A letter from the director of the Indian Institute of Science explains that "euphoria in India" over the "recent nuclear test explosions" is related to feeling like "an entity to be counted," in a country "tired of being depicted in the West as having negative qualities." A bioengineer contends that "the current vision of engineers for bioengineering ... excludes important areas of research" and advocates more contributions from "basic science." And a discussion of Web publishing and "the availability of scientific information on the 'publicly indexable Web'" continues.

The Indian Psyche

The recent nuclear test explosions have created a tremendous euphoria in India and expected condemnation, led by the United States. An average Indian does not associate the test with security concerns or power politics. Right-thinking Indians know that our priorities are such things as health, education, and containment of population.

Why then the euphoria? India, despite an having an ancient culture and a functioning, stable, large democracy and being a hunting ground for technically qualified people, has been persistently represented by the United States and the West as the home of poverty, filth, disease, and backwardness. There have been few occasions when progress made in India has been depicted by the Western media without bias or sarcasm. India is self-sufficient in food production. Its space program and other programs have improved communication and information systems tremendously. It is fighting a big battle to remove age-old social inequalities. The Indian economy has been stable, and Indians have taken to computers and software with ease. The entrepreneurial dynamism of Indians is second to none. India supplies highly qualified cheap labor to the United States. Indians enjoy freedom of expression and dissent, although we would like some of our leaders to keep their mouths shut, at least for a while.

A feeling of alienation permeates segments of the Indian society that have anything to do with the West, the United States in particular. The general perception among Indian scientists in leading institutions, most of whom are U.S.-trained, is that they are being discriminated against. Research papers sent to top international journals from India seem to be reviewed with a bias. Even if I manage to publish one of my papers in one of the best journals, it will seldom be quoted or have an impact, unless I have a U.S.-Western pedigree or a connection with an inner circle. There seems to be an inherent disbelief in the West that good research can be done in India. Even if I am invited to deliver a lecture at an international research conference, I am made to feel like an outsider or am aware that I have been invited to satisfy a condition that someone from a developing country be included for the conference to be eligible for funds from an international agency. My passport at the immigration counter in most European countries is scrutinized with extra care and often with a hostile attitude, even when I have adequate proof that I will not stay for more than 3 days. There are, of course, exceptions, but exceptions do not make the rule.

As director of a pioneering research institution in India, I am aware that we are threatened with sanctions. Some months ago (long before the nuclear tests), newspapers published articles saying that the Indian Institute of Science is on the watchlist of the United States because we are considered to be a think tank for India's defense efforts. We are an academic institution and carry out intellectually challenging problems in fields ranging from particle physics to ecology. Yet, an Indian order sent to Silicon Graphics causes a U.S. embassy official to investigate. We were denied a Cray computer for more than a decade (now we are happy we did not buy these heavyweights). Our scientists are appalled by how the United States, which values intellectual challenges and academic freedom, can have such a discriminatory attitude toward a country struggling to develop its science. We are often ignored by international funding agencies as "developed" when it comes to support for science. Our scientists are worried that the United States may put an embargo on visas for scientists and scholars from India. Already, the supply of research samples from U.S. government laboratories has been put on hold.

India has many, many problems, but we are tired of being depicted in the West as having negative qualities. Given this treatment, one clutches at any "victory" that makes one feel like an entity to be counted. It can be a win in cricket, a chess match, or a beauty contest, or even a nuclear blast.

Sanctions are self-defeating and counterproductive. India needs understanding, not threats or sympathy. We are a warmhearted people with tradition and capabilities. And to top it off, India has great admiration for America and Americans!

G. Padmanaban
Director, Indian Institute of Science, Bangladore, 560 012, India, E-mail: geepee@biochem.iisc.ernet.in

Policy Change

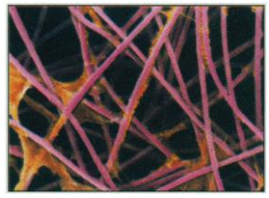
In accord with our colleagues at *Nature* and at other leading journals, we believe that the interests of the scientific community and the public are best served by making freely available the data on which the ideas in our papers are based. Therefore, in order to promote the dissemination of information derived from high-resolution structures (determined by x-ray crystallography, nuclear magnetic resonance, or other methods) of biological macromolecules, *Science* will require unrestricted release of the coordinate sets on or before the date of publication for all new manuscripts received on or after 1 October 1998. It will be necessary for authors to deposit the coordinates of all structures in the submitted manuscript with the Protein Data Bank upon acceptance, and *Science* will proceed only on receipt of the identifier code and with the assurance that layer-1 release will occur at the time of publication (see April 1998 *PDB Newsletter* at www.pdb.bnl.gov/pdbdocs/newsletter.html). We encourage all organizations involved in scientific enterprise (as local as tenure committees and international as funding agencies) to adopt this policy.

Floyd E. Bloom

The Future of Bioengineering

I read with interest Bruce Agnew's article "NIH plans bioengineering initiative" (News & Comment, 5 June, p. 1516). I agree completely with Douglas Lauffenburger's statement (sidebar, p. 1517) that the way to make advances in bioengineering is to integrate fundamental research in biology and engineering. The current vision of engineers for bioengineering is fragmented and excludes important areas of research. Coherent bioengineering research and academic programs should encompass bionics, solid organ transplantation, and what I have called regenerative biology (*1*), which uses the strategies of cell transplantation (cells alone or as part of bioartificial tissues) and the stimulation of regeneration from residual tissues in vivo. These areas depend, to

various overlapping degrees, on basic research advances in materials science, immunology, and developmental biology, including the biology of stem cells, cell adhesion, and molecular signals regulating cell-cycle control, differentiation, and pattern formation.



D. MOONEY/PHOTO RESEARCHERS

Bioengineered collagen

Despite the tremendous interdisciplinary nature of bioengineering, most bioengineering programs are built almost exclusively around an engineering–medical school relationship. While this combination has been a natural one, it tends to ignore important research and educational contributions made by investigators in other basic science departments. One example of this has been the absence from many bioengineering programs of research on models of animals that have unique powers of regeneration, such as flatworms and amphibians. Basic research on these animal models needs to be brought into the mix, because it will contribute to our ability to achieve a wider range and greater degree of regeneration of mammalian tissues in vivo, as well as help provide answers to fundamental biological questions. And we need a wider vision of bioengineering collaborations that includes biology, chemistry, and physics departments as full partners if we are to maximize our success. We will be more successful in this endeavor if we do not create a separate bioengineering institute within the National Institute of Engineering.

David L. Slocum
School of Science, Indiana University–Purdue University, Indianapolis, IN 46202–3272, USA

References

1. D. L. Slocum, *Science* **276**, 15 (1997); in *Cellular and Molecular Basis for Regeneration: From Invertebrates to Huyiztitis*, P. Ferretti and J. Geraudic, Eds. (Wiley, Chichester, UK, 1998), pp. 411–450.

Searching the Web, Continued

With regard to the report "Searching the World Wide Web" (3 Apr., p. 98) by Steve Lawrence and C. Lee Giles, I think it's important to quantify—with the use of well-designed studies—the growth of the Web and the effectiveness (or not) of the popular search engines.

Lawrence and Giles do not ask what might be a key question: Exactly what makes up the "indexable Web"? When they say that "Scientific information retrieval and literature search, previously dominated by librarians, is now directly available to a widespread group of scientists," they do not acknowledge that most of the scientific literature is copyrighted by the authors or by the publishers of the major journals and that copyrighted material is not generally available in the "publicly indexable Web." The full text of their report, for example, is not available at *Science* Online, unless the user (or an institution) pays for an electronic subscription to *Science*. Most of the full-text science literature now on the Web is accessible through fee-based systems only, such as PROQUEST DIRECT (UMI Corp.), Web of Science (Institute for Scientific Information), Academic Press Electronic Journals, and so forth. The contents of these database products (thousands of citations, abstracts, and full-text journal articles) are not accessible to the commercial Web search engines (such as Altavista or Hotbot).

Many researchers may self-publish preliminary or "unofficial" versions of their articles on their personal Web pages, but I wonder if these versions are citable by those who may come across such a paper while searching the "indexable Web." Do authors sign agreements with journal publishers that restrict them from also making