Cases for Teaching Responsible Communication of Science

Genetically-modified headlines: Discussion version

Even though the majority of all commodity crops planted in the U.S. are genetically modified (GM), public sentiment remains deeply divided about the acceptance of GM crops. The pro-GM side argues that GM crops produce more food to feed a growing population, require less land devoted to agriculture, reduce the reliance on chemical pesticides and pose no risk for human consumption. The anti-GM side argues that GM crops may have unknown, and potentially negative, impacts on animals and ecosystems and that they benefit the agricultural-industrial complex more than they benefit farmers, consumers or the environment.

Many scientists are frustrated that the debate seems to have resorted to using science as ammunition, cherry-picking results that support a particular viewpoint rather than considering the results within the larger scientific context. More troubling is when these unrepresentative studies end up influencing policy decisions in directions not supported by the scientific consensus.

One historical example involves a preliminary study published in 1999 finding that pollen from GM corn may harm Monarch butterflies. Subsequent studies eventually found the harm to be negligible, but the newsworthy findings were picked up by the media, worked into propaganda by anti-GM advocacy groups, and led to widespread fears regarding GM corn. Because the future of GM crops, as well as most scientific research, depends on either governmental funding or public support, this influence of the media is not negligible.

In this fictionalized case study, you are part of a group of ecologists that conducted research funded by the National Science Foundation and found evidence that GM corn harms caddisflies in streams. Your results were just published in the peer-reviewed and prestigious academic journal Proceedings of the National Academy of Sciences under the title Toxins in transgenic crop byproducts may affect headwater stream ecosystems. This journal is primarily read by academic researchers and occasionally industry representatives related to the topic – very rarely will the general public have reason to read it.

Immediately after going live in print and online formats, your article is attacked by critics, mostly by crop scientists within academia, claiming it was inappropriate to include passages that could easily be decontextualized by advocacy groups, sensationalized in the media or misinterpreted by the public. In particular, the critics claim the last sentence of your abstract, which reads, “widespread planting of [GM] crops has unexpected ecosystem-scale consequences,” could too easily be manipulated by advocates opposed to GM crops.

While you and your other co-authors consider that last sentence accurate for the ecological context in which the intended audience of ecologists would interpret it, the critics argue that accuracy is not enough when communicating science within controversial contexts. They claim that scientists must consider how others may use the information for political gain and attempt to counter such manipulation by their own communication choices.

It is now three days since your article has been available to read and the critics have been attacking its appropriateness. You receive an email from your university news office to see if you would be interested in working with them to issue a press release to the media publicizing your

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recent study. A draft press release is attached with potential headlines and lead sentences for you to consider.

Press releases are common and strategic communication tools organizations such as universities use to increase their prominence as well disseminate information. They are written to attract the attention of the mainstream media, which will hopefully publish the press release, or some version of it, to their audiences. Usually, public-information officers within the news agency of a university work with the researchers to accurately convey the essence of the research in a form that will also capture the attention of the general public. Issuing a press release is common after publishing in a prestigious journal.

Researchers can benefit from having their work shared via press releases. Universities want to issue press releases. Journalist and other media practitioners want to receive press releases. And if written well, the general public wants to read press releases. In this case, the critics do NOT want a press release issued. Many of them have emailed you directly explaining their concerns.

While you understand how the last sentence of your abstract could be misinterpreted, you think it is still accurate within an ecological context. Likewise, you do NOT agree with the critics that researchers publishing in scientific journals should be held responsible for the potential misuse of their communication by others. However, you don't know what to think about your responsibility when it comes to actively promoting such research to the public through the mass media.

You have to make a decision – do you agree to publish a press release, and if so, how do you appropriately communicate their results to the general public? What do these choices say about the role of communicating science through the mass media in general?

Working Draft of the Press Release From the Public Information Officers

To the authors: In the abstract of your published article, you state, "widespread planting of [GM] crops has unexpected ecosystem-scale consequences." From this, we have drafted a few potential verb and target options to construct the headline and lead sentence of your press releases based on how you want to present these results to the public. Pick one of each and you'll have your headline and lead sentence finished! The remainder of the draft press release follows.

Headline:	Verb Options	Target Options
Genetically Engineered Corn	**(a) Harms** **(b) May Harm** **(c) Affects** **(d) May Affect** **(e) Has Unknown Impact on**	**(a) Aquatic Ecosystems** **(b) Beneficial Insects** **(c) Caddisflies**

Lead Sentence:

A study by environmental science professors suggests a widely planted variety of genetically engineered corn [insert verb option here] [insert target option here].

Remainder of Press Release:

Researchers established that pollen and other plant parts containing toxins from certain genetically engineered GM corn are washing into streams near cornfields.

They also conducted laboratory trials that found consumption of GM corn byproducts produced increased mortality and reduced growth in caddisflies, aquatic insects that are related to the pests targeted by the toxin in GM corn.

Caddisflies, the researchers say, "are a food resource for higher organisms like fish and amphibians. And, if our goal is to have healthy, functioning ecosystems, we need to protect all the parts. Water resources are something we depend on greatly."

Before licensing GM corn, the U.S. Environmental Protection Agency conducted trials to test its impact on water biota. But it used Daphnia, a crustacean commonly used for toxicity tests, and not insects that are more closely related to the target pests, the researchers say.

"Every new technology comes with some benefits and some risks," the researchers said. "I think probably the risks associated with widespread planting of GM corn were not fully assessed."

Discussion Questions

1. What is the purpose?

What are the possible benefits of issuing a press release to the media? What are the possible drawbacks?

How likely or severe do the drawbacks need to be before the benefits are no longer worth attempting?

2. Correct but boring versus exciting but misleading?

How can research be explained in a way that grabs the attention of the media and general public?

When do headlines go too far in trying to gain attention for research? Can they go too far if the statement is still factually accurate?

3. Whose responsibility?

What responsibilities do researchers or science writers have when communicating science to the general public?

Do these responsibilities change when the research is conducted within a controversial societal context?

When, if ever, can researchers appropriately be held responsible for the social impacts that result from their public communication with the media?

4. Your choices as the author.

Would you work with your university news office to issue a press release about your published journal article to the media? Why?

If yes, which headline and lead sentence option in the draft press release do you think is the most appropriate way to present your results to a general audience? Why?