

to donate some of it, that's my business," he told *Science*. He also said he thought there were people at *JAMA* who were "racist, bigoted, ignorant, ethnocentric, and prejudiced." Sharma's response was, "I'm not trying to hide anything. We said in our cover letter that I was a consultant to [the Maharishi Ayur-Veda Products International] and now I'm not." Triguna could not be reached for comment.

These defenses notwithstanding, several experts on meditation and on traditional Indian medicine to whom *Science* showed the original *JAMA* publication concluded that the "Letter from New Delhi" was shoddy science to begin with. "Anyone who knows the literature would have written this up as absurd," says David Holmes, a psychologist at the University of Kansas, referring specifically to the article's claims about the metabolic effects of Maharishi-style meditation. In fact, one *Science*-chosen post-publication reviewer comes down hard not only on the Indians but on *JAMA*: "It's an embarrassment and a disappointment, and it raises serious questions about the editorial policies at *JAMA*," said Carl Thoreson, professor of education and psychology at Stanford.

Experts in herbal pharmacology agreed. "When I first saw the article, I was surprised it was published in *JAMA*," says Varro Tyler, distinguished professor of pharmacognosy (the study of drugs from natural sources) at Purdue University, who has served as a consultant to *JAMA* in the past. Tyler was particularly disturbed by presentation of animal data suggesting anticancer benefits from two Maharishi Ayur-Veda products with no identification of their composition. "Any time you cite a drug by trade name, [without identifying] its components, that raises a big red flag. A knowledgeable person would want to know what the ingredients are, so he can look them up."

Editor Lundberg believes his journal was partly let down by its peer reviewers. "I do believe that a different set of reviewers might have provided us with a very different outlook," he told *Science*. "We have 8000 reviewers, and used 2500 in the last year, so it's a question of finding the right ones at the right time. What our peer reviewers did not help us understand was the substantial difference between traditional Ayurvedic medicine and Maharishi Ayur-Veda, and the commercialism of the entire movement. We were distinctly fooled." Lundberg also points out that the 22 May letter was published as part of an international issue of *JAMA* and was designed to provide "different points of view, from other cultures." If the paper had been a conventional research article, it would not have been published, Lundberg says.

The value of Ayurveda as a traditional form

of Indian medicine is hardly the hottest biomedical research topic around, and on the face of it, the current controversy in *JAMA* may seem like a narrow sectarian dispute. But, in fact, it raises questions that are universal for scientific journals. One is, of course, how journals can protect themselves against authors with deeply hidden financial conflicts. And there may be no foolproof safeguards. The practices *JAMA* followed in this case were identical to those it uses for all its articles, Lundberg says. The journal has required financial disclosure since 1985; since 1989 it has required all authors to sign a standardized disclosure form—and on this form Chopra, Sharma, and Triguna failed to disclose their involvements with the TM movement (although, as Sharma notes, they were identified as consultants to the Maharishi company in the cover letter that originally accompanied their article).

If authors fail to disclose information, says Lundberg, "we don't know what else we can do besides telling them to sign the form and making sure they do it." He acknowledges that "sometimes we do get a signed disclosure that doesn't ring true and we'll do further investigation. We know the system works well," he adds, but concedes "it's not perfect." Indeed, it wasn't the journal's vigilance, but that of its readers, that saved the day. Within days of the 22 May article, the journal was inundated by letters, including "very sharp criticism from a number of substantial critics."

Pointing up the universality of these problems, *JAMA* isn't the only journal touched by the uproar. The *New England Journal of Medicine* (*NEJM*) also requires financial disclosure from authors, but that system failed to prevent publication of a favorable (unsolicited) book review of Chopra's book "Quantum Healing" (Bantam, 1990) by physician John W. Zamarra of Brea, California. Zamarra failed to disclose to the journal his "long-time connection with the TM movement" and his association with the Maharishi Ayur-Veda Medical Center in Pacific Palisades, according to the current *JAMA* report. Says *NEJM* editor Jerome Kassirer: "We can't be detectives about everything. So much depends on the veracity of the author. If we were to investigate every relationship, we would do nothing else."

Kassirer thinks the problem could get worse before it gets better. As pharmaceutical firms increase support for biomedicine, and more researchers become involved financially in the biotech industry, the need for scrutiny grows. "More attention is being paid to the potential for financial gain," says Kassirer. But, he adds that, in general, the facts are on the table. "For the most part, we know what the relationships are, because they tell us." But not always, as the current case suggests.

■ ROBERT BARNETT and
CATHY SEARS

Robert Barnett and Cathy Sears are freelance writers living in New York.

Leroy Hood to Move North

Just 10 months after making an "agonizing" decision to turn down a joint appointment as director of the Human Genome Center at Lawrence Berkeley Laboratory and as a professor at the University of California at Berkeley, immunologist Leroy Hood has met an offer he apparently couldn't refuse. The University of Washington announced this week that it is creating a new Department of Molecular Biotechnology for Hood to chair. Hood, who has been at the California Institute of Technology for 31 years and currently heads a 65-person lab there, will take up his new job in the summer of 1992. A university spokesperson says no other faculty members have yet been recruited for the department.

The new department, which the university has created with a \$12-million gift from Microsoft Corp. founder and chairman William Gates III, will concentrate on the development of tools for molecular biology research. The idea is to capitalize on what Gates and the university see as the growing interdisciplinary convergence of biology, computer science, applied mathematics, and physics.

As *Science* went to press, Hood was traveling and unavailable for comment. According to a university press release, however, he has already devised a "5-pronged approach" to research in the new department that emphasizes the use of computer technology, especially image analysis and simulations, in the study of biological functions such as immune response. Another line of effort will concentrate on the production and effective use of biological databases. The department's curriculum will have a strong interdisciplinary focus that will include training in physics, engineering, computer science, mathematics, and chemistry.

■ DAVID P. HAMILTON