rather than being scientifically based.

Live stranded cetaceans will be subject to both natural and anthropogenic stressors that may affect their welfare state and their likelihood to survive [2,4,6]. Unfortunately, the lack of data from stranding events hinders the assessment of these stressors on stranded cetacean welfare and survival. This leaves decision-making uninformed and potentially inappropriate intervention may occur [7–9]. To be able to undertake systematic and holistic evaluations of stranded cetaceans, we must first identify practically observable and/or measurable indicators that will provide welfare-relevant information. In the current study, we identified and evaluated all potential welfare indicators that could be practically observed and/or measured via video footage from live cetacean stranding events.

We collected video footage of individual stranded cetaceans from different stranding events of varying species around New Zealand. We developed a list of observable and/or measurable indicators based on expert opinion gathered in a recent study [10] along with those that appeared measurable from observation of the video.

footage. These indicators were collated based on whether they were welfare status or alerting indicators and were then organised into the four physical/functional domains of the Five Domains Model [11]. Each of the videos was reviewed at least twice to score all the observable indicators for each individual animal. Additionally, we developed the first cetacean stranding ethogram and used video footage of the most commonly stranded species (pilot whales, *Globicephala melas edwardii*) to quantify behavioural observations.

We identified 10 welfare status and 8 welfare alerting indicators that were representative of all four physical/functional domains in the Five Domains Model and were able to be assessed via video footage. Additionally, we identified and characterised 32 different behaviours, and quantitatively assessed both animal behaviour and types of human intervention during strandings response. This presentation will report on the most up-to-date results.

Our study shows that a range of indicators that are representative of all four physical/functional domains can be assessed via video footage of stranded cetaceans. These data provide the first systematically evaluated, baseline data for holistic assessments of stranded cetaceans. The indicators were able to be evaluated via video footage, making them non-invasive and also highlighting the potential for remote experts to assess stranded cetaceans where necessary.

These data can be used to direct future research at stranding events. Further data collection on these indicators and other observable indicators will be required at future stranding events to evaluate their validity for assessing stranded cetacean welfare. The use of these holistic and practical indicators in the development of an assessment framework will ensure informed decision-making at stranding events. This will lead to the most appropriate intervention and, provide the best welfare and conservation outcomes for stranded cetaceans.

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Working together for a Better Future

Tara Jackson, NZAVS and Dr Jodi Salinsky, University of Auckland

Summary:

'Us' and 'them' is a common rhetoric used when members of the scientific community and animal advocacy groups speaks about the other. This presentation will share the perspectives of Tara Jackson (animal advocate) and Dr. Jodi Salinsky (scientist) to help overcome this divide and give insight into what working in a collaborative way looks like. The benefits and challenges of such an approach will be addressed, focusing particularly on NZAVS' Striking at the Source campaign, and identifying key areas where the groups are attempting to cooperate.

Learning Objectives:

- What working with animal advocacy groups looks like in practice.
- Where there are shared interests between an animal advocacy group like NZAVS and the wider scientific community.
- The benefits of openness and collaboration with animal advocacy groups.

Paper for Proceedings:

Working Together for a Better Future

Tara Jackson[1] Dr. Jodi Salinsky[2]

[1] Executive Director of the New Zealand Anti-Vivisection Society

[2] Animal Welfare Officer - University Veterinarian at The University of Auckland

New Zealand has become internationally noteworthy for the degree of communication between animal advocates and organisations that use animals in science.

While historically the relationships between these groups have been tense, that is changing as communication is increasing. Mutual areas of interest are being identified, and common goals are beginning to be created. After all, everyone has a shared desire to get animals out of science as much as possible. It is just a question of how we get there.

This collaborative talk will share the perspectives of Tara Jackson (animal advocate) and Dr. Jodi Salinsky (scientist). The benefits and challenges of such an approach will be addressed, focusing particularly on NZAVS' Striking at the Source campaign, and identifying key areas where the groups are attempting to cooperate.

It is hoped that this approach to cooperation can spread further, and other organisations will get involved.

Presenter Bio's

Dr. Maria Di Biase is an early career research fellow based at Melbourne University. Her primary research objective is to understand neurobiological factors that underpin schizophrenia and psychosis. She embraces the grand challenges facing psychiatry research including biological heterogeneity and the hunt for clinically meaningful biomarkers. After honing her expertise in neuroscience during two years of postdoctoral training at Harvard Medical School (Boston, USA). Dr. Di Biase returned to Australia to launch her own research program dedicated to understanding developmental brain mechanisms in schizophrenia. She currently holds an NHMRC Investigator Grant and heads the brain imaging stream of the North American Prodrome Longitudinal Study (NAPLS).

Di graduated from Murdoch University in 1982 and has worked for over 20 years in agriculture in various government roles as well as small animal practice, private consultancy, animal research ethics & tertiary education. Including the inaugural Animal Ethics Officer at Murdoch University. She was also the Animal Welfare Officer for the WA Department of Agriculture for several years and has been a Category C member on multiple AECs. She completed a Masters in 2000 on welfare standards in pet shops. In 2013, she became the inaugural Animal Advocate for RSPCA South
Australia and since 2016 she has worked for RSPCA Australia as a senior scientific officer on 'Animals used in research and teaching' and 'Animals used for sport, entertainment, work and recreation'. She completed her Australian and New Zealand College of Veterinary Scientists membership exams in animal welfare in 2008 and is the current president of the Animal Welfare Chapter and immediate past Head Subject Examiner.

Paula Wallace is the founder and director of Liberty Foundation Australia, a charity dedicated to rehoming animals from research establishments. She is also a journalist and communicator who founded the charity after many years writing about business sustainability. She believes applying the principles of sustainability to the management of animals in research has a benefit for all involved. A more sustainable approach is one that provides humane options for animals post-research and better aligns with community and government expectations. Paula works with research establishments and governments around Australia to provide pathways for animals out of research and spends much of her time making presentations and educating people about the benefits of rehoming.

Dr Ben Albert is Senior Research Fellow at the Liggins Institute, University of Auckland and a Pediatric Endocrinologist at Starship Children's Health. His research interests are in the metabolic effects of omega-3 fatty acids and prevention of obesity and obesity related disease. During his PhD he conducted a complex rat-based study where fish oil was administered to pregnant rats by gavage. He observed this caused stress to the animals, that he found was both unacceptable to him from an animal welfare perspective and could confound the aualitv of the science. He
delayed follow up studies, until he had developed a new gel-based vehicle that would retain the benefits of gavage but was kinder, safer and less likely to confound results. He then used this successfully in two large and complex animal studies. For this refinement he and his team were awarded the John Schofield 3Rs award in 2020.

Dr Meg Edwards completed an undergraduate degree in Wildlife Science at the University of Queensland, before travelling to South Africa to spend six months in the bush completing her Honours fieldwork. Since then, she has worked as a wildlife demonstrator, educating the public on Australia's wildlife and what we can do to protect them, as well as a technician for a wildlife research centre. She completed her PhD in 2020 on ways to improve mammalian reintroduction success, and in 2021, started work as an Academic at the University of Southern Queensland, where she is now a lecturer in Wildlife Management.

Professor Andrew Lawrence is a Senior Principal Research Fellow & Division Head at the Florey Institute of Neuroscience & Mental Health where he runs the Addiction Neuroscience laboratory.
Andrew has published over ~300 original articles & reviews, and been cited >12,000 times (H index 58). Andrew was Treasurer of the Australian Neuroscience Society (2002-2008) and is an Honorary Fellow of the British Pharmacological Society. He was Senior Editor of The British Journal of Pharmacology (2007-2014) and is currently Editor-in-Chief of the Journal of Neurochemistry
and a reviews editor with The British Journal of Pharmacology. Andrew was President of the Asian-Pacific Society for Neurochemistry (2014-16) & is currently junior Vice President of the International Society for Biomedical Research on Alcoholism. In 2017 Andrew delivered the Lawrie Austin Plenary lecture at the Australasian Neuroscience Society annual meeting.

Natalie is a respiratory research scientist in Perth, Western Australia, and Scientific Outreach Consultant with Humane Research Australia, Melbourne. Her research interests are in aerosol medicine, computational fluid dynamics, aerosol delivery, the environmental impact of inhaled medicines and non-animal research methods and models. She is in her final year of her PhD at Curtin University of Technology, and Telethon Kids Institute, studying medicinal aerosol delivery through artificial airways, and e-cigarette aerosol to the lungs, using computational fluid dynamics. She studied her Masters in Child Health Research at the University of Western
Australia, investigating inhaled corticosteroid lung deposition in teenagers with and without using their spacer via a radiolabeled lung deposition study.

Dr Dana Briggs (she/her) is a regulatory compliance consultant who specialises in animal ethics and animal care and use for scientific purposes (also referred to as research, testing and teaching). Dana helps organisations achieve their animal care and use program goals by providing a wide range of consulting services including independent review, process improvement and risk management. Dana has a PhD in biomedical science and lived experience in most of the roles involved in an animal care and use program so is uniquely able to understand the distinct challenges of the program as a whole and the perspectives of different stakeholder groups.

Mandy has deep expertise in animal ethics compliance, gained from over 15 years working in government and industry. She is a former category A (veterinary) member of five AEC's and Deputy AEC Chair. This familiarity with the challenges of AEC's has resulted in the development of a practical approach to training AEC members in their responsibilities, supporting efficient and compliant decisions. Mandy's expertise is underpinned by formal qualifications. She has a Bachelor of Veterinary Science, with honours and is a Member of both the Animal Welfare and Medicine and Management of Laboratory Animals Chapters, of the Australian and New Zealand College of Veterinary Scientists. Additionally, she has completed a Monash University Law Postgraduate Unit in Regulatory Methods and is a trained auditor. Mandy has recently established a consulting business, EthiQualia, providing animal ethics compliance and training services with the aim of connecting organisations to a culture of care.

Dr Bradley Smith works as a senior lecturer in psychology at Central Queensland University (Adelaide campus). He combines his background in comparative psychology and ethology with a multidisciplinary approach to the study of animal behaviour and human-animal interactions. Bradley is actively involved in captive and field-based research covering the cognition, behaviour and management of wild canids (with particular emphasis on the Australian dingo), the human dimensions of wildlife, and the intersection between humans and animals more broadly. He currently serves as a category B member on the CQUniversity Animal Ethics Committee. Dr Smith has over 90 publications (including 2 edited books, 16 book chapters, and 71 journal articles). He is currently writing a book relating to the role of dogs in scientific experimentation.

Paula Porter began work as an animal technician in 1999 at the Institute of Medical and Veterinary Science. In 2006 she began teaching at TAFESA delivering training for the Diploma of Animal Technology. In 2015 she became coordinator of the course. Paula has a Diploma in Positive Psychology and delivers workshops for building resilience to combat compassion fatigue to animal biomedical research facilities. She is also a meditation teacher at the meditation studio 'Zen Head'. Paula believes that the wellbeing of workers in our industry is just as important as the wellbeing of animals in our care.

Katrina is a registered veterinarian and has been the Animal Welfare and Ethics Coordinator at Qld University of Technology (QUT) for the past 4 years, where she regularly reviews projects using drones. Katrina is keen to create more awareness of the affect of drone use on animals, and how we can reduce that impact. She was previously the vet at QUTs Medical Engineering Research Facility (MERF) and also has a background in human orthopaedic sales and research. When not working, Katrina loves travelling, bushwalking and spending time with her 4 kids and pet Cavoodle!

Prof Sarah Spencer is the Head of the Neuroendocrinology of the Obese Brain Research Group, and the Deputy Leader of the Neurodevelopment in Health and Disease Program at the RMIT University School of Health & Biomedical Sciences. Since obtaining her PhD in Physiology in 2004 from the University of Queensland, she has been working as a neuroendocrinology researcher focusing on the understanding of brain inflammation in obesity and with other lifestyle challenges. She investigates the neurological causes and consequences of poor diet in early life; how this can lead to ongoing brain inflammation, and how this can impact cognitioin,
memory, and emotional processing. Prof Spencer has substantial expertise in the fields of developmental, stress, and neuroimmune physiology, including over 100 research papers showing how early life challenges, like poor diet, disrupt neuroimmune function and revealing how metabolic hormones control stress and anxiety.

Miss Rebecca M Boys PhD student- Cetacean Ecology Research Group; School of Natural Sciences, Massey University Te Kunenga ki Pūrehuroa Rebecca M Boys is a Commonwealth Scholar who joined Massey University in March 2019. Her PhD investigates the application of welfare science to cetacean strandings. Rebecca was previously employed at the Institute of Marine Research (IMAR) and Marine and Environmental Sciences Centre (MARE) in the Azores and has a background in the ecology and conservation of marine mammals. Rebecca is a current committee member of the Australia and New Zealand Student Chapter of the Society of Marine Mammalogy. She was a council member of the UK and Ireland Regional Student Chapter (2014-2015) and served on the Education Committee (2019-2021) of the Society of Marine Mammalogy, as well as the European Cetacean Society council (2016-2019). Prior to commencing her doctoral studies, Rebecca graduated with a BSc Honours in Applied Marine Biology from Bangor University, UK, where her honours thesis examined the fatal interactions between bottlenose dolphins and harbour porpoises.

Tara Jackson (Kāti Māmoe) is the Executive Director for the New Zealand Anti-Vivisection Society (NZAVS). NZAVS is an NZ-based charity that works to end animal experimentation, and the harmful use of animals in science in Aotearoa. Some of the most well-known campaigns that NZAVS have been a part of are the campaigns that successfully banned the testing of cosmetics on animals in New Zealand and prevented legal highs from being tested on animals in New Zealand. Tara holds a Bachelor of Science in Zoology and has a strong
passion for animal rights, human rights, and environmental protection. She has worked for NZAVS since 2015 and over that time the strategy that the charity follows to create change for animals used in science has evolved significantly. Collaboration and focusing on shared, common goals are now key elements of the work that NZAVS carries out.

Dr Jodi Salinsky is a veterinarian and educator who has worked in animal health, welfare, education and communication capacities with various government departments, zoos, academic institutions, animal welfare agencies and other organisations in NZ, the Cook Islands and the USA for 25+ years. As a trained zoo and wildlife veterinarian, she is especially interested in the welfare of wild animals used in research. She is also passionate about openness in animal research and recently Chaired the ANZCCART (New Zealand) established Working Group that developed the New Zealand Openness Agreement on Animal Research and Teaching, launched July 2021. She sits on several committees related to laboratory animal health and welfare and has been the Animal Welfare Officer at the University of Auckland since 2016. She works to improve all aspects of animal based research, including advancing the 3Rs (Replacement-Reduction-Refinement), enhancing open communication, and enabling robust and reproducible research outcomes.

Alastair Sloan is a translational bioscientist with research interests in regenerative biology, targeted drug delivery and development of 3D organotypic culture systems. He is Professor of Tissue Engineering and Dental Biology and Head of School at Melbourne Dental School, University of Melbourne. Alastair joined the University to take up the role of Head of School in January 2020 following a 20-year academic career in the UK where, latterly he was Head of School of the School of Dentistry, Cardiff University and prior to that, Director, Cardiff Institute of Tissue Engineering and Repair. He has published over 90 peer reviewed research articles and has held over $10M in external competitive research funding, including from the MRC, EPSRC, NC3Rs and industry.

Tony Rowe is a veterinarian and animal welfare officer at CSIRO. He has a PhD in immunology and is a member by examination of the Chapter of Medicine and Management of Laboratory Animals of the Australian and New Zealand College of Veterinary Scientists (MANZCVS). Previously he was the manager of an animal facility which held mice, rats and rabbits and was a researcher working in areas such as toxicology, oncology and parasitology.

Dr Alexander Combes is head of the Development and Disease laboratory at the Monash Biomedicine Discovery Institute, Monash University, and serves as Scientific Director of the Monash Genome Modification Platform. His research focusses on whether stem cell-derived human kidney tissue can model aspects of chronic kidney disease, which affects over 850 million people world-wide.

Malcolm France is a consultant veterinarian working in the care and management of laboratory animals. He has a PhD in veterinary pathology and has served as the director of animal facilities at two of Australia's Group of Eight universities. Other appointments have included chair of two Animal Ethics Committees, reviewer for the international journal Laboratory Animals, ad hoc site visitor for AAALAC International, inaugural President, Registrar and Public Officer of ANZLAA, and secretary of the ANZCVS laboratory animal chapter.

Rachel was appointed CEO of Humane Research Australia in September 2020. She has been committed to various animal welfare causes since a young age. During her career has worked for NGOs in the animal welfare and conservation fields, in Europe, Asia and Australia, as well as employment in the community sector for local, state and federal Government. She holds a MSc in Animal Welfare Science, Ethics and Law.

Dr Helen P. Waudby is a Conservation Biologist working on threatened species for the Department of Planning and Environment and an Adjunct Research Fellow with Charles Sturt University. Helen has been immersed in the natural world since she was a child growing up in the deserts of Central Australia, and has worked on taxa ranging from small desert-dwelling mammals like dunnarts and Ningaui, to wallabies, frogs, and arboreal mammals.
She has worked as a field biologist for nearly 20 years with a strong focus on refining field-based methods to reduce impacts on study animals, in that time. She is an editor of the recently published 'Wildlife Research in Australia: Practical and Applied Methods'.

Professor Gail Anderson graduated from Melbourne Uni and then headed off to Canada where she spent 22 years between Ontario Vet College (MSc, surgery specialist training and credentials through the ACVS), Toronto (PhD) and Dalhousie University on staff in the Medical school. She was Chair of SA Surgery at UQ when head- hunted to be the inaugural dean of the vet school in Adelaide. She also helped establish the Uni Surrey vet school in Guildford, UK as Head of Education. Gail has also been in private practice as a referral surgeon in Canada and Australia and affiliated with Noel Fitzpatrick's Bionic vet practice in Godalming, UK.

She has always been on Animal Ethics Committees wherever she has worked and most recently has been a University Veterinarian/Animal Welfare Officer at Uni Adelaide. Currently she is the Project Leader for the Compass training project with ANZCCART. Gail is a CCRP (canine rehab therapist) and a passionate owner of retrievers - both Labs and Goldies. She also works as a specialist veterinary surgeon for Animal Orthopaedics in Christchurch, New Zealand and acts a tutor for the physiotherapy team at Animal Physiotherapy, NZ.

Dr Jed Goodfellow BA/LLB (Hons), GDLP, PhD is the Co-founder and Director, Policy and Government relations at the Australian Alliance for Animals. He has over 20 years experience in animal welfare law, policy, and advocacy, having previously worked in senior policy, prosecutorial, and enforcement roles with the RSPCA across Australia. Jed has represented animals in courtrooms, parliamentary inquiries, standard setting forums, and regularly in the media. Jed developed Macquarie University's
Animal Law unit in 2012 and has taught the course annually for the past 10 years. In 2015, he
was awarded a PhD in animal welfare regulation. His research examined the role of departments of agriculture in regulating animal welfare and provided an empirical and analytical basis for law reform proposals to establish new animal welfare governance models in Australia.

Margaret Tipper has worked in the community sector for over 30 years, after initially working in the corporate sector. Her experience in the community sector has been in the Western Sydney area with a large charity as its Executive Officer; Manager of a Sub Regional Peak community organisation and most recently, as the Executive Officer of WESTIR Limited, a not for profit community organisation that provides enhanced and equitable access to social research and data for people and organisations.
Margaret is passionate about the work that neighbourhood centres and sector development organisations do everyday in communities.

The importance of this work, often as the initial point of contact with the community, cannot be understated. She is presently Chairperson of the Local Community Services Association, which is the NSW Peak Body for neighbourhood Centres

Margaret's undergraduate degree was a Bachelor of Business in Personnel and Industrial Relations and she has a Graduate Diploma and a Masters of Community Management. She holds memberships with a number of professional associations. Outside of work Margaret sits on a number of community boards and university advisory committees. One of these is on the ACEC Children's Medical Research Institute as a Category D Member. (Until recently this ACEC was merged with the Childrens Hospital Westmead.)

Margaret has been a Category D Member for over 20 years on this Committee and was awarded the Australian ANZCART Member of the Year in 2021."

Dr Rebekah Scotney PhD, graduated from The University of Queensland Gatton Campus in 1993, taking her first position within the School of Veterinary Science shortly thereafter. Rebekah has a strong background in animal husbandry and welfare, behaviour, and ethics with more than 25 years' experience in varied animal and veterinary research and teaching paradigms. Following 18 years as Manager of the Clinical Studies Centre within the School of Veterinary Science, Rebekah was appointed Director from 2013 – 2018, concurrently she held the position of Academic Program Coordinator for the Bachelor of Veterinary Technology degree at UQ (2013 - 2019). Rebekah teaches primarily into the BVetTech and BVSc programs at UQ but also contributes to several other animal-related programs at UQ Gatton Campus. She has a passion for teaching, and a commitment to instil a desire in all students to embrace life-long learning.

Rebekah is a passionate researcher and educator specialising in the psychology of human – animal relationships. Having lived experience of occupational trauma and compassion fatigue, Rebekah presents extensively in this subject area as well as in psychological wellbeing and emotional intelligence. Rebekah also provides thought-provoking seminars and workshops within all sectors of animal-related industries and occupations.

Rebekah is highly regarded in her field, particularly for her leadership and mentoring expertise.