



GERONIMO and RUMIGEN Joint Final Event

Breeding the Future
*Genomics, Epigenomics & Societal
Acceptability for Sustainability in Livestock*

Beyond 'experts only'

On the importance of stakeholder and public participation when dealing with the societal and ethical dimensions of innovations in animal breeding

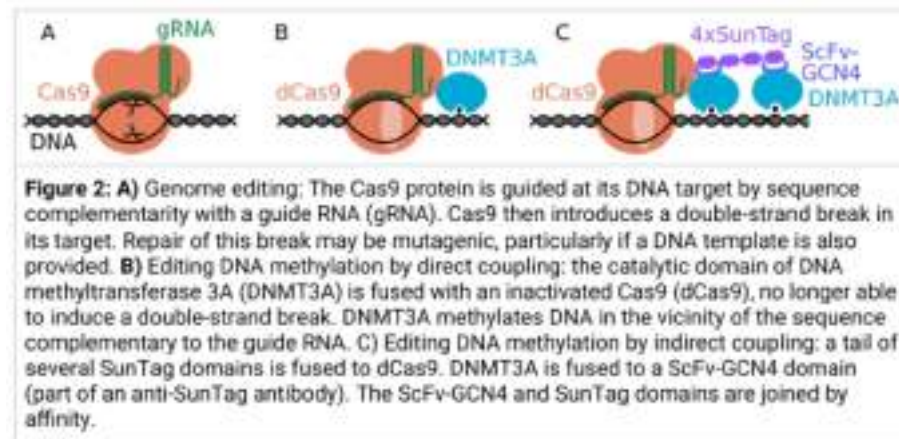
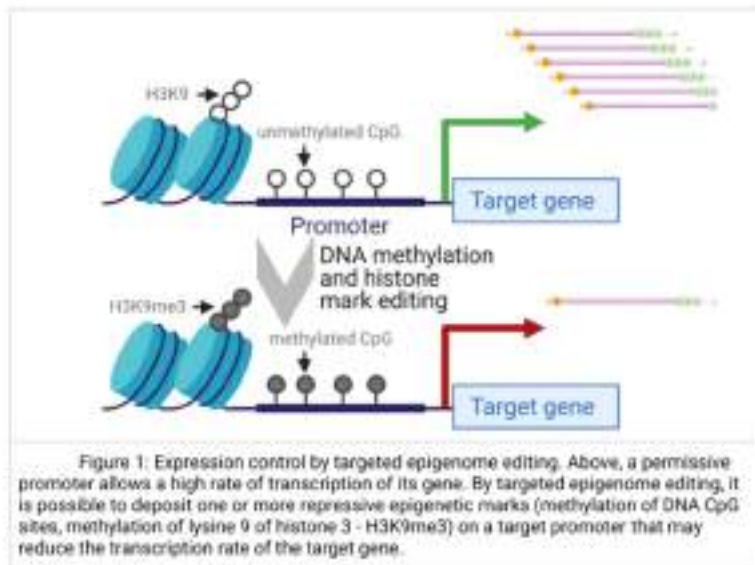
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Expert knowledge

Without expertise in fields such as biology, veterinary and data sciences, innovations in animal breeding are not possible.



Source: Kirstetter et al. (2025), Epigenome editing in animal production: a prospective review. 2025. <hal-05410119v2>

Expert knowledge

Given this need of expertise, discussions about the direction of research, potential applications and future directions often start amongst experts.



Expert knowledge

....however, choices with respect to the direction of (animal breeding) research, potential applications and future directions also have impact beyond science

Four potential answers.....



1. Expert knowledge: not our job....

Start: reflecting on the broader societal impact of research is no task for science....

Route: Disagree/ Ignore the impact of scientific innovation on stakeholders and society

 **ONLY SCIENCE**

2. Expert knowledge: we know best....

Start: Acknowledgment that choices with respect to the direction of research, potential applications and future directions have an impact on stakeholders and society

Route: Expert discussions: broadening the debate only with other experts (policy, economics, law, psychology...)



3. Expert knowledge: don't interfere....

Start: Acknowledgment that choices with respect to the direction of research, potential applications and future directions have an impact on stakeholders and society

Route: Interference by non-academic parties is not to be promoted. It is an internal activity, yet communication can be relevant to explain and inform the public or others who are involved.



4. Expert knowledge: as a building block

Start: Acknowledgment that choices with respect to the direction of research, potential applications and future directions have an impact on stakeholders and society + (a) that to deal with this impact expert knowledge is essential and (b) expert knowledge is not enough....

Route: Including non-academic parties is to be promoted. Not just as audience or potential end users, but (also) as perspectives in their own right.



...but there is no need?!



There is no fierce public debate....and number of stakeholders seems limited

...but there is no need?!



No public debate \neq
no need for public input

Need for public engagement

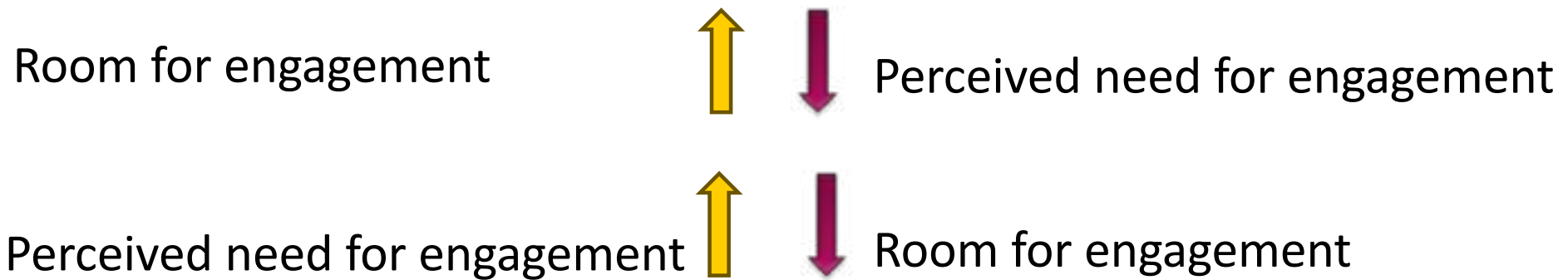
- Public engagement is recognised as an essential element in responsible innovation (Owen et al. 2021).
- Only engaging with technical experts runs the risk of limiting the debate to dominant perspectives (Kayumova et al., 2019).



Need for public engagement

- Many stakeholders are involved in (innovations) in breeding
- Innovation is **no linear process**: stakeholders (can) play a role from the start
 - co-creation
 - awareness of broader set of values and interests
 - prevent that all debate is at the end of pipeline
- Animal breeding is closely related to the future of farming, and is therefore also closely related to societal issues.

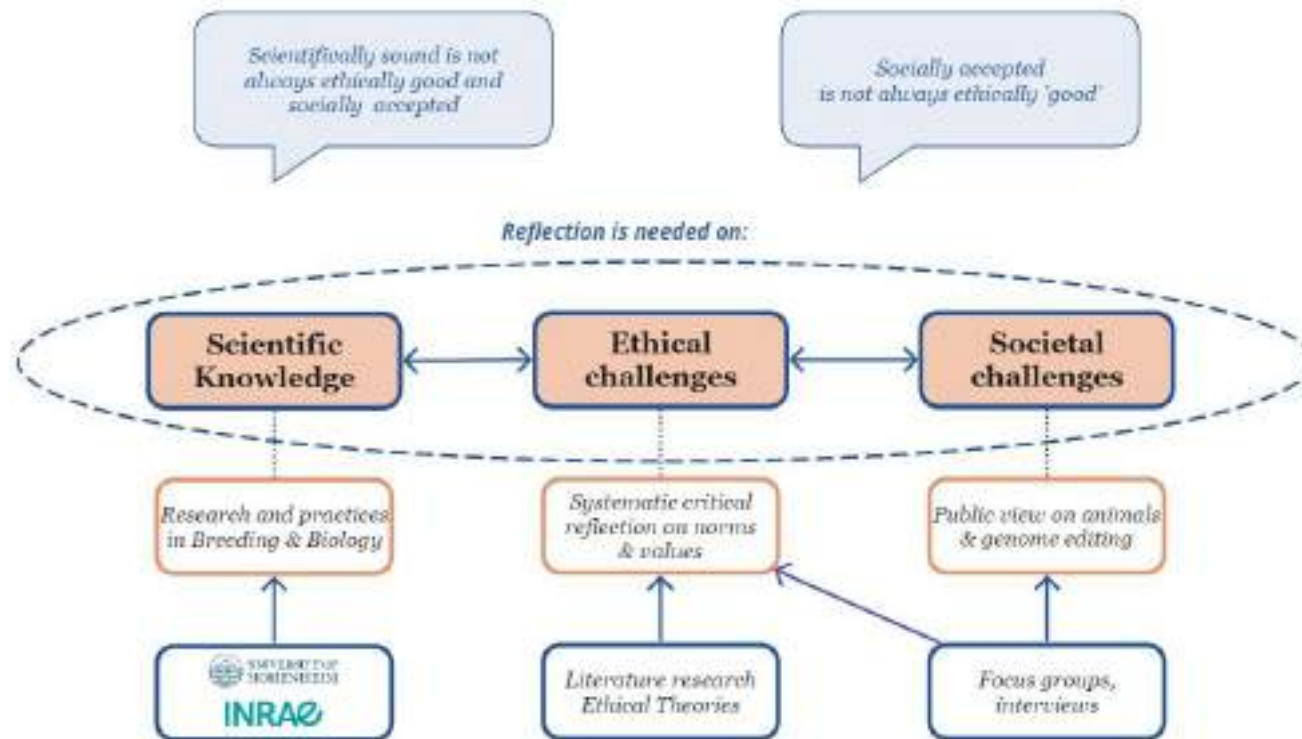
The paradox of engagement



How to improve engagement?

GERONIMO Work Package 5:

Ethical and Societal Implications of Breeding Innovations



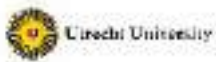
Example

Focus group discussion on the evaluation of breeding innovations (GEroNIMO)

In 2023, we performed 8 focus group discussions (n=70) in four countries (France, Germany, Netherlands, Slovenia). There was a rural and an urban group in each country. The further selection criteria were age, gender, education, and moral eating behaviour.

Three main topics were discussed:

- Human-animal relation (individual, ideal future, reality)
- Future of Farming (animals, technology, scale, scenarios)
- Genetic Technologies in Animal Agriculture (gene editing, breeding goals, scenarios)



Example

General conclusions

- If genome editing is applied, it should serve the interests of animals rather than economic purposes only.
- The importance of trust and responsibility: to actively engage citizens and regard their interests and concerns.
- Discussions on cultivated meat show that breeding engage in the refining, but also in the reduction and replacement of animal products.

Slovenia: Concerns about biodiversity and the loss of traditional farming have to be taken into account.

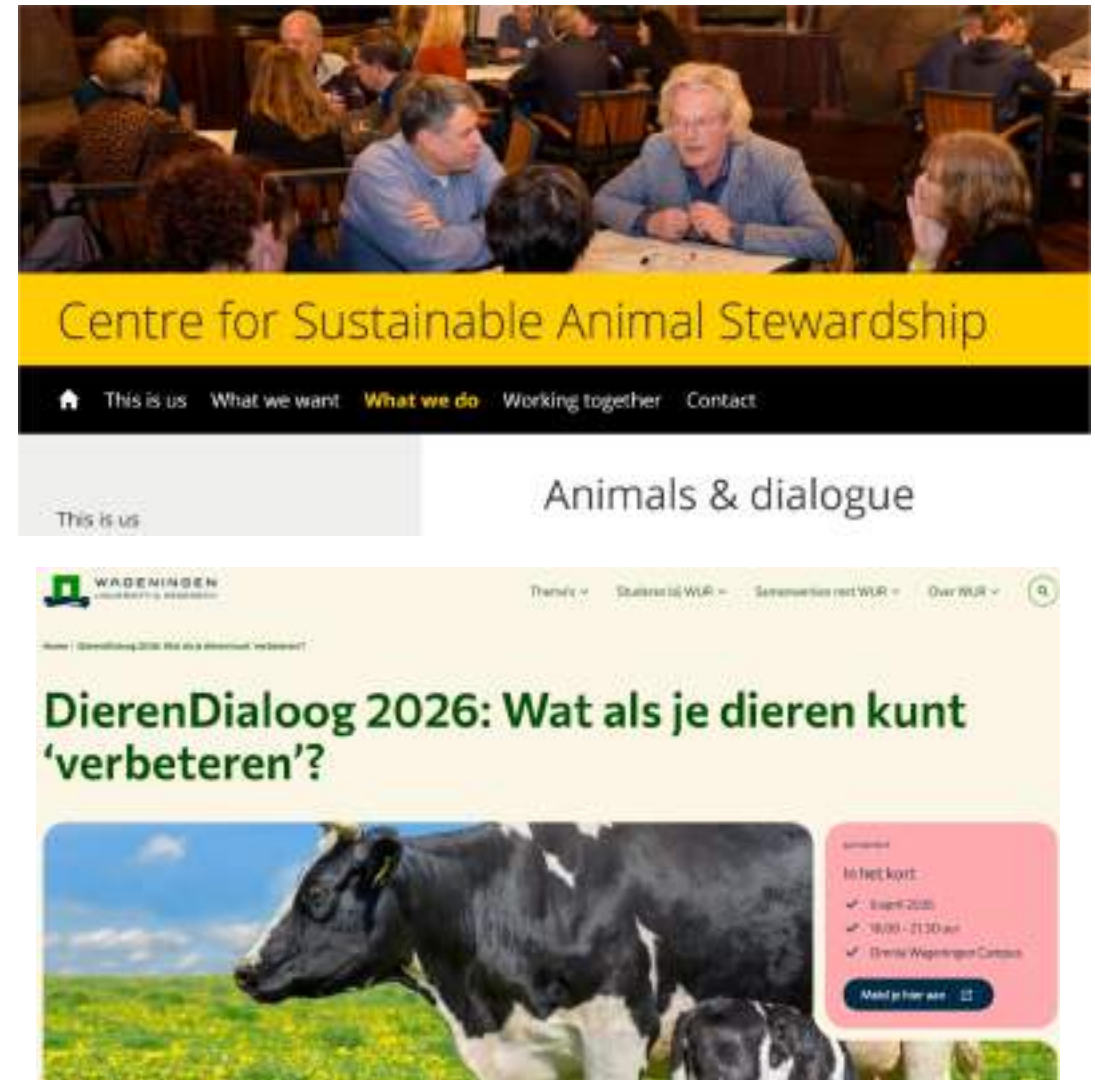
France: Food quality and safety were of particular importance.

Germany/ the Netherlands: more open to new technologies

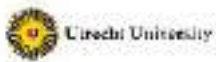


Example

Annual CenSAS Animal Dialogue 2026
with ca 100 participants: open dialogue on
the role of breeding animals for food
production (Utrecht University &
Wageningen University)



The image shows two screenshots of a website. The top screenshot is a photograph of a group of people sitting around a table in a meeting, with a yellow banner overlaid that reads "Centre for Sustainable Animal Stewardship". Below the banner is a navigation menu with items: "This is us", "What we want", "What we do", "Working together", and "Contact". The bottom screenshot is a promotional banner for "DierenDialog 2026: Wat als je dieren kunt 'verbeteren'?" (Animal Dialogue 2026: What if you can 'improve' animals?). It features a black and white cow in a field. A pink box on the right contains the text "In het kort:" followed by three bullet points: "✓ 8 april 2026", "✓ 18:00 - 21:30 uur", and "✓ Online Wageningen Campus". A "Meld je hier aan" button is at the bottom right of the pink box. The Wageningen University logo is in the top left of the banner, and navigation links for "Thema's", "Statistiek WUR", "Samenwerken met WUR", and "Over WUR" are in the top right.



How to improve engagement?

- No “one size fits all” method for public engagement, but...
 - More than providing information to lay people
 - Interaction is essential
- Start in awareness that dealing with societal and ethical dimensions related to breeding is a joint responsibility



Acknowledgments



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DISCLAIMER

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THANK YOU

