

nature structural & molecular biology

Engaging the public

Scientists frequently hear the charge that we need to communicate more effectively with the public. Here are a few ways to facilitate that interaction.

Scientists must engage the public. That has been said so many times that it has almost become trite, but it nevertheless remains true. The statistics describing the public's understanding of science are disconcerting, and surveys continue to highlight just how poorly major scientific concepts are grasped by the average person. An October 2010 survey by the Yale Project on Climate Change Communication estimates that although 63% of Americans understand that climate change is occurring, only 8% would get an "A" or "B" if graded on their level of understanding. Other studies have shown similar problems with public understanding of 'hot button' topics such as stem cells and evolution, particularly in the United States. The implications of this loom large: a public that does not understand the reasons for and benefits of research is less likely to approve allocation of tax money for science or to support philanthropic organizations that fund research.

As members of the research community, we know we can't rely on the popular media to correct the misperceptions the public might harbor about science-related issues. According to a 2009 Pew Research Center survey of Americans, carried out in conjunction with the American Association for the Advancement of Science (AAAS), 76% of scientists feel the media do not adequately distinguish between substantial findings and those that are unfounded. Although it would be easy to say that the public "just doesn't get it," the burden of passing along the understanding and implications of contemporary science falls squarely on the shoulders of those actively engaged in funding, publishing and carrying out research.

Even though that commission has been given countless times, there is still much to do to bridge the gulf between scientists and the general public. Engaging the layperson requires a different set of skills from the standard ones researchers use to communicate with their peers. Many graduate programs train students to prepare and critique scientific presentations, but very few prepare students to present novel scientific findings to the public. Even though a thorough discussion of techniques for engaging the public would take more time and space than allowed here, a few suggestions may help pave the way for more substantive discussion.

First, we must take time to understand our audience. Assuming that the listener understands certain concepts may only lead to confusion as audiences are quickly left behind in a quagmire of jargon and scientific terminology. Conversely, over-explaining trivial or generally understood ideas may cause the audience to feel talked down to. This is a fine line to walk, but finding the right entry point can make or break the discussion. If the setting allows, we should ask questions to gauge the listeners' level of understanding, and we should give them the opportunity to ask for clarification. We also need to listen to the audience, who may have concerns, misunderstandings or desires that they would like to make known. Bidirectional discussions can ensure long-lasting public support.

Additionally, as many concepts are unfamiliar to the public and difficult to understand, the benefits of using analogies cannot be overstated. Analogies can bridge the gap from the familiar to the unfamiliar and can quickly help the audience grasp the context and implications of an idea. The frequent likening of DNA to computer code is effective because it provides a picture of a major function of DNA while also giving the listener a concrete image to start from. Similarly, the proteasome is readily viewed as a garbage disposal, ATP as energy 'currency', and countless transcription factors as on/off switches.

We also need public leaders to support our efforts. President Barack Obama has demonstrated his commitment to this by hosting multiple science-oriented events at the White House and even contributing to an episode of the popular Discovery Channel show "MythBusters." Globally, several world leaders have voiced support for increasing the promotion of science in their countries. Contact with represented officials can go a long way toward enhancing the visibility of science in the public eye.

Finally, it is important that we engage the public where they are. A growing number of organizations and institutions are seeking to do this through several different approaches. Some research universities and institutions sponsor seminars specifically geared toward the general public. For example, in NSMB's own hometown of New York City, Memorial Sloan-Kettering Cancer Center holds an annual seminar in which researchers present their work to high school students and teachers. The New York Academy of Sciences hosts frequent events discussing contemporary issues with the general public. Other organizations, such as the AAAS, encourage scientists to reach the public by sponsoring awards to increase involvement in this area. Although not all media cover science adequately, some outlets do provide effective venues for the dissemination of science news to the public. National Public Radio's "Science Friday" program just celebrated its twentieth anniversary and is still going strong, and the *New York Times* allows guest bloggers, such as evolutionary biologist Olivia Judson, to provide their opinions. NOVA scienceNOW produces the site Sciencecafés.org, which lists numerous regular, informal gatherings held throughout the year in dozens of locations across the United States. There are plenty of other online outlets devoted to science; the website ScienceBlogs.com hosts several blogs dedicated to the advancement of science in the public eye. If a forum focusing on your area of expertise does not exist, perhaps it may be worthwhile to start one.

These are just a few thoughts on facilitating the discussion between scientists and the lay public. By actively supporting some of these organizations or starting our own local efforts, we can begin to bring scientific advancement and public understanding closer together. With more public support, discussions and ideas will flow and progress of research will be more rapid. ■