



(Mis)informed about What? What Citizens Most Need to Know about Science and Scientific Information

Dominique Brossard, Professor and Chair
Department of Life Sciences Communication
University of Wisconsin-Madison



brossardd

*Misinformation about Science in the Public Sphere
NASEM Colloquia, Irvine, CA, November April 3-4 2019*

- Everyone does not need the same scientific information
- ...and what constitutes basic scientific literacy is still up for debate



Science is a way of knowing about the world. At once a process, a product, and an institution, science enables people to both engage in the construction of new knowledge as well as use information to achieve desired ends. Access to science—whether using knowledge or creating it—necessitates some level of familiarity with the enterprise and practice of science: we refer to this as *science literacy*.





Context matters

Citizens need to be able to meaningfully participate in democratic processes

Do They Know What They Read?

**Building a Scientific Literacy
Measurement Instrument
Based on Science Media Coverage**

Dominique Brossard
University of Wisconsin–Madison
James Shanahan
Cornell University

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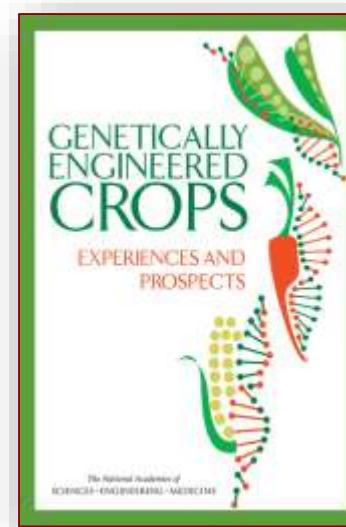
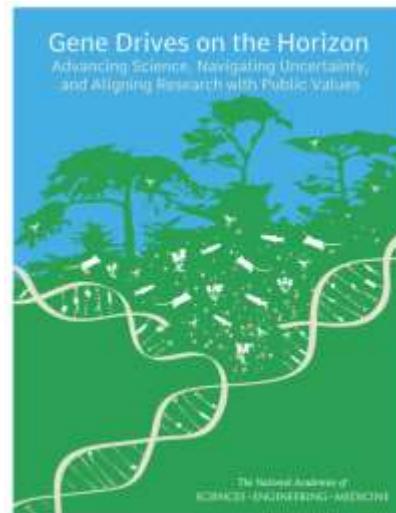


The NASEM report concluded

- ❑ An individual's general attitude toward science does not always predict that same individual's attitude toward a specific science topic, such as genetic engineering or vaccines.
- ❑ Some specific science issues evoke reactions based on worldviews (e.g., ideology, religion, deference to scientific authority,..) rather than on knowledge of the science alone.



... science issues are multifaceted and
required answers from
multiple scientific disciplines





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STAY IN TOUCH

... and may not understand the process of science

4. Study Links Genetically Modified Corn to Rat Tumors

In November 2012, The Journal of *Food and Chemical Toxicology* published a paper titled '*Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize*' by Gilles-Eric Seralini and his team of researchers at France's Caen University. [\(5\)](#)

It was a very significant study, which obviously looks bad for the big bio tech companies like Monsanto, being the first and only long term study under controlled conditions examining the possible effects of a diet of GMO maize treated with Monsanto roundup herbicide.

This study has since been retracted, which is odd, because the journal it was published in is a very well known, reputable peer reviewed scientific journal. In order for a study to be published here, it has to go through a rigorous review process.

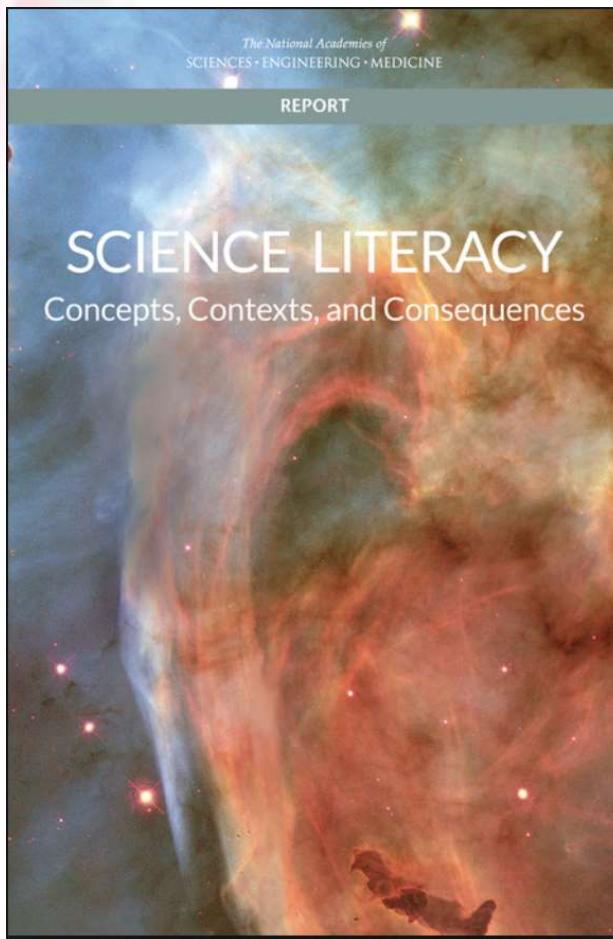
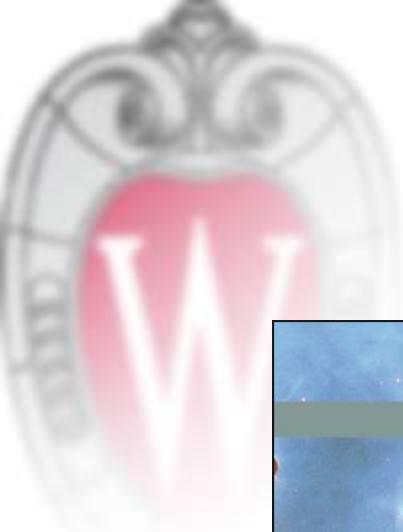
It's also important to note that hundreds of scientists from around the world have condemned the retraction of the study. This study was done by experts, and a correlation between GMOs and the tumors can't be denied, something happened.

The multiple criticisms of the study have also been answered by the team of researchers that conducted the study. You can read them and find out more about the study [here](#).



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- Have we been asking the right questions?
- ... And providing the right answers?





What citizens (including scientists) need to know

Acknowledge
Accommodate
Refute (what needs to be refuted)



Thank you

dbrossard@wisc.edu

 @brossardd

scimep.wisc.edu