anzccart
HUMANE SCIENCE

ANZCCART Australia Conference 2026

Culture, Care and Collaboration

RYDGES WORLD SQUARE HOTEL, SYDNEY
21 – 23 OCTOBER 2026



ANZCCART
Australian and New Zealand Council for the Care of Animals in Research and Teaching

Contents

Welcome 1

Notes 9

Conference Program 10

- Tuesday 20 October 10
- Wednesday 21 October 10
- Thursday 22 October 12
- Friday 23 October 14

Pre-Conference Tours 16

Post-Conference Workshop 17

Conference Social Activities 17

Abstracts Day One 18

Abstracts Day Two 28

Abstracts Day Three 50

Poster presentations 68

Acknowledgements 74

Notes 75

Tēnā koutou and welcome



It is my great pleasure to personally welcome you to the 2026 ANZCCART Conference in Sydney. We will gather on Gadigal land for an opportunity to share knowledge, experience and conversation together.

More than that, this conference is a chance to connect with colleagues, spark new ideas and support one another. We hope you can join us for what promises to be an engaging and thought-provoking event as we explore the role of animals in research and teaching across Australia and New Zealand.

The program includes invited speakers from both interstate and abroad. They will be joined by local speakers with a selection of presentations from submitted abstracts. Pre-conference tours include visits to animal facilities and laboratories. This conference aims to serve as a neutral forum for the exchange of ideas and perspectives, where we can engage in respectful dialogue, fostering a space where diverse views on these complex issues can be expressed and debated. We encourage all participants to engage thoughtfully and contribute to the enriching discussions that will unfold over the course of the event.

We would also like to extend our sincere thanks to our conference sponsors AAALAC International, EthiQualia, Infonetica Ltd, JetPets Animal Transport Ltd, MAWA Trust, Research Code and Tecniplast Australia for their generous support. We look forward to joining you at the conference.

Don Mackie
Chair, ANZCCART Australia

aaalac INTERNATIONAL

High-quality animal care produces better scientific results.

AAALAC International offers **the only international accreditation** for animal research, testing and teaching programs. When you seek AAALAC accreditation, your animal care and research program receives a **confidential, expert peer-review** evaluation designed to help your organization **promote animal welfare**, **strengthen research integrity,** provide **quality assurance** and encourage **continuous improvement**. These evaluations are led by professionals who understand the challenges and opportunities your organization faces.

For organizations in Australia and New Zealand, achieving AAALAC International accreditation satisfies the requirement for "Independent external reviews of the operation of institutions" found in Section 6 of the Code!

Join the **1,170+ institutions in 52 countries/regions** that have earned AAALAC accreditation, and demonstrate your commitment to meeting **high international standards** for animal care and use.

Visit our booth to speak with AAALAC representatives!

Learn more at aaalac.org

EthiQualia

CONNECTING TO A CULTURE OF CARE

Promoting excellence in research animal care and welfare through independent external review.



Independent external reviews, as required at least every 4 years under section six of the *Australian code for the care and use of animals for scientific purposes, 8th edition 2013 (updated 2021)*, are a core part of our service delivery.

Our experienced team takes the angst out of the review process, with friendly, informed communication supporting everyone involved. We bring an expert review panel and protocol to you, enabling you to meet your obligations under the code with ease.

From the opening briefing to the close-out meeting, we assist with templates and provide regular updates, ensuring that the independent external review process is streamlined, thorough, and hassle-free.

Client feedback

It has been a genuine pleasure to work with and learn from you during this review. The willingness of the panel to openly share insights, acknowledge strengths, and provide thoughtful and constructive criticism has been greatly appreciated by all involved.

Their approach was thorough, evidence-based, and collegial, with a clear understanding of the intent and requirements of the Australian Code. They demonstrated excellent insight into the roles and responsibilities of AECs, governance frameworks, and institutional obligations, providing constructive recommendations that supported both compliance and continuous improvement.

The reports produced by EthiQualia were thorough, detailed, and of a very high standard. They provided clear, actionable, and practical recommendations that support our commitment to animal care and welfare and continuous business improvement.

Contact us to discuss your requirements.

connect@EthiQualia.com.au

EthiQualia.com.au

infonetica

Powering the Research of Tomorrow

Trusted by 300+ institutions worldwide

AI-powered research management, from idea to impact

Infonetica empowers research through their AI-powered research management software. Their platform supports the full research lifecycle, from grants management, contracts and ethics compliance, to institutional approvals and clinical trial management. Backed by a strong customer community, they provide ongoing support to help organisations stay future ready.

With Infonetica

Join a global community

With over 300+ institutions worldwide.

Go live in under 6 months

With over 150 successful implementations, we know what it takes to get it right.

Future proof your institution

Best practice templates, built on configurable software that adapts as you grow.

Contact us today to see how we can streamline your entire research lifecycle.

Email Us: enquiries@infonetica.net

Visit: www.infonetica.net

The Research Lifecycle, Connected

Ideas

Collate & develop all research ideas in one place

Grant Discovery

Discover new grants, collaborate and start applications

Pre-Award

Increase research income through high quality proposals

Post-Award

Manage research funding efficiently and maximise impact

Contracts

Create, execute and track all research contracts in one place

Ethics

Comply with human and animal ethics governance requirements

Governance

Post Graduate Research, Bio-safety & risk assessments

Research Security

Export controls, due diligence and visiting scholar reviews

Clinical Trials

Set up sites, recruit participants & manage clinical trials end-to-end

Jetpets
the pet travel people

The Animal Transport Specialists

CEIV - EXCELLENCE IN LOGISTICS
IATA
ANIMALS



EXPERIENCED INSTITUTE CONSULTANTS

OVER 30 YEARS EXPERIENCE IN ANIMAL WELFARE

RESIDENT VETS WHO ARE EXPERTS IN ANIMAL TRANSPORT

HYGIENIC & CLIMATE CONTROLLED VANS

TRAVEL

DOMESTIC & INTERNATIONAL

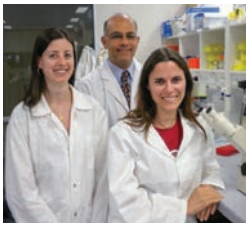
ONLINE BOOKING PORTAL

ANZLAA · ATA · IATA · member of IPATA · RSPCA Corporate Supporter

GET IN CONTACT | +61 3 9339 4300 | INSTITUTES@JETPETS.COM.AU | WWW.JETPETS.COM.AU

MEDICAL ADVANCES WITHOUT ANIMALS

The Medical Advances Without Animals Trust (MAWA) is a registered charity established in 2000. MAWA's aim is to advance medical science and improve human health and therapeutic interventions without using animals or animal products in biomedical research.


University of Sydney


Australian National University


University of Melbourne


Walter and Eliza Hall Institute

MAWA funds a range of researchers, fellows and scholars from universities and research institutions throughout Australia

MAWA takes a leading role in animal-free science and has developed an impressive and diverse research portfolio by providing funding to universities and research institutions throughout Australia and working closely and productively with the medical research community to facilitate the development and promotion of human-relevant alternative methods and non-animal technologies.

MAWA provides research grants, fellowships, scholarships, travel grants, conference bursaries, sponsorships, and support for additional initiatives with potential to further MAWA's goals. MAWA also facilitates third party funding to increase opportunities for researchers and students.


The Hon Kevin Rozzoli AM and ANU Dean Prof Kiaran Kirk


ANU's John Curtin School of Medical Research (JCSMR)


ANU Dean Prof Aidan Byrne and Supportive Academics and Executives

MAWA works in partnership with the Australian National University (ANU) and has established the Replacing Animals in Medical Research Fund (RAMR) at the ANU to provide additional funding.

MAWA BOARD

Prof Toby Allen; Prof Cris dos Remedios; Prof Kieran Fallon; Dr Jason Grossman; Mr Raymond Kidd
Prof Deborah Marriott; Dr Andre Peterson; The Hon Kevin Rozzoli AM; Ms Sharyn Watson

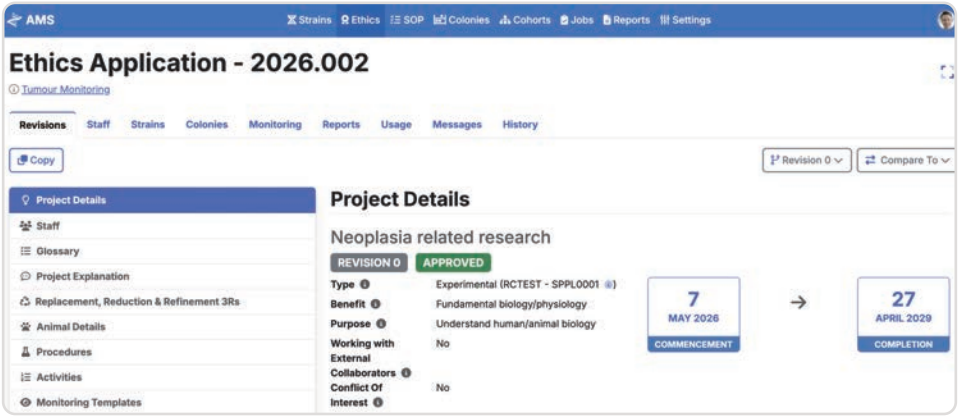
DONATIONS TO MAWA ARE TAX DEDUCTIBLE

PO Box 4097 Hawker ACT 2614 Australia
T: +61 2 6255 1834 | E: info@mawa-trust.org.au | W: www.mawa-trust.org.au

Research Code

Animal Management System (AMS)

One system for ethics, colonies, breeding
and facility operations.



- Ethics applications and compliance
- Standard operating procedures
- Genetic strain catalogue
- Animal colony management
- Work request management
- Administrative reporting

In production since 2016 across leading Australian research institutions.

Research Code

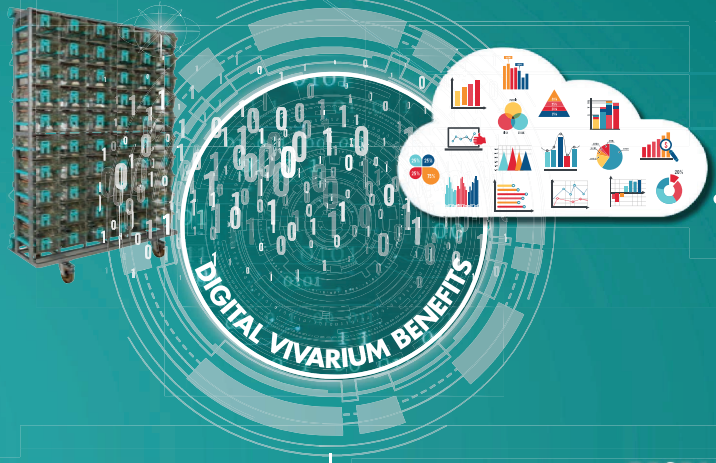
Book a demonstration

info@researchcode.com.au
researchcode.com.au

NEW

DVC® for EMERALD

CAPTURE YOUR DATA, UNLOCK NEW POSSIBILITIES



FACILITY MANAGEMENT

- **Standardization of cage conditions, reduction of running costs,**
- **and no unnecessary animal handlings**
- **Streamline and automatically balance facility workload**: customize the system according to your needs
- and achieve maximum efficiency
- **Coloured LEDs** to highlight single cages
- **Real time cage tracking system**

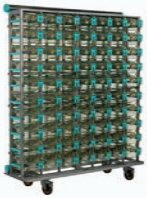
RESEARCH OUTCOMES

- **Get new insights** thanks to 24/7 activity detection
- **Increase study sensitivity and reproducibility**
- **More robust data** thanks to validated digital biomarkers
- **Reduced bias** thanks to the automatic analysis of all cage data
- **Availability of more add-ons** like wheels, Leddy (for a customized ON/OFF cage light cycle) and interlinking system

ANIMAL WELFARE

- **Complete and automatic continuous animal welfare check** thanks to 24/7 detection of spontaneous locomotion
- **24/7 monitoring of food and water (bottle) availability**
- **No unexpected water floods (triggered by bottles or an AWS) and prevention of animal loss** thanks to 24/7 monitoring

COMPATIBLE WITH:



ERGO Emerald rack

DVC



COMFORT Emerald rack

DVC

TECNIPLAST

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

COMPANY WITH ENVIRONMENTAL SYSTEM CERTIFIED BY DNV GL = ISO 14001 =

HEADQUARTERS - ITALY
www.tecniplast.it
tecnicom@tecniplast.it

AUSTRALIA/NEW ZEALAND
Tel. + 61 2 8845 6500
www.tecniplast.it | info@tecniplast.com.au

Notes

Conference program

TUESDAY • 20 OCTOBER

FROM 10.00AM	OPTIONAL TOURS
Tour 1	University of Sydney Charles Perkins Centre
Tour 2	Australian Museum Research Institute
Tour 3	UNSW Randwick Animal Services
4.00-5.00	**REGISTRATION IN THE LOBBY, RYDGES HOTEL**

WEDNESDAY • 21 OCTOBER

8.00	REGISTRATION
8.45	DON MACKIE, Chair, ANZCCART Australia Opening of conference
OPENING CHAIR - ALAN TILBROOK	
9.00	KEYNOTE ADDRESS - LARRY CARBONE The Hidden Lives of Lab Animals: What my life as a lab vet has taught me about ethics and animal welfare
9.45	MARY BATE Review of the 'Australian code for the care and use of animals for scientific purposes'
10.15	Sponsors' Talks
10.30	**MORNING TEA**
NON-HUMAN PRIMATES CHAIR - MALCOLM FRANCE	
11.00	ANNEMARIE HENNESSY Non-human primates in biomedical research
11.30	CLAIRE COULSON Beyond the Lab: Exploring Retirement Pathways for Primates Used in Research in Australia
12.00	Discussion Panel
12.30	**LUNCH**

WELFARE AND ETHICAL GUIDELINES CHAIR – ARNJA DALE	
1.30	PAUL MCGREEVY Guidelines for the conduct of studies into animal behaviour modification, training and equipment use
2.00	JACQUELINE PHILLIPS What helps AECs make hard decisions: Examining the structures, roles and processes that support sound ethical decision-making in AECs, with scenario-based workshopping in small groups
2.30	Breakout Session
3.00	**AFTERNOON TEA**
CULTURE, CARE AND COLLABORATION CHAIR - JENNY SMART	
3.30	AMANDA ERRINGTON Animal Ethics Committees and the Culture of Care: Insights from the literature and a Survey of Australian AEC Members
4.00	KIERON ROONEY The human in animal research and their potential to influence research outcomes
4.30	KATHERINE REID Paved With Good Intentions: Why Compassionate people Produce Poor Animal Welfare Outcomes – and What To Do About It (online)
5.00	MARY BATE Research quality, research culture and good institutional practice
5.15	Poster Session
6.00	**WELCOME RECEPTION**

THURSDAY • 22 OCTOBER

OPENNESS CHAIR - PAT CRAGG	
9.00	ELENA SCHALLER, RACHEL SMITH Public attitudes towards animal research in Australia: Findings from a 2025 national opinion poll (online)
9.15	SHARI COHEN, SHANNON AKERS Benchmarking and Assessment of the 3Rs in Research and Teaching at Universities
9.30	MALCOLM FRANCE Don't count your chickens! A trial to advance openness through national statistics in Australia
9.45	IAN SALDANHA An update on the New Zealand Openness Agreement
10.00	SABINE CHOURBAJI Towards more Transparency in Animal Research: Communication and Next-Gen Scientists – a European Perspective
10.30	Sponsors' Talks
10.40	**MORNING TEA**
NATS/NAMS CHAIR - LIZ RANGE	
11.00	THOMAS WHITE, KATE LYNCH Tiny minds, big feelings: Accommodating invertebrates in research ethics
11.30	HUE DINH, EVANGELINE CLAY, AMY CAIN *Galleria mellonella:* a safe, cost-effective and ethical animal model alternative
11.45	WOJCIECH CHRZANOWSKI The evolving landscape of animal replacement technologies and education
12.00	ANAI GONZALEZ-CORDERO Organoid-Based Modelling and Gene Therapy Strategies for inherited retinal diseases
12.30	**LUNCH**
	CONCURRENT SESSIONS
	SESSION ONE **AAALAC** CHAIR – SUSAN DOOHAN
	SESSION TWO **NATS/NAMS** CHAIR – IAN SALDANHA

1.30	DEWI ROWLANDS Two Decades of Continuous Improvement: HKUMed and AAALAC Accreditation	TARA JACKSON Working together for change: Beyond Animal Research (BAR) one year on
1.45	MONTIP GETTAYACAMIN AAALAC International Accreditation in the Australian Setting	GREG WILLIAMS, NICOLAS GONZALEZ CASTRO, ROHINI POONYTH Biobanking: Enabling infrastructure for our NAMs future
2.00	MALCOLM LAWSON AAALAC International Accreditation in Australian Research Institutes – What are improved	PANTHIPA SUWANNAKOT, EVA TOMASKOVIC-CROOK, KIMBERLEY L. ALEXANDER, JEREMY MICAH CROOK 3D-Printed Human Brain Tumor Model for Safer and Faster Glioblastoma Drug Discovery
2.15	CHRISTOPHER COOPER The quality process and registration with AAALAC in Australia for Ozgene	MUNIRA XAYMARDAN, BORIS MARTINAC,ROHAN RODRICK, EVA WONG Human-Based Models from Adult Stem Cell Biology and Maternal Periodontal Health
2.30	BARBARA KRUGER AAALAC Accreditation in an Australian Research Environment: Elanco's Experience and Lessons Learned	CLIFFORD TEBAY, GEORGE PARKER, CHRIS THEKKEDAM, MONIQUE J WINDLEY, JAMIE I VANDENBERG, ADAM P HILL, OSVALDO CONTRERAS
2.45	Discussion Panel	KATIE BASHANT DAY, TARA JACKSON A Trans-Tasman Pilot of a Truly Animal-Free Serum Replacement Across Research Laboratories in Australia and New Zealand
3.00	**AFTERNOON TEA**	
QUALITY RESEARCH CHAIR – NATALIE BOOTES		
3.30	LARRY CARBONE Protocol Review Workshop: Spotting the Harms and Finding the Benefits	
4.15	ADRIAN SMITH How can we improve the quality of preclinical research? (online)	
4.45	Close of Day 2	
6.00	**CONFERENCE DINNER**	

FRIDAY • 23 OCTOBER

	CONCURRENT SESSIONS	
	SESSION ONE **HIGH ANIMAL WELFARE IMPACT** CHAIR – CATHY PITKIN	**SESSION TWO** **AEC OPERATIONS** CHAIR – MARC RANDS
9.00	RONAK RESHAMWALA, JAMES ST JOHN Refinement of high impact neurotrauma models: improving animal welfare and reducing distress	JENNY KINGHAM Category E members – Should they be included?
9.15	LISA KIDD Using mortality data to assess and manage animal welfare outcomes	
9.30	RACHEL LAYTON, SAMANTHA K. DAVIS, GRACE TAYLOR, ALI DAVIS, GEORGINA VAN DER WOUDE, DAVID T. WILLIAMS Assessing analgesia for pigs in African swine fever disease studies: A case of refinement via researcher collaboration	DEWI ROWLANDS Exploring the Potential Role of Artificial Intelligence in Animal Ethics Committee Workflows
9.45	SUSAN DOOHAN Rethinking Rumen Access: Science, Welfare, and the Road Ahead	MISTY FISH Are we addressing complaints about animal care appropriately
10.00	CATHERINE GEARING Beyond Baseline: Improving Health Assessment Through Weight Loss Metrics in Mouse Experiments	MARK BURDASS, SOBHAN AKHAVAN, ANJA STUDER, VELMA VERMAAT Aquatic Animals in Scientific Trials "A New Zealand Animal Ethics Committee's Experience"
10.15	**MORNING TEA**	

HIGH ANIMAL WELFARE IMPACT CHAIR – MANDY PATERSON	
10.45	RICHARD MALIK Making It Up as We Go: Fast-tracking Veterinary Therapeutics
11.15	PAUL HICK, SARAH GESTIER, TIFFANY O'CONNOR, ANDREW READ, NICHOLAS YUEN, NATALY BOSKOSKI, PETER KIRKLAND Application of a rabbit model for evaluation of mRNA vaccines for livestock
11.45	ANNA CHLINGARYAN, A. MELKUMYAN, E. HOOTON, D. VAN DER SAAG, S. LOMAX AI-Assisted Pain Behaviour Detection in Calves
12.00	SHARI COHEN, NICHOLAS YIJUN PAN Reporting practices of anaesthesia and analgesia in rodent orthopedic research
12.30	**LUNCH**
BEYOND APPROVAL: RESPONSIBLE ANIMAL USE FROM PRACTICE TO RETIREMENT CHAIR – PAUL SOU	
1.30	PAULA WALLACE The sustainability of rehoming animals from research
1.55	ARNJA DALE ICLAS Globally harmonized standard for animals in science
2.00	ARNJA DALE New Zealand Animal Use Statistics – Are our numbers going up?
2.15	TZONGTYNG HUNG Integrating Medical Imaging Technologies with the 3Rs in Preclinical Research
2.30	MALCOLM FRANCE Looking forward: outcomes of the Australian openness agreement review
2.45	Announcement of ANZCCART Conference 2027
3.00	**CLOSE OF CONFERENCE**
3.30	Optional: Post-Approval Monitoring Workshop (1 hour)

Pre-conference tours

TUESDAY • 20 OCTOBER • FROM 10.00AM

Tour 1 - University of Sydney Charles Perkins Centre – Biological Services

The Charles Perkins Centre is a multidisciplinary initiative focused on reducing the burden of chronic disease through collaborative, systems-based research. Within the Centre, Laboratory Animal Services (LAS) supports high-quality animal research for both internal and external partners through a team of technicians, facility officers, and veterinarians. The tour will showcase state-of-the-art rodent and large animal facilities, along with advanced preclinical imaging and hybrid theatre environments.

Tour 2 - Behind the Scenes Tour of the Australian Museum Research Institute

Australia's first museum, the Australian Museum, has a collection of more than 22 million specimens and objects and is home to the Australian Museum Research Institute (AMRI). AMRI specialises in taxonomy, genomics, ecology, and conservation projects that seek to better understand and protect Australia's extraordinary biodiversity.

Join this rare opportunity to go beyond the public galleries and see the science firsthand in a behind-the-scenes tour of the AMRI facilities and collections and also meet the scientists that work there.

Tour 3 - UNSW Randwick Animal Services

The University of New South Wales is home to two purpose-adapted animal research facilities at its Randwick campus, supporting world-class biomedical research in surgical orthopaedic science, biomedical engineering and optometry. The facilities provide high-quality housing and care for rabbits and sheep sourced from interstate and rural suppliers, with a dedicated team of Animal Services technicians supporting their welfare throughout surgical procedures and recovery.

Join this unique opportunity to tour a sheep and rabbit holding facility at the heart of one of Australia's most prominent universities and discover the initiatives our team has implemented to optimise animal housing, enrichment and nutrition.

Post-conference workshop

FRIDAY • 23 OCTOBER • 3.30PM

Post-Approval Monitoring

CONVENOR: Casey Schauer, Post Approval Monitoring Officer, Monash University.
VENUE: Rydges, Ballroom 1, Conference area.

Conference venue

The venue is the **Rydges World Square Hotel**, Pitt Street, Sydney.
T: 02 8268 1888

Plenary presentations, including concurrent sessions, for the Conference will be delivered in **Ballroom 1** and **2**. A Sponsor exhibition area and Poster Session will be held in **Ballroom 3**, adjacent to the Plenary which will also host tea breaks.

Conference social activities

WELCOME RECEPTION
WEDNESDAY • 21 OCTOBER • 6.00 TO 8.00PM

Cidery Bar, Rydges, adjacent to the Conference area

Located in Sydney's vibrant World Square precinct, the Sydney Cidery's urban-style space showcases an authentic distressed aesthetic with rich oak and copper tones, herringbone flooring, and a striking bar constructed from recycled brass pipes and bridge timbers, opening onto a spacious terrace overlooking World Square.

CONFERENCE DINNER
THURSDAY • 22 OCTOBER • 6.00 TO 10.00PM



Dockside Darling Rooms, Cockle Bay Wharf

The Darling Room at Dockside is a stylish waterfront event space located on the balcony level of Cockle Bay Wharf in Darling Harbour, Sydney.

Floor-to-ceiling windows provide panoramic views of Darling Harbour and the area is surrounded by a generous outdoor wrap-around terrace.

Abstracts Day One

WEDNESDAY • 21 OCTOBER

OPENING
CHAIR - ALAN TILBROOK

KEYNOTE ADDRESS

The Hidden Lives of Lab Animals: What my life as a lab vet has taught me about ethics and animal welfare

Larry Carbone, Independent
Valencia, Spain

In one ear, critics tell you that animal labs are cruel and unnecessary. In the other, scientists say they only use animals when absolutely necessary for important projects, with minimal animal harm. People who want medical progress without animal suffering are understandably confused.

In my book, *The Hidden Lives of Lab Animals*, I bring readers behind the scenes of animal laboratories. As a lab vet, I spent decades working with the animals, scientists, ethics committees, carers and inspectors. Every story holds some lessons for improving animal care. All of us here have our own stories, whether a lab insider or outsider. Your stories will differ from mine, and all are worth examining for the lessons they hold.

People with frontline animal contact quickly learn how hard animals can be to "read," especially if we see them but once a day. That experience teaches us not to write protocols that assume we will always detect pain and suffering, but rather err on the side of caution. In ethics committees, we struggle to score the benefits of a proposed project. Will anything ever come of this ongoing series of experiments? Will we really tell a scientist their progress is too slow and we are taking away their animal privileges? As a committee vet, I was both the animals' and the scientists' advocate. What a conflict! Meanwhile, nonscientists struggle to find their voice and ask the valuable questions we lab insiders did not know to ask. That prompts my calls for more support and invitation for outside eyes and voices in these committee meetings.

This talk traces my own journey, the animals I have known and the lessons I have learned, as I invite others to tell their own stories and find the lessons in them.



Larry Carbone, DVM, PhD, is a veterinarian, researcher, and animal-welfare scholar with decades of experience working with laboratory animals, scientists, veterinarians, ethics committees, carers, and regulators. He studies animal-welfare science and ethics in the US, where he practiced for forty years, and internationally. His book, The Hidden Lives of Lab Animals, draws on his experience as a laboratory veterinarian to explore how we can better understand and respect animals used in research.

Review of the 'Australian code for the care and use of animals for scientific purposes'

Mary Bate
National Health and Medical Research Council

A review of the *Australian code for the care and use of animals for scientific purposes* (the Code) is well advanced. This presentation will provide an update on review activities, including consultation with sector stakeholders and the Australian community. The level of detail presented will reflect the current stage of the review process.

The Code provides a framework for the ethical, humane and responsible care and use of animals used for scientific purposes. In Australia, the state and territory governments are responsible for the regulation of animal welfare, including the use of animals for scientific purposes and have adopted the Code into their legislation. This review seeks to ensure that the Code continues to provide guidance that is current, fit for purpose and reflects current scientific evidence, as well as ethical and social views about the care and use of animals for scientific purposes.



Mary is an experienced veterinarian who completed her graduate training at the University of Queensland. She has extensive experience with animal ethics and welfare, and veterinary medicine and surgery. Mary joined the National Health and Medical Research Council in 2010 and leads the development and review of animal ethics and welfare guidelines, including the review of the *Australian code for the care and use of animals for scientific purposes*. She is also the project lead for NHMRC's research quality work.

NON-HUMAN PRIMATES
CHAIR - MALCOLM FRANCE

Non-human primates in biomedical research

Annemarie Hennessy
University of Sydney, NSW

Professor Annemarie Hennessy AM is a Renal and Obstetric Physician who is the Deputy Dean Westmead for the Faculty of Medicine and Health at the University of Sydney. She has over 20 year's experience working in higher education in Western Sydney, and has worked as a clinician researcher during her 35 years of clinical practice in Sydney.

Beyond the Lab: Exploring Retirement Pathways for Primates Used in Research in Australia

Claire Coulson, Independent
Queensland

Australia has three non-human primate breeding facilities that provide animals for biomedical research. In 2024, researchers in New South Wales and Victoria used approximately 278 primates from these facilities in their studies. The National Health and Medical Research Council (NHMRC) Code and the Guidelines for the Care and Use of Non-human Primates for Scientific Purposes state that researchers must consider retiring primates at the end of their research use. However, no established primate retirement pathway currently exists, and therefore all primates bred for research in Australia spend their entire lives either inside these breeding colonies or in laboratories.

In the United States, established collaborations between laboratories and sanctuaries show that structured primate retirement pathways are achievable, which suggests that similar approaches could be successful elsewhere. This study assesses the feasibility of potential retirement pathways in Australia. These include the development of a purpose-built standalone facility, a network of sanctuaries, and a retire-in-place approach. A consistent set of criteria, including animal welfare outcomes, legal feasibility, financial sustainability, and operational practicality, is used to evaluate each pathway.

International benchmarking forms a key component of this study, using multiple established primate sanctuaries as comparative case studies. Information from sanctuaries across North America and Europe is used to examine factors such as enclosure design, animal husbandry, operational costs, funding, and the practical processes involved in transitioning non-human primates from research into long-term sanctuary retirement.

The findings of this study provide an evidence-based framework to inform policy and funding decisions, and to support the development of practical, scalable retirement pathways for primates used in research in Australia.



Claire Coulson is an independent consultant specialising in primate welfare, conservation and captive management. She has worked with non-human primates in zoos, sanctuaries, and in the field for over 20 years. Claire previously served for 12 years as Director and later Chair of the Board of an international conservation and primate sanctuary organisation.

WELFARE AND ETHICAL GUIDELINES
CHAIR - ARNJA DALE

Guidelines for the conduct of studies into animal behaviour modification, training and equipment use

Paul McGreevy
Sydney School of Veterinary Science, University of Sydney, NSW

Horse and dog training is a nascent scientific discipline with great potential to improve the welfare of animals in training, sport and work through evidence-based research into learning theory and behaviour modification. However, the credibility of recommendations within these practices depends on the scientific rigour of the studies from which they derive. As public scrutiny of horse sports intensifies and social license to operate in all animal-based sports (and law enforcement) becomes increasingly contingent upon demonstrable welfare standards, the sectors urgently require research that withstands methodological scrutiny while genuinely prioritising animal welfare outcomes. The new guidelines address this need by providing detailed, welfare-focused direction for conducting behaviour modification research, complementing the foundational ARRIVE Guidelines with specific attention to the complexities inherent in studies that alter animal behaviour through training, handling or restraint.

Developed by researchers with extensive collective experience in equitation science, dog training and animal welfare assessment, these Guidelines serve multiple constituencies. They assist animal ethics committees in evaluating research proposals, support researchers in designing scientifically robust studies, guide journal reviewers in manuscript assessment, and ultimately strengthen the evidential basis for welfare advocacy. By making methodological expectations explicit rather than implicit, the Guidelines are expected to elevate standards across equitation science and canine performance research, ensuring that welfare recommendations carry sufficient credibility to inform industry practices, regulatory decisions and the ongoing evolution of training methods that genuinely prioritise animal welfare.



Paul McGreevy, a veterinarian, ethologist and animal welfare scientist, is the author of over 350 peer-reviewed publications and ten books. He taught animal behaviour and welfare science at the Sydney School of Veterinary Science from 1996-2021 and established the *VetCompass* initiative that brought together all of the Australian veterinary schools to provide national disease surveillance for companion animals and horses. In 2006, he co-founded the International Society for Equitation Science that focuses on evidence-based approaches to riding and training.

What helps AECs make hard decisions?

Jacqueline Phillips
Macquarie Medical School, Macquarie University, Sydney, NSW

The Australian code for the care and use of animals for scientific purposes requires that Animal Ethics Committees (AECs) make ethically defensible decisions through a process that is thorough, inclusive of all members considerations and, where possible, consensus-based, balancing effects on animal wellbeing against potential benefits based on evidence in the application. This balancing act becomes especially difficult where projects involve significant welfare cost, scientific uncertainty or substantial research investment. Committee deliberation is rarely straightforward under these conditions: complex applications, time pressures and the wide range of membership categories on the AEC, each bringing distinct expertise, all shape the discussion. Guidance from the Animal Research Review Panel (ARRP), ANZCCART and the Code itself supports AECs in applying these principles, but the mechanics of good decision-making can be hard to apply in practice.

Drawing on her experience as a member and former chair of the ARRP, Professor Phillips will lead this session, bringing together lessons from published guidance and documented inspection findings to examine what actually supports sound ethical decision-making at the AEC table. The session will consider the composition and administration of the AEC, issues around quorum and conflict of interest, how the chair exercises authority, and how bias and group dynamics shape discussion. It will also consider how application format can either support or hinder members' meaningful participation.

Following a presentation of these structural and behavioural factors, attendees will break into small groups to work scenarios that highlight through common issues that the ARRP have identified that AECs encounter in their deliberations.



Professor Jacqueline Phillips is Chair of the Academic Senate at Macquarie University NSW and Professor of Neurophysiology, with a veterinary science background. She chaired the NSW Animal Research Review Panel (ARRP) from 2019 to 2025, having served as a panel member since 2010, overseeing the welfare of animals used in research, testing and teaching across New South Wales. Her work bridges animal ethics governance, physiological research and university leadership, informing this session's focus on practical decision-making within Animal Ethics Committees.

CULTURE, CARE AND COLLABORATION
CHAIR - JENNY SMART

Animal Ethics Committees and the Culture of Care: Insights from the Literature and a Survey of Australian AEC Members

Amanda Errington
EthiQualia

Globally, establishing a culture of care (CoC) within institutions that use animals for scientific purposes is a legal obligation in some jurisdictions and a recognised condition of the social licence for animal use in science. A strong CoC supports animal welfare, promotes human wellbeing, and underpins public confidence in animal research. Members of ethical review bodies (ERBs), through the provision of ethical oversight, act as guardians of animals used in these activities. This presentation provides an overview of current literature examining the association between ERBs and institutional CoC.

While there is growing awareness in Australia of the importance of establishing robust cultures of care, little attention has been given to how these principles are applied to Animal Ethics Committee (AEC) members themselves. Preliminary findings from a 2026 survey of Australian AEC members will be presented, exploring the associations between organisational culture and the effectiveness of ethical oversight. The results indicate that while many institutions demonstrate positive practices in supporting AEC functions, gaps remain in the recognition, resourcing, and protection AEC members need to fulfill their responsibilities.

The presentation will highlight key strengths and weaknesses in current institutional approaches to supporting AECs and consider the potential risks. Institutions that fail to recognise and mitigate these risks may undermine not only the effectiveness of their AEC, but also their own – and the broader sector's – social licence to operate in animal research and teaching.



Mandy is the Principal of EthiQualia, promoting the welfare of animals used for scientific purposes through risk evaluation and analysis. She has served on multiple AECs, worked as an animal welfare officer at various research institutions, as well as within the Animal Welfare Victoria regulatory team. Mandy is an animal welfare and laboratory animal veterinarian and has recently completed a Master of Science in International Animal Welfare Ethics and Law at the University of Edinburgh.

The human in animal research and their potential to influence research outcomes

Kieron Rooney
University of Sydney, NSW

Bias in both human and non-human research can arise from conscious and sub-conscious factors. The development of research design tools, reporting guidelines and ethical oversight has sought to manage the conscious bias that can arise from conflicts of interest and study design choices. However subconscious bias resulting from handling practices, and human-animal interactions are relatively less understood. In our recent work that sought to investigate the role of early career researchers in study design we uncovered a culture of ethical and emotional dilemma when working with animals. This work paralleled the identification and discussion of compassion fatigue and the need for a culture of care that has grown in the community of those that use animals for scientific purposes of late. In this presentation, Kieron will present on this completed work and consider the potential impact for subconscious bias to develop and the potential role of ethics committees in managing this phenomena. Bias in both human and non-human research can arise from conscious and sub-conscious factors. The development of research design tools, reporting guidelines and ethical oversight has sought to manage the conscious bias that can arise from conflicts of interest and study design choices. However subconscious bias resulting from handling practices, and human-animal interactions are relatively less understood. In our recent work that sought to investigate the role of early career researchers in study design we uncovered a culture of ethical and emotional dilemma when working with animals. This work paralleled the identification and discussion of compassion fatigue and the need for a culture of care that has grown in the community of those that use animals for scientific purposes of late. In this presentation, Kieron will present on this completed work and consider the potential impact for subconscious bias to develop and the potential role of ethics committees in managing this phenomena.



Kieron commenced his research career in 1998 as an honours student in his Bachelor of Science and subsequent PhD that used animal models of type 2 diabetes and obesity. Kieron went on to secure an academic position at the University of Sydney in 2004. Since then, Kieron's research portfolio has included both human and small animal studies. Kieron has sat on both Animal (10 years) and Human (5 years) Ethics Committee and has co-lead for the Charles Perkins centre Bias in Research node since 2020.

Paved With Good Intentions: Why Compassionate People Produce Poor Animal Welfare Outcomes - and What To Do About It (online)

Katherine Reid, Independent

Animal welfare failures in research settings are rarely caused by ignorance or malice.They occur despite the efforts of knowledgeable, caring professionals working within properly constituted animal ethics committees and research programs. Why do intelligent, compassionate people, applying sound welfare science, still produce outcomes they find troubling?

This presentation introduces human factors research, the discipline that transformed safety in aviation and anaesthesia, and applies its central insight to animal-based research: welfare failures typically arise not from individual moral failure but from predictable, systemic conditions that good people cannot overcome through effort or vigilance alone.

Blame-based incident review looks for the person who erred. Systems-based review looks for the conditions that made the error likely, and asks why the same failure could happen again to someone else entirely. This talk works through that shift, examining how the same underlying conditions can resurface across different studies, species and teams, and why blame-focused reviews consistently fail to catch them.

Attendees will leave with a different lens for understanding welfare failures in research: not as lapses to be corrected in individuals, but as information about the system that produced them.

This talk is aimed at AEC members, research staff and welfare officers working in animal-based research. No prior knowledge of human factors is assumed.



Katherine is a veterinarian and animal welfare specialist based in North Canterbury, New Zealand. She holds a BVSc (Massey University), and an MS (Biomedical Sciences) and BS (Animal Sciences) from Colorado State University, as well as membership in ANZCVS in the Animal Welfare Chapter. Her career spans dairy practice, biomedical research, lab animal welfare, shelter medicine, racing industry, and export verification. Her interests focus on the human factors that make application of animal welfare practical and sustainable rather than just good intentions.

Research quality, research culture and good institutional practice

Mary Bate
National Health and Medical Research Council

Research culture is a critical determinant of research quality. It influences how research is governed, conducted and communicated and ultimately affects the reliability, impact and trustworthiness of the research outcome. Recognising this relationship, the National Health and Medical Research Council released the Good Institutional Practice Guide in 2025. This Guide provides a practical, values-based framework to assist institutional and research leaders to promote an open, honest, supportive and respectful institutional research culture that supports the conduct of high-quality research. The Guide is particularly relevant to animal research, where maintaining high standards of research quality is essential to minimise animal use and harm while maximising the potential benefits of animal use and ensuring the reliability, reproducibility and impact of research outcomes.

The Guide is built around six core values that underpin an open, supportive and inclusive research environment: care, collaboration, ethics and integrity, intellectual freedom, respect for others, and transparency. It also highlights key organisational elements that shape research culture, including role modelling and leadership, institutional resources, education and training, rewards and recognition, communication, and monitoring and evaluation. Through the provision of guidance about practical implementation, reflective questions, case studies and examples, the Guide supports institutional and research leaders to embed these values into everyday practice and organisational systems, thereby strengthening research quality.



Mary is an experienced veterinarian who completed her graduate training at the University of Queensland. She has extensive experience with animal ethics and welfare, and veterinary medicine and surgery. Mary joined the National Health and Medical Research Council in 2010 and leads the development and review of animal ethics and welfare guidelines, including the review of the *Australian code for the care and use of animals for scientific purposes*. She is also the project lead for NHMRC's research quality work.

Abstracts Day Two

THURSDAY • 22 OCTOBER

OPENNESS
CHAIR - PAT CRAGG

Public attitudes towards animal research in Australia: Findings from a 2025 national opinion poll

Elena Schaller, Rachel Smith
Animal-Free Science Advocacy, VIC

Public expectations around animal research increasingly extend beyond animal welfare to include transparency and the development of non-animal methods. This presentation summarises findings from a 2025 national opinion poll conducted independently by Nexus Research and commissioned by Animal-Free Science Advocacy. Findings are compared with national surveys completed in 2018, 2013, and 2008 using comparable methodology and questions.

The survey was administered via an online panel in September 2025 and completed by 1,011 Australians aged 16 years and older, with the sample weighted to reflect the national population (margin of error ±3%).

The findings indicate persistent gaps in public awareness: around one-third (32%) of respondents were unaware that animals are used in research in Australia. When informed that approximately 7 million animals are used annually for research and teaching, 74% believed this number should be reduced.

Attitudes varied considerably depending on context. Opposition was highest for cosmetic testing and household product development, the use of companion animals and non-human primates, and procedures involving severe harm or death.

Seventy-one percent of respondents supported replacing animal models with non-animal technologies where possible (up from 61% in 2018), and the same proportion supported allocating research funding towards their development (up from 67% in 2018). Respondents also expressed strong support for the rehoming or retirement of animals where possible, and greater transparency, including mandatory collection and reporting of national animal use statistics.

Overall, the findings suggest that public attitudes remain nuanced and context-dependent but increasingly favour greater transparency, stronger ethical safeguards, and investment in non-animal technologies. For organisations responsible for animal ethics review and governance, these findings provide contemporary evidence of community expectations that may help inform future policy and practice.



Elena is a US-trained pharmacist (PharmD, University of Pittsburgh) working in Australia's not-for-profit sector. At Animal-Free Science Advocacy, she works across science, policy, and public engagement to advance the development and adoption of human-relevant methods for research and education.

Benchmarking and Assessment of the 3Rs in Research and Teaching at Universities

Shannon Akers, Shari Cohen
Australian Ethical Investment

Australian Ethical Investment is an ethical investment manager and superannuation fund with a longstanding interest in the welfare impacts of animal research. As an investor in university-issued bonds, Australian Ethical seeks to understand not only whether institutions comply with animal research regulations, but also how they are advancing the principles of Replacement, Reduction and Refinement (the 3Rs) and supporting the transition to non-animal research methods.

To support this objective, Australian Ethical is developing a university benchmarking framework that provides a consistent, evidence-based approach to assessing institutional practices related to animal research and the adoption of non-animal models. The framework is designed to identify meaningful implementation of the 3Rs and leadership in research innovation, rather than simply measuring regulatory compliance. Developed with input from independent veterinary and animal welfare experts, the framework incorporates peer review and pilot testing to ensure scientific credibility, practical applicability and consistency across institutions.

This presentation will outline the methodology underpinning the benchmarking framework, the final criteria used for assessment, and key learnings from the project to date. It will also discuss future directions, including exploration of the framework's evolution into a public tool that could be used by others including research stakeholders, or industry bodies. Such a tool could support assessment and encouragement of high standards of animal welfare in research, while promoting the transition toward non animal models where possible.



Shannon Akers is an Impact and Ethics Analyst at Australian Ethical, where she is responsible for assessing investments against the Australian Ethical Charter, evaluating the impacts of industries and investments on people, animals and the planet. She also engages in ethical stewardship activities, primarily around animal research. Her focus areas include healthcare, animal research and evolving ethics research systems.



Shari is an animal welfare veterinarian passionate about advancing the welfare of animals and people through education, collaboration, and via systems change. She is a Veterinary Fellow in Animal Welfare, Ethics, and Law and Member of the Medicine and Management of Lab Animals in the ANZ College of Veterinary Scientists. Shari has worked with the Victorian Government on animal welfare legislative reform and holds a Masters by Research in Veterinary Epidemiology and Population Health conducted in partnership with the former Victorian Department of the Environment and Primary Industries. She continues to work with the state animal welfare departments and holds adjunct academic positions at the Animal Welfare Science Centre at the University of Melbourne, La Trobe, and University of Sydney. She enjoys working as a clinician, academic, and animal welfare and 3RS industry consultant. She was awarded a 3Rs grant from UNSW which forms the basis of her PhD at the University of Sydney in Better Animal Welfare and 3Rs in the Research and Teaching Industry.

Don’t count your chickens! A trial to advance openness through national statistics in Australia

Malcolm France
ANZCCART Australia

ANZCCART has completed a proof-of-principle trial in which statistics on mice and rats used in biomedical research over a 12-month period have been collected from all Australian states and territories.

The results to be revealed in this presentation comprise the most complete set of national statistics for these species collected so far in Australia.

While there is need for further refinement, the findings justify efforts to gradually expand the scope of national statistics to enable year-on-year comparisons across more species and areas of research in a manner that could inform policy and resource allocation as well as support greater openness. It would also bring Australia into line with the numerous other countries that have been collecting national animal use statistics for many years.

The assistance of the state and territory regulators and applicable research institutions in compiling these statistics is gratefully acknowledged.



Malcolm France is the project officer for ANZCCART Australia where he manages the National Statistics Project and the Australian Openness Agreement. He is a consultant veterinarian who has worked as a lecturer in veterinary pathology, animal facility director, Animal Ethics Committee chair, journal reviewer and in several honorary roles for industry bodies.

An update on the New Zealand Openness Agreement

Ian Saldanha
ANZCCART New Zealand

The fourth Annual Report of the New Zealand Openness Agreement on the Use of Animals in Research and Teaching covers the period September 2024 to August 2025 and summarises activity across 33 signatory organisations, comprising 23 Research & Teaching signatories and 10 Supporters.

This presentation will highlight the key findings from the report and 16 recommendations for signatory organisations to strengthen their openness activities.

Following the 2024 review, a new Supporter category was introduced (in 2025) for organisations involved in animal research and teaching but not conducting it directly. The presentation will discuss adaptations made by ANZCCART NZ to support these organisations and encourage their participation in openness activities.

Finally, the presentation will discuss the development of the inaugural 'New Zealand Openness Week', taking place from 12–16 October 2026. This nationally coordinated initiative provides an opportunity for signatory organisations to proactively engage with the public about how and why animals are used in research, testing and teaching, with participation accessible regardless of organisational size, experience or resources.

The presentation will outline how the 'Openness Week' was developed and rolled out to signatories, together with its outcomes and lessons learned.



Ian has more than 10 years' experience in laboratory animal science, with expertise in animal welfare, facility management, and biosecurity. Before joining Cawthron Institute, he was Head of the Animal Facility at the Malaghan Institute. Ian served on the Australia and New Zealand Laboratory Animal Association executive committee and was awarded life membership for his contribution to the industry. He currently oversees animal welfare and biosecurity at Cawthron and is Deputy Chair of ANZCCART New Zealand, advocating for ethical research and high standards of animal care.

Towards more Transparency in Animal Research: Communication & Next-Gen Scientists – a European Perspective

Sabine Chourbaji
Interfaculty Biomedical Research Institution (IBF), Heidelberg University, Germany

Studies in animals remain among the most sensitive and controversially debated topics in modern science, which concerns not only the research community itself, but also the broader public. Thus, a new generation of young scientists are reshaping the discussion by a marked different mindset and accordingly appreciate educational support to develop an appropriate style to handle science *communication and ethics*.

Certainly, this shift comes along with opportunities and challenges: appropriate *didactic reformation* adapted to a new spirit of students and thoroughly accentuated ways how to transport mutual understanding, i.e. how in vivo experiments are justified and conducted.

A key to transformation is *openness*, which is promoted by *transparency-initiatives* and networks working on the demystification of animal research at the same time addressing societal concerns. This allows scientist and (university) institutions to actively share methods, purposes and outcomes (but also pitfalls) to improve information for the public discourse and reduce mistrust. Moreover, ethical reflection must remain at the forefront since young researchers are increasingly aware not only about scientific progress, but also about changing societal values.

Applicable and timely *training* in essential in this context, especially *at stages of early careers*. Universities therefore need to keep in mind to equip students not only with technical competencies but also foster *critical thinking, empathy and communication skills*.

Future scientist must be accompanied to find their role in constructive dialogues, particularly on emotionally charged topics and open to a professional dialogue also including parties with different views on animal research.

This talk aims at presenting the development of recent debates in Germany/Europe and which *strategies* may be *appropriate for sustainable communication strategies in future generations* implying respectful open-minded effort between researchers, institutions and public to ensure sustainable and mutual understanding – keeping the focus on the most relevant ones, our animals used for scientific purposes.



Sabine Chourbaji is a researcher and educator known for her work in animal welfare, behavioral neuroscience, and ethics in animal research. Her work emphasizes improving the welfare of laboratory animals and strengthening ethics education for students and researchers involved in animal experimentation. She has contributed to advancing the principles of humane science, including refinement of research methods, responsible care practices, and critical reflection on the ethical responsibilities of scientists working with animals. Through teaching, mentoring, and interdisciplinary collaboration, Sabine promotes greater awareness of animal ethics among students, encouraging scientifically rigorous and ethically responsible approaches to animal research.

NATS/NAMS
CHAIR - LIZ RANGE

Tiny minds, big feelings: Accommodating invertebrates in research ethics

Thomas White, Kate Lynch
The University of Sydney, NSW

The question of whether major invertebrate groups like the insects are sentient — whether they can feel pain or pleasure — has moved from the fringes to the centre of zoology, animal ethics, and philosophy of mind, and the evidence is trending hard towards yes. We cannot directly observe another animal's experience, so research must get inventive, hunting for behaviours that are hard to explain without subjective experience: tending a wound or weighing a painful stimulus against a wanted food. Our work with house crickets is one example. Apply noxious heat to a cricket's antenna and it will nurse that antenna more often, in longer bouts, and for longer afterwards than following a harmless touch, indicating a targeted pain-like response rather than a fixed reflex. Pain is not the whole story, however, as we find increasing reason to expect that states like hunger, thirst, and exhaustion are felt too. The practical stakes are substantial. Insects and other invertebrates are used in research at scales dwarfing vertebrate work: flies, worms, honeybees, and crickets run into the millions annually. Most of that work proceeds on an assumption of absent experience that is fast becoming hard to sustain. Our current applied ethical frameworks are targeted at vertebrates, which we believe are unlikely to be of practical use to invertebrate research without major revision. It is an open question how to accommodate what we are learning about invertebrate sentience in research ethics while so much remains uncertain. We close on what might be done in the meantime, including reporting standards for invertebrate welfare that a survey of recent papers suggests are overdue, and on the wider questions this exciting field is only beginning to ask.



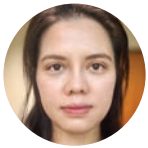


Kate Lynch and Thomas White collaborate on invertebrate sentience and welfare, including the expanding use of insects in research and production. Tom is an entomologist and co-leads the Invertebrate Behaviour, Ecology and Conservation (BEACON) Lab at the University of Sydney; trained in sensory ecology, he works on how insects perceive the world, and now on invertebrate minds and wellbeing. Kate, a philosopher and biologist, works on which animals can feel and how we can tell, causation and explanation in biology and medicine, and effective conservation.

Galleria mellonella: a safe, cost-effective and ethical animal model alternative

Hue Dinh, Evangeline Clay, Amy Cain
Macquarie University, NSW

Galleria mellonella has emerged as a valuable invertebrate model that aligns closely with the principles of ethical animal research, particularly the 3Rs (Replacement, Reduction, and Refinement). Its low maintenance requirements, rapid life cycle, and ability to thrive at human body temperature make it a practical and scalable alternative to traditional vertebrate models. In addition, its innate immune system shares key functional similarities with mammalian hosts, enabling biologically relevant insights while reducing reliance on higher animals. These advantages position *Galleria* as a robust, cost-effective, and ethically responsible model for a wide range of applications. This presentation will highlight the application of Galleria as an *in vivo* model for assessing the toxicity and efficacy of antimicrobial compounds and investigating microbial pathogenicity using systemic and burn wound infection models.



Hue Dinh works in the fields of antimicrobial resistance and plastic biodegradation at Macquarie University. She is also a manager of Macquarie Galleria Research Facility, Australia's first high-throughput facility using *Galleria mellonella* as an *in vivo* model to evaluate antimicrobial therapies and investigate host-pathogen interactions.

The evolving landscape of animal replacement technologies and education

Wojciech Chrzanowski
The University of Sydney, Faculty of Medicine and Health, Sydney Pharmacy School, NSW

This presentation will provide an update on the activities and impact of the Non-Animal Technologies Network (NAT-Net), a NSW-led initiative that brings together researchers, industry, government, regulators and educators to accelerate the development, validation and adoption of non-animal technologies in biomedical research, health innovation and regulatory science. NAT-Net aims to foster collaboration, build capability, and support the transition towards more human-relevant and predictive research approaches.

The presentation will highlight recent NAT-Net initiatives, including networking and capacity -building activities, stakeholder engagement, support for emerging non-animal technologies, and efforts to strengthen partnerships across Australia and internationally.

The second part of the presentation will focus on outcomes from a global survey examining education and training needs related to non-animal methodologies (NAMs) among regulatory professionals. The survey identified significant knowledge gaps in emerging NAM technologies, strong demand for practical and case-based training, and a need for accessible educational resources to support confidence in the regulatory use of NAM-derived data.

Together, these findings highlight the growing importance of coordinated networks, targeted education, and international collaboration in advancing the implementation of non-animal technologies across research, regulation and teaching.



Professor Wojciech Chrzanowski is the Head of the Nano-Medical Innovations Group at the University of Sydney. His work develops extracellular vesicle-based strategies for treating rare diseases and for tissue repair. Professor Chrzanowski applies and promotes a non-animal innovation research strategy in his work and is also a passionate advocate for global R&D capacity building and international networking.

Organoid-Based Modelling and Gene Therapy Strategies for inherited retinal diseases

Anai Gonzalez-Cordero
Children's Medical Research Institute, NSW

Stargardt disease and Usher syndrome are among the most common inherited retinal degenerations (IRDs), yet both remain without effective treatments. Although these autosomal recessive conditions are theoretically amenable to gene replacement therapies, the large size of the causative genes, ABCA4 in Stargardt and various USH genes in Usher syndrome, has precluded the use of conventional adeno-associated virus (AAV) gene replacement approaches. Additionally, the lack of physiologically relevant animal models has hindered therapeutic development. To address these challenges, we employed pluripotent stem cell-derived retinal and inner ear organoids to model disease pathology and evaluate novel gene therapy strategies.

Our optimized protocol reliably generates mature retinal organoids with outer segment-bearing photoreceptors, enabling accurate modelling of cone cells in Stargardt disease and cilia-associated Usher syndromes. We also successfully generated inner ear organoids containing sensory hair cells vesicles, providing a platform for dual sensory system modelling. Using these organoid systems, we optimized AAV delivery parameters, including promoter and capsid selection, for efficient transduction in vitro. Multi-omics analyses of diseased organoids revealed novel, disease-specific biomarkers and shared IRD features, such as mitochondrial dysfunction and cGMP accumulation, offering deeper insight into disease mechanisms.

To overcome gene size limitations, we developed various therapeutic approaches: a dual AAV trans-splicing system, and NHEJ and homology-independent targeted integration (HITI) CRISPR-based approaches. While the dual AAV system showed variable success, gene editing demonstrated robust efficacy in correcting mutations associated with Stargardt disease and two forms of Usher syndrome.

Together, these findings establish a powerful organoid-based platform for modelling IRD pathology and screening gene therapies. Our results underscore the need for tailored therapeutic strategies and highlight the potential of genome editing as a viable path toward treating previously untreatable large genes IRDs.

Short lay summary

Stargardt disease and Usher syndrome are inherited conditions that cause vision loss, and in Usher syndrome, hearing loss as well. Effective treatments are still lacking, largely because the genes involved are too large for standard gene therapies and because good human disease models have been missing. In this study, we used human stem cells to grow miniature eye and inner ear tissues in the laboratory. These models allowed us to better understand disease mechanisms and test new gene therapy approaches. While some traditional methods had limited success, gene editing strategies were highly effective, offering new hope for treating these previously untreatable conditions.



Associate Professor Anai Gonzalez Cordero is an Al & Val Rosenstrauss Fellow and Unit Head at the Children's Medical Research Institute, with a conjoint appointment at the University of Sydney. She leads translational research using stem cells and organoid models to develop therapies for inherited retinal diseases. Trained in the UK with a Wellcome Trust PhD, she relocated to Australia in 2019. She is Vice President of ASSCR, a Retina Australia board member, and leads the CMRI Stem Cell and Organoid Facility.

SESSION ONE
AAALAC
CHAIR – SUSAN DOOHAN

Two Decades of Continuous Improvement: HKUMed and AAALAC Accreditation

Dewi K Rowlands
Director, Centre for Comparative Medicine Research, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China

As one of the world's leading medical schools, the Li Ka Shing Faculty of Medicine (HKUMed) at The University of Hong Kong has long recognised that high quality, ethically conducted animal research is essential to advancing biomedical discovery and safeguarding scientific integrity. HKUMed's AAALAC International accreditation journey, that began in 2005, has been instrumental in strengthening institutional commitment to excellence in animal care and use. Beyond formal recognition, AAALAC accreditation has served as a framework for continuous improvement, reinforcing a robust culture of care that integrates animal welfare with occupational health and safety (OHS), staff wellbeing, and research quality. The accreditation and peer review process has driven enhancements in governance, ethical oversight, and risk management, while supporting the development of structured training and professional development programmes for researchers and animal care personnel. Importantly, AAALAC's continuous improvement mindset has also informed long term strategic planning, prioritising upgrades and redevelopment of animal facilities to meet evolving welfare standards, biosafety requirements, and scientific needs. Collectively, HKU-Med's AAALAC journey demonstrates how international accreditation can catalyse sustainable advances in animal welfare, whilst strengthening staff training, safety, and infrastructure resilience within a leading global medical institution.



Dewi Rowlands is Director of the Centre for Comparative Medicine Research at HKU and has over 20 years' experience in laboratory animal science. He is the founding President of the Hong Kong Laboratory Animal Sciences Society, Chair of the HKSAR Government's Legal Sub-Group leading revision of the Hong Kong Code of Practice, and an AAALAC International Council Member and former Council President. Dewi is committed to advancing animal welfare, the 3Rs, and excellence in science through international collaboration and education.

AAALAC International Accreditation in the Australian Setting

Montip Gettayacamin, D.V.M., DACLAM
Senior Director for Asia-Pacific, AAALAC International

AAALAC International is a private, non-profit organization that promotes the humane and ethical treatment of animals in science through voluntary program assessment, accreditation and education. AAALAC International's mission improves the welfare of animals in science and education through accrediting organizations meeting high standards of humane and responsible animal care and use. AAALAC International has been recognized around the world as a symbol of high-quality animal care and use for research, teaching and testing, as well as promoting animal welfare. More than 1,160 institutions in 52 countries have earned AAALAC accreditation. There are more than 310 accredited programs in Asia-Pacific region including three institutions in Australia. Evaluation process by AAALAC International around the world has been successfully conducted by over 500 international experts. They conduct onsite overall performance evaluations to all aspects of animal care and use program called the "site visit". The results of the in-depth, multi-layered peer-review process including the final Council on Accreditation's deliberations. In any country, AAALAC International considers compliance with applicable local animal legislation of the country, institutional policies. Following the rules of Accreditation, AAALAC International experts use a customized approach of Accreditation Standards including the Guide for the Care and Use of Laboratory Animals (National Research Council, 2011) or the Guide for the Care and Use of Agricultural Animals in Research and Teaching (2020) for animals in agricultural research, as well as Position Statements, Guidance Statements and Reference Resources as applicable. This presentation provides highlights of AAALAC International accreditation process and standards applicable to programs in Australia and other countries.

Keywords: AAALAC International, Accreditation, Peer-review, Animal welfare, Australia, Global standards.



Dr. Montip Gettayacamin is Senior Director for Asia-Pacific at AAALAC International. Since 2009, she has supported the AAALAC International's accreditation program to advance research animal welfare and has assisted institutions in the Asia-Pacific region to attain accreditation. Dr. Montip received her veterinary medicine degree from Chulalongkorn University, Bangkok, Thailand in 1984. She is a diplomate American College of Laboratory Animal Medicine. She has over 40 years of experience in Laboratory Animal Medicine.

AAALAC International Accreditation in Australian Research Institutes – What are improved

Malcolm A. Lawson
Laboratory Animal Research Consultant and AAALAC Ad Hoc Visitor, Perth, WA

Public perceptions on the use of laboratory animals in scientific and medical research present many challenging and varied views which requires close research institution attention to the responsibilities incumbent on the use of animals for research. While there are robust systems and regulatory processes in place that provide an administrative framework for both the use of the animals and the underlying funding required for their use, this range of perceptions from a community point of view as to their use nevertheless informs the social licence and research accountability of this research. One way to provide validation for the use of laboratory animals in research and teaching is to engage a broad-based accreditation process for the use of research animals in this way. The implementation and application of appropriate accreditation, application, review and validation systems can provide a path forward to provide further reassurance for all stakeholders in laboratory animal based scientific and medical research. My experience in institutional AAALAC International accreditation for the use of laboratory animals in the Australian context will be discussed including how the '3 Rs ' are addressed, the expectations of funding agencies as related to the NHMRC Code of Practice, impact of State Animal Welfare legislation, shared concerns of researchers, Institution officials, AECs, animal care and welfare staff, the AAALAC process itself and AAALAC resources available to support the sponsoring institution. This accreditation experience provides a means of constant program improvement, attention to institutional support and constant animal care staff engagement which together provided an enabling environment for laboratory animal based biomedical and scientific research.



Dr Malcolm Lawson, BSc (Hons), PhD, MBA, Former Director, University Western Australia Animal Care Services. Lead the redevelopment of UWA biomedical research facilities and structured UWA Animal Care Services (ACS) to become the first comprehensive AAALAC accredited unit in Australia. Harmonised animal facility management software with Australian compliance requirements (NHMRC) and commissioned state of the art animal research centres within ACS.

Having completed three AAALAC reaccreditations and Harvard Business School requirements for Alumni status, I now consult to the Biomedical Research Industry and provide strategic advice and competitive advantage to their programs.

The quality process and registration with AAALAC in Australia for Ozgene

Christopher Cooper
Ozgene Pty/Ozgene ARC. Perth, WA

AAALAC International accreditation provides Australian laboratory animal institutions global credibility, enhanced research validity and smoother international scientific collaboration. It demonstrates a voluntary commitment to high welfare standards that go beyond baseline local compliance.

Global Recognition and Market Access

- International partnerships - Simplifies cross-border collaborations with overseas universities and pharma companies by harmonizing animal care benchmarks.
- Contract research appeal - Acts as a trusted quality seal for Australian contract research organizations (CROs) seeking global clients.
- Regulatory bridge - Helps bridge gaps when partner countries evaluate differing national animal use laws.

Scientific Quality and Integrity

- Better reproducibility - High-standard, low-stress animal care minimizes physiological variables that skew data.
- Independent peer review - Offers constructive, expert external evaluations of local animal care and use programs (AEC/IACUC equivalents).
- Drives the 3Rs - Reinforces active institutional implementation of Replacement, Reduction and Refinement.

Recruitment and Accountability

- Attracting talent - Signals a world-class working environment to high-calibre international researchers and clinicians.
- Public trust - Demonstrates transparent, accountable and humane stewardship to the broader community.



Graduate Murdoch University 82. Owned and develop mixed rural practice 14 years. Hong Kong owner of practice small animals 10 years. Cattle husbandry consultancy, welfare and biosecurity for export 10 years. Laboratory Animal consultancy 10 years.

AAALAC Accreditation in an Australian Research Environment: Elanco's Experience and Lessons Learned

Barbara Kruger
Elanco Animal Health

This presentation describes Elanco's experience with AAALAC International accreditation in Australia. It will outline the motivations for pursuing accreditation, key steps in preparing for the process, and lessons learned during implementation and maintenance. The presentation will also discuss benefits, challenges, and opportunities for continuous improvement identified through accreditation. By sharing practical experiences from an industry research setting, this case study aims to provide useful insights for organizations considering AAALAC accreditation or seeking to strengthen their animal care and use programs and animal welfare culture.



Barbara Kruger is a veterinarian and animal health professional with over 12 years of experience in veterinary research and regulated environments. Her work focuses on animal welfare, ethics, regulatory compliance and the continuous improvement of animal care and use programs. She has practical experience supporting AAALAC International accreditation and is passionate about strengthening animal welfare culture through responsible science, evidence-based practice and collaboration.

SESSION TWO
NATS/NAMS
CHAIR – IAN SALDANHA

Working together for change: Beyond Animal Research (BAR) one year on

Tara Jackson
Beyond Animal Research, Temuka, New Zealand

Beyond Animal Research (BAR) publicly launched on 24 April 2025; an NZ-based charity with a clear purpose, from day one: to work collaboratively with the animal science and research community to accelerate progress toward a future where animals are no longer harmed in science. At the 2024 ANZCCART conference, this unique collaborative premise was introduced in its planning phase, with attendees even contributing to its name - making this a meaningful opportunity to return one year on and share what has been achieved, and together.

BAR operates as a science alliance for animals, bringing together progressive scientists, institutions, and organisations across Aotearoa and beyond. Its approach focuses on aligning groups with traditionally opposing perspectives to deliver practical, long-term change for both animals and scientific outcomes.

This presentation will provide an overview of BAR's first year, including key initiatives, early collaborations with researchers, and lessons learned from working within this cross-sector space. It will also outline upcoming projects designed to further support and collaborate on the transition toward innovative, ethical, and scientifically robust approaches in NZ and beyond.

Progress in this area depends on collective effort. By working together, we can positively accelerate the shift toward research systems that better serve science, animals and society.



Tara Jackson is Co-Founder of Beyond Animal Research (BAR), a New Zealand charity working to accelerate the transition away from the harmful use of animals in research, testing and teaching. With more than a decade of experience in animal-free science advocacy, Tara is one of Aotearoa's leading voices in this field. Her work focuses on breaking down barriers to change and bringing scientists, advocates and decision-makers together to advance ethical, effective and animal-free science.

Biobanking: Enabling infrastructure for our NAMs future

Greg Williams, Health and Biosecurity Lead, CSIRO Futures,
Nicolas Gonzalez Castro, Rohini Poonyth
CSIRO, VIC

The development and validation of non-animal models rely on access to high-quality, well-characterised human biological materials. These biological materials, and associated data, are housed across the country in over 200 human health biobanks that support biomedical, clinical, public and population health research. These collections are the key research infrastructure needed to maximise the impact of existing biospecimens and data, ensure that biological models represent the diversity of Australia's population, and support government decision-making.

Despite the criticality of biobanks to the success of non-animal models these collections have typically emerged as de-centralised entities with limited connectivity. Absence of coordination at a national level has resulted in reduced visibility and traceability of individual collections, possible duplication of pre-existing collections, growth of biospecimen stocks without consideration of long-term demand, and inconsistent operating processes, data management systems and governance models.

Last year, CSIRO Futures conducted economic analysis and consultation to quantify the value of a nationally coordinated approach to biobanking. The analysis aimed to support infrastructure investment decision making across federal and state governments. The total value of the 6 quantified benefits came to $39 million per year. The analysis also produced 5 recommendations for Australia to pursue this future state under the themes of visibility, accessibility and harmonisation.



Greg leads the Health and Biosecurity portfolio within the CSIRO Futures team; CSIRO's strategic and economic advisory arm. This team aims to inform public policy and investment decisions through robust, evidence-backed analysis by translating research, industry, government and economic insights into tangible actions for policy makers. In this role, Greg has led a range of projects across health, biosecurity, synthetic biology, space and agribusiness.

3D-Printed Human Brain Tumor Model for Safer and Faster Glioblastoma Drug Discovery

Panthipa Suwannakot[1,2], Eva Tomaskovic-Crook[1,2,3], Kimberley L. Alexander[2,4,5], Jeremy Micah Crook[1,2,3]

[1] Arto Hardy Family Biomedical Innovation Hub, Chris O'Brien Lifehouse, Camperdown, NSW
[2] School of Medical Sciences, The University of Sydney, Camperdown, NSW
[3] Intelligent Polymer Research Institute, AIIM Facility, Innovation Campus, University of Wollongong, Fairy Meadow, NSW
[4] Department of Neurosurgery, Chris O'Brien Lifehouse, Camperdown, NSW
[5] Department of Neuropathology, Royal Prince Alfred Hospital, Camperdown, NSW

Glioblastoma (GBM) is the most aggressive and lethal form of primary brain cancer in adults. Despite improvements in surgery and chemotherapy, the prognosis remains poor: most patients live around 15 months after diagnosis, with only a 5% chance of survival after five years. Current treatments often prove ineffective because they are tested in animals whose brains do not accurately mirror the complexity of the human brain. This disconnect causes many promising drugs to fail in human trials, leaving patients with limited options.

To meet this urgent need and reduce reliance on animal experimentation, we have developed a non-animal alternative: a high-throughput 3D human brain tumour model produced using printing technology. Instead of relying on animal subjects, we "print" tiny, realistic 3D spheres of human brain tumour cells suspended in a soft, gel-like material that mimics the exact texture and stiffness of a real human brain. We tested this new model by exposing the printed tumours to temozolomide, the standard chemotherapy drug used today. Using sensitive imaging and molecular analyses, we observed how the tumours responded to the drug and identified specific genetic markers (microRNAs) that drive treatment resistance.

Our results show that this 3D-printed system can predict how human tumours respond to treatment. This technique offers a powerful alternative to animal models, providing a faster, more ethical, and more accurate way to screen new drugs. By improving understanding of individual tumour behaviour, this technology promotes personalized medicine, enabling doctors to test treatments on a patient's own tumour cells before applying them. Ultimately, it aims to accelerate the development of life-saving therapies for patients with glioblastoma, who currently have limited treatment options.



I hold a PhD (2023) and Master's degree (2019) from the School of Chemistry, UNSW Sydney. My research spans 3D bioprinting, mass spectrometry, analytical chemistry, biomedical engineering, and cancer biology. Following my PhD, I joined the Arto Hardy Family Biomedical Innovation Hub at Chris O'Brien Lifehouse, Royal Prince Alfred Hospital, where I developed a high-throughput 3D bioprinting-based drug screening platform to deliver personalised, point-of-care diagnostics for cancer patients.

Human-Based Models from Adult Stem Cell Biology and Maternal Periodontal Health

Munira Xaymardan[1], Boris Martinac, Rohan Rodrick, Eva Wong
[1] Faculty of Medicine and Health, the University of Sydney, NSW

The replacement of animal models with human-relevant systems is a central objective in contemporary biomedical research, driven by ethical imperatives and the need for improved translational validity. This project outlines a strategic shift from animal-based experimentation toward human tissue–based approaches across two distinct but conceptually aligned research areas: regenerative stem cell biology and maternal health.

In the first domain, prior discoveries in adult-tissue-derived stem cells established in animal systems are being translated into human tissue–derived platforms. This transition focuses on validating cellular characteristics, differentiation potential, and functional relevance within human-specific biological contexts. By leveraging clinically sourced tissues and advanced in vitro methodologies, this work aims to overcome species-specific limitations that often hinder clinical translation.

In parallel, research investigating the relationship between maternal periodontal health and adverse pregnancy outcomes is being reoriented away from animal models toward human-based observational and biomarker-driven studies. This approach emphasises the integration of clinical data, non-invasive sampling, and patient-derived biological materials to better characterise disease associations and underlying mechanisms in human populations.

Together, these complementary strategies exemplify a broader framework for replacing animal use in research while maintaining scientific rigor. The adoption of human-relevant models not only addresses ethical considerations but also enhances the reliability and applicability of findings to clinical practice. Importantly, this transition is supported by methodological innovations in cell culture systems, data integration, and interdisciplinary collaboration.

This work contributes to the evolving paradigm of non-animal research by demonstrating feasible and scalable pathways for the replacement of animal models across diverse biomedical fields, ultimately supporting more effective and ethically responsible translational research.



Dr Munira Xaymardan is an oral biologist and cardiovascular scientist at the Faculty of Medicine and Health, The University of Sydney. Her research focuses on oral facial development, cardiovascular regenerative medicine and more recently mechanobiology. She has led multidisciplinary programs oral diseases and their systemic implications. Her work spans fundamental discovery, translational research, and innovation aimed at improving cardiovascular health and developing next-generation therapies.

Clifford TeBay[1,2], George Parker[1,2], Chris Thekkedam[1,2], Monique J Windley[1,2], Jamie I Vandenberg[1,2], Adam P Hill[1,2], and Osvaldo Contreras[1,2]

[1] Victor Chang Cardiac Research Institute, Darlinghurst, NSW

[2] School of Clinical Medicine, Faculty of Medicine and Health, UNSW, Sydney, NSW



Clifford TeBay joined the Contreras Lab group at the Victor Chang Cardiac Research Institute in August 2026 after completing his PhD under the supervision of Associate Professor Adam Hill in the Mark Cowley Lidwill Research Group. His lead project has involved developing a human induced pluripotent stem cell (hiPSC) model to investigate the changes that occur in the heart following type 2 diabetes (Diabetic Cardiomyopathy), which was a model built entirely from human cells in culture.

A Trans-Tasman Pilot of a Truly Animal-Free Serum Replacement Across Research Laboratories in Australia and New Zealand

Katie Bashant Day[1], Tara Jackson[2]
[1] Media City Scientific, Sydney
[2] Beyond Animal Research, Temuka, New Zealand

Foetal bovine serum (FBS) is one of the most ethically problematic materials in biomedical research. Harvested from foetal calves during slaughter, a process with significant animal welfare implications, FBS is used endemically in laboratories worldwide. Critically, many products marketed as "serum-free" still contain animal-derived ingredients such as bovine serum albumin (BSA), meaning the ethical problem is obscured rather than solved.

FRS™ Pioneer (Media City Scientific) is a chemically defined serum replacement containing no animal-derived ingredients of any kind; no FBS, no BSA, no animal-derived components. To evaluate whether a genuinely animal-free alternative can perform across the diverse workflows present in real research laboratories, we coordinated a structured pilot program across several Australian and New Zealand institutions, in partnership with animal advocacy charity Beyond Animal Research (BAR).

Participating laboratories spanned cancer research, immunology, virology, and cell therapy development, representing the breadth of settings where FBS is currently used. Findings demonstrate that FRS™ Pioneer supports equivalent cell growth, transfection efficiency, and cryopreservation performance relative to FBS across a broad variety of use cases. For primary cells, the most demanding application, FRS™ Pioneer enabled replacement of up to 90% of standard FBS without requiring researchers to redesign their protocols.

This presentation combines scientific findings with the lived experience of laboratories navigating the transition away from animal-derived materials. We reflect on what motivates researchers to trial alternatives, what barriers slow adoption, and how charity-facilitated pilot programs can accelerate real-world 3Rs outcomes. The data demonstrate that ethical, truly animal-free cell culture is not a future ambition; it is available, validated, and accessible to Australian and New Zealand researchers today.



Katie Bashant Day, PhD is a scientist and the co-founder of Media City Scientific, which aims to make cell culture more reproducible and human-relevant. Katie was previously the Head of Technology at Vow (developing cultured meat products, Sydney). She completed her PhD in Medicine through the University of Cambridge and National Institutes of Health.



Tara Jackson is Co-Founder of Beyond Animal Research (BAR), a New Zealand charity working to accelerate the transition away from the harmful use of animals in research, testing and teaching. With more than a decade of experience in animal-free science advocacy, Tara is one of Aotearoa's leading voices in this field. Her work focuses on breaking down barriers to change and bringing scientists, advocates and decision-makers together to advance ethical, effective and animal-free science.

QUALITY RESEARCH
CHAIR - NATALIE BOOTES

Workshop: Scoring the harms and benefits in animal use ethics proposals

Larry Carbone, Independent
Valencia, Spain

In this workshop, we will review some (semi)hypothetical animal-use research projects. We will share our approach for a birth-to-death inventory of animal welfare issues. We will use the Three Rs for minimizing harms, including the most important and most difficult R: Replacement. We will tackle the truly tricky task of scoring the potential benefits: is this a high quality experiment? Does the research question justify animal use? Will the findings translate to the target population (human patients, domestic or wild animals)?

The workshop leader will bring the questions. You bring your wisdom and creativity!



Larry Carbone, DVM, PhD, is a veterinarian, researcher, and animal-welfare scholar with decades of experience working with laboratory animals, scientists, veterinarians, ethics committees, carers, and regulators. He studies animal-welfare science and ethics in the US, where he practiced for forty years, and internationally. His book, The Hidden Lives of Lab Animals, draws on his experience as a laboratory veterinarian to explore how we can better understand and respect animals used in research.

How can we improve the quality of preclinical research? (online)

Adrian Smith
Norecopa, Ås, Norway

We have become increasingly aware of the effect that environmental and experimental stressors can have on the biology of research animals, including their behaviour, which in turn can lead to unwanted scientific outcomes such as increased variability, reduced reproducibility and real concerns about the ultimate validity of the whole study. In addition to these concerns come the welfare implications of poor research on the animals, and on those who care for them. Although Research Animal Science is still a relatively young field, we now have a range of tools to mitigate these weaknesses.

Importantly, there must also be a system in place to acknowledge and learn from the failures and accidents that will occur during preclinical research. A Culture of Care will ensure that doubts and "stupid questions" can be raised by anyone, without fear of ridicule or reprisal. This dialogue may also prevent serious accidents, since many are the result of a cascade (or simultaneous occurrence) of a number of events which, individually, are relatively harmless. Staff should therefore be encouraged to embrace small incidents as a means of preventing larger ones, rather than ignoring them or covering them up. The research animal world has much to learn from industries with systems for minimising and investigating accidents.

This presentation will provide an overview of the most critical stages in the research stream, and will provide suggestions on how their quality may be ensured. Resources that can contribute to these improvements will be highlighted. Interestingly, the principle of Aggregation of Marginal Gains ensures that research quality will improve markedly when a system for quality assurance is deployed over time, even if the individual improvements appear relatively insignificant.

It will become clear that good science is dependent upon collaboration between many specialist groups from day 1 of planning. In the case of in vivo research, scientists and facility managers must involve animal caretakers and technicians in this process from the earliest possible stage, since many of the improvements needed centre on the quality of the facility itself and its functions.



Adrian Smith is Secretary of the Norwegian 3Rs platform Norecopa.

Adrian is a British veterinarian who graduated from Cambridge University in 1979. After a year in mixed practice, he emigrated to Norway where he has lived since. He ran the research animal facilities at the Norwegian School of Veterinary Science until he left in 2011. Since 2007 he has been the Secretary of Norecopa. He is lead author of the PREPARE guidelines for planning animal experiments.

Abstracts Day Three

FRIDAY • 23 OCTOBER

SESSION ONE
HIGH ANIMAL WELFARE IMPACT
CHAIR – CATHY PITKIN

Refinement of high impact neurotrauma models: improving animal welfare and reducing distress

Ronak Reshamwala[1*], James St John[1]
[1] Clem Jones Centre for Neurobiology and Stem Cell Research, Institute for Biomedicine and Glycomics, Griffith University, QLD

Rodent models are commonly used model for neurotraumatic conditions in vivo. Inducing neurotraumatic conditions typically involves invasive surgeries, and in models involving spinal cord and brain injuries post-surgical survival is often accompanied by severe adverse events and high amount of distress in the animals. Our team specialises in modelling complete transection type and severe incomplete contusion type spinal cord injuries, and large-gap peripheral nerve injuries. These include primarily mice, and to a lesser extent, rats. With a view to optimising development and translation of therapies, our team has focused on developing clinical-grade surgical approaches and post-operative care that aim to reduce adverse events, improve animal welfare, and enhance validity of scientific outcomes. To achieve this, our team has employed a surgically trained medical doctor to lead the animal research, and we have a rigorous upskilling and training regime for all personnel involved with our animal research beyond the usual University and Animal Ethics Committee requirements. Improvements have been introduced across the full suite of activities including post-surgical care with specialised bladder management, detailed monitoring protocols including model-specific monitoring and intervention plans, and clinically relevant behavioural tests (reverse translated and low stress). With this focus on high quality animal surgery and comprehensive post-operative care, over the last five years we have 100% post-operative survival in our animal studies with no severe adverse events resulting in unexpected mortalities, and less than 1% mild/moderate adverse events. Our animals showed no post-operative infections or wound dehiscence (common, largely unreported in literature), hypothermia, autotomy (11% expected as per literature) or signs of pain lingering beyond the immediate post-operative stages. Our refinement approaches have led to improved animal wellbeing and more streamlined outcomes, allowing us to bring a cell transplantation therapy to a Phase I clinical trial while helping us significantly reduce the animal usage.



Dr Ronak Reshamwala is a Senior Research Fellow at Griffith University's Clem Jones Centre for Neurobiology and Stem Cell Research and a medically trained clinical-scientist specialising in translational neuroregenerative research. His research focuses on ethically optimised animal models and regenerative, cell based therapies for spinal cord injury, spanning preclinical surgery, behavioural assessment and clinical research. Dr Reshamwala's work has helped advance a spinal cord injury therapy to clinical trial, with strong emphasis on animal welfare, the 3Rs, and community engagement.

Using mortality data to assess and manage animal welfare outcomes

Lisa Kidd
School of Veterinary Science, The University of Queensland, Gatton, QLD

Categorising animal deaths in experimental and breeding projects is a tool that can be used by AECs, investigators and facility managers to assess animal welfare outcomes, especially in projects with large numbers of animals. Information on morbidity, mortality, procedure outcomes, successful use and any unexpected outcomes should already be collected as part of best practice experimental and breeding management. With careful design and recording, data sets can be created to enhance monitoring activities, allow animal welfare risk management, and encourage continuous improvement in experimental and breeding procedures. Welfare risks range from prolonged holding of unused animals through to undetected severe suffering.

Categories may include:

1. Successful breeding or experimental use including humane killing or euthanasia as part of the project.
2. Planned cull. This includes humane killing of healthy or viable offspring that cannot be used due to genotype, phenotype or sex etc.
3. Humanely killed without being used in projects. This reflects "wastage" of healthy animals and might include cancelled or delayed experiments, accidental phenotyping mistakes, unexpected breeding outcomes etc.
4. Euthanasia when unplanned humane end points are reached. These are adverse outcomes. However, monitoring has been effective in detecting pain or distress, allowing intervention. This may include, animals euthanised when found injured, sick or deformed, or animals requiring euthanasia because of adverse events during procedures.
5. Found dead. Most animals that are found dead should be assumed to have suffered. This category may indicate severe animal welfare outcomes and reflect the adequacy of animal monitoring.

Within each of these broad categories, sub-categories and more specific classification of the cause of death should be included to facilitate more detailed investigation if indicated.

While unexpected mortalities and adverse project outcomes cannot be completely prevented, analysis of data can allow tracking of welfare outcomes, retrospective assessment of severity, and guide the implementation of project changes if needed.



Lisa is a veterinarian who has worked as a clinical veterinary surgeon, a researcher, a teaching academic, an AEC member, an animal welfare officer and a private consultant. She has a strong interest in the welfare and monitoring of animals used for science. Lisa currently holds an adjunct research position in the UQ School of Veterinary Science.

Assessing analgesia for pigs in African swine fever disease studies: A case of refinement via researcher collaboration

Rachel Layton*, Samantha K. Davis*, Grace Taylor, Ali Davis, Georgina van der Woude, David T. Williams, *Co-first authors

CSIRO Australian Centre for Disease Preparedness, Geelong, VIC

Infectious disease animal studies must carefully balance welfare requirements with achieving scientific outcomes. Providing analgesia for pain relief in these studies is therefore commonly omitted, due to the potential masking of clinical disease signs and impacts on immune responses. African swine fever (ASF) is a viral haemorrhagic disease of pigs associated with severe clinical signs and up to 100% mortality. Analgesia use has not previously been reported for pigs experimentally infected with the ASF virus.

Following the direction of the CSIRO Australian Centre for Disease Preparedness' Animal Ethics Committee, a pilot study was conducted to assess the impacts of analgesia (paracetamol 30mg/kg and buprenorphine 0.05mg/kg) on pigs experimentally infected with ASF virus. Pigs (total n = 8) were exposed to virus and were either administered analgesia (n = 4) or not administered analgesia (n = 4), until their pre-determined humane endpoint was reached. Welfare impacts for all pigs were measured via clinical score assessments, grimace scores, and an ethogram for behavioural assessment using video footage, before and after analgesia administration twice daily. Time to reach humane endpoint was also measured. Impacts on scientific outcomes were assessed by measuring viral load (blood, nasal swabs and oral swabs) and multiple immunological parameters (haematology and flow cytometry using blood), from samples collected every two days. Pathology of multiple tissues post-mortem was also assessed.

Analgesia reduced pain and did not significantly impact scientific outcomes. However, it significantly masked clinical signs of disease. This impeded effective monitoring of disease progression and the identification of humane endpoints. Further studies are planned to use a modified analgesia regimen based on these results. This pilot study is an example of how welfare refinement can be achieved by collaboration between ASF and welfare researchers, veterinarians, animal care staff, pathologists, the Animal Ethics team, and the Animal Ethics Committee.



Rachel works as an Animal Welfare Scientist at the Australian Centre for Disease Preparedness (ACDP), investigating and implementing animal welfare refinements within the unique restrictions of high biocontainment infectious disease research. Rachel completed her PhD in laboratory animal welfare in 2025, after spending 15 years working as an animal technician within ACDP's high biocontainment animal facility. In addition, Rachel is a member (Animal Facility Representitive) of the ACDP Animal Ethics Committee.

Rethinking Rumen Access: Science, Welfare, and the Road Ahead

Susan Doohan, Veterinarian/Animal Welfare Officer
Bioeconomy Science Institute, Grasslands, Palmerston North, New Zealand

The Bioeconomy Science Institute use a small herd of surgically modified cattle, sometimes called "cows with windows," to safely access the rumen – the large fermenting stomach where grass digestion begins. These animals have a soft, sealed opening (a fistula) on their side, which allows researchers to observe how feed breaks down with minimal stress or discomfort to the animal. This approach avoids the need for long tubes passed through the cow's mouth or nose, which often provide limited and contaminated samples.

Access to the rumen has helped scientists answer important questions about cattle nutrition, animal health, and environmental impact. Fistulated cows provide high quality samples that help researchers understand the nutritional value of different forages, support laboratory studies that reduce the need for live animal experiments and reveal how treatments such as mineral boluses dissolve in the stomach. They allow scientists to study how methane is produced during digestion and test new methods to reduce emissions.

However, creating a fistulated cow requires a major surgery, and is a permanent modification to a sentient animal. Is it time we rethink our use of fistulated cows? To address this question, I will take us through a series of questions including:

Artificial rumens are improving in complexity, can fistulated cattle be **replaced** in research?

How can fistulated cattle **reduce** the number of sentient animals used for research, testing, and what could their role be in teaching?

Rumen fistulation involves a high impact surgical procedure – how can we **refine** this procedure and associated aftercare?

How can we give these cows the best life we can?

Are rumen fistulated cows justified in 2026? I believe, 'it depends'!



Susan Doohan is a Massey trained veterinarian working as an Animal Welfare Officer based at the Bioeconomy Science Institute, Grasslands Campus for the last 9 years. She is also a member of the ANZCCART NZ board. From an initial background in mixed practice, with a later focus on dairy cattle production, she enjoys getting to interact with inspiring research on a daily basis. Further education has included Massey postgraduate courses, and gaining Australian and New Zealand College of Veterinary Scientists membership in Animal Welfare in 2021. Working with technicians, farm staff, and scientists from varied backgrounds and skill levels, to train them to perform research and husbandry manipulations on production species, is a strong area of interest, alongside implementation of the 3R's.

Beyond Baseline: Improving Health Assessment Through Weight Loss Metrics in Mouse Experiments

Catherine Gearing
Peter MacCallum Cancer Centre, Translational Research Centre (TRC), Melbourne, VIC

Body weight monitoring is a cornerstone of health and welfare assessment in laboratory mouse experiments, yet the value of weight data depends heavily on how it is interpreted. Weight loss is traditionally assessed relative to a fixed baseline recorded at study commencement. While simple and widely used, this approach can underestimate morbidity by failing to account for factors such as growth, acclimation-related weight gain, delayed disease onset, and important experimental milestones.

This presentation explores how a multi-metric approach to body weight assessment can provide a more biologically meaningful understanding of animal health and welfare. By examining weight data from multiple perspectives rather than relying solely on a single baseline measurement, it is possible to identify meaningful patterns of physiological change that may otherwise go unrecognised.

Using practical examples drawn from routine monitoring, this presentation will demonstrate how multi-dimensional weight analysis can improve the interpretation of animal health status, support earlier recognition of morbidity, and aid welfare decision making. The talk will also highlight the importance of considering trends and context when assessing body weight data, rather than relying on threshold-based assessments alone.

Importantly, these insights can be achieved without additional handling, equipment, or data collection. By maximising the value of routinely collected weight data, a multi-metric approach has the potential to enhance both animal welfare outcomes and scientific quality.



Catherine Gearing is a Senior Animal Laboratory Technician within the Peter MacCallum Cancer Centre's Translational Research Centre (TRC) in Melbourne, Australia. Working in preclinical cancer research, she has a strong interest in laboratory animal welfare, refinement, and the practical application of data to support evidence-based welfare decisions. She has a strong interest in optimising monitoring and husbandry practices to improve both animal wellbeing and scientific outcomes.

SESSION TWO
AEC OPERATIONS
CHAIR – MARC RANDS

Category E members- Should they be included?

Jenny Kingham, Consultant
New South Wales

Section 2.2.5 of the 2013 Australian code for the care and use of animals for scientific purposes (the Code) says - Institutions should appoint to the AEC a person responsible for the routine care of animals in the institution. This additional category is often referred to as a Category E (Cat E) member. While recommended by the Code, the appointment of a Cat E member is not mandated by legislation (except in South Australia- SA). Outside SA, many institutions have chosen not to make this appointment. With the Code currently under review, it's timely to consider the benefits and drawbacks of Cat E membership.

Adding a Cat E member allows input from all key stakeholders responsible for animal welfare in research. The Cat E member can contribute practical knowledge about the animal facility/s operations and are often highly knowledgeable about animal welfare. Engaging animal care managers/ senior staff in AEC decisions better informs them when providing services to researchers and gives additional research oversight.

However, appointing a Cat E member changes the balance of external versus internal members, and increases the complexity of maintaining a quorum. Conflicts of interest will arise, and the responsibility for compliance becomes blurred. There may be practical challenges such as the selection of a candidate if there are multiple animal facilities, or the time commitment required for stretched animal care staff. The management of such challenges will be discussed.

The role of Animal Welfare Officers is also critical. They are usually not AEC members and their practical involvement in AEC discussions varies significantly. Formalising their input in decision making needs consideration in the Code review.

Animal welfare depends on committed stakeholders. Optimising AEC membership is important in achieving this goal.



Dr Jenny Kingham BVSc, MANZCVS (MMLA)

Jenny is a laboratory animal veterinarian registered in NSW, currently working as an independent consultant. She is a member of the laboratory animal chapter (MMLA) of the Australian & New Zealand College of Veterinary Scientists. With over 30 years' experience working as a facility manager with a range of species, she has served on several AECs. Jenny has undertaken Independent External Reviews of AECs and animal facilities in several states of Australia.

Exploring the Potential Role of Artificial Intelligence in Animal Ethics Committee Workflows

Dewi K Rowlands, Director, Centre for Comparative Medicine Research
Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China

Animal Ethics Committees (AECs) are experiencing increasing pressure from rising application volumes and growing protocol complexity. At The University of Hong Kong, more than 400 new AEC protocol applications are submitted each year, placing significant demands on secretariat staff and committee members. In response, we are exploring the potential role of artificial intelligence (AI) as a decision support tool in the preliminary screening of AEC protocol submissions.

We explore whether Artificial Intelligence (AI) could meaningfully contribute in; reducing administrative burden through automated initial screening; generating structured assessments of submission completeness and clarity; and highlighting major scientific, safety or animal welfare deficiencies to enable early, constructive feedback to researchers prior to full committee review. The intention is to improve submission quality upstream and better focus committee time and expertise on ethical judgement rather than administrative correction.

Feasibility, performance, and limitations, including data security and confidentiality, challenges in training models on institutional polices and ethical standards, and risks of bias or inappropriate reliance on automated outputs will also be discussed.



Dewi Rowlands is Director of the Centre for Comparative Medicine Research at HKU and has over 20 years' experience in laboratory animal science. He is the founding President of the Hong Kong Laboratory Animal Sciences Society, Chair of the HKSAR Government's Legal Sub-Group leading revision of the Hong Kong Code of Practice, and an AAALAC International Council Member and former Council President. Dewi is committed to advancing animal welfare, the 3Rs, and excellence in science through international collaboration and education.

Are we addressing complaints about animal care appropriately?

Misty Fish, Manager
Research Integrity, Curtin University, Perth, WA

The *Australian code for the care and use of animals for scientific purposes* (the Animal Code) recognises that institutions may receive complaints about the care and use of animals used for scientific purposes. It acknowledges that complaints may relate to activities, persons, the Animal Ethics Committee (AEC) (or individual members) and governance officials. In order to address such complaints, institutions must have appropriate procedures in place for dealing with these complaints.

Institutions often develop standard operating procedures that allows AECs to receive, and deal with, complaints about non-compliances with the Animal Code, particularly where complaints relate to activities that have the potential to adversely affect animal wellbeing, and where, whether activities which have AEC approval are conducted in accordance with the approval. However, if a complaint made also raises the possibility of 'research misconduct' as described in the *Australian Code for the Responsible Conduct of Research* 2018 (the Research Code), the complaint should be handled in accordance with procedures specified in the Research Code.

When thinking about the connection between potential non-compliances under the Animal Code and complaints that may raise the possibility of research misconduct under the Research Code, are AECs adequately equipped to decide non-compliances, and/or potential breaches, and do AEC members understand the assessment and investigation principles and how to ensure procedural fairness is afforded to those who may be impacted by a complaint.

A brief desktop review of several institutions policy and procedure relating to non-compliances and how they may intersect with the Research Code has been conducted. The presentation will highlight potential issues associated with AECs determining non-compliances, and open conversation about whether the handling of complaints in this area could be improved to ensure stronger compliance with, and emphasis on, the importance of the responsible conduct of research.



Dr Misty Fish is a lawyer and the Manager of the Research Integrity Office at Curtin University. Misty's role includes managing the human and animal ethics teams, facilitating the operation of the animal and human ethics committees, and managing and conducting research integrity complaint investigations. Misty is also an Animal Ethics Committee member for another tertiary institution. A strong advocate for animal welfare and conservation, Misty's research studies focussed on wild animal welfare protections and environmental law.

Aquatic Animals in Scientific Trials "A New Zealand Animal Ethics Committee's Experience"

Mark Burdass, Sobhan Akhavan, Anja Studer, Velma Vermaat
Nelson Marlborough Institute of Technology, Nelson, New Zealand

In Aotearoa New Zealand, aquatic animals are legally defined to include all vertebrates, decapods, and cephalopods. While international views differ regarding their capacity for consciousness, pain perception, and level of sentience, New Zealand has adopted a pragmatic precautionary approach which covers ethical protection to these non-mammalian species thereby reducing the risk of harm and suffering.

The NMIT Animal Ethics Committee parents several research and commercial partners and oversees protocols and activities, with most applications involving aquatic animals. Since its inception in 2005, the committee has reviewed hundreds of applications involving both laboratory-based and field work. This experience has enabled the development of practical guidelines for aquatic animal husbandry, anaesthesia, analgesia and euthanasia that also takes a pragmatic approach. For each area aquatic species have specific requirements and impacts, a variety of methods, and often limited evidence of effectiveness. These are guided by the 3R's (Replacement, Reduction, and Refinement) as well as the Five Freedoms with the aim of minimising the ethical cost of research while maintaining scientific validity.

An additional consideration relates to native species that may be regarded as taonga (treasure) by tangata whenua (Māori). Although not explicitly required by legislation, applications are assessed to ensure appropriate recognition of Treaty partnerships. Applicants are therefore expected to identify species status and describe what consultation has taken place with relevant iwi.

Aquatic animals are enormously diverse occurring in a wide range of natural environments, and generic housing is rarely acceptable. Replicating key aspects of their natural habitats will often provide the most appropriate housing conditions; however, research involving commercial species may need to replicate commercial conditions to reflect standard industry practice to ensure relevance.

This presentation will explore these issues through anonymised case studies, highlighting both research outcomes and welfare considerations.



Mark has been a lifelong enthusiast for aquatic life and was lucky enough to turn my obsession into a career. I have worked with a wide variety of aquatic organisms for over 45 years across the globe. I now teach at Nelson Marlborough Institute of Technology (NMIT) and have chaired the NMIT Animal Ethics committee for the last 15 years. My current areas of research are aquatic animal welfare and health; aquatic animal nutrition and systems design and development.

HIGH ANIMAL WELFARE IMPACT
CHAIR - MANDY PATERSON

Making It Up as We Go: Fast-tracking Veterinary Therapeutics

Richard Malik
Sydney School of Veterinary Science and Centre for Veterinary Education, The University of Sydney, NSW

New veterinary drugs are usually developed by large pharmaceutical companies with substantial budgets and access to patented compounds. Before clinical use, these drugs typically undergo extensive laboratory and animal studies to define their pharmacokinetics, pharmacodynamics, metabolism, excretion and organ-specific toxicities. When existing human or agricultural drugs are repurposed for veterinary use, much of this information is unavailable, and clinicians must learn progressively from carefully monitored cases.

Since the beginning of this century, our group has repurposed human medicines to treat major viral diseases of cats, including feline herpesvirus type 1, feline calicivirus, feline infectious peritonitis virus, feline leukaemia virus and feline immunodeficiency virus. These treatments have included famciclovir, molnupiravir and its active metabolite EIDD-1931, remdesivir and its metabolite GS-441524, and fixed-dose HIV combination tablets such as Dovato and Biktarvy. Much of this work involved cats with otherwise fatal or severely debilitating diseases for which no licensed veterinary product was available.

In horses, we have also developed treatment protocols for pythiosis and lagenidiosis using the agricultural fungicide metalaxyl-M.

This presentation will discuss the scientific, ethical and practical challenges of "making it up as we go": selecting candidate drugs, establishing doses, recognising toxicity, monitoring outcomes and refining protocols in real time. It will also show how this pragmatic approach, accelerated during the COVID-19 era, produced effective treatment regimens for several previously untreatable or poorly treatable diseases of cats and horses.



Richard Malik is a veterinary academic, clinician and researcher with more than four decades of experience in small-animal medicine. Based at the University of Sydney, he is internationally recognised for his work in feline infectious diseases, antiviral and antifungal therapeutics, and the treatment of previously intractable conditions in cats. He has authored or co-authored more than 500 scientific publications, contributed extensively to veterinary education and professional development, and remains actively involved in clinical research, mentoring and translational drug development today.

Application of a rabbit model for evaluation of mRNA vaccines for livestock

Paul Hick, Sarah Gestier, Tiffany O'Connor, Andrew Read, Nicholas Yuen, Nataly Boskoski, Peter Kirkland

Elizabeth Macarthur Agricultural Institute, New South Wales Department of Primary Industries and Regional Development, Menangle, NSW

RNA vaccines are emerging as a transformative technology for controlling infectious diseases in livestock. This platform is suited to improving emergency animal disease preparedness, offering several advantages over conventional vaccines. These include rapid manufacture, genetic matching for outbreak strains, and compatibility with tests that distinguish between vaccinated and infected animals.

Design and optimisation of mRNA vaccines is a complex process requiring identification of viral components needed for a protective response, optimal RNA sequences, and delivery formulation. Whilst laboratory studies confirm that the vaccine produces the desired proteins, animal studies are essential to test whether the vaccine induces a protective immune response.

Rabbits have proven to be valuable in studies that optimised novel vaccines for foot-and-mouth disease virus and bovine-viral-diarrhoea-virus. Compared with mice, rabbits allowed larger blood volumes with repeated sampling over time. This enabled detailed monitoring of immune responses by virus neutralisation tests, providing a quantitative measure predictive of vaccine efficacy. These rabbit studies refined vaccine designs before testing in cattle, the target species. Rabbit studies will also provide immunogenicity data required for the regulatory pathway including evaluating batches produced during commercial scale-up and determining shelf-life.

Increasing demand for vaccine research combined with a shortage of research rabbits led to the establishment of a small on-site colony of New Zealand White rabbits. This provides a reliable supply of animals with welfare benefits through reduced transport stress, positive handling from an early age, and preventative health programmes tailored to site-specific conditions. The facility was designed to meet best-practice housing standards within the constraints of the local operating environment and biosecurity requirements.

Successful establishment of a rabbit colony, supported by robust animal care and management systems, enables the development and regulatory approval of next-generation livestock vaccines. This capability will accelerate the delivery of novel RNA vaccines and strengthen preparedness for future emergency animal disease outbreaks.



Dr Paul Hick is a registered veterinarian with a PhD in aquatic animal epidemiology. He has worked in veterinary practice, academia and is currently a senior research scientist with the NSW Government working to improve animal health and biosecurity.



Dr Sarah Gestier is a registered veterinarian with a Masters in veterinary immunology. She works as a government veterinary virologist and anatomical pathologist with a focus on diagnostic virology, pathology and livestock disease research.

AI-Assisted Pain Behaviour Detection in Calves

A. Chlingaryan, A. Melkumyan, E. Hooton, D. Van der Saag and S. Lomax
University of Sydney, Sydney, NSW

Accurately recognising signs of pain in animals is essential for good welfare and for meeting ethical responsibilities in research. In cattle, behaviours such as tail flicks, flat ears, and changes in resting patterns can indicate discomfort following routine husbandry procedures like disbudding. Traditionally, these behaviours are recorded by people watching animals directly or reviewing video footage. While effective, this approach is extremely time consuming and can limit how much behaviour can realistically be monitored.

This project explores how modern artificial intelligence (AI) can support animal welfare assessment by automatically identifying pain related behaviours in calves from video recordings. Our goal is to reduce the burden of manual observation while improving the consistency and detail of behaviour monitoring, ultimately supporting better welfare decisions and refinement practices.

We used video footage of five six month old Holstein calves housed in an indoor pen. These calves were part of a University of Sydney study evaluating improved pain relief for cautery disbudding. All calves received a local anaesthetic and oral meloxicam before the procedure, and filming began one hour afterwards.

The AI system first located and tracked each calf throughout the video while they moved around the pen or interacted with each other. It was then taught to recognise specific behaviours, such as lying down, tail flicks, and flat ears, using a small number of example images. The system analysed each video frame and described what the calf was doing, allowing behaviours to be automatically classified.

The method showed high accuracy for larger, easily distinguishable movements, such as standing versus lying. Smaller movements, like ear position, were more challenging but improved when the video was zoomed in. Overall, the system achieved performance close to human observers while requiring no ongoing manual labour. This approach shows strong potential to support AECs, veterinarians, and researchers by enabling an automated welfare assessment.



Dr Anna Chlingaryan is a data scientist specialising in machine learning (ML), artificial intelligence (AI), mathematical modelling, and the development of novel algorithmic solutions for real-world challenges in livestock production, dairy science, plant science, and mine geology modelling. Her work integrates rapidly evolving AI/ML technologies into multidisciplinary research, strengthening and adapting these capabilities to operate effectively under real-world constraints and complexities.

Reporting practices of anaesthesia and analgesia in rodent orthopedic research

Shari Cohen, Nicholas Yijun Pan
Animal Welfare Science and Melbourne Veterinary School. University of Melbourne, VIC

The Animal Research Reporting of In Vivo Experiments (ARRIVE) guidelines, along with the updated ARRIVE 2.0, provide a crucial framework for transparent reporting in animal research. These guidelines enhance the quality and reproducibility of studies while supporting animal welfare. However, concerns persist regarding the reporting practices of biomedical researchers in scientific articles related to anesthesia and analgesia despite the endorsement of ARRIVE guidelines, as has been demonstrated in previous descriptive analyses. The current study systematically reviews articles published from 2016 to 2023 that involve rodent orthopedic surgeries. These procedures were selected as a focus for this research given that anesthetics and analgesics are essential for such high impact procedures to meet animal welfare, 3Rs, and social license requirements. Analysis of the literature identified significant reporting gaps, noting that anesthetic and analgesic details were missing in 29.4% and 74.8% of the articles, respectively. The findings from this study reveal no correlation between reporting completeness and journal impact factors, indicating that this issue generalized across journals. Furthermore, among articles that did report analgesia use, there was observed to be a low prevalence of multimodal analgesia. Overall, this study underscores the urgent need to develop effective strategies to improve reporting of anesthesia and analgesia in animal studies to enhance ethical standards, animal welfare, and the robustness and reproducibility of research.



Shari is an animal welfare veterinarian passionate about advancing the welfare of animals and people through education, collaboration, and via systems change. She is a Veterinary Fellow in Animal Welfare, Ethics, and Law and Member of the Medicine and Management of Lab Animals in the ANZ College of Veterinary Scientists. Shari has worked with the Victorian Government on animal welfare legislative reform and holds a Masters by Research in Veterinary Epidemiology and Population Health conducted in partnership with the former Victorian Department of the Environment and Primary Industries. She continues to work with the state animal welfare departments and holds adjunct academic positions at the Animal Welfare Science Centre at the University of Melbourne, La Trobe, and University of Sydney. She enjoys working as a clinician, academic, and animal welfare and 3RS industry consultant.

She was awarded a 3Rs grant from UNSW which forms the basis of her PhD at the University of Sydney in Better Animal Welfare and 3Rs in the Research and Teaching Industry.

The sustainability of rehoming animals from research

Paula Wallace
Liberty Foundation Australia Limited

Liberty Foundation Australia (LFA) is a registered charity providing rehoming services for the full range of domestic species from research in Australia since 2017, including dogs, cats, rabbits, guinea pigs, rats, mice and fish. The successful rehoming of these animals into domestic homes as pets and companions is a collaborative effort, between accredited research establishments, government and the charitable sector. There are numerous benefits to research establishments in including rehoming in their sustainability plans. These include:

- a commitment to providing care for the full lifecyle of animals involved in research projects as an alternative to re-use in research work or euthanasia for example
- setting targets to reduce or eliminate "wastage" from their operations
- improved representation of stakeholder views/expectations including greater transparency of animal management
- positive impacts on staff morale and workplace culture within research establishments
- alignment with the Australian code for the care and use of animals for scientific purposes (National Code); NSW legislation (for dogs and cats); and government-issued rehoming guidelines covering all species.

The National Code states that opportunities to rehome animals should be considered wherever possible. LFA has extensive evidence of the success of rehoming and the ability of small animals to transition into domestic settings. It also has specialist knowledge and processes for achieving high standards of animal welfare, governance and innovation in husbandry and housing.

Rehoming ex-research animals is a growing movement internationally, with numerous services commencing operations over the last 10 years, for all species including rabbits and rodents.

In Australia, the movement is reaching a critical stage. With growing demand from the research sector for rehoming, a multi-sectoral approach is required to support the expansion of rehoming operations in the charitable sector. In response to this, LFA will outline the partnership model it has developed to sustain rehoming services in the long term.



Paula Wallace is the founder and a director of Liberty Foundation Australia Limited, a registered not-for-profit with the sole objective to facilitate the release, rehabilitation and rehoming of animals from research in Australia. A former print journalist specialising in business sustainability, Paula is currently managing Australia's first adoption centre for animals from research, opened in June 2026 on the Central Coast of NSW, which is home to more than 100 former research animals including rabbits, mice, rats and guinea pigs.

ICLAS Globally harmonized standard for animals in science

Arnja Dale, Chief Scientific Officer
RNZSPCA Auckland, New Zealand and ANZCCART New Zealand Board Member

The International Council for Laboratory Animal Science (ICLAS) is a global organization, including institutional and national members from all continents of the world. ICLAS is leading a new initiative to produce a document outlining high-level globally harmonized performance (outcome-based) standards for the care, use, and ethical oversight of animals in science that supports quality science and promotes animal well-being. The target date for completing this work will be the beginning of 2028.

The vision is that the final published standards will be of value to the global scientific and wider community (e.g. regulators and other stakeholders) relevant to the use of animals in research and testing. The aim is to set out expectations and a shared understanding of the key factors and actions that will support high quality, ethical science and good animal welfare. These Standards should be viewed as guidance and not substitutes for following relevant local and national legislative and regulatory requirements. It is also recognised that institutions and countries will vary in their current ability to meet some or all of the elements the Standards will set out. Whilst the Standards will be designed to be operational and realistically achievable, they will also act to encourage continuous improvement, and examples of leading practice to aspire to will be included.



Dr Arnja Dale is on the ANZCCART New Zealand Board and the Chief Scientific Officer at RNZSPCA and sits on a number of Animal Ethics Committees. Areas of interest include openness, humane killing, grading of manipulations and animal use statistics.

New Zealand Animal Use Statistics – Are our numbers going up?

Arnja Dale, Chief Scientific Officer
RNZSPCA Auckland, New Zealand and ANZCCART New Zealand Board Member

New Zealand's Ministry for Primary Industries released the 2024 statistics on the use of animals in research, testing and teaching (RTT) in December 2025. In 2024, 602,318 animals were used for RTT, the highest number recorded since reporting began in 1987, and an increase of 285,750 from the previous year. In addition, 139,686 animals were bred but not used for RTT and were subsequently killed; this is 29,121 more than the previous year. A further 44,161 animals were killed for their tissues for RTT. The most commonly used species were fish (292,348), cattle (178,637), sheep (50,460) and mice (34,719).

The report is based on animal use data from 128 organisations. Most use occurred at universities (65%), commercial organisations (16%) and Crown Research Institutes (10%). Of these, 22 organisations hold an MPI-approved Code of Ethical Conduct, and a further 106 are covered under a parent organisation's code. The stated purposes of use was: species conservation (34%), veterinary research (27%), animal husbandry (11%), basic biological research (11%), teaching (9%), medical research (3.5%), environmental management (2.5%) and product testing (less than 1%). Only 82 animals were used to develop or validate alternatives that could replace the use of animals in the future.

In 2024, 51% of animals experienced manipulations graded as having 'little impact' on their welfare and 47% experienced 'moderate impact', with fewer than 2% experiencing 'high' or 'very high' impact. Overall, 492,075 of the 602,318 animals (81%) remained alive after manipulations and were returned to owners (35%), retained by institutions (4%), released to the wild (where this was the animals' normal environment) (40%), rehomed (adopted into a home environment) (0.02%) or sold/disposed of through commercial slaughterhouses (2%). Eighteen percent of the animals died during or after use (110,245). Only 144 animals were rehomed, compared with 444 in 2023 and 599 in 2022.



Dr Arnja Dale is on the ANZCCART New Zealand Board and the Chief Scientific Officer at RNZSPCA and sits on a number of Animal Ethics Committees. Areas of interest include openness, humane killing, grading of manipulations and animal use statistics.

Integrating Medical Imaging Technologies with the 3Rs in Preclinical Research

Tzong Tyng Hung
UNSW Sydney, NSW

Medical imaging technologies are powerful, non-invasive tools for monitoring disease progression over time. Clinical modalities such as Magnetic Resonance Imaging (MRI) and Positron Emission Tomography (PET) are increasingly being adapted for preclinical research, accelerating the translational pathway from laboratory discovery to clinical application. Over the past two decades, substantial advances in sensitivity, resolution, and workflow integration have transformed preclinical imaging into a welfare-aligned research platform.

These technologies inherently support the principles of the 3Rs (Reduction, Refinement, Replacement). Reduction is achieved through longitudinal imaging, enabling repeated measurements in the same animal and decreasing cohort sizes. Refinement is embedded in modern imaging workflows, with improved anaesthesia systems, physiological monitoring, and minimally invasive protocols. Emerging imaging innovations also contribute to Replacement, particularly in neurobiology, where high-resolution in vivo and ex vivo imaging can reduce or replace animal use.

Although welfare concerns during imaging—such as stress, anaesthesia burden, and handling—remain important, they can be effectively mitigated through thoughtful experimental design, optimised protocols, and instrument features tailored for small-animal research. Together, these developments position preclinical imaging as a key driver of responsible, high-quality biomedical science.



Tzongtyng Hung is a Preclinical Imaging Scientist specialising in molecular imaging, animal models, and oncology. He completed his Ph.D. in Molecular Oncology at UNSW in 2007 and became a National Imaging Facility scientist in 2011, helping build the Biological Resource Imaging Laboratory into a leading preclinical imaging centre. His work supports research using PET, microCT, ultrasound, photoacoustic, and optical imaging, and since 2022 he has served on the UNSW Animal Ethics Committee.

Looking forward: outcomes of the Australian openness agreement review

Malcolm France
ANZCCART Australia

ANZCCART committed to conducting a review of the Australian Openness Agreement within three years of its launch in 2023.

Although the review is still underway at the time of writing, this presentation will summarise feedback from meetings with Signatories and Supporters and online questionnaires sent both to organisations that have signed the Agreement and a selection of those that have not.

Preliminary results point to an ongoing commitment to greater openness by Signatories and Supporters with a desire for more guidance on how they can enhance progress within their own organisations.

Hesitancy within organisations that have not signed the Agreement often appears to be relatively localised and relates to concerns that have not been part of the experience among Signatories and Supporters.

Any updates to the Australian Openness Agreement arising from the review are expected to be completed by the time of the ANZCCART conference.



Malcolm France is the project officer for ANZCCART Australia where he manages the Australian Openness Agreement and National Statistics Project. He is a consultant veterinarian who has worked as a lecturer in veterinary pathology, animal facility director, Animal Ethics Committee chair, journal reviewer and in several honorary roles for industry bodies.

Poster presentations

Let's Get Digital: Leaving physical records in the past for improved animal welfare

Jansen S[1], Blyth BJ[1,2]
[1] Models of Cancer TRC, Peter MacCallum Cancer Centre, Melbourne, VIC
[2] Sir Peter MacCallum Department of Oncology, The University of Melbourne, VIC

The Models of Cancer TRC at the Peter MacCallum Cancer Centre designs and completes thousands of welfare monitoring records for a diverse range of mouse cancer experimental designs. In our human clinical trial work, we are well versed in electronic record keeping methods that meet industry-standard data management principles. And yet our mouse welfare monitoring records, a bit by habit and (what we thought was) necessity had remained paper based even while we routinely collected experimental data electronically.

Many of the record-keeping parameters in Animal Ethics legislation and regulations, designed to ensure the integrity, accessibility and auditability of the records, had been the very things preventing us from moving to an electronic system. Commercially available record keeping systems could be costly, were difficult to customise to our workflow and often increased complexity and time to our record-keeping. Early efforts to digitally reproduce our paper records were clumsy and shared the same inherent limitations as their printed counterparts. However, improved accessibility to cloud-based data management platforms removed these barriers that, up until this point, had kept us tied to paper.

We have now successfully transitioned to bespoke in-house electronic welfare monitoring records, that align with ALOCA+ best-practice data management principles, while still allowing flexibility to customise for complex experiments.

Designed by technicians and investigators, with rigorous testing, improvements from feedback and use allowed us to produce a consistent yet flexible platform that isn't broken by common experimental practices like randomisations, heightened monitoring periods and the parallel recording of events only relevant to one mouse or treatment group.

Making the record keeping easy, fast and flexible means we are naturally capturing more detailed and informative monitoring data. Now that A4 is before, our experience can help reassure those ready to reach for the cloud.

Human Organoid Models of Usher Syndrome Type 1B Bridge Disease Mechanisms and Gene Therapy Development

Kaiser V.M.[1,2], Nili E.[1], Ginn S.L.[2,3], Carvalho L.S.[4], Gonzalez-Cordero A.[1,2]

[1] Stem Children's Medical Research Institute Cell Medicine Unit, Westmead, NSW
[2] Faculty of Medicine and Health, The University of Sydney, Sydney, NSW
[3] Gene Therapy Research Unit, Children's Medical Research Institute, Westmead, NSW
[4] Department of Optometry and Vision Sciences, The University of Melbourne, VIC

Usher syndrome is the most common cause of inherited deaf blindness, characterised by congenital hearing loss, early onset retinitis pigmentosa, and vestibular dysfunction. There are currently no approved treatments. Usher syndrome type 1B (USH1B) is one of the most severe subtypes and is caused by mutations in MYO7A, which encodes the actin binding motor protein MyosinVIIA, implicated in ciliary maintenance and intracellular transport in inner ear hair cells and retinal photoreceptors. Progress in understanding USH1B pathology has been limited by the lack of faithful disease models. Here, we established patient specific iPSC derived retinal and inner ear organoids that recapitulate key features of USH1B and start to develop a novel gene therapy for this devastating disease.

Using immunohistochemistry, we have shown the successful generation of Usher1b inner ear organoids with sensory cells, as measured by specific otic and sensory hair cell markers. Additionally, we have observed stereocilia and hair bundle defects in organoids consistent with murine models, enabling appropriate disease modelling. Usher1b murine models do not display a strong retinal phenotype, preventing adequate disease modelling and therapy development. Here, we have shown the successful generation of Usher1b retinal organoids with photoreceptors and connecting cilia and have elucidated novel mechanisms of disease including absence of Myosin VIIA protein, altered translation, actin regulation and Muller glia dysregulation. Dysregulation of additional Usher associated proteins was observed across both models, enabling interrogation of the broader Usher protein interactome.

To explore therapeutic intervention, we investigated a novel gene therapy strategy for USH1B. Given the large size of MYO7A (~7.5 kb), which limits conventional AAV delivery, we tested a CRISPR homology independent targeted integration (HITI) approach to insert healthy exons 28–49. Together, this study establishes robust patient derived organoid models of USH1B, uncovers disease relevant phenotypes, and provides a versatile platform for the development and evaluation of next generation gene therapies with translational potential.

Optimising Ethical Wildlife Research - Training and Practice

Rob Harcourt, Clive McMahon, Ben Pitcher, Justin Clarke
Macquarie University, Sydney, NSW

How can we maximise the scientific value of wildlife research while ensuring that animal welfare and researcher training remain at its core?

Wildlife research increasingly provides unique insights into animal behaviour and the rapidly changing environments on which species depend. At the same time, researchers have a responsibility to ensure that these opportunities are pursued safely, ethically and to the highest possible standards. This poster showcases examples of how these principles can be embedded throughout wildlife research and training at Macquarie University and through international collaboration.

Advanced biologging technologies, including conductivity-temperature-depth satellite relay device loggers (CTDSRDLs), allow researchers to follow the movements, habitat use and foraging behaviour of species such as Weddell seals and flatback turtles. These devices also generate valuable environmental data, revealing information about water masses, ice formation, ocean warming and bathymetry in remote regions of the Southern Ocean. For flatback turtles, a degradable harness provides a practical solution for safely attaching tracking devices to their smooth, oily shells before naturally detaching after approximately 160 days.

Importantly, the technology is only one part of responsible wildlife research. Students are trained in safe and ethical wildlife survey techniques, while collaborative fieldwork provides opportunities to develop practical skills in monitoring animals during procedures. During CTDSRDL deployment, for example, students learn to monitor the vital parameters of anaesthetised Weddell seals, integrating animal welfare directly into research practice.

By bringing together innovative science, rigorous welfare practices, practical training and collaboration, these examples demonstrate how ethical wildlife research can simultaneously advance knowledge, protect animal welfare and prepare the next generation of conservation researchers.

Supporting the Supporters: Why the Wellbeing of Animal Ethics Office Staff Matters for Animal Welfare

Nimanthi Vithana Dewage, Diana Sketriene, Rasika Kumarasingha
Peter MacCallum Cancer Centre, VIC

Animal Ethics Office staff play a critical role in protecting the welfare of animals used in research and teaching. Through protocol review, compliance monitoring, incident response, and advice to committees and researchers, they help reduce welfare risks and support ethical and regulatory compliance.

This work, however, often involves repeated exposure to difficult decisions about animal pain, distress, humane endpoints, and euthanasia, while balancing the expectations of multiple stakeholders. Although published research has not focused specifically on Animal Ethics Office staff, studies of laboratory animal professionals indicate that compassion fatigue and burnout are common. One study found that 66% reported experiencing compassion fatigue during their career, with workplace factors such as understaffing, poor supervisory relationships, and lack of support resources contributing to distress (LaFollette et al., 2020)

Other research has linked professional quality of life to social support, perceived animal welfare, and workplace debriefing practices, suggesting that wellbeing and organisational support are closely connected (LaFollette et al., 2020, Randall et al., 2021).

In our experience, regular peer discussion opportunities — such as monthly meetings between Animal Ethics professionals in Victoria — provide opportunities to discuss challenging cases, share knowledge, validate experiences, and reduce professional isolation. While formal evaluation is needed, peer connection may be a valuable and practical strategy to support the wellbeing of Animal Ethics Office staff and strengthen a sustainable culture of care.

In vitro human stem cell neural models without animals

Neville S. Ng[1]*, Michelle Newbery[1], Lezanne Ooi[1]*
[1] School of Science, Molecular Horizons, University of Wollongong, NSW

Stem cell culture techniques inherent move toward xeno-free systems, however can suffer from long developmental timeframes and complexity, leaving many projects reliant on continuous human and animal cell lines that require fetal bovine serum, or uncertain to transition from animal model -based assays. Modern alternatives must offer comparable simplicity, reproducibility, accessibility, but also allow for tissue complexity, and tissue regional specificity. Over the past several years we have built upon recent developments to generate high purity, functional, regionally specifiable populations of excitatory cortical neurons, motor neurons, skeletal muscle cells, and glial cells, including astrocytes, microglia, and oligodendrocytes, within 2 to 3 weeks. We also demonstrated the generation of functionally active neuronal organoids that exhibit spontaneous local field potentials. We are not the only groups to have made similar advances, demonstrating the delivery of high purity scalable platforms that remove technical barriers to adopting non-animal methodologies. This poster demonstrates optimized, high-efficiency platforms utilizing human induced pluripotent stem cells (iPSCs) to rapidly generate major cellular components of the neural system under chemically defined, serum-free conditions, and discusses the more likely state of art moving forwards.

Although animal models are thought to remain necessary in parallel with lab-on-a-chip and organoid models, this assumes that comparable assays for omics, cytotoxic, genotoxic, developmental, blood brain barrier and other pharmacokinetic data cannot be gathered with alternative means in spite of advances in human stem cell systems, live imaging and post-mortem human tissue biobanks. Animal models are typically studied within a finite spatial and temporal window and serve as an analogous, convenient, but frequently misleading, vehicle for human disease and drug studies. We predict that the exploitation of animals as sources of tissue will soon rapidly decline as researchers collectively progress through the next decade. Supported by recent FDA Modernisation Act 2.0 policy changes in drug testing and regulatory approvals, human stem cell models are becoming increasingly feasible and relevant for drug development, positioning to actively supersede animal usage in medical research and posing the most logical solution in cell replacement. Adoption of technologies, cultures and ethics are also poised to change in an exciting era of information and AI. This research was supported by the MAWA Trust Foundation.

Creating a Human-Mimicking Gut Model for Evaluating Treatment Efficacy: A Step Towards Animal Replacement

Sarah Qingyu Lei
The University of Sydney, NSW

The human gut relies on a complex relationship of microbiota, epithelial layers, and immune cells to stay healthy. Because static in vitro cultures cannot replicate dynamic mechanical stresses and specific disease states, preclinical evaluations mainly depend on animal models. To bridge this translational gap, this study focuses on designing a realistic in vitro platform to mimic specific diseases, such as Inflammatory Bowel Disease (IBD), and using it to test targeted treatments.

The platform utilizes human intestinal epithelial and immune cells, forming a protective barrier that keeps toxins and harmful bacteria out of the bloodstream. Rather than using a static environment, we integrated fluid flow to simulate the natural, dynamic mechanical stresses of the digestive tract. To simulate IBD, immune cells triggered an inflammatory response, making this barrier "leaky". To track tissue health, we continuously monitored the barrier's structural integrity using electrical sensors and high-resolution microscopy. Finally, we tested therapeutic effects of probiotic released particles (pEVs) grown in standard and tomato-supplemented broths.

Co-culturing these cells successfully created a baseline mimicking a healthy human gut. When inflammation was induced, our electrical measurements and microscopy accurately mapped the tissue's physical breakdown, proving the model captures real disease states. When evaluating treatments, pEVs from the tomato-supplemented broth successfully restored the inflamed barrier, whereas standard broth pEVs exhibited toxicity. Importantly, incorporating dynamic fluid flow prolonged the treatments' benefits and captured the heightened immune responses that occur in a natural digestive system.

The dynamic 3D gut model provides a human-relevant architecture isolating localized physiological responses. Merging accurate disease modeling with dynamic fluidic flow accurately predicts therapeutic efficacy and identifies adverse immune responses. Ultimately, this framework provides a highly predictive alternative that could actively reduce reliance on animal models during early preclinical screening, providing a crucial step forward for gastrointestinal research.

Acknowledgements

ANZCCART EXPRESSES SINCERE THANKS TO ALL WHO CONTRIBUTED TO THE PLANNING AND DELIVERY OF THIS CONFERENCE WITH PARTICULAR THANKS TO:

The Conference Organising Committee for their help and valuable contribution to the Conference Program

Jenny Smart, Natalie Bootes, Karen Brennan, Liz Range, Cindy Kok, Arnja Dale, Ian Saldanha, Stacey Gardiner, Malcolm France and Christine Wadey. Paul Sou (Convenor).

The following institutions who made the Pre-Conference Tours possible

Tour 1: The University of Sydney Charles Perkins Centre - Biological Services Unit

Tour 2: The Australian Museum Research Institute

Tour 3: UNSW Randwick Animal Services

Post-Conference Workshop

Casey Schauer the Post Approval Monitoring Officer at Monash University who made the Post-Conference Workshop on Post-Approval Monitoring possible.

All material contained within these proceedings is protected by Australian Copyright law and by international conventions and the applicable law in other jurisdictions. All rights are reserved. This material may only be used under the following conditions:

- Copies of material may be saved or printed for personal use only.
- Commercial exploitation of this material is prohibited.
- This copyright notice must be included in any copy (either printed or electronic) made.
- No material may be altered in any way without the prior written permission of ANZCCART Ltd. ACN 063 383 522

ISBN: 978-0-9874657-9-5

©2026 Australian and New Zealand Council for the Care of Animals in Research and Teaching Ltd. (ANZCCART)

Notes

Notes

Notes

ANZCCART acknowledges and appreciates the support of the following Sponsors for this year's Conference















anzccart.adelaide.edu.au