Now that China has replaced the former Soviet Union as the major focus of concern, human-rights activists meet with indifference or even hostility

Human Rights Fades as a Cause for Scientists

Last spring, the annual gathering that is proudly billed as the largest physics meeting in the world became a nightmare for the one human-rights group officially represented there. The meeting, held in Los Angeles in March and sponsored by the American Physical Society (APS), had its usual scientific dazzle, as participants flocked to talks on quantum dots, micromachines, and ultrafast lasers. But problems for the Committee on the International Freedom of Scientists, or CIFS—a bylaw committee of the APS—started even before the first overhead projector flashed to life. Then the problems got worse.

A workshop on human rights had to be canceled when only two of the thousands of physicists at the meeting registered for it. Then a Chinese graduate student in physics destroyed literature at a CIFS booth, enraged by what he said were false depictions of human-rights abuses in his home country. To top it off, an APS official then ordered CIFS representatives to remove the materials that had just been defaced, saying that boldface words like "torture" and "repression" on posters and flyers were too inflammatory.

For human-rights activists in the scientific community, the combination of apathy from many scientists, ambivalence from others, and hostility from a few has become a familiar experience in recent years. Many organizations have seen scientist interest in human rights slip into a long-term decline after decades of raucous agitation on behalf of Soviet dissidents during the Cold War—and a brief resurgence after the crushing of a student-led pro-democracy movement at Tiananmen Square in Beijing, on 4 June 1989, in which hundreds of people were killed.

One factor in the change was the end of the Cold War, which undercut a broad consensus among scientists on human-rights issues. There is, for example, no longer a central, symbolic figure like the physicist Andrei Sakharov during his exile to Gorky in the former Soviet Union. The People's Republic of China (PRC), which has replaced the Soviet Union as the major focus of human-rights activism, also has a far less hostile relationship with the United States. And although the PRC keeps strict clamps on political expression, it has loosened the reins on personal and economic freedoms.

Equally important are the views of the large population of expatriate Chinese scientists here. "You should know that there is a tremendous split within the expatriate Chinese scientific community," says Irving Lerch, director of International Affairs at the APS and co-chair of the Committee on Scientific Freedom and Responsibility at the American Association for the Advancement of Science (AAAS, publisher of *Science*). "The feelings are very strong," Lerch says.

Although many expatriates deplore Tiananmen and the imprisonments since then, others resent criticism of their homeland or believe a strident approach to human rights is counterproductive. In fact, some of the most powerful voices in that community—such as Chen Ning Yang,* the Nobel Prize–winning physicist at the State University of New York, Stony Brook—have not condemned the 1989 massacre, saying it may have been necessary to preserve stability and economic progress in the PRC.

That was then. Avital Sharansky, wife of the Soviet dissident Natan Sharansky, is flanked by scientists including Andrew Sessler (far left), current president of the American Physical Society, in July 1978 at the San Francisco press club.

News reports and the watch lists of human-rights groups are still replete with cases of harassed and imprisoned scientists and other academics. But the numbers—and the scientists' international profile—are lower than in the immediate aftermath of Tiananmen, feeding the disagreement. Even younger scientists who recognize continuing human-rights problems in the PRC tend to feel that exiled dissidents, and the Western press that covers them, give an unfair picture of China. "Generally the Chinese students here feel that especially the bad side of China has been exaggerated out of proportion, because the media tries to make big news," says Kezhao Zhang, a physics graduate student at the University of California, San Diego, who was president of the local chapter of the Chinese Students and Scholars Association from 1996 to 1997.

Fang Li Zhi, the astrophysicist in exile who is now at the University of Arizona, Tucson, notes that as the PRC released into exile high-profile dissidents like himself, others slipped out of the public eye. "My case was very visible," he says. Most of the dissident scientists who remain, he says, "are unknown people." The same is true for most of the scientists on human rights watch lists outside the PRC, mostly in the Middle East, Africa, and Latin America.

Activists are quick to add that some human-rights organizations, especially those that have adapted to the fractured post–Cold War political scene, have been thriving. But the overall mood shift has left the scientists who are still speaking out about human rights bewildered and frustrated. "It's my academic generation, and probably my generation in a larger sense, that has completely dropped the ball," says William Dorland, 32, this year's CIFS chair and a physicist at the University of Maryland, College Park. "I'm not riding on a high horse. It's just disappointing that so few people think this is an important part of what it means to be a scientist."

From one voice to many

Many learned societies have made human rights a cause, but for years physicists were the standard-bearers. After World War II, a long line of physicists expressed humanitarian

CREDIT: GEORGE T. KRUSE

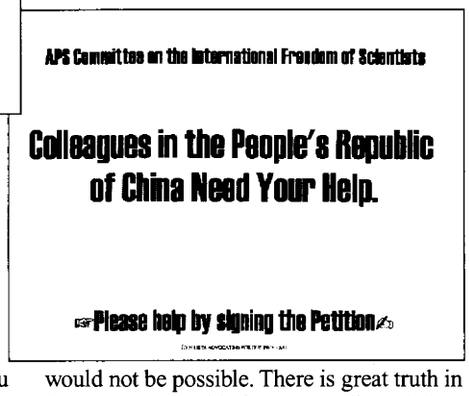
* The order of Chinese family and given names varies with individual preference.

views in the face of the destructive power of the atomic bomb their field had created. Many Soviet dissidents, like Sakharov, were physicists, which drew the APS further into the human-rights movement.

By any measure, the current difficulties with the human-rights programs of the APS come at a particularly ironic time. During its 100th anniversary next year, the APS will showcase its activist history in the human-rights struggle at a huge gathering in Atlanta. And the president of APS for 1998, Andrew Sessler of Lawrence Berkeley National Laboratory in California, has attained an almost legendary status as a veteran of those struggles.

In the late 1970s, Sessler, Berkeley's Morris Pripstein, and others formed a group called SOS—focusing on the cases of imprisoned scientists Sakharov, Yuri Orlov, and Natan Sharansky. After years of pressure from SOS and other scientific organizations, all three were released. Sessler recalls taking disruptive actions like picketing a talk in the United States by Nikolai Basov, a Soviet physicist and Nobel laureate who Sessler says signed a petition against Sakharov. Sessler's sign said, BASOV: GREAT SCIENTIST, LOUSY HUMAN BEING. Newspapers ran pictures of Sessler and his sign. "The picture went back to Moscow," says Sessler. "What an embarrassment! They send their Nobel Prize winner and instead of being noticed for all his great accomplishments in science, here is this character getting all the PR."

Not all of Sessler's colleagues favored such direct confrontation. Although Sessler and others hoped to declare a moratorium on travel to scientific conferences on Soviet soil, some scientists favored continuing engagement. "In the end, there was a kind of compromise between the two camps," says Lerch. "The compromise was, if you feel you have to attend meetings over there, at least acknowledge that the regime is doing something wrong." So scientists would preface their technical talks with a "dedication" to particular dissidents, or publicly visit them at some point during the trip. The compromise permitted the international scientific community to speak nearly with one voice.



Fighting words. A human rights petition displayed at last spring's American Physical Society meeting before (*above*) and after a Chinese graduate student objected to it.

When it came to China, physicists' voices were heard again, but this time the messages were mixed. The silence of several prominent Chinese scientists about the killings in Tiananmen Square set the tone for much of the debate that has followed. Such is the scientific prestige of Yang and the man with whom he shared the Nobel Prize in 1957—Columbia University's Tsung Dao Lee—that they made a ringing statement simply by refusing to condemn the killings. One Chinese-American physicist with moderate political views, who asked that his name not be used, asks a question that was initially on many of his colleagues' minds: "How come these big shots remained silent over Tiananmen? They should be the spiritual leaders."

"The view which the dissidents would like me or anybody else to take is a one-sided view."

—Chen Ning Yang

Asked this question, Yang responds: "I knew the situation was very complex. The view which the dissidents would like me or anybody else to take is a one-sided view." He adds: "I did not want to say anything publicly about it also because the fundamental position of the Chinese government, now, has some truth in it. That is the following. If the bloodshed did not happen, China might end in a tremendous turmoil, and all subsequent economic progress since 1989 would not be possible. There is great truth in this statement. This is usually discarded as nonsense or propaganda."

Lee did not respond to several requests for comment on his views, but almost a decade ago he took a step that went even further, in the eyes of many physicists. Just a few months after Tiananmen, he met with Deng Xiaoping and allowed himself to be photographed shaking hands with the Chinese leader. The gesture caused "an outpouring of indignation and shock," recalls Joseph Birman, a physicist at the City College of New York and chair of the human rights committee of the New York Academy of Sciences. After the meeting, according to newspaper reports, Lee announced that Deng had privately expressed a new, conciliatory stance on the killings. The new stance by Deng and the government never materialized publicly, however.

Since then the division among Chinese-American physicists has only deepened, as the government has continued to suppress political dissent. This year, for example, the physicist Wang Youcai was imprisoned for attempts to organize an opposition party. Lin Hai, a software engineer in Shanghai, was arrested in July for subversion after distributing Chinese e-mail addresses to U.S.–based Internet publications that promote democracy, according to rights groups. Xu Liangying, the elderly translator of Einstein's works who has petitioned the country to adopt political reforms, continues to live under tight surveillance in Beijing. And Chinese scientists who live in the United States have recently been detained and interrogated during visits to see relatives in the PRC.

But with the increase in personal freedoms and economic prosperity, along with the release of some high-profile dissidents, some Chinese physicists began to feel that direct confrontation was not the best route to progress on human rights, says Cheuk-Yin Wong of Oak Ridge National Laboratory in Tennessee, vice chair of the Overseas Chinese Physics Association (OCPA). "Nobody can defend" the continuing human-rights violations in the PRC, says Tsung-Shung Lee, a physicist at Argonne National Laboratory in Illinois, but "if you mix the scientific activity with politics, there's no boundary."

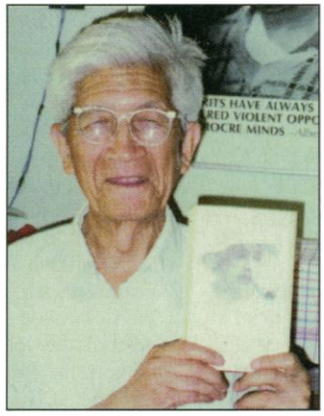
Other expatriates, especially younger students, view human-rights criticisms as groundless attacks on their homeland. And even moderate Chinese often say that criticism of the PRC here is excessive. Says Frank Shu, an astrophysics professor at the University of California, Berkeley: "Across the board I think among all Chinese, most of us feel that in the Western press this is given more emphasis than is commensurate with the degree

of violations that take place. There is an attempt to put China in the role of bogeyman."

But Betty Manyee Tsang, a physicist at Michigan State University in East Lansing who is an OCPA member and a former CIFS chair, argues that by distancing itself from human-rights issues, the Chinese-American science community has discouraged wider support. "A lot of American physicists said, 'The Chinese physicists are not involved with human rights. Why should we care?' "

Some American scientists and scientific administrators call such sentiments overwrought. But although human-rights subcommittees at the AAAS, the American Chemical Society, and the National Academy of Sciences remain active in advancing their cause, their parent organizations are increasingly decoupling scientific activities from activism. The National Academy of Sciences (NAS) suspended its relations with the Soviet Academy of Sciences during the Cold War and with Chinese institutions on 7 June 1989. The APS sponsored decades of resistance to Soviet repression and abandoned a major scientific exchange program with the PRC because of Tiananmen.

By 1993, however, the NAS had decided to reestablish contact with the Chinese Academy of Sciences. And in 1994, when Burton Richter, the Nobel laureate and director of the Stanford Linear Accelerator Center, was APS president, the society negotiated a "memorandum of understanding" with the Chinese Physical Society. The agreement was intended to stem the pirating of APS technical journals in China—there were fewer than 10 paid subscriptions in the entire country—and foster various forms of scientific collaboration, which had come to a sudden halt with the 4 June killings. After intense debate, including an impassioned speech by Fang and opposition by CIFS, the APS council narrowly approved a memorandum with no explicit mention of human rights.



Under surveillance. Xu Liangying, translator of Einstein's works, petitioned the Chinese government to adopt political reforms.

Richter, who favored separating the issues and whose influence probably ensured victory for that approach in the final vote, says that any attempt to link human rights to the agreement would have doomed it. It was, he says, "unrealistic in the extreme" to think that Chinese scientists would ever sign an agreement with such language. Says Richter, "I believe personally that in situations like this, it takes two different groups to advance things. It takes a group like Fang Li Zhi to protest—to make the protest vocal and heard all over. And it takes another group to try and keep the doors open." The AAAS is also keeping human-rights concerns separate from other initiatives. Although its own Science and Human Rights watch list chronicles human-rights violations in China and elsewhere, AAAS has made subscription agreements with the Natural Sciences Academy in China that do not mention human rights.

Flash point

The conflict between the activism of a few scientists and the indifference or hostility of most was in full view at the APS March meeting. Problems began with a workshop sponsored by CIFS and AAAS titled "International Freedom of Scientists: What the Physics Community Can Do and Is Doing." When only two of the 5056 physicists who registered for the meeting signed up for the workshop, it was canceled.

> **"We are concerned about any physicist, anywhere in the world, who is suffering a human-rights attack."**
>
> —Andrew Sessler

A far stronger message about how the world had changed awaited the activists the next day. On the morning of Monday, 16 March, in the meeting's bustling registration area, Dorland set up the usual CIFS display encouraging those in attendance to sign a petition on behalf of a list of Chinese scientists thought to have been imprisoned "because they have engaged in the peaceful exercise of their right to freedom of expression."

The petition—which was sponsored by CIFS, the Committee on Scientific Freedom and Responsibility of the AAAS, the Committee on the Human Rights of Scientists of the New York Academy of Sciences, and the independent, New York–based Committee of Concerned Scientists—highlighted two of the 18 scientists, engineers, and physicians listed by a variety of watch groups as imprisoned or missing. One was Zhu Xiangzhong, who was reportedly sentenced to seven and a half years' imprisonment in 1989 for dissident political activities; the other was Lu Yanghua, a student at Lanzhou University who was detained in April or May 1992 for connections with underground dissident organizations. Prominently distributed on the petition, and on larger posters that followed its design, were words such as "torture," "repression," "intimidation," and "unlawful imprisonment" (see graphic on p. 217).

At some point during the morning, when Dorland stepped away from the booth for a few moments, the words caught the eye of Patrick Shuanghua Dai, a graduate student in physics at Tufts University in Medford, Massachusetts. "I looked through the poster [and] got very angry," says Dai, who is from the PRC. "It looks like some terrible human-rights abuse in China," he says. "But I live in China, and I know it's not true. It's just a lie."

Dai says he looked around for someone to talk to about the material, and not finding anyone, he started tearing down the posters. He threw away the material at the booth and then found thousands of flyers and began throwing those out, too. That was when Dorland returned to the room. "He was scooping them up as I saw him," says Dorland. "I said: 'What are you doing?' I don't think I hollered, [but] it was a dramatic moment. He started telling me that we were supporting common criminals and we didn't know the true situation in China." Says Dai, "I think I did the right thing"—just what an American in China might do, he says, if confronted with similar material about his or her country.

The material had been cleared through Lerch's office and had been used in the same basic form for at least 2 years. So Dorland called in Judy Franz, the APS executive director, to back him up. But now it was Dorland's turn to be shocked. After scolding Dai, Franz told Dorland she had decided that words such as "torture" and "repression" were unnecessarily inflammatory and would have to be removed from the display.

How stark was the contrast with the heyday of APS activism? "If Sakharov was in Gorky and Orlov and Sharansky were in prison and some Russian student came tearing through a display like that," says Lerch, "I think there would have been a riot." Instead, Dorland and Jennifer Kirin, then an international programs assistant at APS, dipped into CIFS's shoestring budget and, in the local copy center, ran off a few flyers without the offending words.

"I was very unhappy about [Franz's] decision," says Dorland. Franz will only say, "I thought it was a very small incident. It was unfortunate that we had a young student who got more emotional than he should have. CIFS is an important part of APS, and we will continue to support them in the work that they do."

Dorland notes that no one in APS has questioned the facts of the cases publicized in Los Angeles. Liu Gang, the dissident who as a physics student helped organize protests on Tiananmen Square and who escaped to the United States in 1996 after he was released from prison, says "I can tell you that I experienced torture by policemen and common prisoners sent by policemen [in my] solitary cell, when I was in prison." *Science* has what is said to be a firsthand account from a source close to Zhu, which reports that while in prison, Zhu was beaten with a bench by an orderly and severely injured, then went on a hunger strike to protest the subsequent lack of medical treatment. Zhu survived, but the dissident network has not been able to confirm his release at the end of his prison sentence 2 years ago.

"We take great efforts to be accurate," Sessler, the APS president, says about the reports on Zhu and Lu. "Very rarely if ever has somebody found that we misspoke, and certainly that hasn't been so in this case." As to the enforced revision, says Sessler, "we're down to a level of detail of what's appropriate to get people's attention."

Sessler says the APS isn't wavering from its commitment to human rights. "There's a long tradition, which I fully support, of the Physical Society being involved in public affairs which concern physicists," he says. "We are concerned about any physicist, anywhere in the world, who is suffering a human-rights attack."

Although that concern is harder than ever to translate into an effective campaign, a handful of organizations say they have found ways to adapt to the changed political landscape. "We're making a greater effort to match cases of imprisoned scientists with individual scientists in their field ... who are interested in that country," says Carol Corillon, director of the Committee on Human Rights of the National Academy of Sciences, the National Academy of Engineers, and the Institute of Medicine. This tailored approach, she says, produces committed activism by scientists who have useful connections. The committee recently reported, for example, that after a visit by committee members, Guatemala indicted three top military officers for the murder of an anthropologist.

There may no longer be a single political route to success in the campaign for human rights. But if the heirs to Sessler's Cold War activism can master the new landscape, scientists may once again find human rights as fascinating as lasers and quantum dots.

–JAMES GLANZ

INFECTIOUS DISEASE

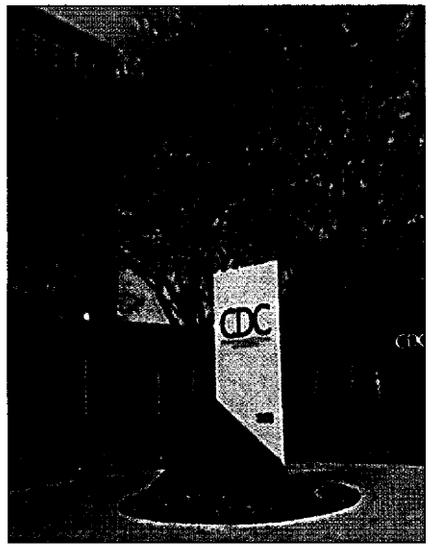
Molecular Methods Fire Up the Hunt for Emerging Pathogens

Combining an early warning system with genetic techniques, microbiologists have stepped up the hunt for emerging pathogens in the United States

When a 3-year-old Connecticut girl was hospitalized with an often-fatal type of kidney failure last year, doctors at first suspected that she was infected with *Escherichia coli* O157:H7, a dangerous strain of bacteria that can cause kidney failure in children. But all attempts to culture this and other pathogens failed. Fortunately, the girl recovered, and the case became one of the thousands of unexplained illnesses put on the books every year in the United States.

This time, however, the story didn't end there. To track down the mystery pathogen, doctors turned over samples of the girl's blood taken during the height of her illness to a specialized pathogen lab in California, via the Unexplained Illness Working Group, a network of infectious-disease experts coordinated by the Centers for Disease Control and Prevention (CDC) in Atlanta. The California lab used sensitive molecular and immunological probes to identify the pathogen: an unknown strain of enterovirus, a large group of microbes that includes the poliovirus. This information came too late to help the Connecticut girl, but researchers are still probing the virus's genome to see if it matches one of the more than 70 known enterovirus strains, or if it is a new pathogen.

This is just one example of how new molecular technologies are speeding the hunt for microbes that have recently begun to attack human hosts, or so-called emerging pathogens. To fight these bugs, researchers are now going beyond the traditional means of identifying pathogens—culturing them in petri dishes and test tubes—and isolating the DNA or RNA that makes up their genomes. The enterovirus that infected the Connecticut girl, for example, was spotted by matching a segment of its RNA to that of other known enteroviruses. The Unexplained Illness Working Group, created by the CDC in 1994, is one leader in this effort, focusing not on the tropics, home to infamous viruses such as Ebola, but on the familiar settings of U.S. hospitals and clinics, where new and deadly strains may also emerge.



CREDIT: CDC

Pathogen central. The CDC in Atlanta is at the hub of a microbe-spotting network.

The network serves as an early warning system for dangerous microbes as well as a focal point for research on new tests. And over the past year the team has revved up to full speed: Some 200 cases of unexplained illness are under active investigation, and results are starting to emerge. The network has tracked down possible new strains of enterovirus—implicated in a number of recent outbreaks of childhood disease in the United States and Asia—and has uncovered evidence that microbes once thought innocuous can cause disease. For example, the team has found that human herpesvirus 6, previously thought to be benign when it infects children, is behind some cases of childhood encephalitis. Once new pathogens have been identified, says CDC epidemiologist Bradley Perkins, the working group's Atlanta-based coordinator, the ultimate goal is to develop a "diagnostic test that a clinician could order in the hospital."

The evidence so far suggests that some unidentified killers may already be out there. In up to 14% of deaths caused by infection in people between the ages of 1 and 49, no known microbe could be identified as the culprit, according to surveys carried out over the past few years by the working group and other collaborators.

But finding these silent killers isn't easy. The time-honored means of identifying an invading microbe is by taking blood and tissue samples and trying to culture the organism in various artificial growth media, then identifying it either under the microscope or with