ASSOCIATION AFFAIRS

Phillip A. Sharp: Supporting Science and Engineering as Innovative Forces

Phillip Sharp takes his responsibilities as a role model seriously, from speaking in schools about his childhood interest in science on a Kentucky farm, to posing with rock stars in the pages of *GQ* to raise interest in cancer research.

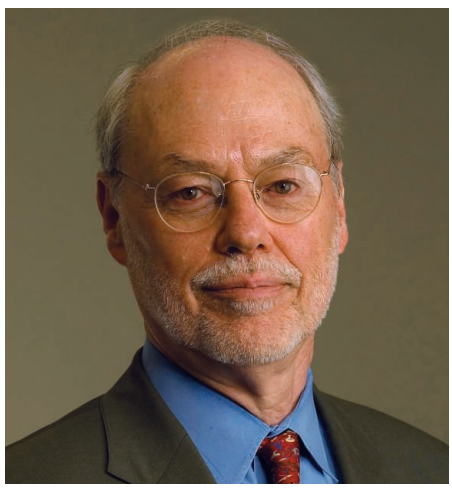
The magazine spread has brought him more attention than his 1993 Nobel Prize, "but I was pleased to do it," he said during a recent interview. "I think any time scientists are presented as being engaged in society, understanding what's going on in society, and in a positive mode, it's a big plus for science."

Sharp's career has followed a trajectory that might itself serve as a model for the future of science, with an emphasis on interdisciplinary research, innovation, and the translation of scientific discovery. As the MIT molecular biologist and biochemist assumes the AAAS presidency, he sees a prominent leadership role for the organization in these areas.

In particular, Sharp said, "AAAS will need to be at the center of the debate on R&D support in the next few years, and I am ready to help play a role as a science and engineering advocate." He praised AAAS for the work it has already done to highlight the connections between science funding and global economic growth. "We cannot let that slip, because if we do, we're going to pay the price for the next 30 years," he said. "And every person in this country is going to pay the price, because the jobs aren't going to be there."

Science funding will be a challenge "in almost every developed and developing country" as well, Sharp said. AAAS could play a vital role in addressing some of these challenges, he noted, drawing on the strong collaborations it has established with international scientists and scientific societies. "In a world that is increasingly 'flat,' where science, technology, and economies in each community are interdependent," he suggested, "the importance of AAAS is greater today than ever before."

Support for interdisciplinary science will also be key, he said, citing its potential to propel innovation and open up entirely new fields of research. Sharp has written extensively



Phillip A. Sharp

about convergence—where the life sciences meet physical and computational sciences and engineering—as co-chair of the U.S. National Academy of Sciences committee that produced the report, *A New Biology for the 21st Century,* and in other white papers.

Sharp said that universities, industries, and organizations like AAAS "have moved a long way" toward creating environments where convergence thrives. "We're making changes as a community that make it easier for an individual to be engaged in interdisciplinary science, and we're encouraging exciting new areas of science to develop as well."

After winning the Nobel Prize for his co-discovery of "split genes," demonstrating that genes can be discontinuous on a strand of DNA, Sharp has seen the power of convergence firsthand in his research on cancer cell biology. He has moved deeper into explorations of RNA interference, or RNAi, in which RNA molecules can be used as "on/off switches" for gene expression. This powerful tool, along with advances in computational power and whole genome sequencing, "have made this a wonderful moment in science."

Sharp was a convergence pioneer of another sort in the 1970s when he co-founded Biogen (now Biogen Idec), helping to shape the future of a nascent biotechnology industry. "This was a time when technology and genetic engineering and recombinant DNA were newly emerging in the lab, and it was widely recognized and clear to me that there would be great benefit to society in having this knowledge translated." In 2002 he continued those steps toward translation as a co-founder of Alnylam Pharmaceuticals, an early-stage RNAi therapeutics company. Working with both companies, Sharp said, "was a way of contributing to society and learning at the same time that I found very enriching."

In a way that is perhaps fitting for the son of farmers and ironworkers, Sharp emphasizes the importance of engineers in sharing the benefits of science. The United States produces too few engineers, he said, and "they have a skill set that is essential for our media, for life science, for medicine, and for manufacturing. We need to expand this if we're going to have a knowledge and work base in this country that can actually deal with the innovation we need to keep our economy growing."

Sharp is an Institute Professor at the Koch Institute for Integrative Cancer Research at MIT, where he served as director from 1985 to 1991. He also served as the founding director of MIT's McGovern Institute for Brain Research from 2000 to 2004. Sharp succeeded William H. Press, a professor of computer science and integrative biology at the University of Texas at Austin, at the close of the AAAS Annual Meeting on 18 February. Press is now serving a 1-year term as chairperson of the AAAS Board.

Along the Licking River in Falmouth, Kentucky, Sharp raised cattle and grew tobacco to pay for his college education. He encourages more engineers and scientists to talk with rural and poor students, especially, as a way of inspiring the next generation of researchers. In some of these communities, Sharp said, students "don't see people who have made contributions to science and engineering. Someone standing in front of them and telling them how exciting it is can have a profound impact on a young mind."

"Every student who wants to contribute and has the opportunity should think about" a career in the sciences, he said. "The growing importance of science and engineering in society, in terms of helping people, is a way of contributing to everyone across the face of the earth."

–Becky Ham

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