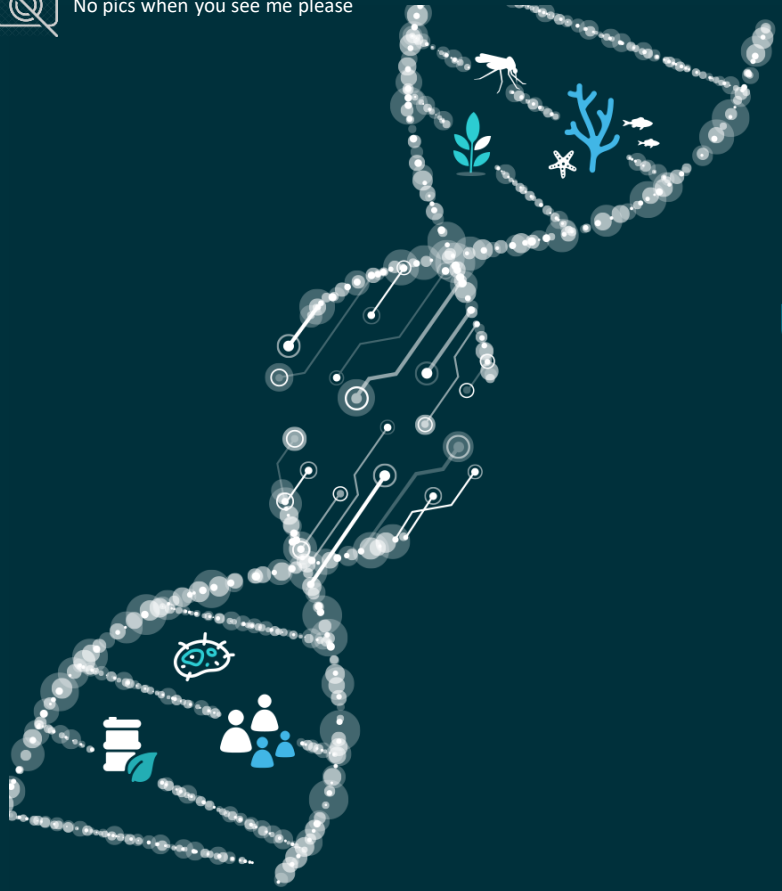
No pics when you see me please



Public perceptions of using synthetic biology to prevent the culling of male chicks

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Dr Lucy Carter
Dr Elizabeth Hobman

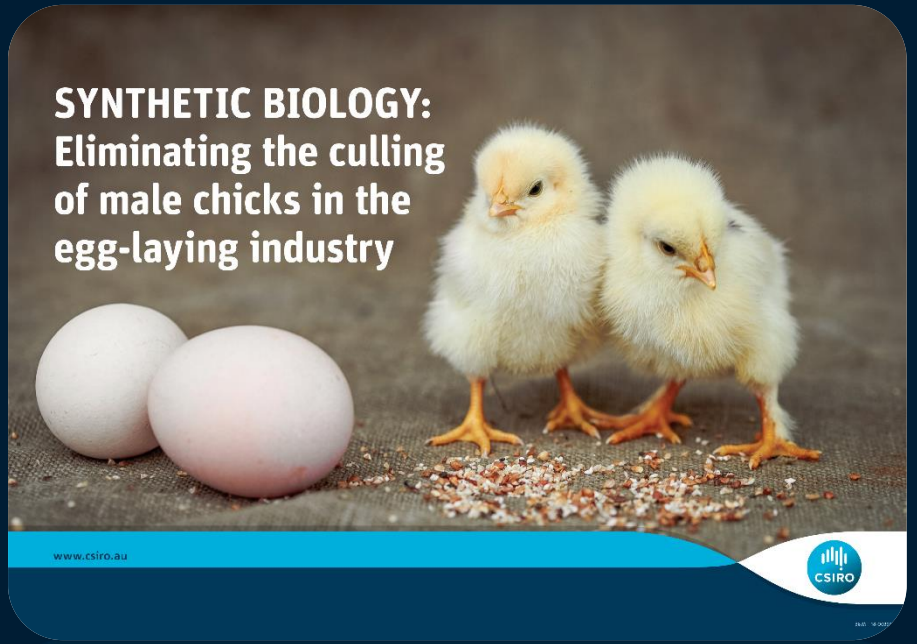
Survey Purpose

To obtain a baseline understanding of national attitudes

- Inform science planning and direction
- Inform a public engagement process
- Improve our understanding of human decision-making, risk perception and values

Background narrative

- Co-developed with biotechnical scientists (Tizard, Doran, Cooper, Woodcock, Jenkins)
- Iterative process
- Validated via public focus groups



Storyboard

- Male chicks not sustainable for meat production; humanely culled

- Synbio techniques enable scientists to place marker gene on male chromosome; produces special protein visible when illuminated

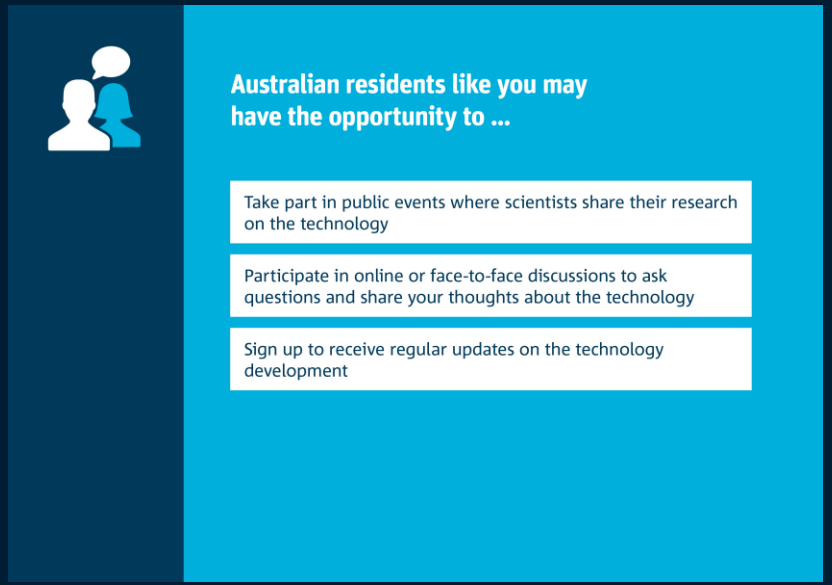
Storyboard (cont…)

- Males are removed from production; females incubated, hatched as usual

- Gene marking could remove need for culling male chicks, potentially reducing industry costs and improving industry sustainability

Regulation

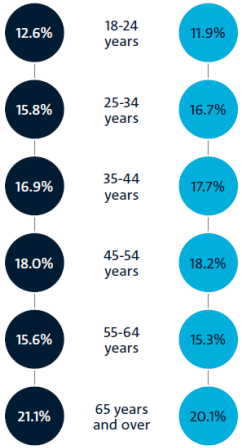
Engagement

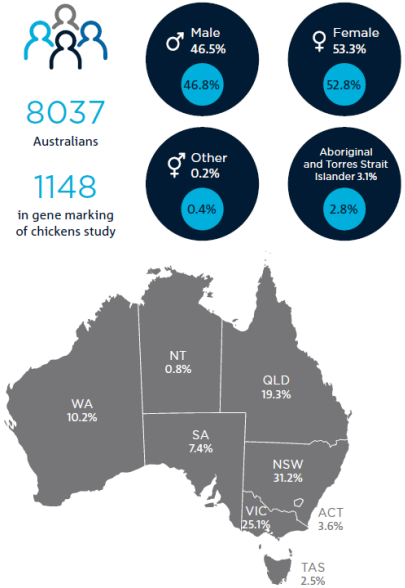


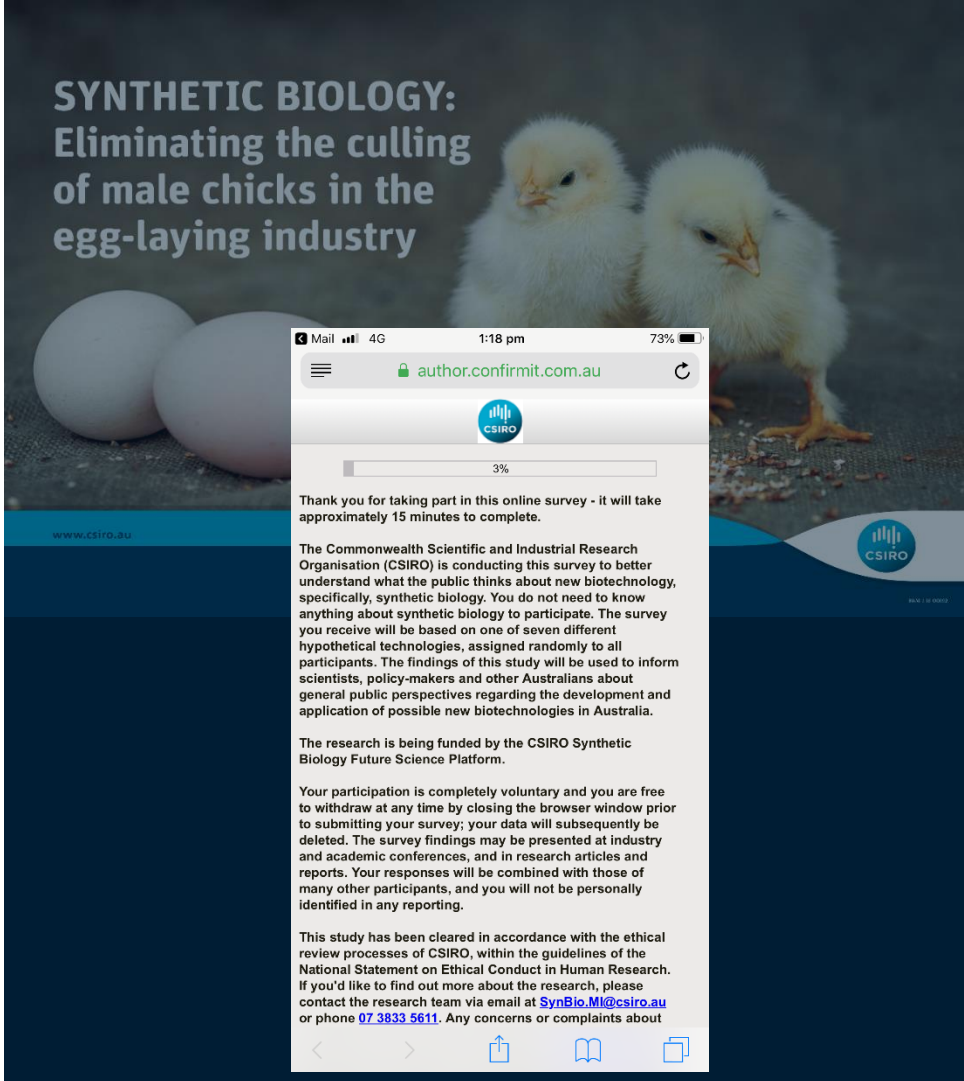
Sample

Australian demographic data

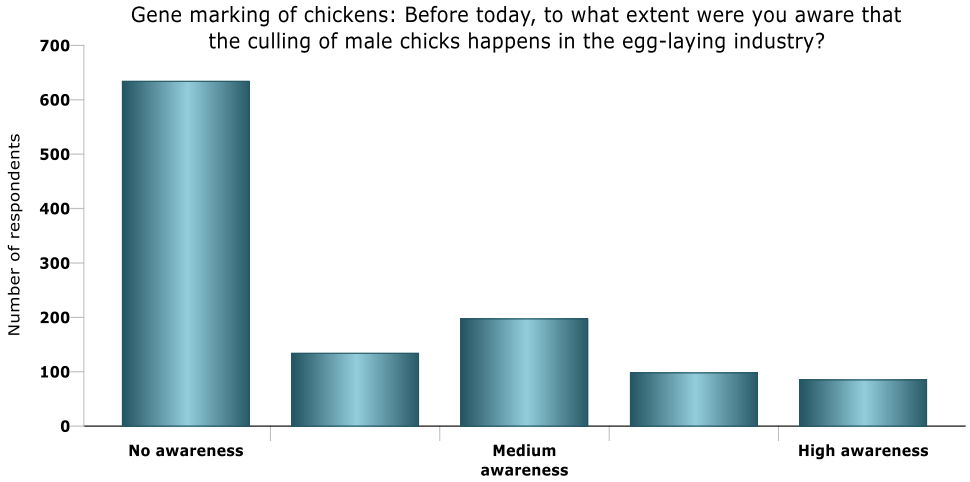
All surveys and this specific survey

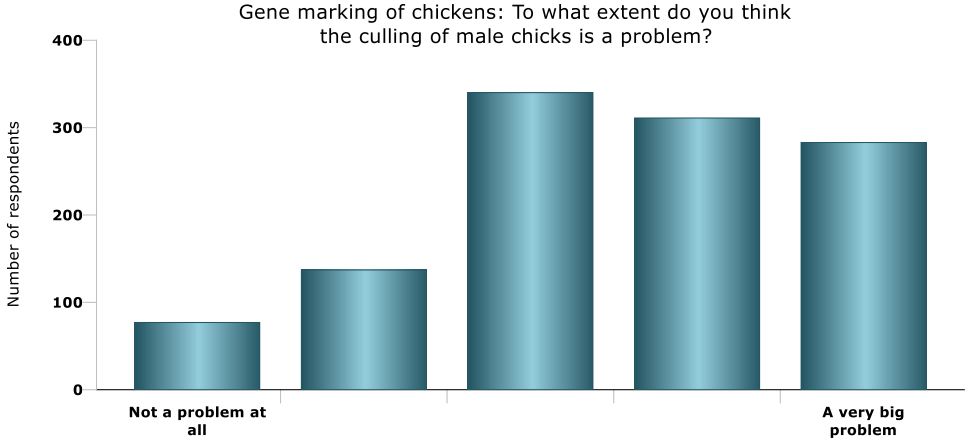






Problem awareness and perception





Low awareness of problem

Culling viewed as problematic

How do Australians feel about synthetic biology?

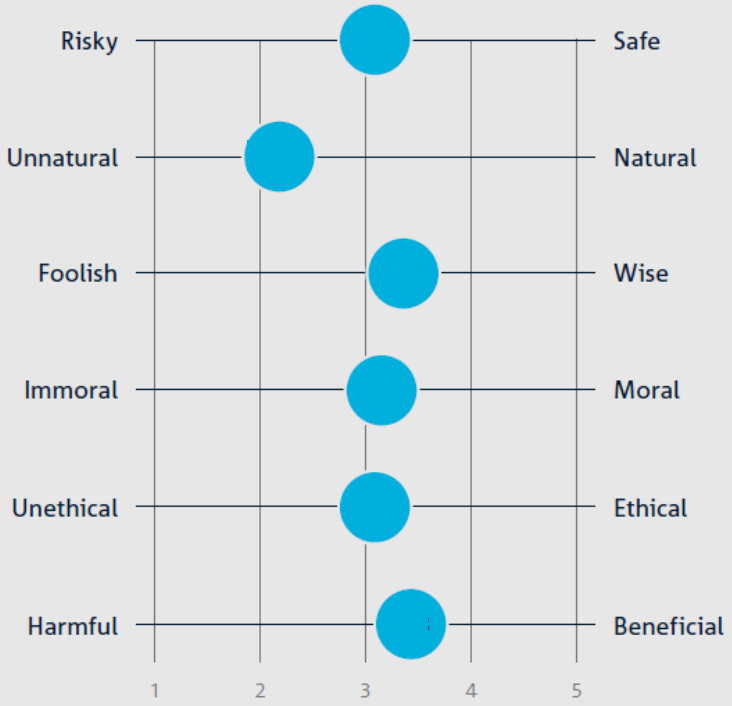
Gene marking in chickens

Emotion

Attitudinal affect

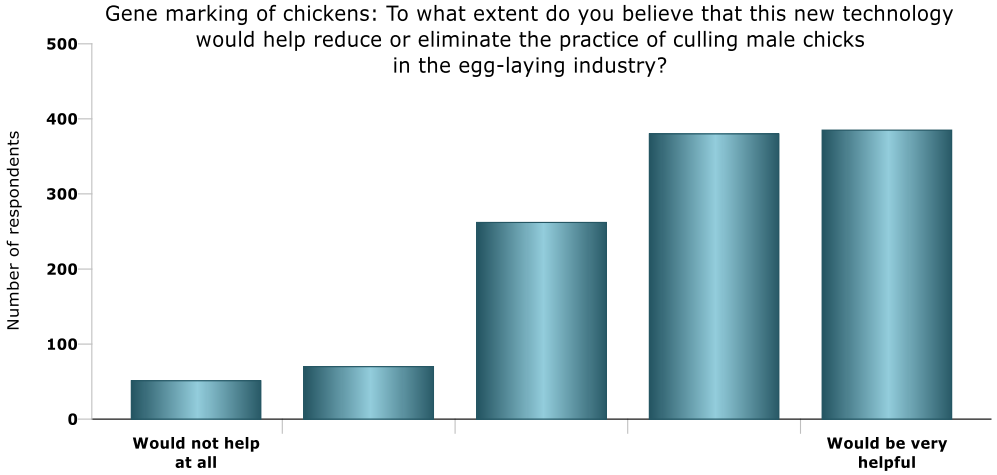
Emotions indicated by Australians*

Attitudinal pairs*

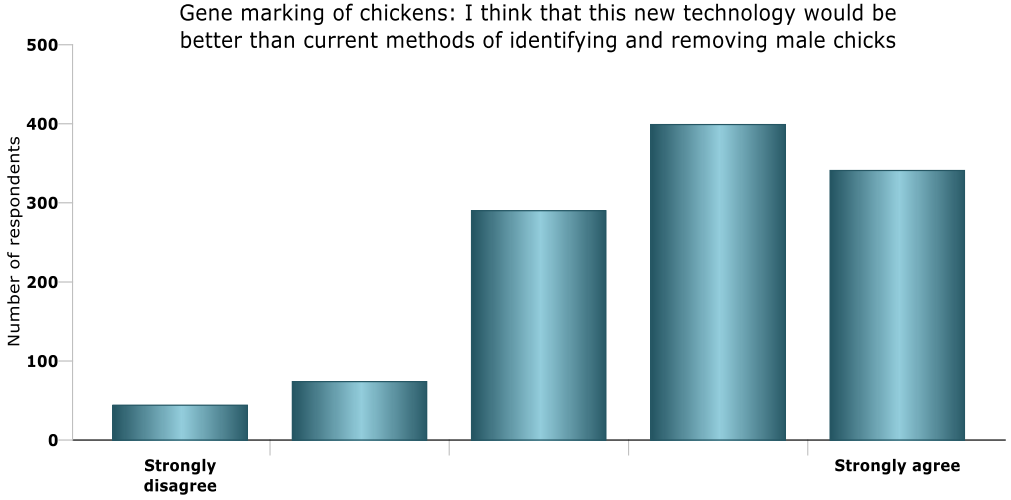


*Data range: 1 – 5

Expected benefits



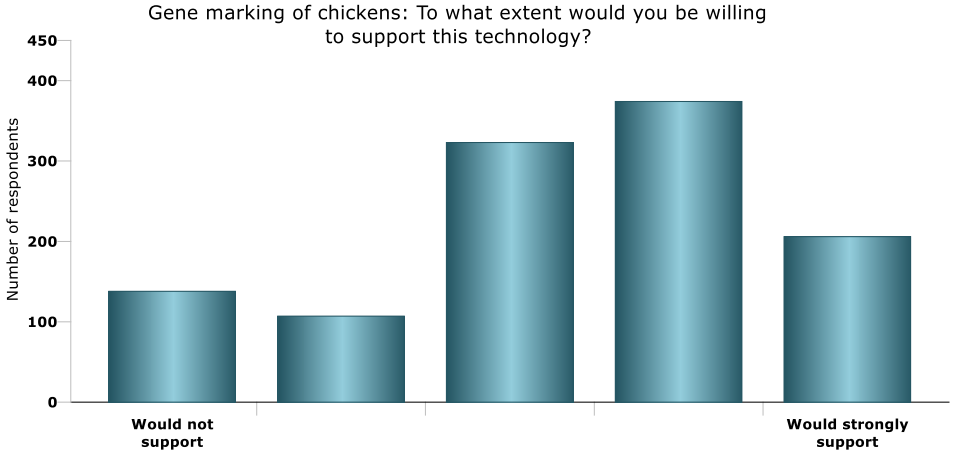
Strong belief that new tech would help reduce/eliminate culling male chicks

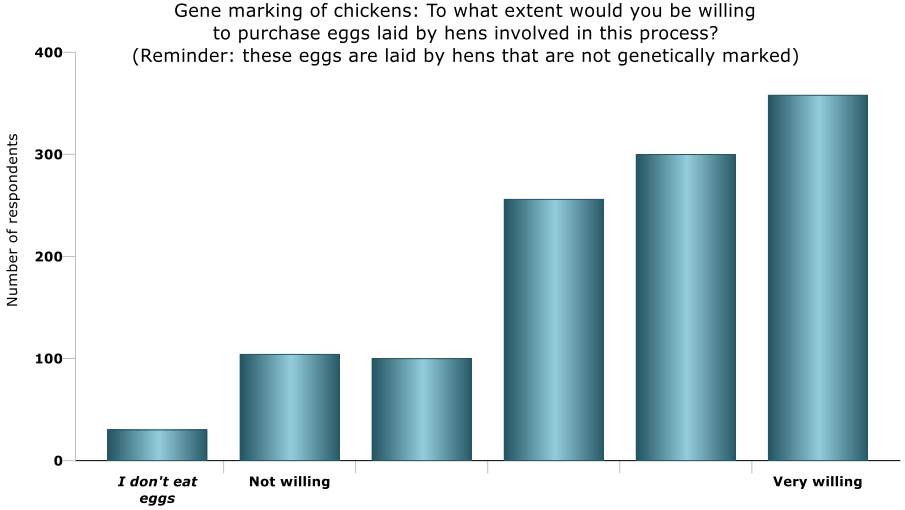


Relative advantage of synbio solution over current practices

Support

Moderate to high support for development of this technology





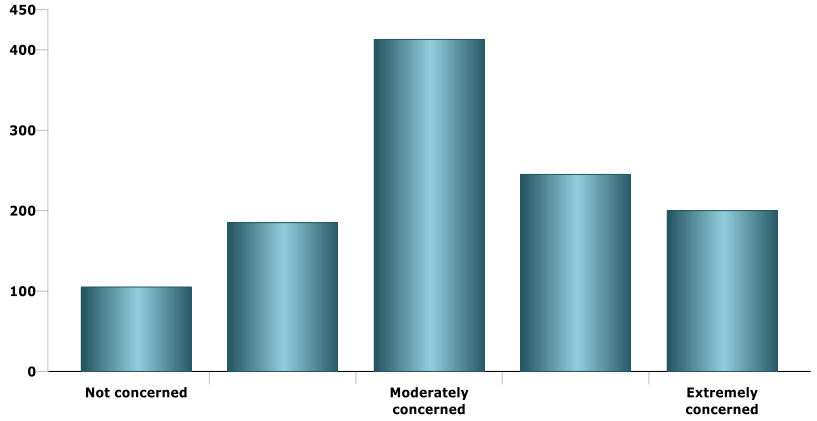
Strong willingness to purchase eggs laid by hens involved in this process

Perceived risks/concerns

Most are at least moderately concerned about the long-term effects on environment, humans and animals

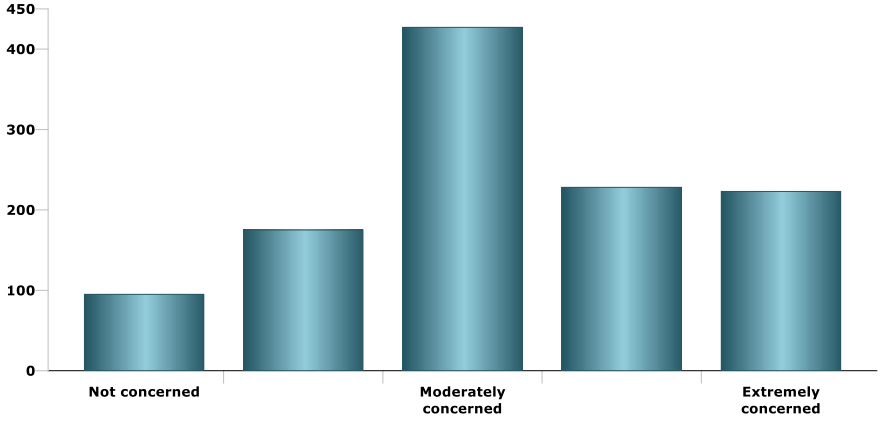
Moderate-high concern that consequences can be controlled

Gene marking of chickens: To what extent would you be concerned about the long-term effects on the natural environment?



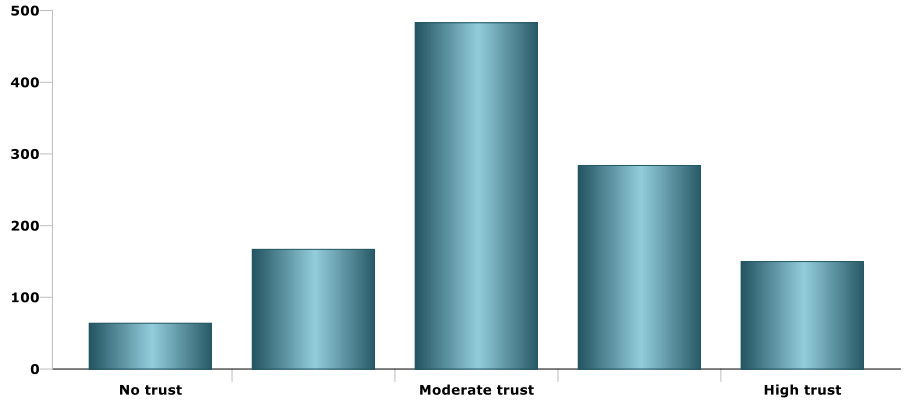
Gene marking of chickens: To what extent would you be concerned about whether the consequences of the technology can be effectively controlled or managed?

Gene marking of chickens: To what extent would you be concerned about the long-term effects on humans and animals?

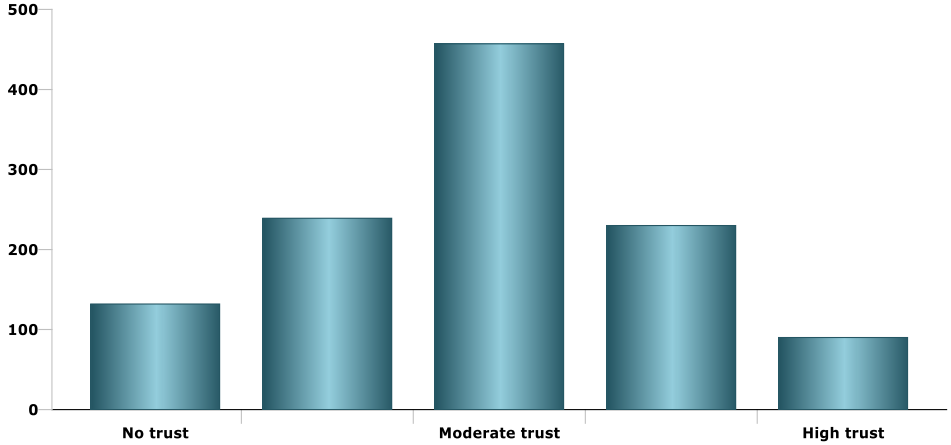


Trust

Gene marking of chickens: How much do you trust that scientists working on this technology would develop it responsibly?



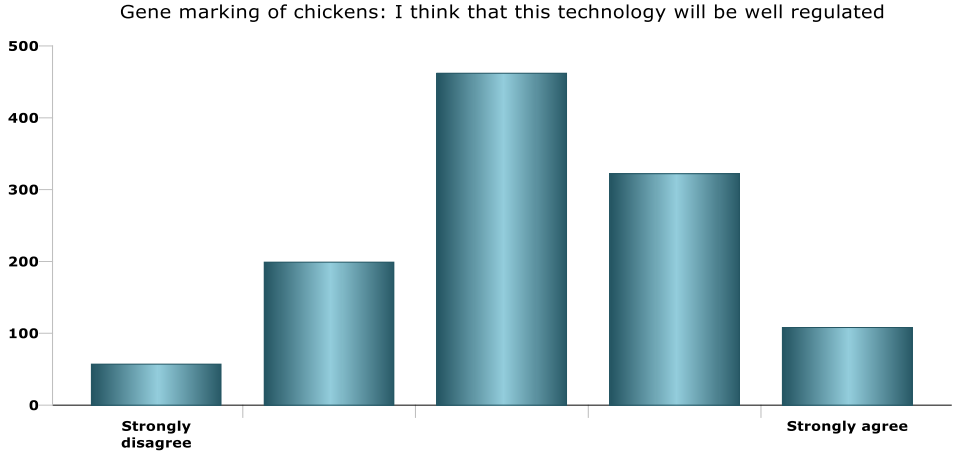
Gene marking of chickens: How much do you trust the government agency that would be responsible for approving/regulating the technology?

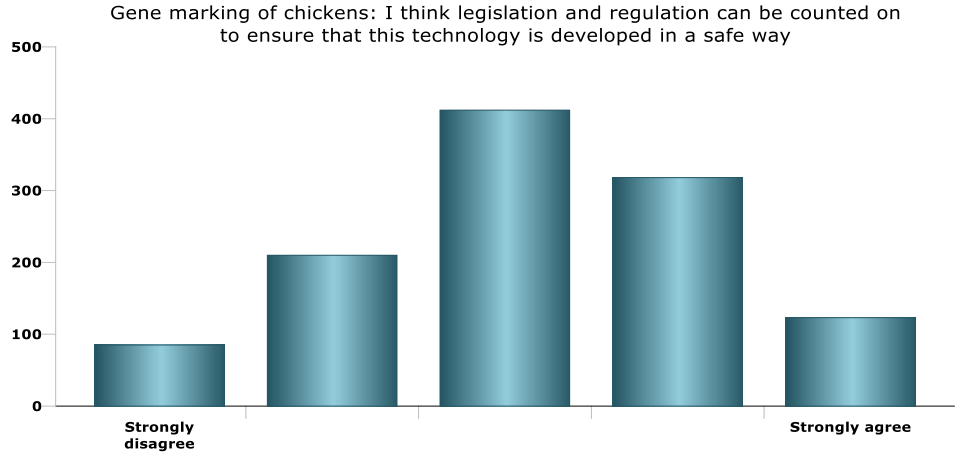


Most are moderately trusting of scientists

Slightly less trust in the governing agency

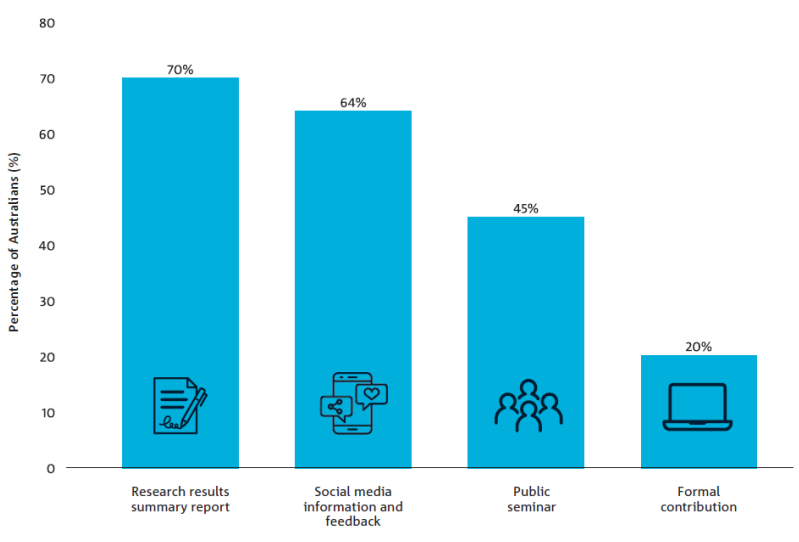
Confidence in governance





- Many middle-ground responses
- Generally, more confident in governance than not – might be a product of national experience on other matters

Public involvement



Which of the following most accurately reflects your feelings about the appropriate level of public involvement when it comes to making decisions about this technology?	N	%
The public should be consulted with, and their opinions considered, when making decisions about this technology	472	41.1%
The public should be kept informed of decisions made about this technology	405	35.3%
The public should be directly involved in making decisions about this technology	144	12.5%
The public does not need to be involved in decisions about this technology	52	4.5%
Don't know	75	6.5%

Public information needs

- Information about risks, the regulation/control aspects, and what is being done to deal with the social and ethical issues all featured strongly

Please select the top three issues you would like to hear more about related to this technology:	Rated as #1	Rated as #2	Rated as #3	TOTAL
What the possible risks are	283	189	155	627
What is being done to regulate and control the technology	177	222	192	591
What is being done to deal with the social and ethical issues involved	108	142	142	392
Who will benefit and who will bear the risks	71	106	138	315
Who is funding the research and why	110	93	111	314
What the scientific processes and techniques are	89	90	101	280
What the claimed benefits are	67	63	66	166

Insights from the qualitative data…

In deciding whether you'd support this technology, what influenced your decision? What is your main reason for supporting it, or not supporting it?

Higher level themes arising…

INTRINSIC CONCERNS

Tampering with nature

Playing God

Interfering with the natural order

Slippery slope references

EXTRINSIC CONCERNS

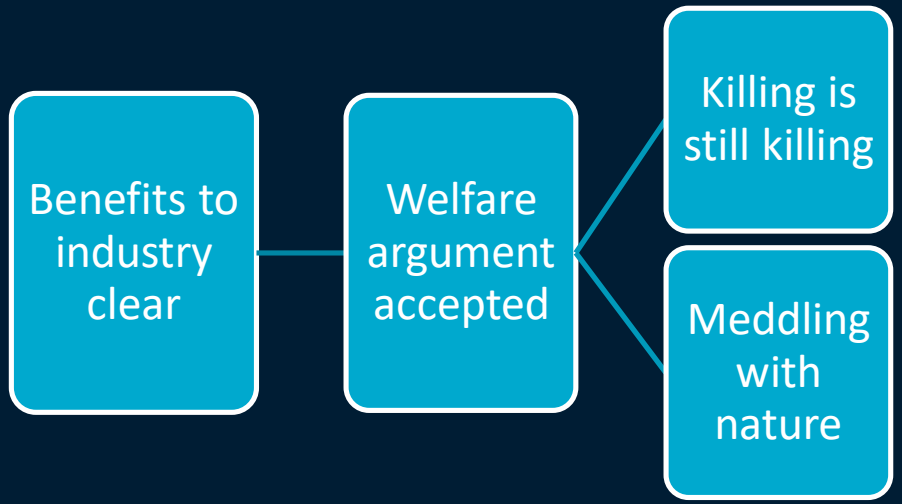
Unforeseen consequences

Uncertainty about future impacts

Initial shock of learning about existence of culling

Theme 1 – Internal tension

“Its really hard. It seems good that they aren't culled, and no doubt cheaper for producers. I just hate meddling with nature.” [C0421]



Theme 2 – ‘Tampering with nature’ sentiment

“Because it is tampering with nature.” [C203]

- ~20% of data set contained intrinsic objection of some type
- In other synthetic biology scenarios we’ve explored, this type of intrinsic objection readily comes with an explanation.
- For chicks scenario, an explanation was uncommon.

How should the science community engage?

- As transparently and respectfully as possible
- Resist carrying across myths - not all moral objections are nonsensical
- Engage with those who want to be engaged – focus on problem-solution, not biotech push.

Summary

- Low awareness of problem, but most view culling as a moderate to very big problem
- Technology is generally viewed as beneficial by most, however, uncertainties regarding long-term consequences and management of risks remain
- Majority support the technology, around 20% less supportive
- Moderate degree of trust in the scientists and governing agency, but still room for improvement
- Many favour a passive information exchange model
  - People want some level of involvement in the future (consulted with, to have some say over tech development and implementation, to be kept informed, to know more about risks)

Thank you

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