

U.S.-Chinese Relations

The news briefing entitled "Why is this man smiling?" (Research News, 13 Oct., p. 214) does not do justice to what is really a very serious matter. As is well known, especially during the last 10 years, there has been an ever deepening relationship between the United States and the People's Republic of China (PRC). Many of these bonds are based on scientific exchange. As a Chinese-American physicist, I have both watched and helped foster this climate. My work has centered on the China-U.S. Physics Examination and Application program (CUSPEA), which has permitted nearly 1000 Chinese physics students to join U.S. graduate programs; on the China Center for Advanced Science and Technology (CCAST) and the Beijing Institute of Modern Physics (BIMP), which sponsor research programs and international conferences; and on the U.S.-PRC Joint Committee on High Energy Physics, which has led to the recent construction of the Beijing Electron Positron Collider (BEPC).

It was as a CCAST conference participant that I was in Beijing in late May and early June and personally observed the tragic events of 3 and 4 June. Many Chinese scientists took part actively in the demonstrations. For example, a large number of the physicists and engineers from the Institute of High Energy Physics participated, holding placards saying "Accelerator Accelerates Democracy" and "Collider Collides Corruption." Ye Duzheng, president of the Meteorological Society, personally led several marches of scientists and made speeches at Tiananmen Square supporting the movement. No one feels the agony and the disappointment over what happened more than our colleagues in China.

Because of my deep concern over the possible consequences for these Chinese scientists, I made a second trip to Beijing in September. I was fortunate to meet with Deng Xiaoping, as well as with a number of other Chinese leaders. They agreed to several of my suggestions (1). More immediately, they also allowed all the new CUSPEA students to come to the United States this year. They did not arrest or punish any of the scientists and engineers from the Institute of High Energy Physics. They have permitted Ye Duzheng as well as many other scientists who participated in the demonstrations to travel abroad to attend meetings freely.

The universality of science and the free exchange between scientists of all nations has been a powerful force in helping to preserve civilization in difficult times. This is something that I believe in deeply. Only through continuous contact with our colleagues in China can we help them in a genuine way. Of course, it is still too early to fully assess the final outcome of my recent trip. However, these are new positive developments that may serve as a first step.

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REFERENCES

1. D. Oberdorfer, *Washington Post*, 18 October 1989, p. A27.

Response: In the *Washington Post* article cited, Lee quotes Deng as saying, "We have really made mistakes." But Deng's comment contrasts sharply with his recent statements to former President Richard Nixon, in which he charged that the United States was too involved in the June unrest in China.

—MARJORIE SUN

Human Genome Program

"If something is not worth doing at all, it is not worth doing well." This aphorism, which I learned almost half a century ago from a wise colleague, applies today to the human genome project currently being activated. No one has been able to spell out the benefits to be expected from that project, either in terms of science, or of medicine, or of public health. The program has been promoted without public discussion by a small coterie of power-seeking enthusiasts.

The lack of clearly stated goals appears now to have befuddled the thinking of my friend, the usually level-headed editor of *Science*, Daniel E. Koshland, Jr. (Editorial, 13 Oct., p. 189). The phantom promise of early diagnosis of a few hereditary diseases is being replaced in Koshland's editorial by hints of a eugenic program targeted to "the poor, the infirm, the underprivileged." Are they to be transformed (or perhaps altogether eliminated) by eugenic applications of genetic technology?

Ten years ago, I battled against the unreasonable fears that genetic engineering might create unnatural forms of life. The real danger today is the possible emergence of an establishment program to invade the rights and privacy of individuals, whether in the area of sexual preference, or right to abor-

tion, or drug addiction, under cover of beneficent eugenic intervention.

Will the Nazi program to eradicate Jewish or otherwise "inferior" genes by mass murder be transformed here into a kinder, gentler program to "perfect" human individuals by "correcting" their genomes in conformity, perhaps, to an ideal, "white, Judeo-Christian, economically successful" genotype?

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Response: Knowledge is power and therefore can be abused, as my friend Salvador Luria points out. The new knowledge projected for the human genome project requires special vigilance in the area of ethics, but unreal scenarios advance neither the cause of ethics nor that of science. There should be no temptation to a Big Brother to try to erase the genes for "democratic instincts," any more than to try to erase the genes for schizophrenia, manic depression, or diabetes. The latter genes are so numerous in the population that such action would have little genetic effect.

The new knowledge can, however, lead to drugs to help people affected by illnesses, and that is why the genome project should go forward. Legislation to prevent abuse should be enacted as needed, just as in the case of fingerprints, social security numbers, and the census, all of which have been opposed at some time because of possible misuse.

—DANIEL E. KOSHLAND, JR.

While there may be intellectually consistent and sound reasons for supporting the billion dollar-plus congressional funding of the human genome project, Koshland's editorial about the project is, at best, misguided. If we have learned anything from the scientific hubris of this, the "atomic" age, it is to be circumspect in proclaiming unproven benefits of new technology. The statement that many diseases "are probably all multigenic" is in no way an indication that the tremendous resources involved in the genome project will yield the useful results implied in the editorial. Our colleagues in physics could wryly argue that diseases are based, ultimately, on particle physics and quantum mechanics and justify spending this congressional windfall on linear accelerators.

Koshland's concluding admonition—that not supporting the project constitutes "immorality of omission—failure to apply a great new technology to aid the poor, the infirm, and the underprivileged"—might sound cynical to health care workers in third

world countries who deal with countless children not even vaccinated against polio or tetanus or to physicians and nurses in our own country unable to apply state-of-the-art medicine to "medically indigent" people whose care appears to be of little concern to the rest of society. In these cases, the "great" technology already exists, but politics and economics prevent its application.

As a researcher and physician, I daily witness the growing frustration of creative investigators for whom research funding has become the central theme of their work. This is ultimately the fault of the dwindling commitment of our society to research, and not of the human genome project per se. But in the current context, the project appears excessive.

Is it the role of federal government to inordinately support applied, molecular biological research when genetically engineered drugs are already privately manufactured and marketed at ample prices? Apple and IBM need little taxpayer support in their research and development of smaller chips and faster processors. The real crisis in biomedical research today lies in maintaining the infrastructure of a rich variety of laboratories in academic institutions and in the training of eclectic, creative new investigators. Imbuing the human genome project with unearned moral status will not help in this pursuit.

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Koshland draws an analogy between attempts to prevent or treat mental illness and historical attempts to prevent or treat polio, with the implication that we should search for something akin to "vaccines" for mental illnesses. Later, in the context of the necessity for sequencing the human genome, rather than genomes of other species, he points out that "[s]ome diseases involve speech and mental states unique to man." The implication is that human beings reduce to their genomes. These comments gloss over some very real and very important issues, such as whether mental illnesses can be accounted for simply on the basis of genetics, whether physiological or psychological methods (or both) are most effective in preventing or treating mental illnesses, and whether or not we wish to speed the coming of a day when mental states judged (by whom?) to be antisocial, unproductive, or unpleasant are "cured" or prevented by shots.

Koshland writes that "[f]amily planning also will be made more accurate." Does this mean that couples will be able to choose

characteristics they would like their child to have? Is this something we want to come about? An admittedly "farfetched" argument ("that a Hitler or a Stalin would prefer the engineering of Jews into Aryans or capitalists into communists") is assigned by Koshland to the project's adversaries, while reasonable fears are ignored. What about the much more likely possibility that the power to alter human genes will encourage well-meaning researchers and statesmen to create human beings with characteristics they see as beneficial, something along the lines of Aldous Huxley's *Brave New World*? How would the cost of dehumanization inherent in fabrication of people compare with the benefits of eradicating certain diseases?

Koshland writes that we "must step boldly and confidently across the threshold" of this new biological frontier. This ignores the question of whether we want to get where we're going. It also disregards the fact that technological advances often give us the power (for better or for worse) to do quickly and on a large scale what we had previously done with relatively little efficiency. Thus, the fact that we now have genetic counseling does not mean that this is equivalent in either benefits or dangers to the genetic technology we may soon have.

Many of us oppose regulation of science by nonscientists. Those who believe scientists are not capable of regulating their own profession may be aided by Koshland's editorial. We must show ourselves capable of thinking through the possible consequences of future lines of research and of making funding choices accordingly, not just of "advancing" in any direction.

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Epilepsy "Cure"

In the article "The epilepsy cure: Bold claims, weak data" by Robert P. Crease (News & Comment, 29 Sept., p. 1444), the main argument given against publishing papers about so-called cures for debilitating diseases that are not substantiated is the false hope given to patients. The article discusses a paper published in the *International Journal of Neurosciences* (1) which described the curative nature of magnetic fields for epilepsy. The paper provoked a major outcry from epileptologists, and the editor of the *International Journal of Neurosciences* is quoted as saying in response, "this isn't a case like that of cold fusion. These guys went to a journal first and not to the newspapers."

I would like to comment on that state-

ment. Approximately 1 year ago, I was mailed a photocopy of an article (2) about the authors that was published in a slick Greek-language magazine that was not a scientific journal. This article reported on a potential cure for epilepsy, and a plea was made for private financing of this research. The patient who sent me the article about the researchers asked if magnetic field therapy was a cure for epilepsy. The patient's question demonstrates to me that the controversy about the research of Anninos and Tsagas and about publication of weak data by an international journal is justified.

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REFERENCES

1. P. A. Anninos and N. Tsajas, *Int. J. Neurosci.* **46** (nos. 3 and 4), 235 (1989).
2. *Tachydromos (The Postman)* **47**, 50 (24 November 1988).

Skin Research Center

Marjorie Sun's article of 25 August (News & Comment, p. 810) did a fine job of capturing the historic background leading to the agreement between the Shiseido Company, Ltd., and the Massachusetts General Hospital (MGH)—Harvard (Medical School) Cutaneous Biology Research Center. The article also captured very well the spirit of the agreement with Shiseido. There are, however, some corrections and a clarification that should be made for the record: (i) The Harvard Medical School faculty has 5, not 50, full-time professors on its dermatology faculty. The full-time staff has about 50 faculty members. (ii) The MGH will receive well under half of the \$85 million in indirect costs. (iii) Shiseido has sent 4 or 5, not 45, researchers to MGH-Harvard laboratories in the past 20 years. (iv) The MGH, not Harvard, will hold patents for and receive royalties from research supported by Shiseido. (v) Tatsuya Ozawa will serve as associate director for Shiseido Liaison and is expected to spend the preponderance of his time in Japan.

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Erratum: The credit line for the photograph of polyacetylene fibers accompanying Joseph Alper's article "Conductive polymers recharged" (Research News, 13 Oct., p. 208) should have read, "Tokyo Institute of Technology."