



## What is the perception of GM animals among the general public?

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MISTRA Symposium 24 July 2014  
Breeding genetically modified animals for food production



## Agenda

1. GM policy and debate since the early 1980s:
  - a discursive split between risks of GM in industry and agriculture / ethics of GM related to humans
2. Manipulated animals in the context of other genetically modified organisms:
  - GM animals among the most controversial applications
3. Beyond the criticism of GM
  - it's about values; not lacking knowledge
4. Behind the statistics of public perceptions of GM animals:
  - voices of concern regarding risks, usefulness and other moral concerns



## A brief history of GM, risks and ethics - Denmark as an illustrative example

1983 Production & humans: Establishment of two discourses

- Controversy following production of GM HgH and insulin

*The policy arena*

- Proactive policy process:

The Committee on Ethical Problems re IVF and Diagnostics

Task: review the need for regulation of GM within the human area

**Relevant concerns: Ethics; excluding risks**

The Committee on Genetic Manipulation.

Task: review the need for regulation of GM in agriculture, production and research

**Relevant concerns: Risks; excluding ethics**

*Ethics must be considered "in a broader context"*

*Account no. 1043 (1985)*



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## A brief history of GM, risks and ethics - Denmark as an illustrative example

1983 Production & humans: Establishment of two discourses

1986 First GM act in the world: Regulation of risks

- Controversy continues

*The policy arena*

- Act on Genetic Technologies and the Environment

- Risks to human health and the environment
- Not a word about ethics...but GM animals were banned



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## A brief history of GM, risks and ethics - Denmark as an illustrative example

- 1983 Production & humans: Establishment of two discourses
- 1986 First GM act in the world: Regulation of risks
- 1991 Implementing EU-directives: Confirming the risk focus
- The GM controversy disappears

### *The policy arena*

- 90-219 EU directive on contained use of GMOs
- 90-220 EU directive on deliberate release of GMOs
  - Risks to human health and the environment
  - Still not a word about ethics...

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## A brief history of GM, risks and ethics - Denmark as an illustrative example

- 1983 Production & humans: Establishment of two discourses
- 1986 First GM act in the world: Regulation of risks
- 1991 Implementing EU-directives: Confirming the risk focus
- 1996 GM soy shipped from the US to Europe
- 1997 Dolly is born
- The GM-controversy is re-opened
- GM animals on the agenda

### *The policy arena*

- Studies of public perceptions of GM foods and animals

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## Public perceptions of genetic technologies



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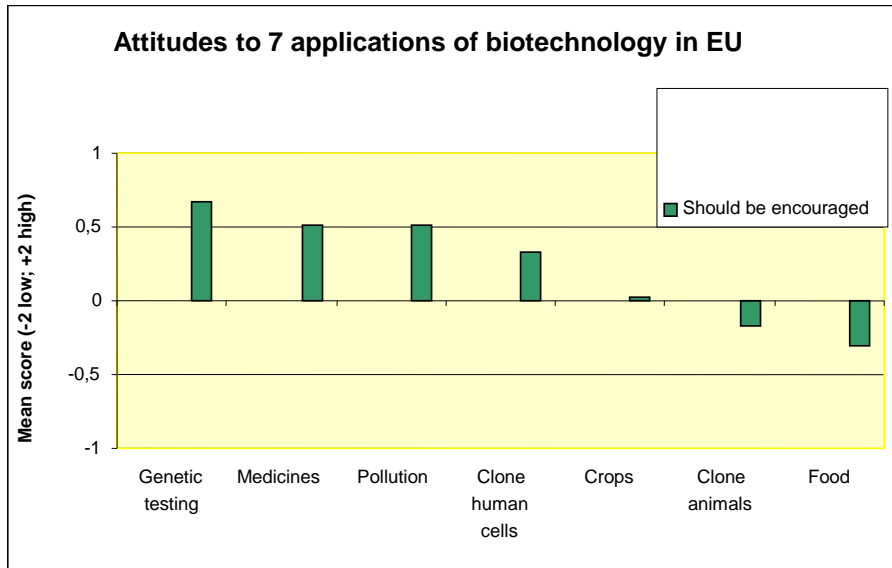
### Eurobarometer surveys: Public perceptions of applications of biotechnology

*Respondents were asked about the following applications:*

- Using genetic testing to detect inheritable diseases such as cystic fibrosis
- Introducing human genes into bacteria to produce medicines or vaccines, for example to produce insulin for diabetics
- Taking genes from plant species and transferring them into crop plants to make them more resistant to insect pests
- Using modern biotechnology in the production of foods, for example to make them higher in protein, keep longer or change in taste
- Developing genetically modified bacteria to clean up slicks of oil or dangerous chemicals
- Cloning human cells or tissues to replace a patient's diseased cells that are not functioning properly
- Cloning animals such as sheep to get milk which can be used to make medicines and vaccines

Eurobarometer, EB 52.1, 1999  
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## Knowledge about and acceptance of GM - a positive correlation?

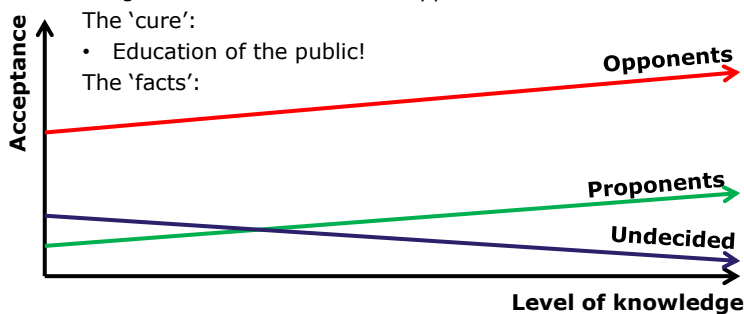
The knowledge-deficit explanation:

- Public resistance is a result of scientific illiteracy!
- Ignores the fact that some applications are liked others disliked

The 'cure':

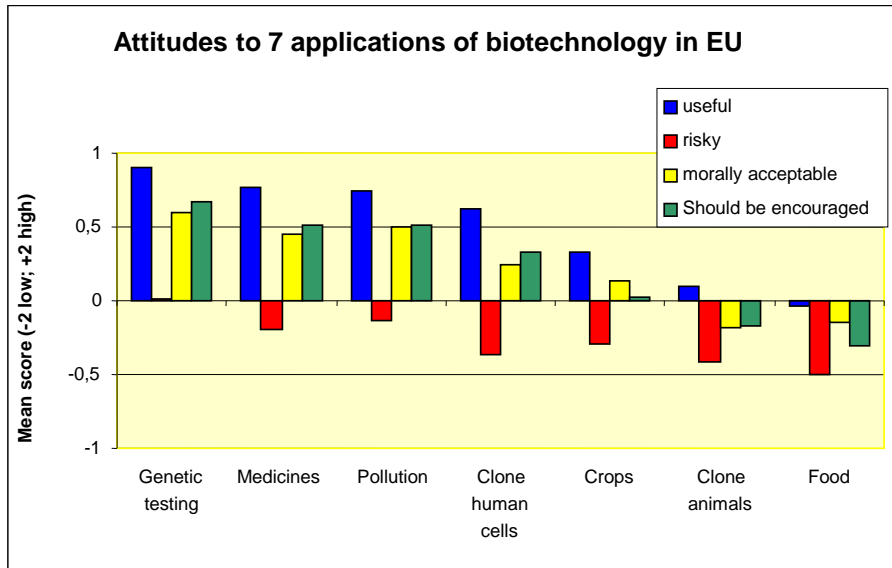
- Education of the public!

The 'facts':



- No simple correlation between level of scientific knowledge and acceptance at population level





Eurobarometer, EB 52.1, 1999

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A main conclusion of the Eurobarometer surveys:

**Moral** concerns is a more important single factor for predicting the overall attitude towards gene technology than **risks** and perceived **usefulness**. Moral concerns have a veto-like status in assessments of gene technology.



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## A qualitative study of the public perception of gene technology in Denmark

7 focus group interviews

5-7 participants in each group

Criteria:

- Sex, age, occupation, income etc
- Expected attitude

Urban and rural locations

2-2½ hrs

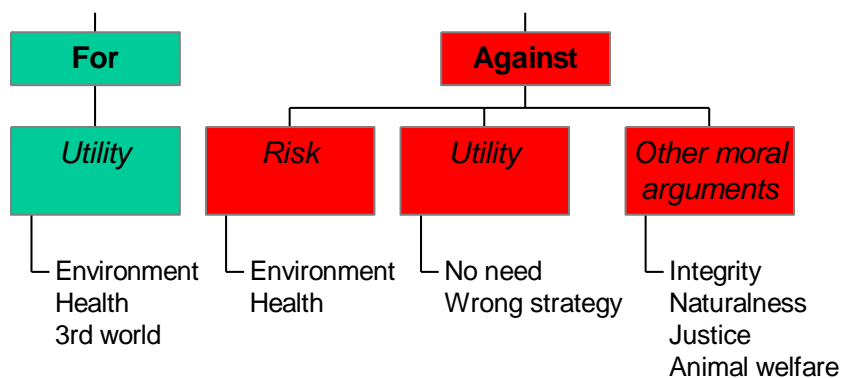
Three themes: food and non food applications; involved actors

*Lassen & Jamison (2006): Genetic technologies meet the public.*  
*Lassen, Gjerris & Sandøe (2006): After Dolly*



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## Arguments for and against gene technology



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## Risk arguments

Argumentations within the 'old' risk discourse

- Gene technology is just another new technology - and the risks associated with it do not differ from the known risks

Argumentations within a 'new' risk discourse

- Gene technology is something qualitatively new - and the risks are also of a new kind. Concerns about the speed.
- GM animals are not as risky as GM plants and microorganisms
- But GM animals are unnatural and therefore risky

*"I think it is unnatural, I do know many other things are too, but the lesson from history tell us that somewhere you have to draw a line and stop fooling around with things. (...) Looking at the scientists, I think they start acting as if they were God, meddling in how all this is made, I don't trust that. Considering how genius it all is constructed - the earth with plants, humans, animals and the like - they will never reach that level!"*

## Other moral arguments

- There is a natural (or God-given) order we shouldn't interfere with.
- We have no right to harm other creatures

*"... I feel like you. It's hard enough for the cows already, I don't think we should exploit them further. I have an image of these cows standing on the fields, hardly able to walk because they drag around with large udders. That can't be funny."*

- We should respect the integrity of other creatures

*"A: ... a cow needs to eat, but if it has to stand there all day long being milked, that would be tough. That isn't a cow-life!  
B: It isn't a worthy cow-life!"*



## Exploring usefulness

### Economic usefulness

- corporate or private economic gain

### Self-interested usefulness

- non-economic benefits to the individual

*"E: I should happily trample 2½ million mice to death, if it would help me survive (...)*

*D: Exactly! It's very easy sitting here declaring that you are against all of it. But when they show up and say: 'Tage Andersen, your close relative is going to die from AIDS! But if we give him/her this gene ...' ... By all means, do so (...)."*

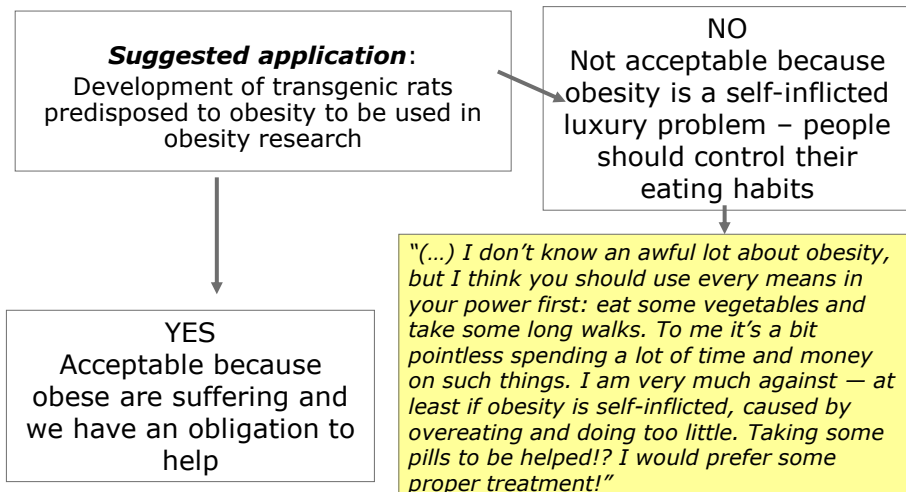
### Societal usefulness

- avoidance of risks; alleviation of hunger and poverty; elimination of disease

*"Yes and no. I feel sorry for the [research] animals, that they have to pay. But if we don't have other possibilities then we have to try it. Apparently there are no other possibilities — then you have to do something to produce these products to help cancer patients and whatever. Then it's OK, but still I believe it's wrong."*



## The usefulness of GM lab GM animals



## Changing the context

What if ....

...the rats are to be used in diabetes-2 research  
– knowing that there is a relation between  
obesity and the development of diabetes-2?

That makes a difference

*"I don't think it makes a difference, obesity is still the cause. People should pull themselves together! I can't understand why people allow themselves to grow bigger and bigger and bigger — it's a luxury problem, that's what it is!"*

That doesn't change anything

*"...even if you are fat and get old-age diabetes, you need some medicines. And there are also elderly people who are not fat, but who get diabetes — they should not suffer because some are overweight. Rather sacrifice some rats — that's my opinion."*

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## Perceptions of animal cloning for food (EU) EB73.1, 2010)

Let's speak now about cloning farm animals. Cloning may be used to improve some characteristics of farmed animals in food production. Due to the high cost of cloning, this technique would mainly be used to produce cloned animals which will reproduce with non-cloned animals. Their offspring would then be used to produce meat and milk of higher quality.

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## Conclusion

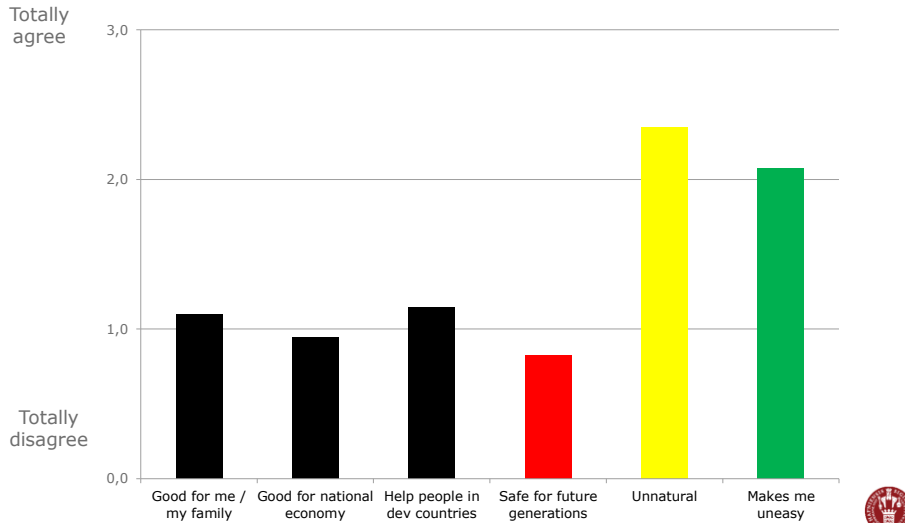
- Public perceptions depend on the context
  - GM animals perceived as more problematic
- Overall knowledge doesn't increase acceptance
  - Public concerns over GM animals and other GMs reflect different values – not lacking However knowledge qualify assessments
- The kind of usefulness and moral concerns are important

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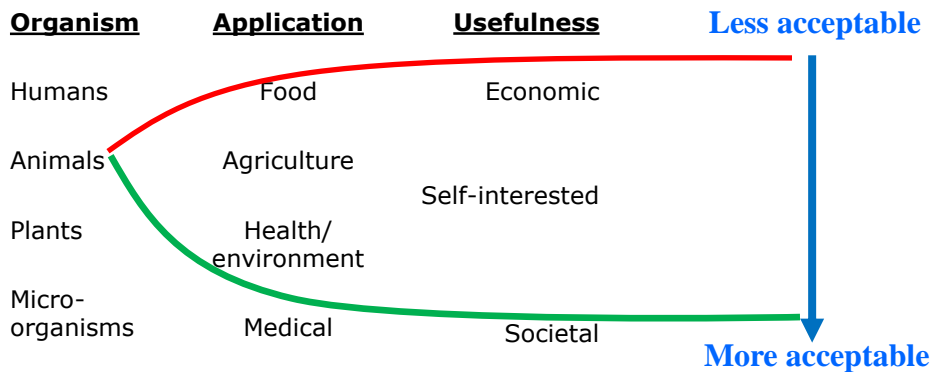
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### Scales of acceptance



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