

Tobacco Money Lights Up a Debate

Grants from tobacco companies provide a large and growing source of support for basic biomedical research, but critics charge that the funds help the industry sow doubts about the hazards of smoking



LA JOLLA, CALIFORNIA—Taped on the door leading to the new office of famed molecular biologist Sydney Brenner is a paper sign that reads "Molecular Sciences Institute." A visitor has few clues that this embryonic basic research institute—currently in rented space on the grounds of Scripps Memorial Hospital here—has the ambitions or the ability to rival nearby scientific powerhouses, which have the University of California, San Diego, at their hub. But along with Brenner's involvement, the institute already has another major advantage: a grant of \$15 million a year for 15 years from Philip Morris Companies, the tobacco giant.

Brenner, who made his name at the U.K. Medical Research Council's Laboratory of Molecular Biology—with pathbreaking work on messenger RNA in the 1960s and a later project that has made the nematode worm a favorite of geneticists worldwide—stresses that Philip Morris funds the institute with no strings attached. "It's a free-standing, independent institution," says Brenner. This is a point Brenner does not take lightly. Indeed, California state records show that Molecular Sciences Institute was named the "Philip Morris Institute for Molecular Sciences Inc." when it was incorporated on 29 June 1995, and its name was officially changed in February. The change, says Brenner, "has become part of the effort to remove any hint, any possibility of any suspicion that there would be a control by Philip Morris of the institute." It's also an attempt, he says, "to make sure we do not have any additional burdens that would not help us as we're trying to get this project to proceed" (see box on p. 489).

It is easy to imagine the type of "additional burdens" to which Brenner is alluding, given the debate that has been raging in many areas of society over the propriety of accepting money from the tobacco industry. Broadcasting companies and publishers have been confronting the issue head-on for decades, with many giving up millions of dollars of advertising revenues. Organizers of arts festivals, concerts, and county fairs have also become embroiled in bitter disputes about tobacco-company sponsorship of their

events. And the debate has become still more rancorous as Congress and the Food and Drug Administration have gone after the industry for playing dumb about the dangers of tobacco, states and individuals have sued tobacco companies for the health damage their products have wrought, a brood of disgruntled former tobacco company scientists have left the flock and gone public with allegations of industry deceit, and the U.S. Department of Justice is investigating whether industry executives lied to Congress and stockholders about tobacco's dangers.

industry (see box on p. 490), and others have divested their tobacco company stocks. Last July, the *Journal of the American Medical Association* ran five papers criticizing tobacco industry support of scientific research and editorialized that "[m]edical schools and research institutions, as well as individual researchers, should refuse any funding from the tobacco industry and its subsidiaries to avoid giving them an appearance of credibility." Two journals published by the American Lung Association went a step further in December, announcing that they will no longer accept papers if the work was funded by tobacco money (see box on p. 492).

Given this backdrop, it's no surprise that

Brenner's concerns about "additional burdens" are far from theoretical: Already, the San Diego chapter of the American Lung Association has fired off a letter urging ScrippsHealth, sister of the nearby Scripps Research Institute and owner of the property Molecular Sciences is renting, to cut its ties to Philip Morris. "I urge you to take whatever steps are legally possible to sever the relationship," wrote American Lung Association Vice President Debra Kelly to ScrippsHealth CEO Ames Early on 29 February.

During the past 4 months, *Science* has interviewed scores of researchers on both sides of the debate over whether scientists

should take money from the tobacco industry. It is a fiery controversy, in which the staunchest critics routinely lard conversations with references to "blood money" and the like, and the ardent defenders retort that they are being unfairly harassed by politically correct zealots. Those who defend the practice argue that as long as the money supports first-class, peer-reviewed research and comes with no strings attached, tobacco dollars can provide a crucial source of support—especially for young researchers struggling to secure scarce federal grants. But critics argue that even when researchers retain their independence, they risk being used by the industry to bolster its contention that there are scientific doubts about the health hazards of smoking.

One thing is clear amid the smoke of this debate: It is likely to touch more and more



Under fire. Tobacco research hits headlines.

But until recently, the scientific community has dealt with the issue of whether to accept tobacco money sub rosa. Scientists, however, are increasingly being drawn into the fray, as they receive tens of millions of dollars from the industry each year. In 1994, a blue-ribbon panel recommended that the federal government no longer fund cancer centers that take tobacco money. A handful of academic institutions now forbid their researchers from accepting money from the

Philip Morris Gives Institute a Head Start

LA JOLLA, CALIFORNIA—On a few short miles of the breath-taking Torrey Pines Mesa overlooking the Pacific Ocean stand the Salk Institute for Biological Studies, the University of California, San Diego, and the Scripps Research Institute. The Neurosciences Institute, headed by Nobel laureate Gerald Edelman, recently moved into the neighborhood, constructing a stunning building to match its ambitious plans. And if molecular biologist Sydney Brenner has his way, there will soon be another new face on the block: Molecular Sciences Institute (MSI).

MSI stands out even among these illustrious neighbors, because it is the beneficiary of the largest single grant a tobacco company has ever offered for scientific research: a \$225 million commitment from Philip Morris Companies—maker of Marlboro, Benson & Hedges, and other leading cigarette brands. As such it is likely to become a target for critics of this pervasive but little-acknowledged source of research funding (see main text). But its scientific ambitions are right in the mainstream: studying cell signal transduction, the haute biology of the 1990s. Indeed, at a time when traditional funding is tight, the institute stands a good chance of making its mark in a key area of basic biology.

“One of the reasons the institute has come to La Jolla is because of the large number of research institutes,” says Brenner, who is MSI’s acting director. “There’s a conglomerate of activity, which means that a small institute could act synergistically and have enough critical mass. Scientists like to talk to people and go to talks. You have a community.” Brenner, now 69, knows a thing or two about scientific communities and synergism. In 1952, he left the then scientifically barren country of South Africa for Oxford University, where his doctoral work on bacteriophage hooked him up with a crowd of scientists attempting to crack the genetic code. A key collaborator soon became Francis Crick of DNA double-helix fame, and for years the two shared an office at the Medical Research Council’s Laboratory for Molecular Biology in Cambridge, U.K.

Brenner went on to found an entire field of genetics based on *Caenorhabditis elegans*, a worm that can now boast having one of the best studied genomes in the world. Brenner recently has birthed yet another new field, unraveling the genome of the puffer fish. “I don’t like the middle game of science,” explains Brenner. “There are only two games worth playing: the opening game and the end game. And it’s given to very few of us to play the end game, so I like playing the opening game.”

MSI may be his grandest opening game yet. “It’s an excellent idea to start this institute, particularly with Sydney at the head,” says his friend Gunter Blobel, a distinguished Rockefeller University cell biologist. “He has been a pioneer in many fields, and he has the very best taste in science.” For Brenner, MSI is something of a last hurrah. “When you reach my age, the long-term and the short-term become the same thing,” says Brenner.

The institute will focus on basic research into signal transduction, a catchall phrase that describes the way chemical messages move from outside a cell to its nucleus—a process that is crucial to understanding everything from developmental biology to disease processes. In all, MSI expects to hire a cross-disciplinary

group of 200 scientists, who will have no teaching responsibilities or mandate to raise funds (although they will be encouraged to get outside grants). “Unlike many other places where you do the science for which the money exists, we would rather follow where the science is taking us,” says Brenner.

Right now, though, MSI is still what Brenner calls a “paper institute.” Currently leasing a mere 530 square meters of space next door to a hospital that is located about one and a half kilometers inland from the Torrey Pines Mesa, MSI has yet to hire any scientists beyond Brenner. “I think we have a long induction period, one of those chemical reactions,” says Brenner.

What is already in place is the funding. Philip Morris has committed \$15 million a year, to be adjusted for inflation, for 15 years. In return, the company will have some licensing rights to MSI inventions, but only if they have no application to its tobacco business. Philip Morris’s real motivation, says George Knox, a spokesperson for the company, is to give something back to the community. “We have a chance to contribute to something that’s truly unique and has the potential to make a highly positive contribution to our society at a time when funds for these types of enterprises are not generally available,” says Knox. “This was a chance for us to do something truly spectacular.” Knox flat out rejects the notion that the company is in any way attempting to use MSI to promote doubt about the links between smoking

and disease. “This contribution is driven by extremely positive ideals and hopes for the future, not a cynical and negative need to address current controversies,” he says.

Beyond having one representative on the board of trustees, retired company Chair R. William Murray, Philip Morris will have no say in the institute’s direction. “We have total autonomy,” says Brenner. And the trustees, promises board designee John Safer, a Virginia banker and sculptor, will act as watchdogs to make sure that the company does not use MSI to further arguments that tobacco doesn’t cause disease. “This thing will remain a truly independent agency that won’t do anything but basic research,” says Safer. Although other board members have yet to be named, Brenner allows that one person they have been speaking with is Charles Edwards, the former head of Scripps Research Institute who once served as the commissioner of the Food and Drug Administration. Edwards did not return repeated phone calls.

Brenner hopes to have his own lab up and running by this summer. Other board members should be named in short order, too, and MSI then will begin hiring scientists. “The task will be to really find people at least a decade younger than me that will actually take the labs into their first decade,” Brenner says.

Brenner well recognizes that MSI—and he—will be criticized for taking tobacco money. But he suggests that people reflect on the life of Albert Nobel, the inventor of dynamite who left his money for the Nobel Prizes. “He probably killed more people than anybody ever,” says Brenner, half in jest. If the critics don’t slow Brenner down, MSI will have started to make its mark by June of 1999, when it moves into a new 8800-square-meter building on the Torrey Pines Mesa.

—J.C.



No strings.
Sydney Brenner says his planned institute will follow its own course.



Institutes Find It Hard to Kick the Tobacco Funding Habit

Seven years ago, three representatives from Philip Morris Companies visited the University of California, San Diego (UCSD), to discuss the prospect that the tobacco company would fund biomedical research at the school. The talks, says Richard Atkinson, former chancellor of UCSD and now head of the entire UC system, "never went beyond some early discussions." But the school had no objection in principle to accepting money from a tobacco company—a fact that outraged some UCSD researchers at the time. "Some of the faculty felt very strongly about it," recalls former UCSD Dean Gerald Burrow, who is now dean of Yale Medical School. Adds Atkinson, "There's no question we perceived it as a problem."

Back then, few schools had confronted the issue of tobacco money, which is a major source of funding for biomedical research (see main text). But today, while the UC system still has no policy on taking tobacco industry money—and indeed, several researchers at UCSD and its sister schools receive funding through the Council for Tobacco Research (CTR)—other institutions have taken action. Some have formally debated the issue but have declined to spurn the industry's dollars. But at least six research institutions in the United States, along with the University of Sydney in Australia, have renounced tobacco money (see table).

Red-hot arguments often precede the decision to reject or continue accepting tobacco money, pitting issues of academic freedom against such values as integrity, morality, and the promo-

after a Mass General committee studied the issue. "There was a very intelligent debate about the general philosophical issue of judging the quality of support," recalls Newbower. "If money came in from someone's will, should we look at how they earned it before they died?"

What "tipped the scales" against CTR and STRC money, says Newbower, was the industry's steadfast position that the link between tobacco and disease remains unproven. The Mass General committee concluded that this position represents "a calculated public relations effort" designed to limit restrictions on tobacco advertising, sales, and use—and to help fend off lawsuits. "At the least, these activities create a conflict of interest for the investigators and institutions receiving support from CTR," the committee wrote. "At their worst, they compromise the health-promoting goals of grant recipients and may undermine benefits derived from the research itself."

M. D. Anderson Cancer Center at the University of Texas is the latest institution to join the no smoking money club. After wrestling with the issue for several years, the faculty voted for a ban last November. "It kept rearing its head," says oncologist Anthony Mastromarino, the center's vice president for research. Mastromarino explains that in June 1994, the faculty senate and the center's research council, which is made up of department heads, disagreed about nixing tobacco funds. Yet last winter, following an exposé by a local television news station about tobacco-industry funding of M. D. Anderson researchers, the

same two groups unanimously decided to just say no. "The overwhelming feeling was we should take the moral high road," says Mastromarino.

Some researchers who had been receiving tobacco money insist that they were not being duped by the industry. Michael Van Dyke, a biochemist at M. D. Anderson, says he supports the policy because it's good public relations. But he has no regrets about accepting CTR funding to isolate and characterize proteins. "I was very thankful for the money and would have applied again," says Van Dyke. "When you're just starting out, who's going to fund you?" Molecular biologist Lynne Maquat of Roswell Park Cancer Institute, which is run by the state of New York Department of Health, makes a similar case. "I was very grateful to have received

the funds, and it allowed us to take on a project I otherwise would not have been able to do—and it was very productive," says Maquat, whose institution—along with two smaller ones run by the health department—learned in May 1994 that it no longer could accept tobacco money.

Yet others, such as M. D. Anderson molecular pathologist Claudio Conti, see themselves as unwittingly having contributed to the industry's nonscientific aims. "I didn't know anything about CTR," says Conti, when he accepted funds for his research on tumor suppressor genes. "I thought in a very naive way, well, the tobacco industry is concerned about what they've done, and they're trying to repair it with money for basic research with no strings attached." Then Conti read a widely discussed *Wall Street Journal* article in 1993 that was sharply critical of CTR. The article "showed that they were not trying to repair the damage tobacco could have done to health but to repair the bad image the tobacco industry has as a result of its arrogance," says Conti. "I'm afraid that I played a role. Sorry, I wouldn't do it again."

—J.C.

INSTITUTIONS THAT BAR TOBACCO-INDUSTRY SUPPORT

Institution	Location	Date of Ban
Brigham and Women's Hospital	Boston, MA	April 1994
Massachusetts General Hospital	Boston, MA	April 1994
M. D. Anderson Cancer Center	Houston, TX	Dec. 1995
Roswell Park Cancer Institute*	Buffalo, NY	May 1994
Wadsworth Center for Labs and Research*	Albany, NY	May 1994
Health Research Inc.*	Albany, NY	May 1994
University of Sydney	Sydney, Australia	Sept. 1982

* Run by N.Y. Department of Health

tion of public health. "This was a pretty fierce debate in the faculty here," says Harvey Fineberg, dean of Harvard School of Public Health, which ultimately decided about 5 years ago not to institute a ban. Fineberg says he supports the decision on grounds of academic freedom. "Personally, I'd rather beg on the street than accept that money," Fineberg says. "But I don't want to be in a university that would prohibit others from accepting that money except by persuasion."

Yet Massachusetts General Hospital and Brigham and Women's Hospital—both of which are part of Harvard Medical School—have taken a different tack. In March 1994, these two institutions jointly announced they would no longer allow their researchers to accept funding from CTR or its cousin, the Smokeless Tobacco Research Council (STRC). All support from CTR and STRC was phased out by 1 January of this year. "The general feeling was that [CTR and STRC] were using the good name of the institution and the researchers to further ends that we did not support," says Ronald Newbower, senior vice president for research at Mass General. The hospitals reached this decision

researchers. As federal dollars for scientific research become more scarce, *Science* has found that the amount of money being offered to scientists by the tobacco industry is steadily increasing—seemingly in lockstep with the intensity of the debate.

Givers and takers

All told, tobacco companies—as they like to point out—offer outside investigators one of the largest sources of private funding for biomedical research. And there is no shortage of takers. In addition to Brenner, prominent investigators who have received tobacco-industry money to do research include Nobel Prize winners, members of the National Academy of Sciences, and Howard Hughes Medical Institute investigators. Some are as well known for their iconoclasm as they are for their work—such as retrovirologist Peter Duesberg of the University of California, Berkeley, who contends that HIV does not cause AIDS. Many are unknowns who are getting their first grants. A survey sent out by the American Medical Association (AMA) in 1992 to medical schools revealed that 52 of the 95 responding schools received tobacco money. Even intramural researchers at the National Institutes of Health (NIH) have been awarded tobacco-sponsored grants.

Although Brenner's nascent institute is getting the biggest single grant the tobacco companies have ever given, companies have long given money to individual researchers and institutions. Rockefeller University, for example, received \$7.2 million between 1975 and 1988 from what is now RJR Nabisco, and another \$655,000 from Brown & Williamson between 1980 and 1991. Both companies gave the money in a "completely unrestricted" fashion, says a Rockefeller spokesperson, and it was used for "general operating support." The Salk Institute for Biological Studies similarly received \$280,000 from Philip Morris between 1977 and 1995. Philip Morris, Brown & Williamson, and RJR Nabisco all declined to tell *Science* what other institutions or researchers they have directly supported over the years.

Grants to individual researchers generally come through a nonprofit organization called the Council for Tobacco Research—USA (CTR), and it is the main target of the critics. Funded primarily by five tobacco companies that contribute in proportion to their revenues, CTR gives grants to independent researchers who are assured complete scientific freedom and are encouraged to publish their results. Although in the past CTR has supported a small number of controversial "special projects" through contracts (see box on p. 494), grant applications typically are reviewed by a scientific advisory

board made up of prominent researchers. CTR bills itself as "the sponsoring agency of a program of research into questions of tobacco use and health," but most of the grants it funds have little obvious connection to the health effects of smoking; many of them focus on such basic questions as the role of oncogenes, the actions of various receptors, mechanisms of gene regulation, and molecular immunology.

In 1994, the latest year for which figures are available, CTR awarded \$19.5 million in grants; between its inception in 1954 and 1994, CTR has given 1038 researchers more than \$243 million. The Smokeless Tobacco Research Council, a similar but smaller group, has "committed" \$32 million to grants since 1981; the Center for Indoor



No PR. CTR President James Glenn testified that the organization focuses on science.

Air Research, an industry-supported group that awards contracts to study secondhand smoke and other issues, has given out a total of about \$20 million during the past 5 years.

Researchers awarded money by CTR and its smaller relatives widely report that they feel no influence from—or even a connection to—the tobacco industry. Many, such as gene-therapy researcher Inder Verma at the Salk Institute, explain that they applied for a CTR grant because they respected people on the board who evaluated their grants. "I figured this is a good scientific committee," says Verma, whom CTR funded to study mediators of signal transduction. "I didn't have big questions." Virologist Ronald Luftig of Louisiana State University Medical Center, who received CTR money 2 decades ago to study a murine leukemia virus, recounts a similar scenario. Luftig knew "a very good scientist" on CTR's board: "I wasn't taking [money] from an unscrupulous entity that wanted a good image, but a scientist who knew my work and wanted to see good research."

Past and present members of CTR's scientific advisory board—at least the few who returned phone calls from *Science*—also emphasize that tobacco companies never interfered with their decisions. "We've always been absolutely free to pick and choose [from the grant applications] and to use sci-

entific principles as our only guiding principles," says Manfred Karnovsky, a retired Harvard University biochemist who left the board last year. "Never in the 10 years I was on the board did undue pressure ever come up." Board member Peter Vogt, a widely respected oncovirologist at the Scripps Research Institute, also stresses that the group only supports top-quality, peer-reviewed research. "This is as clean a study section as I've ever served on, and it compares to any study section at the NIH," says Vogt.

Board member Raymond Erikson, who studies protein kinases at Harvard University, notes that the board favors applications from young scientists. "A lot of people on the committee, rather than feeling they're being used by the tobacco companies, feel as though they're helping young investigators," he says. Vogt agrees. "There are a lot of young people who are receiving CTR grants at a time that it is critical," he says.

Burning debates

Tobacco industry critics argue that, regardless of the eminence of the CTR board members and the excellence of the work they fund, there is an insidious side to these connections. The heart of their argument is that tobacco products kill more than 400,000 people each year in the United States alone, making it the number one preventable cause of death. Yet the industry, critics assert, funds outside researchers, especially researchers probing the molecular basis of causes of cancer, mainly to make it appear as though this conclusion is controversial.

"It all fits into the overall strategy that anything but tobacco causes disease," says cardiologist Stanton Glantz of the University of California, San Francisco (UCSF), co-author of a new book, *The Cigarette Papers*, which takes a detailed look at 4000 pages of internal documents from the Brown & Williamson Tobacco Corp. UCSF pharmacologist Lisa Bero, another co-author of *The Cigarette Papers*, thinks taking tobacco money "basically makes you a pawn of the industry." Richard Daynard, a law professor at Boston's Northeastern University who heads the Tobacco Control Resource Center, also stresses this point. "Taking money from them advances one's own research agenda but allows tobacco companies to say, 'Look at all the money we're spending to see whether tobacco causes cancer,'" says Daynard. "This is not a disinterested charity."

Exhibit A in this critique is the fact that tobacco company executives set up CTR in 1954 as a public relations operation in reaction to a seminal scientific paper published the year before that linked smoking to cancer. A 1954 memo prepared by the public relations firm Hill & Knowlton, which ran CTR for its first few years, explains how the

Lung Association Journals Spurn Tobacco-Funded Papers

Last November, the medical section of the American Lung Association let some researchers breathe easier when it announced that its two journals would no longer publish work funded by the tobacco industry. But the policy change has made other researchers choke.

After considering the views of leading bioethicists and its members, the board of the association's affiliate, the American Thoracic Society, decided that, as of December 1995, the *American Journal of Respiratory and Critical Care Medicine* and the *American Journal of Respiratory Cell and Molecular Biology* would no longer even review papers if the tobacco industry funded the research. "The mission of the tobacco industry is not consonant with the mission of the American Thoracic Society," explains Molly Osborne, a pulmonologist at the Veterans Administration hospital in Portland, Oregon, who sat on the society's bioethics committee that recommended the new policy.

Critics of the decision say it is shortsighted—and they do not mince words. One of the most stinging attacks came in the 20 January *British Medical Journal*, whose editors branded the policy "misguided" and said it was "a threat to medical science, to journalism, and ultimately to a free society." Warned the editors, "If some studies are systematically suppressed then we will reach false and biased conclusions when reviewing a body of research." H. Tristram Engelhardt Jr., a physician and philosopher at Baylor College of Medicine's Center for Medical Ethics and Health Policy in Houston, says the decision "blurs the status for what it is to have a scientific publication."

Engelhardt had elaborated on that point before the policy was adopted, during a vigorous debate in the pages of the *American Journal of Respiratory and Critical Care Medicine*. In the February

1995 issue, Engelhardt argued that science should be judged on its merits, period. Barring research conducted with legally available money was a slippery slope, he argued. Is it acceptable, he asked, to take money if it is derived from cigarette taxes? Can someone publish in these journals who pollutes the air by driving an old-model car? May one smoke and publish? Scientific journals, he concluded, "should be very wary of acting as moral police."

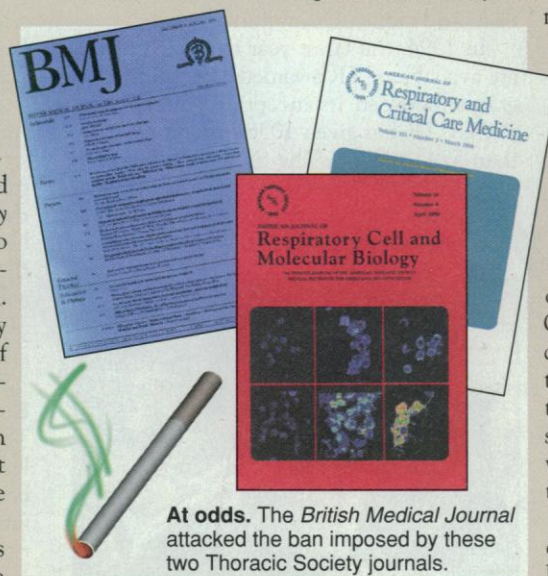
In the same issue of that journal, bioethicist Arthur Caplan from the University of Pennsylvania championed the argument that ultimately prevailed. Caplan contended that the American Thoracic Society's mission includes the "prevention and treatment of lung disease throughout the world." Caplan wrote that banning tobacco industry-funded research would increase the society's credibility—and diminish that of the industry, which "has been shown time and time again to be at odds with the overall goals of free inquiry and the open exchange of information."

Although these two journals previously published few papers by authors who had tobacco-industry backing, the effects of the decision are already being felt.

Chemist Max Eisenberg, executive director of the industry-funded Center for Indoor Air Research, says he has received a few calls from concerned investigators whom they support. "I'm sure there will be some scientists who will not submit proposals [to us]," says Eisenberg. The decision of the journals was "dead wrong," he contends. "It tells the investigators, You can't be trusted based on the source of your support. Yet if you get a grant from a governmental agency, you're good. There should be some separation."

Caplan stresses that he would not encourage journals that have different missions to adopt the same stance. But, he says, "when you're in a political battle as the Lung Association clearly is, you have more values than peer review."

—J.C.



companies "feel that they should sponsor a public relations campaign which is positive in nature and is entirely 'pro-cigarettes.'" It continues: "The underlying purpose of any activity at this stage should be reassurance of the public. It is important that the public recognizes the existence of weighty scientific views which hold there is no proof that cigarette smoking is a cause of lung cancer."

Although CTR President James Glenn did not return repeated phone calls to discuss his organization, he addressed many of the criticisms directed at it when he testified at a congressional hearing in 1994. Glenn, a urologist and former dean of the Emory University and Mount Sinai medical schools, said the origins of CTR were "ancient history" that he could not verify, and he insisted that the council had "always been dedicated to science." CTR, he said,

has had no public relations function since he began working with the group in 1987.

Glenn testified that his personal view is that, while there are risk factors associated with tobacco use, "[n]o one has been able to demonstrate that smoking, per se, causes any diseases." By funding basic research through CTR, he said, "we believe that we are providing the best opportunity for understanding the processes and mechanisms of disease, specifically those that are statistically associated with smoking." Contending that CTR had been unfairly attacked, he added: "I think it is by inference that we are supporting smoking, which is certainly the furthest thing from the truth."

Tobacco industry critics contend, however, that CTR's work does end up supporting smoking, although by a roundabout route. Kenneth Warner, a health econo-

mist at the University of Michigan, says the industry wants to establish "innocence by association"—by pointing out that it is funding prominent researchers to investigate the causes of cancer. The scientists who dole out and receive CTR grants don't have "any appreciation for how they are lending their names," he says.

A committee established by the Massachusetts General Hospital (MGH) reached a similar conclusion. In a 1994 report, the committee took strong exception to tobacco companies naming CTR board members, grant recipients, and their institutions as part of their defense against lawsuits claiming wrongful death from tobacco. The suggestion, the committee wrote, was that "the recipients of CTR research funding endorse the need for further research to establish the relationship between tobacco

and disease." Concluded the committee: "Without interfering directly with the research programs of the sponsored investigators, the CTR nonetheless exploited their reputations to enhance the public image and further the commercial interests of the tobacco industry." Largely on the basis of the committee's report, MGH decided to bar its researchers from taking CTR money (see box on p. 490).

The prestige of CTR board members and grant recipients has been invoked in many other settings, too. When Glenn testified before Congress, for example, he named a half-dozen "pre-eminent" medical institutions CTR had funded and noted that three of their grantees—NIH Director Harold Varmus, Vanderbilt University's Stanley Cohen, and Dana-Farber Cancer Institute's Baruj Benacerraf—had subsequently won Nobel Prizes. Last year, Glenn again raised Varmus's name in a biting letter to AMA Vice President James Todd. Glenn's missive was in response to a letter sharply criticizing CTR that Todd had sent to deans of U.S. medical schools. Todd had asserted that "tobacco research funds help the industry convince policy-makers and the public that they have legitimate research projects under way that continue to search for links between smoking and ill health." Glenn countered that the "fundamental process of many diseases remains obscure" and quoted Varmus—who he noted was a former CTR grant recipient—saying, "Out of basic cancer research will come new methods of assessing cancer risk and the best course of treatment."

Representative Henry Waxman (D-CA) closed the 1994 hearing at which Glenn testified with another example of how, he said, "the tobacco industry uses the council for public relations purposes." Waxman quoted from a 1990 letter sent by RJ Reynolds Tobacco Co. to the principal of a New York school whose fifth graders had written the company about the dangers of smoking. "[I]n a sincere attempt to determine what harmful effects, if any, smoking might have on human health," explained RJ Reynolds, the industry had set up CTR. "Despite all the research going on, the simple and unfortunate fact is that scientists do not know the cause or causes of the chronic diseases reported to be associated with smoking," the letter concluded. "The answers to the many unanswered controversies surrounding smoking ... we believe can only be determined through much more scientific work."

Where to draw the line

Many researchers who have received tobacco money think industry funding is getting a bum rap. "I don't feel that the money is tainted to the degree people think it is," says

Scripps's Vogt, who in addition to sitting on CTR's board has been funded by CTR to study oncogenes. "Where, currently, is there an aggressive disinformation campaign?" Vogt adds that he wishes other industries would be as generous to scientists. "Wouldn't it be marvelous if there were a Beef Council that supported research?" Michael Guerin, who runs the analytical chemistry division at Oak Ridge National Laboratory and has received more than \$1 million from CTR and the Center for Indoor Air Research, says he doesn't think companies "in-



MICHELE FIRPO/UCSF

"It all fits into the overall strategy that anything but tobacco causes disease."

Stanton Glantz

tionally go out and fund something that causes trouble for them." But, he says "they take what they get, at least with us," and he asks, "why not have them pay for it rather than the taxpayer?"

Others, however, are uneasy about having received tobacco industry support. Varmus, who received CTR money from 1984 to 1986 to study oncogenes, says he was not comfortable taking the money then, but his lab was deeply in debt. "Even at the time, I didn't want them coming out and laying claim to me," says Varmus,

who thinks the argument that the industry uses researchers like

"A lot of people on the [CTR] committee ... feel they're helping young investigators."

Raymond Erikson

himself to further nonscientific aims "has legitimacy."

Dana-Farber's Benacerraf raises a different complaint. He says there is not even "any evidence" that he personally received money from CTR. "They were supporting members of my department," he says, implying that CTR was illegitimately using his name. Like many other scientists, Benacerraf says his attitude toward the tobacco industry funding scientific research has changed. "I have seen the tobacco industry try to use [CTR] as a means to defend their

existence unjustifiably," Benacerraf says. "I used to understand scientists taking their money. At the present time, I'm totally against it."

UCSF's Glantz asserts that there are more direct negative consequences of taking CTR money, too: "If you come up with results they don't like, they'll trash you." He cites the case of Gary Friedman, an epidemiologist at Kaiser Permanente Medical Care Program in Oakland, California, who in 1979 published in the *New England Journal of Medicine* findings of a CTR-funded study showing that heart-disease rates in smokers were higher than in nonsmokers. CTR took the unusual step of issuing a press release stating that his study had not made "any suggestion of cause and effect." Smoking "may or may not be hazardous, and that's where we are," the release concluded. Although Friedman thinks it goes overboard to suggest that CTR "trashed" him, he also says "as a supposedly unbiased scientific funder, the press release was inappropriate." And while that incident alone does not sour him on CTR, he says "I'd have difficulty at this point accepting money from them [again]."

A growing number of institutions are wrestling with the issue, too. NIH, which currently has only one researcher receiving CTR funds, through the National Institute of Allergy and Infectious Diseases' "gift fund," is debating the issue. "At this point, I wouldn't want to take their money until there was further discussion with the Administration," says Varmus. National Cancer Institute (NCI) Director Richard Klausner says he personally would be "very uncomfortable" with his institute accepting money from CTR "because of appearances and all sorts of other issues."

NIH does not currently penalize its grantees who receive tobacco money, but that possibility has been put on the table. In 1994, a subcommittee of the National Cancer Advisory Board recommended that the federal government "[w]ithdraw federal funding from cancer research organizations that accept tobacco industry support." Brown University's Paul Calabresi, the chair of that group, would like to see that recommendation go even further and apply to individual researchers. "It's a conflict of interest for someone to receive money from the tobacco industry and at the same time receive money from NCI," contends Calabresi. Tobacco money, he says, "comes with strings attached and therefore works counter to our efforts."

Others on the same committee share Calabresi's anti-tobacco sentiments, but make a distinction between individuals and institutions. "It's a much grayer area [with individuals] simply because of aca-



HARVARD UNIV.

CTR's Special Projects Attract Special Scrutiny

The Council for Tobacco Research—USA (CTR), the chief source of tobacco funds for individual biomedical researchers, prides itself on supporting peer-reviewed, independent science (see main text). But between 1966 and 1991, a small fraction of its funding—about \$18 million, according to records given to Congress—went to 139 projects that didn't fit that description: Instead of going through CTR's review process, these "special projects" were selected by tobacco companies and their attorneys. And critics charge that they were set up that way to bolster the industry's legal position.

Court papers and internal documents—many of which came to light after being leaked to cardiologist Stanton Glantz of the University of California, San Francisco (UCSF)—lend weight to that interpretation. As a 1978 internal document written by Ernest Pepples, a leading attorney at Brown & Williamson Tobacco Corp., states, "the industry research effort has included special projects designed to find scientists and medical doctors who might serve as industry witnesses in lawsuits or in a legislative forum." Or, as CTR head James Glenn explained in 1994 during hearings on the regulation of tobacco products, "These were projects that were deemed worthy of pursuit by our sponsor companies."

CTR, he said, "merely acted as the administrative agent" by transferring money from the tobacco companies to the special-project researchers.

Both the strategy and the research itself have come under heavy fire. In a 1992 opinion in a case filed by a smoker against a tobacco manufacturer, federal Judge H. Lee Sarokin hammered on the tobacco industry, which he charged "may be the king of concealment and disinformation," and its use of special projects to hide unfavorable data. As Sarokin noted, CTR-sponsored grants were "generally unrelated to the core health issues implicated by cigarette smoking," while the special projects were "directly relevant to the hazards of smoking." Sarokin concluded that the advantage to having this more sensitive work handled by attorneys was that if results showed the hazards of tobacco, the industry thought the data could legally be "shielded" from disclosure under "attorney-client privilege."

The attorney-client privilege became a central issue in Judge Sarokin's opinion. The plaintiff alleged that Liggett Group Inc., a cigarette manufacturer, had "perpetrated a public relations fraud" by discrediting the links between smoking and disease. When the plaintiff asked to see documents relating to CTR special projects, the company claimed attorney-client privilege. Sarokin reviewed some of the 1500 related documents. "[T]he documents indicate that defendants specifically abused the attorney-client privilege in their efforts to effectuate their allegedly

fraudulent scheme," concluded Sarokin.

Critics also charge that much work was funneled into well-funded special projects because the lawyers hoped the resultant data would help the industry. "These lawyers encouraged scientific research to refute the scientific evidence about tobacco, to perpetuate controversy about the health effects of tobacco, and to provide results that could be used to respond to adverse publicity," charge Glantz and his four co-authors in their recently released book, *The Cigarette Papers*. As evidence, they quote from internal documents that they claim show how three specific CTR special projects "were designed to dispute the scientific findings about the adverse effects of tobacco and to produce research that shifted attention away from tobacco as a cause of disease."

One of the three researchers singled out in *The Cigarette Papers* is Theodor Sterling, who, according to CTR documents supplied to Congress, received more special-project money than any other researcher—\$5.8 million between 1968 and 1990. Sterling, an epidemiologist at Simon Fraser University in British Columbia, Canada, critically reviewed statistical analyses of lung cancer's causes and the risks of environmental tobacco smoke (commonly known as secondhand smoke). Glantz

and co-authors contend Sterling's tobacco-related studies have focused on "examining factors that could potentially confound the association of tobacco smoke and adverse health effects."

Sterling, who in 1993 published a controversial paper in the *American Journal of Epidemiology* which contended that the U.S. Surgeon General and others vastly overestimate the number of deaths linked to tobacco, flatly rejects the accusation. Sterling says his investigations have been entirely independent and insists that until recently he had "no idea" that his work was funded by CTR as a special project or that attorneys were involved. "I'm not aware of what I've published that is of comfort to the industry," says Sterling.

In presentations at scientific meetings and in the literature, Sterling has complained that researchers who take tobacco-industry money have been subjected to "harassment" and "intimidation"—and he says the criticism has hurt him professionally. "I feel like my ability to function as a scientific expert [in court cases] is sharply reduced," says Sterling. "These people cut me off from work I like to do. I've discussed it with a number of lawyers, and their spin was they would not wish to use a scientific expert if the expert could be presented as a tool of the tobacco industry."

Sterling says the source of funding should have no bearing on the quality of the research. "The only way to judge the merit of scientific work is to see where it was published," Sterling argues. "If it's published, the onus falls on the reviewers."

—J.C.

As a means of introduction, Bill Shinn described the history, particularly in relation to the CTR. CTR began as an organization called Tobacco Industry Research Council (TIRC). It was set up as an industry "shield" in 1954. That was the year statistical accusations relating smoking to diseases were leveled at the industry; litigation began; and the Wynder/Graham reports were issued. CTR has helped out legal counsel by giving advice and technical information, which was needed at court trials. CTR has provided spokesmen for the industry at Congressional hearings. The monies spent on CTR provides a base for introduction of witnesses.

Bill Shinn feels that "special projects" are the best way that monies are spent. On these projects, CTR has acted as a "front"; however, there are times when CTR has been reluctant to serve in that capacity. . . .

CTR's origins. Judge Sarokin's opinion included this excerpt from a company memorandum.

democratic freedom," says Erwin Bettinghaus of Michigan State University. "I took money in my very early career from the civil defense department at a time when faculty said no one should take money from civil defense. I don't think you can come up with hard-and-fast rules."

For researchers like Sydney Brenner—who coughs frequently from emphysema he

says "is almost certainly tobacco-caused"—all of this hand-wringing is unnecessary. As he sees it, tobacco money is an appropriate source of funding as long as he is free to follow his hunches and do pure science. "I've always viewed this as a gift, in fact," says Brenner. "And there are very few people who will just give scientists money and say get on with it. The only condition is do

good work. Do good work." The American Lung Association's job, he says, is to protect the lungs of people. "My job is to do basic research. You may say I'm being naive, but I just think that's a very important thing to do," says Brenner. "If we can create new science there, then it will be to the benefit of the whole of society and the future."

—Jon Cohen