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Use video to cut through jargon

Films can take science to a crucial but often-overlooked audience, says **Adrian A. Smith**.

Three years ago, I realized that I had never given my mum a clear explanation of what I do as a research scientist. I knew I needed to change that.

I was considering how I communicated my science to non-scientists, and began to see my mother as a part of an audience I hadn't fully reached. She knew the generalities of my work — that I study ants' behaviour and had published many peer-reviewed papers about it — but she'd never read any of those studies. And, given that I'd never walked her through the specifics of any of them, none was truly accessible to her.

I decided that I could solve that problem — for my mum, and for the many other people who don't read primary scientific literature, perhaps because of a paywall or because of the unfamiliar technical format and language. I wanted her and others to be able to learn about my research.

When all this occurred to me, it was November 2015 and I had just started my first faculty position, at the North Carolina Museum of Natural Sciences (NCMNS) in Raleigh, where I head a research lab. My mother, Cindy, was coming to visit for the US Thanksgiving holiday. So, the day after the holiday, I asked her to come to work with me. I had decided to conduct a long-overdue experiment in science communication: it was time to sit down and talk to Mum about the specifics of my research.

We went to the museum's studio. There, I would film our unscripted chat for a video to accompany my institution's press release about an upcoming paper of mine (A. A. Smith *et al. J. Exp. Biol.* **219**, 419–430; 2016). With a few visual aids — including pictures of the ants that I study and diagrams of the chemicals that they use to communicate with each other — and with three cameras pointing at us, I started explaining my results on fertility and sexual dimorphism in cuticular hydrocarbon profiles of three species of trap-jaw ant (*Odontomachus*). Or, in less-jargonized language, how ants use a unique chemical language to communicate about sex and fertility.

For 40 minutes, the cameras rolled and I stumbled through descriptions of my latest findings, as my mother gave me live feedback on what she did and didn't understand. I asked whether she remembered what kinds of chemicals I studied, and handed her a diagram. She grimaced. She had heard me talk about cuticular hydrocarbons, but for her to understand their importance, I needed to show her that ▶

they were chemicals, and explain how ants used them to communicate with each other.

After our video session, I spent a week editing what we'd filmed into a four-minute video summary of the paper. The press release describes the research in the standard way — in third person, with me as the lead researcher quoted in the middle. However, embedded in the document is the video, which intersperses our dialogue with stills of the ant images and diagrams that I used.

I think that the clip captures both my research and a slice of my relationship with my mum that in turn helps to make the science more engaging and relatable: even as I'm trying to present her with a summary of my work, she's cheekily interjecting one-liners about how worker ants and queens are just like sons and mothers. To understand the 'what' and 'why' of my research, one could read the press release — or, just watch our video.

The video ends with me asking my mother why she thinks that my research is important, after hearing about the study. "It's part of our world," she says. "We need to understand what it does. How we can get along with it better." At that point, I felt confident that my mum and I were on the same page in terms of why I was doing this work.

Today, when I ask my mum what she says when her friends ask about what I do for work, she has a succinct answer. "I tell them you research ants," she says. "Then I say that we made a video that explains the details and why you do what you do."

ADRIAN SMITH

Adrian Smith and his mother, Cindy, prepare for their live science chat.

JARGON BE GONE

This was the third video I'd made as a way of translating primary scientific research for a non-scientist audience. A year or so earlier, I'd realized that most people would be lost in my papers' technical jargon and formatting. I'd also noticed that when family members and friends sent me articles about new research, they weren't providing links to a journal's table of contents or PDFs of a manuscript — they were sending popular-media news stories about the work.

I came to understand that if I wanted my science to find its way to the same sources that my family and friends were using, I would need to rethink my publication process. As a scientist with an interest in digital media, I had a direct path for getting first-person narratives about my work to a global mass-media audience.

Today, most media outlets source their science news from institutional press releases announcing new discoveries. These write-ups often appear on news aggregators, such as the American Association for the Advancement of Science's 'EurekAlert!'. Reporters cover science news by including in their stories perspectives and quotes from their own sources, beyond the information in an institutional release. But some sites simply repost press releases along with stills and videos. This new, more-direct intersection between scientists, aggregators and science-news consumers is where I found my path to the public.

In the past three years, I have produced and posted ten videos tied to institutional press releases about scientific research papers originating from my or my colleagues' labs. We want to use press releases as a way to make our research narratives directly accessible to a mass-media news audience — just as I made my paper accessible to my mum.

Here's how it works: we include a URL in the press release that leads reporters to a related YouTube video. We post these press releases on EurekAlert! with an embargoed period of two or three days before publication. US and international news outlets, including *Wired*'s UK edition, *The Washington Post* and *der Standard*, a daily Austrian newspaper, have picked up five of the ten press releases as the basis for their own stories, and they have added our videos alongside their written coverage. Cumulative views on the YouTube videos picked up by those outlets range from 5,000 to about 62,000, whereas views on videos associated with releases that did not get major news coverage range from 1,000 to 3,900.

> ***"I now view the impact of my research in terms of how well I can make my work available to those outside my profession."***

When these videos were released, the number of subscribers to my personal YouTube page was a mere smattering, about 200 or 300, compared with the number of views for each of my clips. Clearly, the much larger number of viewers compared to subscribers was a direct result of media interest in the press releases. And these view counts are a conservative measure of engagement: they include YouTube views only, and not those, for example, from instances in which news outlets, such as the *Washington Post* or *National Geographic News*, requested the original video and posted it directly on their sites.

Working with public-information officers to distribute media-rich press releases has given my colleagues and me the ability to present the value we see in our work to a science-curious public ourselves. We have been able to reach much larger audiences than we could have by simply publishing in journals. The engagement numbers are persuasive, even when these papers are published through open access. One of the papers we promoted was published in *PLoS ONE*, where page-view numbers are public (F. J. Larabee and A. V. Suarez *PLoS ONE* **10**, e0124871; 2015). Since the paper's release in May 2015, it has accumulated around 12,200 page views — but the video about the paper has received more than 62,300 views.

First-person accounts of science were not a part of my life when I was younger. I am a first-generation university graduate with no immediate or extended family members who are involved in scientific careers. As a child, I'd never known a working scientist. When I was filming that video with my mum, I realized that I was presenting myself as a professional scientist to a family member who also had never had a personal connection to science before me. Making videos and using press releases to distribute them has helped me to introduce myself and my colleagues to the world as scientists. I now view the impact of my research not just in relation to the metrics around my journal articles, but also in terms of how well I can make my work available to those outside my profession.

Online science videos and the press-release distribution system allow for direct access by and dialogue between researchers and science-news consumers. Adding first-person narratives and reshaping science-news information is not impossible for scientists who are willing to communicate their research actively. By making this content about our science readily available to any viewer, we can reach people who are interested in science but can't read original manuscripts in a journal for whatever reason.

If you don't believe me, just ask my mum. ■

Adrian A. Smith *is head of the Evolutionary Biology & Behaviour Research Lab at the North Carolina Museum of Natural Sciences and a research assistant professor in biology at North Carolina State University in Raleigh.*