

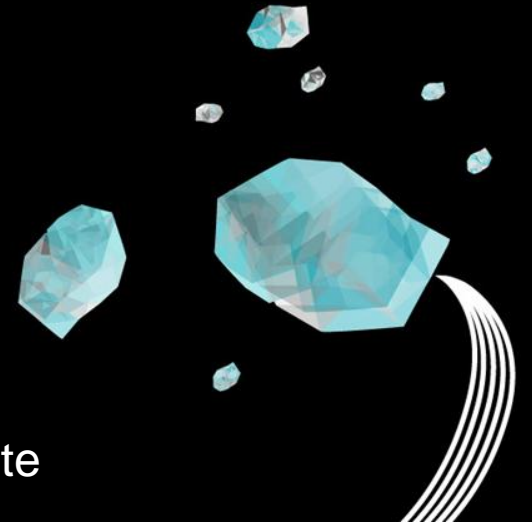
UNIVERSITY OF TWENTE.

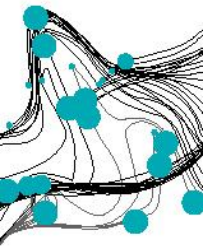
A MATTER OF TRUST?

RISK COMMUNICATION AND LAY UNDERSTANDING OF SCIENCE

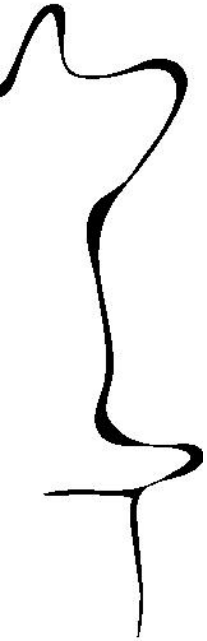


Agnieszka D. Hunka,
Roskilde University, University of Twente





BACKGROUND INFO

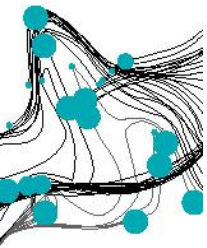


- 1997-2002 Psychology
 - ✓ Social psychology
 - ✓ Visual cues in radio commercials

- 2000-2004 Landscape Architecture
 - ✓ Urban restorations
 - ✓ Garden City restoration project (my home town)

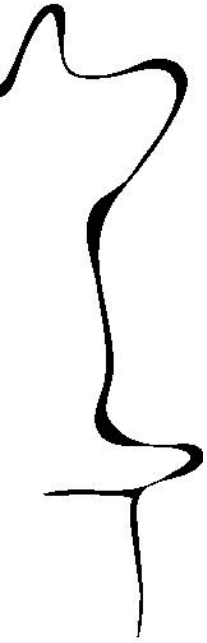
- 2004-2009 PhD in Environmental Science
 - ✓ Flood risk perception and communication
 - ✓ Participatory planning

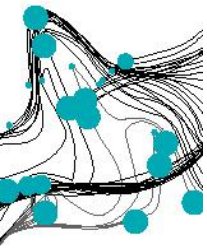




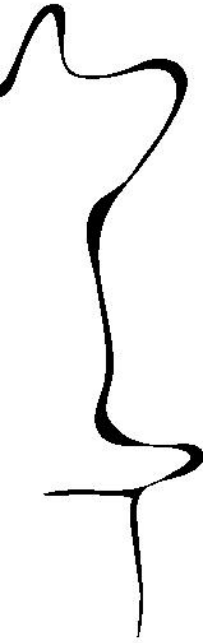
WHY COMMUNICATE RISKS AT ALL?

- GMO, pesticide and food scares
- Risk communicated by media
- Risk mitigation and management decisions have to be communicated



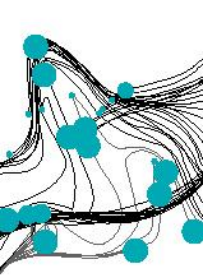


GENETICALLY MODIFIED ORGANISMS

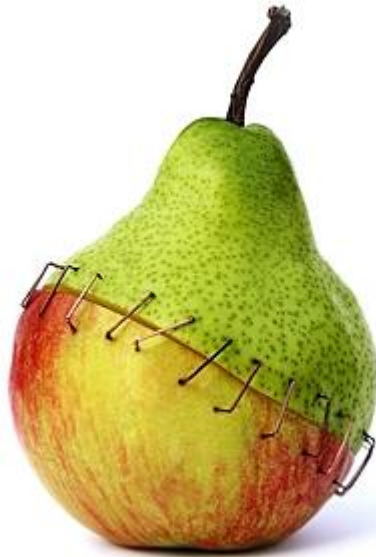
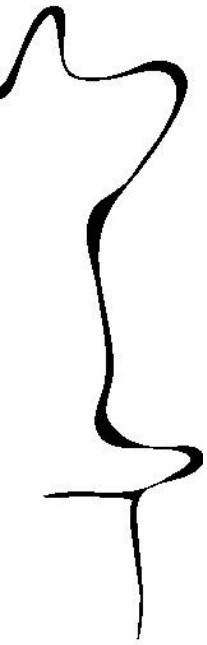


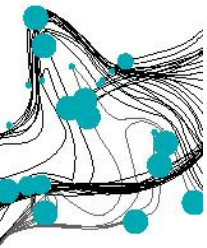
GM organism: a plant (or an animal) whose genetic code (DNA) was artificially modified by introduction of specific DNA segments.



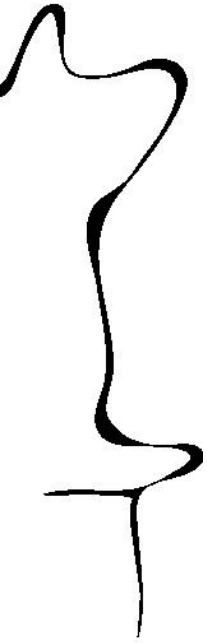


GENETICALLY MODIFIED ORGANISMS IN EUROPE



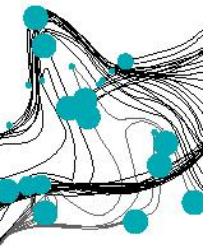


GENETICALLY MODIFIED ORGANISMS IN EUROPE

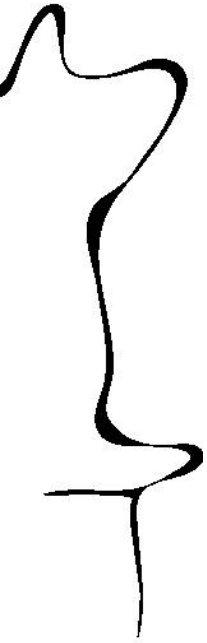


- 35% of Europeans believe that “ordinary tomatoes do not contain genes while genetically modified tomatoes do” (Eurobarometer study)
- Amflora potato (made by BASF Plant Science) first approved in 2010, has been ruled out by the General Court of Europe in Dec. 2013



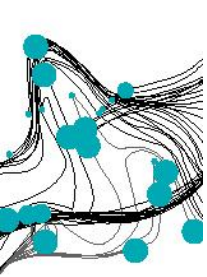


RISK PERCEPTION

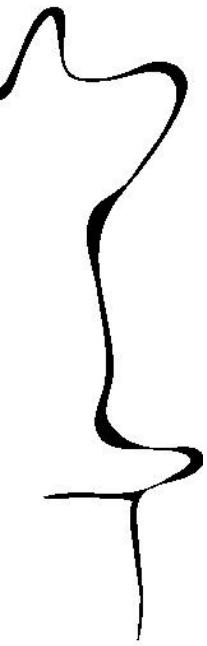


- Risk perception – a subjective judgement over probability/severity of a threat
- Perceived risk can differ significantly from objective, measurable risk
 - People fear things that are not objectively dangerous
 - People underestimate chronic risk
 - Risk is estimated with data “at hand” (availability)



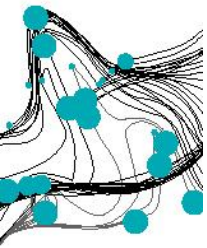


WHEN PERCEIVED RISK IS HIGH



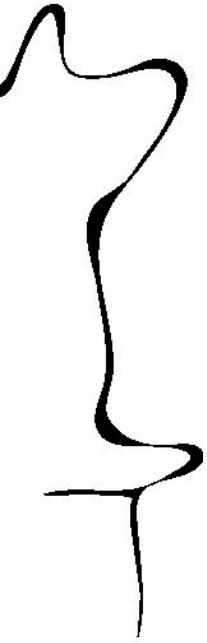
- Voluntary?
- Novel?
- Known versus unknown (to science)
- Beneficial?
- Immediate effect or delayed in time?
- Direct personal costs?
- In line with our beliefs?
- From a trusted expert?
- Under control?
- Chronic?
- Natural?



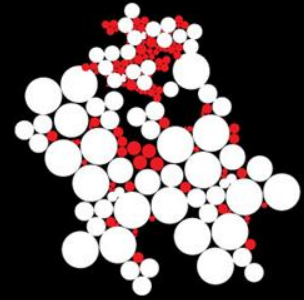


WHY GM FOOD IS PERCEIVED AS RISKY?

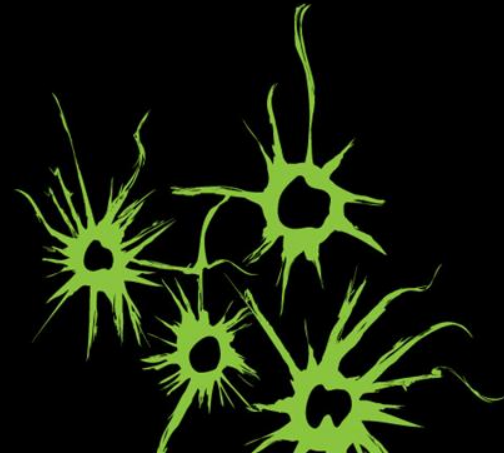
- Novel
- No scientific consensus
- Lack of scientific literacy
- Unnatural (phylogenetic distance between the GM organism & its genes)
- Perceived benefits of gene technology
- Not voluntary (GM labelling)

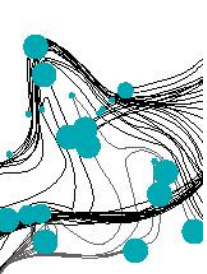


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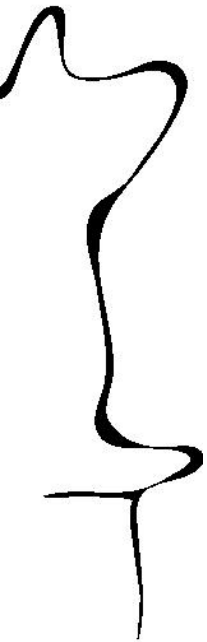


CASE STUDY: RISK COMMUNICATION IN POPULAR MEDIA



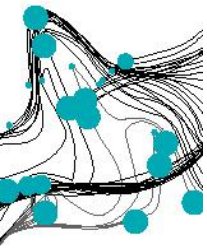


CASE STUDY

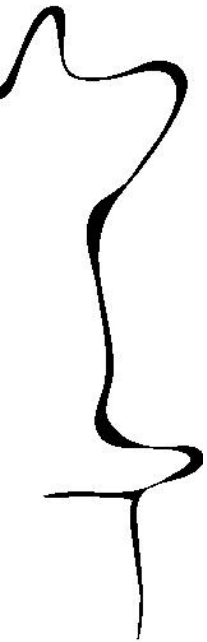


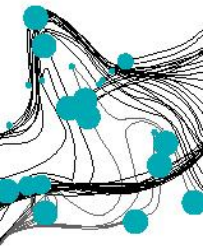
- Séralini et al. (2012) study: **“Long-term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize”**
- Sprague-Dawley rats fed:
 - Monsanto Roundup-Ready® maize
 - Roundup-Ready® maize + Roundup
 - Roundup-spiked water and food
 - Non-GM equivalents (control group)



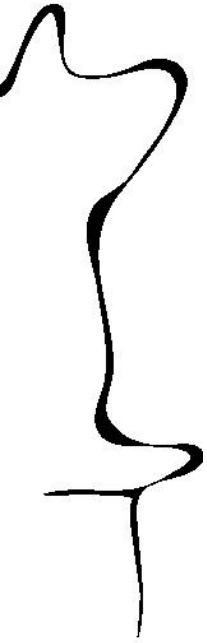


SERALINI ET AL. (2012) RESULTS





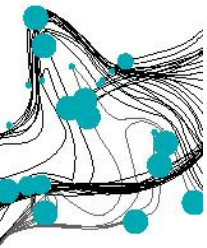
SERALINI ET AL (2012) RESULTS



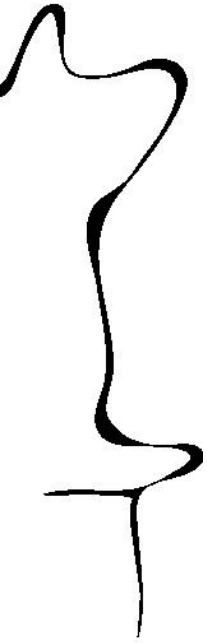
- Study conclusions:
- Roundup-tolerant maize and Roundup provoked chronic hormone and sex-dependent pathologies.
- Female mortality was 2–3 times increased.
- Males had liver congestions, necrosis, severe kidney nephropathies and large tumors.
- This may be due to an endocrine disruption linked to Roundup and a new metabolism due to the transgene

Gilles-Eric Séralini, Emilie Clair, Robin Mesnage, Steeve Gress, Nicolas Defarge, Manuela Malatesta, Didier Hennequin, Joël Spiroux de Vendômois, Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize, Food and Chemical Toxicology, Volume 50, Issue 11, November 2012, Pages 4221-4231





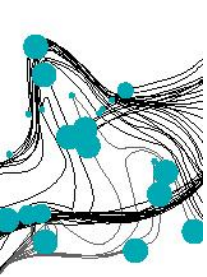
PEER (SCIENTIFIC) RESPONSE



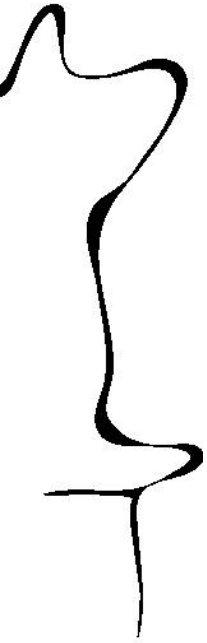
SCIENTISTS SMELL A RAT

- Quick reaction of the scientific community
 - Two EFSA's scientific opinions
 - 18 letters to the editor of FaCT
 - Scientific blogs, articles in Nature and Science
 - Article retracted in January 2014



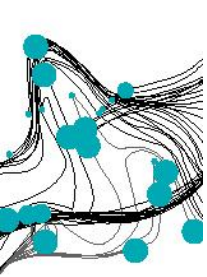


PEER (SCIENTIFIC) RESPONSE

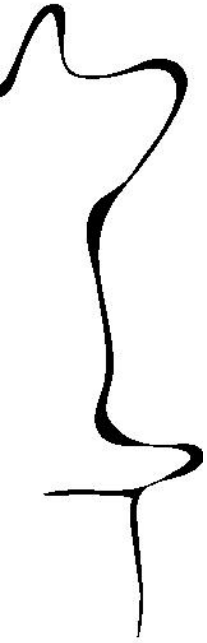


- Unclear study objective
- Unclear methodology
- Flawed study design
- Problems with statistical methods used
- Unclear reporting of results





(ENGLISH-SPEAKING) MEDIA COVERAGE

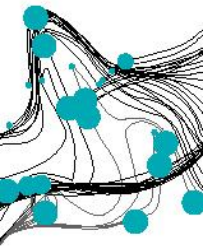


- Four British news pages: The Daily Mail, The Guardian, The Daily Telegraph, and BBC News
- Four predefined criteria:
 - wide accessibility without subscription
 - extensive coverage of the Seralini Affair
 - appearance in the top (most popular) search results
 - readily available readership profiles
- Different target audiences – an overview of the British public



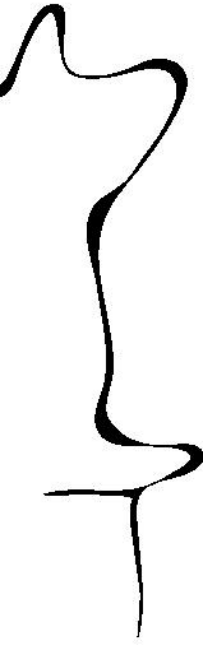
**“The problem with
communication is the illusion
that it has occurred.”**

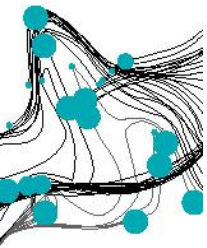
George Bernard Shaw



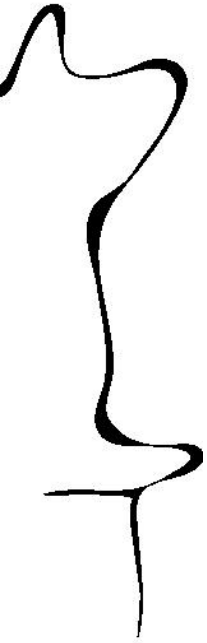
IS GM SCARE CREATED BY MEDIA?

- [The Daily Mail article](#): the most dramatised journalistic style
- [BBC News](#): educating the public
- [The Guardian](#): promoting a viewpoint
- [The Telegraph](#): is there a hidden agenda?



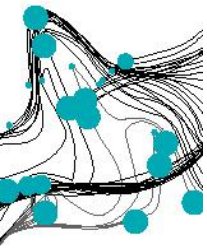


CONCLUSIONS

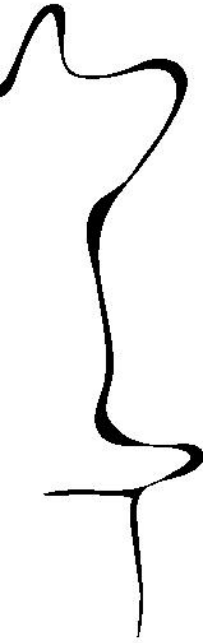


- How much impact do news articles have on our opinions?
- How stable is this impact over time?
- Is it possible to have truly independent scientists and regulators?
- Are media scaremongering?



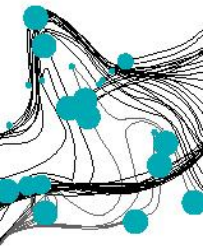


WAY FORWARD?

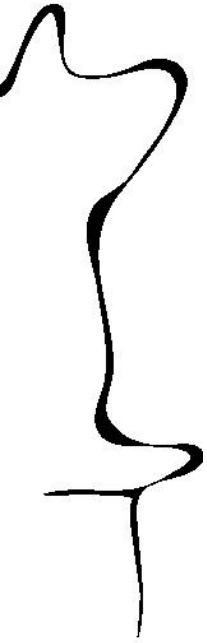


- Impact of negative information
- Science journalism and understanding of scientific process
- Genetic literacy





THANK YOU VERY MUCH!



OR

<https://www.survey-xact.dk/LinkCollector?key=R6NA4EEXCJ15>

OR

UNIVERSITY OF TWENTE. <http://cream-itn.eu/projects/wp-4/risk>

