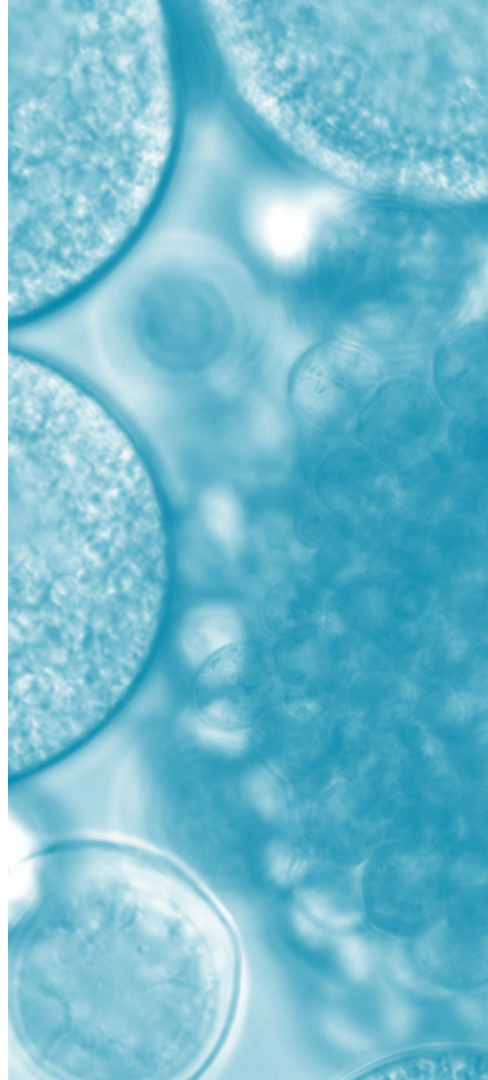


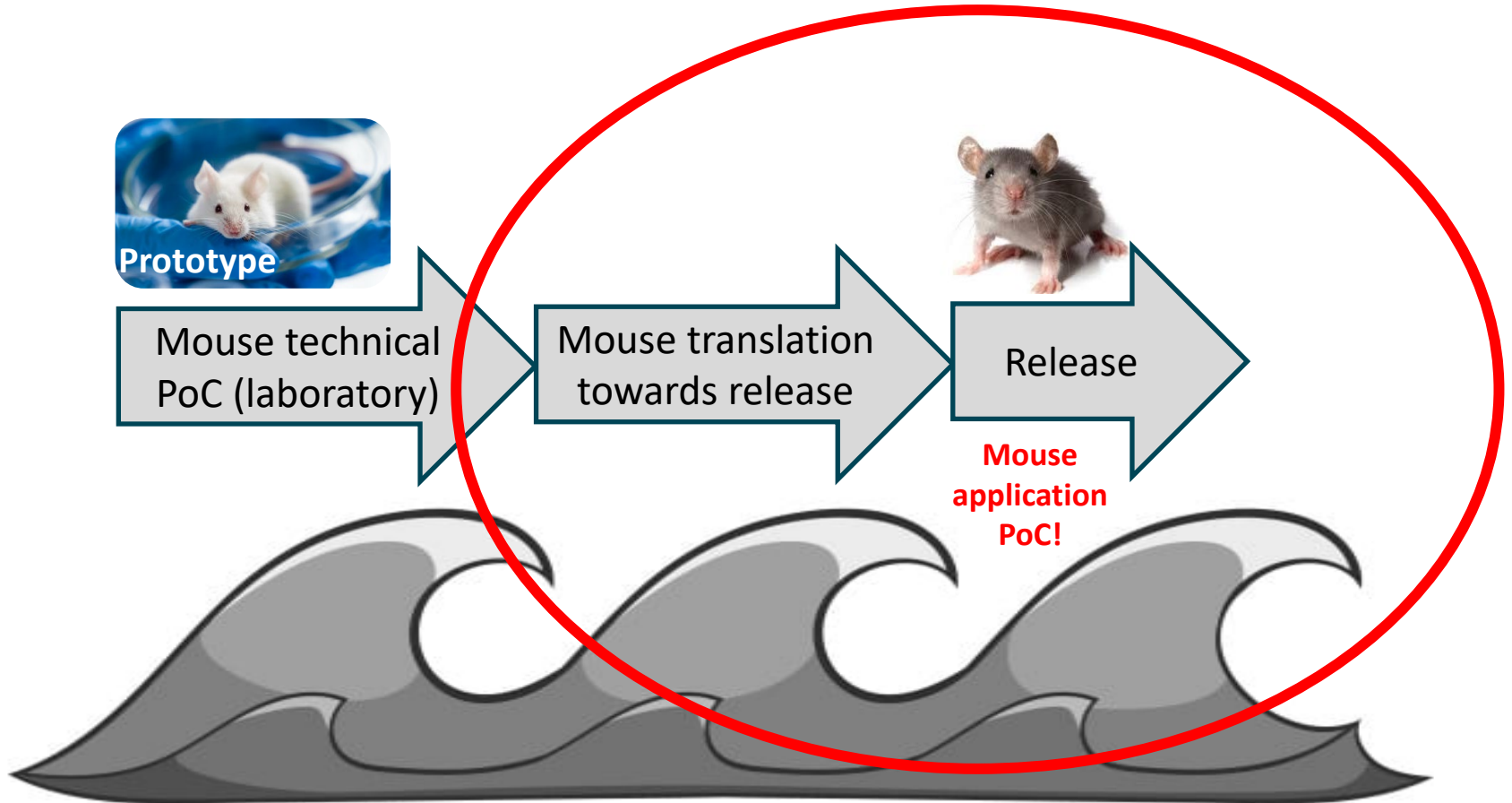
# Risk management and responsible gene drive translation:

- Phased development process
- Regulatory/Policy considerations
- Social risk management

Tanja Strive and Aditi Mankad  
CSIRO

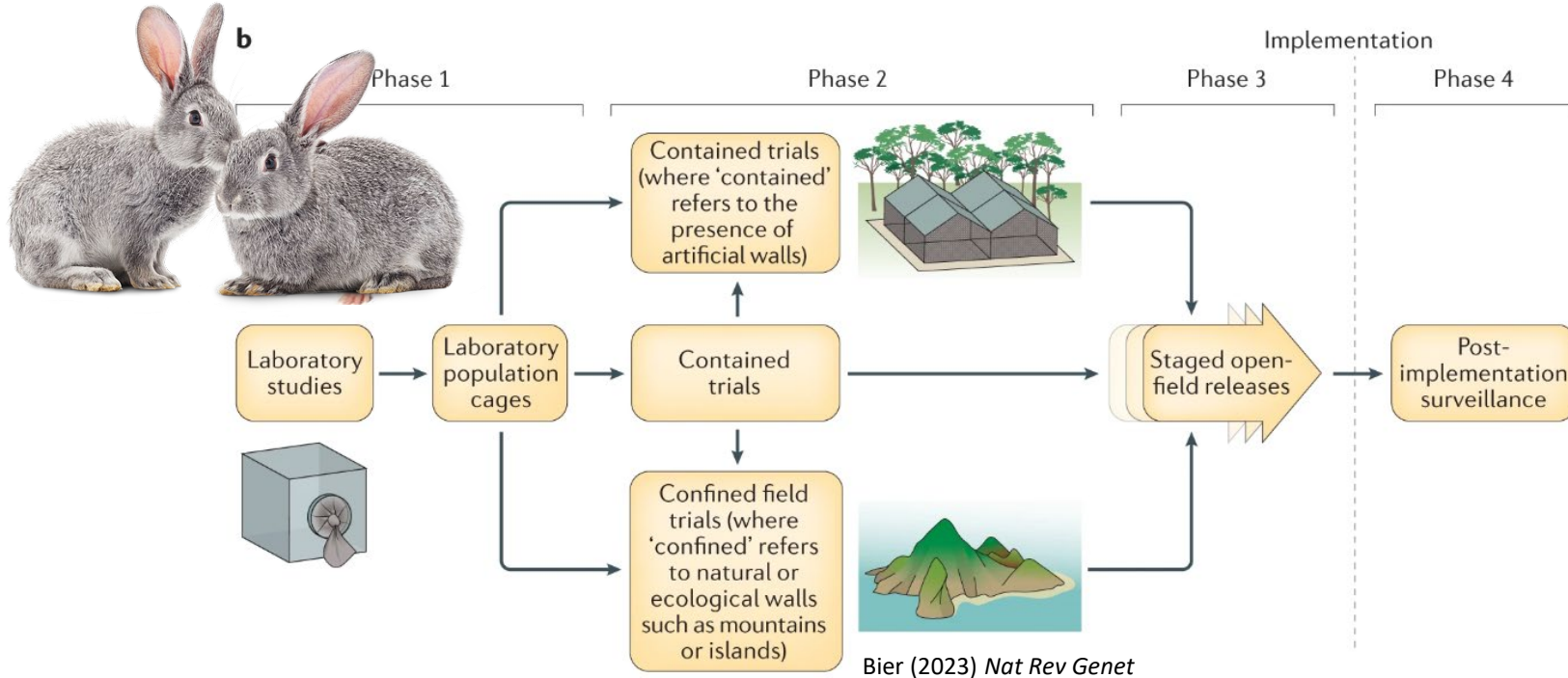


# Towards application of a mouse gene drive



# Translation: How do we (*responsibly*) get there?

*WHO Guidelines for Phased Gene Drive Development (insects)*



- *Every step informs design and risk assessment of the next*
- *High level of regulatory oversight*

# Australian Regulatory and Policy Perspectives

Biological control agents  
(weeds and rabbits)



GMOs  
(crops, vaccines, etc)



# Relevant regulations/legislation

## Gene Technology Regulator (OGTR)

Dealings Not Involving an Intentional Release (DNIR)  
of GMO (Research phase)

Dealings involving an intentional release (DIR) of  
GMO

## Government Departments (Federal and State)

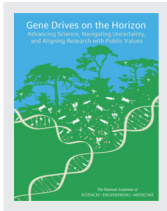
Biosecurity Act 2015

EPBC Act/ Nature  
Positive Plan

Biological Control  
Act 1985

Review and endorsement  
by various committees





Gene Drives on the Horizon: Advancing Science, Navigating Uncertainty, and Aligning Research with Public Values

**DETAILS**

230 pages | 7 x 10 | PAPERBACK  
ISBN 978-0-309-43787-5 | DOI 10.17226/23405

## Guiding Principles for the Sponsors of Gene Drive Research

- **Quality (public good) science**
- **Strong governance**
- **Transparency/accountability**
- **Engagement (communities/stakeholders/publics)**
- **Strengthen capacity and education**



Managing established pests.....



# Social risk management for gene drives

Aditi Mankad  
Principal Research Scientist, CSIRO





# Examples of public engagement in gene drive

**TARGET  
MALARIA**



A Vector Control Research Alliance

## Target Malaria

- Population reduction
- Extensive community engagement in Burkina Faso, Ghana, Uganda
- Continuous dialogue with local communities

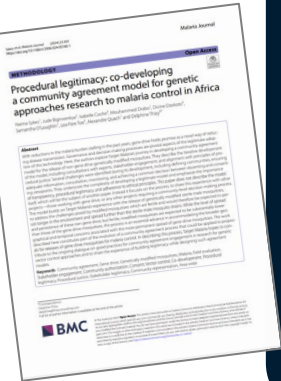


**UCMI**

THE UNIVERSITY OF CALIFORNIA MALARIA INITIATIVE

## University of California Malaria Initiative (UCMI)

- Population modification
- Relationship-based model for engagement
- Formal partnership with São Tomé and Príncipe



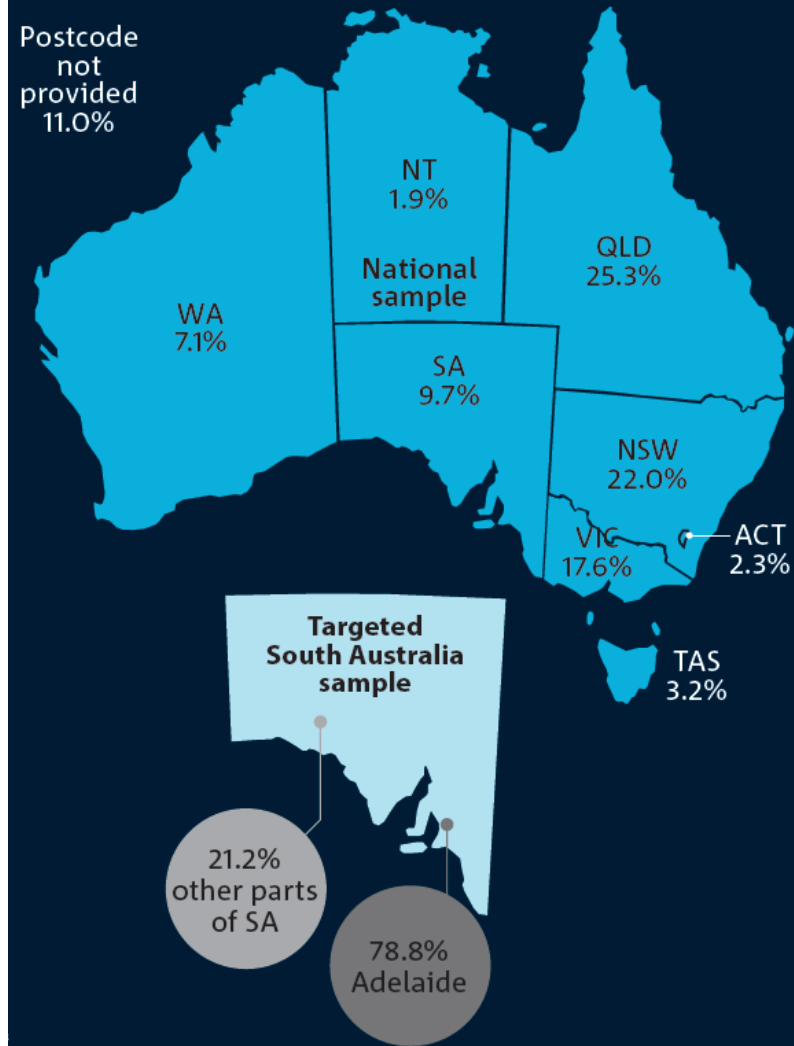


# Public perspectives towards using gene drive for invasive species management in Australia



## Study period – November, 2021

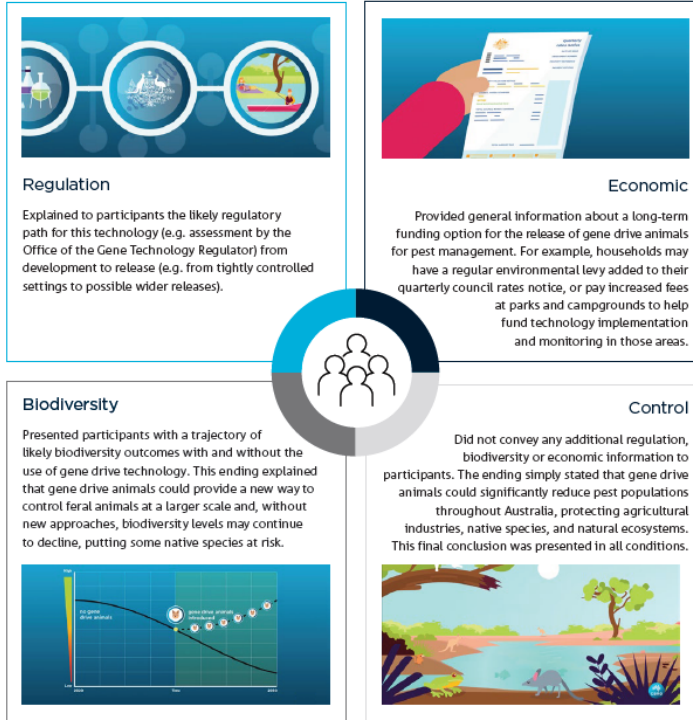
- Online survey embedded with animation and scenario of local feral cat problem and gene drive release
- Two samples:
  - National sample of 2,157 residents (social media)
  - South Australian sample of 1,666 residents (panel)
  - Total sample = 3,823 residents



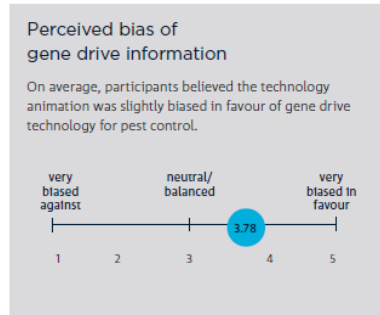
# Gene drive animation


- Co-developed with synbio colleagues
- Problem-solution framed narrative

## Different animation endings



Comprehension:  
3.75 / 4





CASE STUDY

# Gene drive for feral cat control

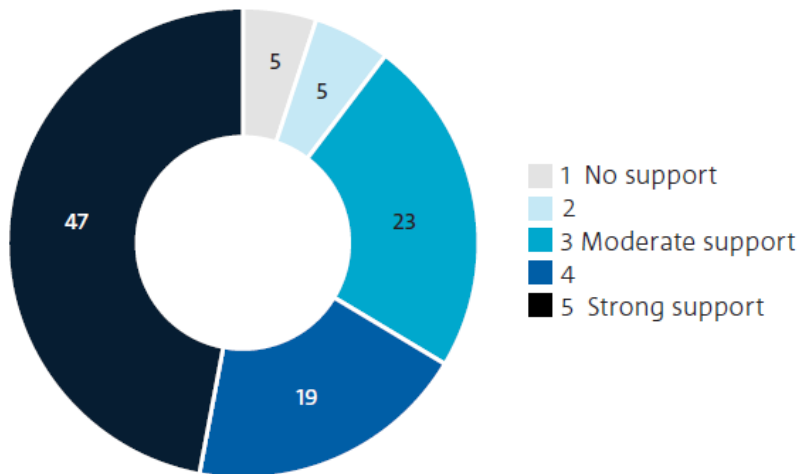


Gene drives video

QR Code  
link to  
animation

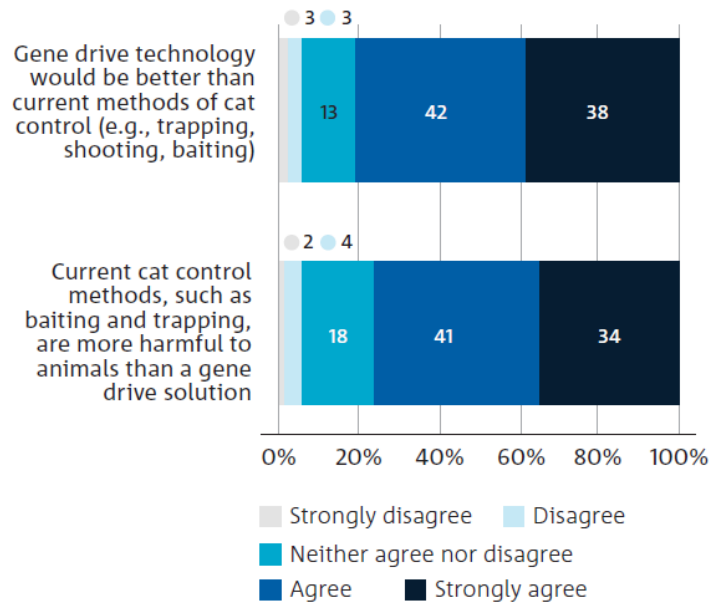


# Support



Level of support for the development of gene drive technology for pest control in Australia, as a percentage (%) of total responses.

# Relative advantage



Perceptions of relative advantage of gene drive technology over current cat control methods, as a percentage (%) of total responses.

## Strongest themes for support

Reduce biodiversity loss

27%

Effectiveness

19%

Humaneness

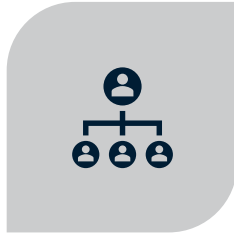
12%

- Conflation of feral/domestic/wandering cat classifications
- Perception that negligent cat owners are wholly responsible for feral cat problem
- Some unease with initial release of additional cats

# What does this mean for rabbits....



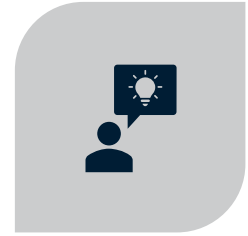
CLEAR ARTICULATION OF  
THE PROBLEM



WHO HOLDS  
RESPONSIBILITY?



HOW WOULD THIS  
TECHNOLOGY BE  
DEPLOYED



NEVER TOO EARLY TO  
START CONVERSATIONS  
– FAMILIARITY IS KEY