notebooks sooner. Bennett and his colleagues decline to discuss the loss of the notebooks; NIH Deputy Director Michael Gottesman, who has been working to mediate the case, says the loss remains a mystery.

In the 1 July letter to Devi, Bennett wrote that because Devi's original data were lost, and because the copies Devi had made before leaving the lab were likely to be incomplete, he, Robbins, Schneerson, and Williamson had agreed that "neither you nor we have sufficient data to publish" the original mouse studies. He added, however, that with Williamson's help, the NIH team had "extended the mouse protection experiments which we began after you left the laboratory." Bennett added that the four team members would be publishing the mouse studies "with an acknowledgment for your assistance in vaccine preparation."

But NIH documents reveal that in May 1993, before Bennett's letter was written, Bennett and his NIH colleagues had already submitted a manuscript on a mouse study of the vaccine to *Science*. According to an administrative memo signed by Gottesman on 7 April 1994, Devi's contribution was "not clearly acknowledged" in that manuscript, nor had the manuscript been submitted to NIH for prepublication review. The authors withdrew the paper.

RICK KOZAK

Mediator. NIH's Michael Gottesman says the arrangement he has worked out leaves Devi free to publish.

In August 1993, Bennett and his colleagues submitted a revised paper on the mouse studies to *Science*, inviting Devi to be the second of five authors, with Williamson as first author. Devi balked at taking second place to Williamson, noting in a letter to Bennett that "I designed and performed experiments very similar" to those attributed to Williamson "well in advance of Dr. Williamson's involvement in the project." She added that she hadn't even seen the manuscript she was being asked to sign. She refused to collaborate under these conditions. That manuscript was

McGill: Analyzing the Data

While John Bailar was a statistical consultant for the *New England Journal of Medicine*, a position he held for a decade, he read "enormous numbers of manuscripts," a fair share of which he says seemed to be deceptive—whether consciously or unconsciously. The deception rarely involved fabrication, falsification, or plagiarism, says Bailar. Instead, the authors were "misleading readers and users about the strength of their evidence—trying to tell a pretty story when the story isn't pretty, trying to find a statistically significant result when there may not be anything there."

Bailar, now chair of the epidemiology department at McGill University in Montreal, says the papers he reviewed got him thinking about responsible science. He began teaching a course on the topic after he won a MacArthur Fellowship in 1990. Bailar started the course against the advice of colleagues who suggested students didn't need it: "They know it all, won't be interested; they'll be tied up with other concerns." But Bailar says "Students gobble it up; they're eager to learn what is acceptable conduct."

The course meets once a week for 3 hours during the month-long summer session at McGill. Bailar has about a dozen students, all at least graduate students. He likes to say he teaches a course on scientific conduct, with "misconduct and bad practice used only to cast light on good conduct." The reading material for Bailar's course consists of documents on both the good and not-so-good faces of science. On the one hand, his students must read the 1989 book by the National Academy of Sciences *On Being a Scientist* and the 1994 American Association of Medical Colleges pamphlet on "Maintenance of High Ethical Standards and Conduct of Research," along with McGill's own statement on integrity of research and scholarship. Then they are given reports of examples of purported scientific misconduct, with specific questions they have to answer "to make sure they really do think and don't just read them on the bus on the way in to class."

MCGILL UNIVERSITY

... and statistics. Epidemiologist John Bailar focuses his ethics course on how data are used to support a conclusion.

What sets Bailar's course apart from other ethics courses is that these assignments and the discussions that follow are as much about the scientific and statistical methods scientists use to draw inferences from their data as they are about what would ordinarily be considered good conduct or misconduct. As Margaret Somerville, director of McGill's Center for Medicine, Ethics, and Law, puts it, "Good ethics depends on good science. If you're not doing good science, you're not even in the ballpark of doing good ethics. So you have to know is this good science; is this statistically valid what you're proposing to do."

In one assignment, for example, Bailar's students read a 1993 *American Scientist* article by Judith Swazey and colleagues from the Arcadia Institute in Maine reporting on a survey of scientific misconduct at American universities. Swazey "surveyed graduate students and faculty members about what they knew regarding instances of misconduct," says Bailar. "It was a mail survey: shipped them out, dropped them back, did an analysis, and published." Rather than just discussing the results and assuming they are meaningful, Bailar asks his students to study the report's strengths and weaknesses, asking whether the data support the conclusions. Only then does he have them write on their own knowledge of misconduct.

An assignment that hits closer to home is analyzing the case of Montreal surgeon Roger Poisson, who admitted last year to falsifying data in research studies on the treatment of breast cancer. Bailar spends a short time in the classroom going over the details of the case, then tries to stimulate the most lively discussion possible. In the case of the breast cancer study, at least, Bailar certainly succeeded. "One of the seminar participants was a physician from one of the French hospitals here in town," says Charles Weiger, a postdoctoral fellow at McGill who is studying experimental medicine and took Bailar's course. "And there was quite a bit of argument over whether Dr. Poisson had been treated fairly, how serious in fact was the fraud, and so on." The discussion, recalls Weiger, was "memorable" and "loud."

–G.T.