Communicating Science: From the Laboratory Bench to the Breakfast Table†

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If we are to maintain public appreciation and support for our scientific enterprise, we need to pay more attention to translating the benefits and grandeur of science into the language of broader society. Both educators and journalists have a role to play in communicating the achievements of science, but scientists must recognize that we have a responsibility to increase the availability and salience of science to the public.

KEY WORDS: science; communication; education; media; press; reporter; funding

My lab at The University of Iowa is working on elucidating the molecular mechanisms underlying disease processes. This research utilizes several experimental biological models, including the use of human tumor cells and human arthritis synovial fibroblasts. Our immediate objectives include identifying genes that contribute to cancer metastasis and rheumatoid arthritis, diseases that exhibit similar biological activities. I hope it is obvious that I am excited about our research activities, and very absorbed in them.

So believe me when I say that I know from personal experience that often scientists can become so wrapped up in our work and our discoveries that many of us forget our obligation to explain them to the broader society that will eventually benefit. We forget to provide the details of our work in a language that non-scientists can understand. We forget to clarify the relevance of research to our daily lives—our health, wealth and well being as a nation—and how we translate our work for commercial use.

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One of the ironies of our modern age is that, while our society depends on science more than ever before, what we do in our laboratories remains an enigma to most people. As any non-scientist who has tried to wade through a scientific journal knows, the language of science is virtually incomprehensible to the average person. While these journals are not written for a general audience—nor should they be—they are perhaps the clearest example of the widening schism between scientists and the rest of society.

But if we are to maintain public appreciation and support for our scientific enterprise, we need to pay more attention to translating the benefits and grandeur of science into the language of broader society. Both educators and journalists have a role to play in communicating the achievements of science, and other members of our panel will address that. But scientists must recognize that we have a responsibility to increase the availability and salience of science to the public.

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search, and fetal-tissue research. Our work is in the public eye more now than perhaps ever before. And yet, arguably, our work has never been more misunderstood. Thus, we have an important role to play in redressing the balance.

BUILDING BRIDGES

We must work to build the bridges between scientists and journalists. There has been an exciting explosion of new scientific knowledge during our lifetimes. No one person can fathom it all. Many scientists say they are hard pressed to keep up with cutting-edge research, even in their own specialties. Imagine the challenge that the average newspaper reader must face.

To bring accurate, relevant information from the front lines of science to the pages of newspapers and into peoples’ homes to the breakfast table, journalists and scientists must be willing and able to communicate with each other. This does not always come easily. In the words of Jim Hartz, the former co-host of the Today Show, and Dr. Rick Chappell, the Director of Science and Research Communication at Vanderbilt University, who in May 1998 testified before theCommittee on Science in the U.S. House of Representatives that: “Scientists complained that reporters didn’t understand many of the basics of their methods, including peer review, the incremental nature of science, and a proper interpretation of statistics, probabilities and risk. Conversely, journalists complained that scientists get wrapped up too much in the jargon about such matters and fail to explain their work simply and cogently.”

The result of this impasse is that important stories may go unheard for lack of communication. Most Americans get information on scientific advances from their local newspapers, television stations, and the internet. Many newspapers do a decent job of covering science; some even have science sections. Nevertheless, many local news outlets often do not have the wherewithal to devote precious resources to science stories that are often difficult to write and may not attract a wide audience. According to Deborah Blum, a Pulitzer-Prize winning science journalist, readers do respond to science articles when they are done well. But she also notes that writing these stories requires mutual trust between the scientist who is the object of the story and the journalist who writes it.

Her advice? First, all journalism school graduates should take an entry-level science-writing course. Secondly, news outlets—newspapers, magazines, and TV and radio stations—need to have training workshops, for writers and editors. Finally—and this is where we come in—every person employed in the scientific field should have to take a science communication course and should be taught that communicating with the public is part of their job description. “Scientists know very little about the culture of journalism, what makes a story, how to talk to reporters,” she says. Ms. Blum’s comments show that the gap between scientists and journalists threatens to get wider. Closing it will require that scientists and journalists gain a greater appreciation for how each other operates.

FASEB attempts to close the gap in a couple of ways. Take, for instance, our Breakthroughs in Bioscience project (http://www.faseb.org/opar/break). Breakthroughs are a series of illustrated essays that explain recent breakthroughs in biomedical research and how they are important to society. In recent years, we have covered topics such as magnetic resonance imaging, cloning, and protein folding. Our most recent essay, on osteoporosis, has just been published and is available from FASEB’s Office of Public Affairs.

These essays are one way that FASEB tries to demystify basic research. Each article explains how basic research has led to developments in a current field of study, the integral part that laboratory animals played in the discoveries, and the impact of public funding on the outcome of research. We distribute these, free of charge, to lawmakers, government officials, teachers, students and the press—in the hopes of bridging this much talked about chasm between scientists and the nonscientist.

This fall, FASEB plans to launch a public education campaign on the importance of animals in the conduct of biomedical research. This effort will include the publication of op-eds debunking the arguments of the animal rights activists and explaining arcane yet important issues such as defining the responsibilities of Institutional Animal Care and Use Committees (IACUC) with respect toward assuring the welfare and appropriate use of animals in research. Another op-ed will clarify the current flap over the addition of mice, rats and birds to the Animal Welfare Act. I am sure that few lay people understand the challenges we face, and I think many scientists don’t understand what’s at stake, either.

We are also developing op-eds and information papers on subjects such as cloning, stem cell research, and postdoctoral compensation and benefits. We are aiming high, hoping to place these articles in publications such as the New York Times and the Washington Post.

TIPS FOR COMMUNICATING SCIENCE

If you are just embarking on this exciting journey, here are few tips for basic survival:

- Get your message straight. Focus on two or three main points you want to get across; phrase them in simple, nontechnical language; and
stick to these points. There is no time or space for complicated explanations.

- **Describe the implications of your work, rather than the clever science.** People want to know how they are going to be affected by your work. Is it going to mean a more effective antibiotic for ear infections? Will it drastically reduce the incidence of Downs syndrome in children born to women of advanced maternal age? And, for some politicians, will it create a new export industry?

- **Learn about the world of the journalist.** They live by ferocious deadlines, and are always in a hurry. So try to respond quickly to their queries. They work in a highly competitive industry, and few understand even basic scientific facts, but they do try to get things right. The onus is on you to explain your work in clear and simple terms.

- **Prepare a simple document with the important details.** This should highlight the basic details of the story, spell everyone’s names correctly, and have your contact information. And consult your collaborators and colleagues to make sure everyone agrees on the wording to avoid territorial arguments before they start. Admit what you don’t know, and offer to get back to them with missing information.

- **Understand the importance of pictures.** Good pictures can make all the difference. A compelling photo can gain a story prominent newspaper coverage; and, as far as TV is concerned, if there are no interesting pictures, there is no story.

- **Let them know that you are willing to engage in a dialogue.** If a science article appears in your local newspaper or on a television broadcast, send in a comment either complementing them on their coverage, clarifying an issue or vehemently disagreeing. Let them know that you are willing to engage in a dialogue.

### BEING AN AMBASSADOR FOR SCIENCE

As important as bridging the gap between scientists and the media is, there is no substitute for scientists speaking directly to the public about their work. In part because science must compete for discretionary funding with disparate interests, engaging the public’s interest in science through direct interaction is crucial. Also, scientists have an ethical obligation to the public to account for their stewardship of the public funds used to support their work.

Public speaking is one of the best ways for scientists to reach the public and share their enthusiasm for their work and educate the public. Efforts can include speaking at local civic clubs and other organizations, working with teachers in local schools, and inviting interested groups, such as students and lawmakers, into their laboratories. Without these efforts, support for science may erode.

The reality is that often, scientists who decide to spend time talking to the media or the public pay a high price professionally. Such activities take precious time away from their work, and may thus jeopardize their ability to compete for grants or tenure or complete research projects. Even for those who prove adept at public communications, the price among a scientist’s peers is often great. It is important that we have institutional backing for these efforts. University officials, at the highest level, must recognize the importance of communicating science to the public, and encourage faculty to speak to the public about science and scientific issues.

In addition to these public service and ethical motivations for aiding science journalists, there are also very practical reasons. For one thing, publicity helps communicate scientific information among researchers. Experience has shown that after a piece of research is publicized, a scientist usually receives a significant number of requests for further information from fellow researchers, many of whom may have missed the published scientific paper or meeting presentation. Particularly important in this era of interdisciplinary research, such contacts often come from colleagues outside the scientist’s discipline. These may result in useful collaborations or new insights into the scientist’s work.

Finally, of course, coverage of science and technology attracts more public and private support for research and attracts interested, talented students to careers in science and engineering. There is a great deal that scientists can learn in making the media work to their advantage. Unless they learn to use the media to explain their work to the public, they cannot expect that the public will support them. Lack of public support translates rapidly into loss of public funding, and the sidelining of what should be one of the driving forces of American life.

It is a privilege to do research. Let us be responsible stewards and advocates for our trade and for our progeny!

### FURTHER READING

Communicating Science News: A Guide for Public Information Officers, Scientists and Physicians. Prepared and Distributed by The National Association of Science Writers. *Printed versions of Communicating Science News may be ordered by sending a check or money order for $8 ($5 for NASW members) to Diane McGurgan, P.O. Box 294, Greenlawn, NY 11740.*