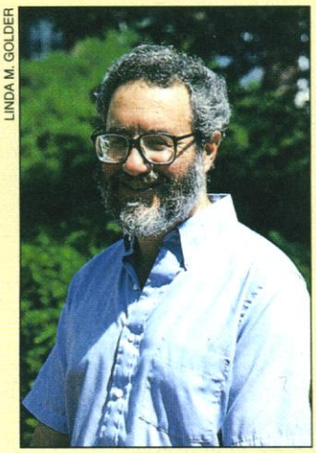
Pittsburgh: Interwoven With the Fabric of Learning



LINDA M. GOLDER

Ethical core. Neuroscientist Michael Zigmond is working to integrate ethics into the core life sciences curriculum.

Few researchers who take on a second career in pedagogy get the rave reviews received by Michael Zigmond of the University of Pittsburgh. Zigmond's course on Survival Skills in universities has already become famous (*Science*, 4 November 1994, p. 872), and now his ethics curriculum is wowing researchers as well. Zigmond, a neuroscientist at Pittsburgh since 1970, got into the ethics business 3 years ago, prompted by the National Institutes of Health mandate. Since then, he has attacked it with the single-minded resolution and creativity most researchers reserve for scientific problems. Or as one biologist who has heard Zigmond's presentation on his curriculum put it, "Zigmond is unbelievable."

Zigmond started with what he calls "more or less what everybody else is doing"—six sessions of 90 minutes, each concentrating on a specific topic, and a few case studies for discussion. At first, business boomed: Students had to be turned away from the first few classes. Then, he says, "attendance started to wane. I attributed that in part to the fact that it didn't seem terribly relevant. It was more of an intellectual exercise than anything else."

So Zigmond set about making research ethics "more real." First, he decided that "anything that's going to make sense for our students had to involve the active participation of someone like what they wanted to be—i.e., a bench scientist." And second, "if what we're teaching people is of essential importance, then it shouldn't be separated out from the rest of what we're teaching them."

Zigmond and Beth Fischer, who helps coordinate the program, went about integrating ethics into the curriculum of the Survival Skills workshop, which is open to the entire university community and consists of eight 1-day workshops covering everything from how to write a paper and give a seminar to how to get and keep a job. "Throughout each of these workshops," he says, "we deal with the ethical dimensions of each activity. We talk about plagiarism when we talk about writing, and we talk about misleading graphics when we talk about giving a talk. We talk about intellectual property and who owns the data when we talk about getting a job—[when you leave] what goes with you and what stays behind in your old laboratory." These workshops now include a lunch in which faculty members and students discuss fictitious case studies created by Zigmond.

Part two of Zigmond's master plan is to integrate ethical issues into the core curriculum in life sciences, something he is doing in his own neuroscience department and hopes will spread to others. Each of the directors of the core courses, he says, agreed to spend at least two 1-hour periods per term discussing an ethics topic relevant to the course subject. For example, he says, "the use of animals in research is something we would talk about in a course with a lot of data generated from animal experiments. Informed consent is something we talk about in a clinical neuroscience course. Ethical dimensions of gene therapy or genetic counseling or university-biotech relations are all issues that can come up in a molecular biology course."

The students seem to relish the idea, says Pat Card, who teaches the systems neuroscience course, if for no other reason than that ethics now provides 90 minutes of "a quite different digression from the basic information they're receiving" in these core courses. Although Card had never taught ethics before and hadn't studied it since his undergraduate days, he says he had no trouble keeping students interested for the full 90 minutes, and they "could have gone a lot longer had we had the time."

Zigmond has one other goal for his emerging program: a comprehensive exam on research ethics in which students demonstrate proficiency. "It's a way of telling them," he says, "that this is very important. Because in the end everything important we have an exam for. The way to tell students it's not important is to have a beer and pizza discussion at night—and that seems to me what ethics typically is."

–G.T.

Gilboa. The same year, Anderson stepped up his effort to test gene therapy in humans by beginning a collaboration with Blaese of the National Cancer Institute (NCI). Blaese, a pediatric immunologist, could help Anderson advance the technology Gilboa and others were developing and take it into the clinic against adenosine deaminase (ADA) deficiency, a rare but devastating genetic illness causing AIDS-like symptoms in children.

In 1988, Anderson and Blaese began collaborating with NCI's Rosenberg on a potential cancer gene therapy. The two proposals survived a punishing series of reviews by regulatory bodies. To meet those reviews, the National Institutes of Health (NIH) team switched from Gilboa's vectors and packaging cells to those developed by Miller. With the changes, they won approval; the ADA trial began in September 1990 and the cancer trial the next January.

The media came out in droves, anointing Anderson in particular as the father of gene therapy. Anderson also received the harshest criticism, much of it from research colleagues who argued that the trials were premature and that the main motivation for them was credit. "The only urgency is competition of labs," pediatrician Stuart Orkin of Harvard Medical School was quoted as saying in the *Los Angeles Times* in 1987. A week after the first child began receiving gene therapy for ADA, Columbia University hematologist and geneticist Arthur Bank told an international genetics conference that the main motivation for the trial "is the need for French Anderson to do gene therapy in man."

With NIH promoting his work, Anderson's star rose; in 1991 he was featured in both the *New York Times* and the *Washington Post* magazines. His celebrity rankled colleagues who felt that the basic researchers responsible for the system Anderson used had received pitifully little credit. Says one basic researcher in the field who insisted on anonymity: "His contributions have been organizational, not scientific. Other people are burning away trying to solve [the scientific] issues, and French is out there talking about it."

Anger from the research community was also directed at NIH for heavily promoting the gene-therapy trials. "A lot of good people had left, and this was the one thing they could trump up," says a gene-therapy researcher who also requested anonymity.

In the end, gene-therapy credit issues upset not just competitors of the NIH trio but also their collaborators. That became apparent in March, when Miller and Kenneth Culver, a former postdoc in Blaese's lab who played a central role in the ADA trial, were outraged to learn that a patent on the basic