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An Unwelcome Discovery

By JENEEN INTERLANDI

On a rainy afternoon in June, Eric Poehlman stood before a federal judge in the United States District Court in downtown Burlington, Vt. His sentencing hearing had dragged on for more than four hours, and Poehlman, dressed in a black suit, remained silent while the lawyers argued over the appropriate sentence for his transgressions. Now was his chance to speak. A year earlier, in the same courthouse, Poehlman pleaded guilty to lying on a federal grant application and admitted to fabricating more than a decade's worth of scientific data on obesity, menopause and aging, much of it while conducting clinical research as a tenured faculty member at the University of Vermont. He presented fraudulent data in lectures and in published papers, and he used this data to obtain millions of dollars in federal grants from the National Institutes of Health — a crime subject to as many as five years in federal prison. Poehlman's admission of guilt came after more than five years during which he denied the charges against him, lied under oath and tried to discredit his accusers. By the time Poehlman came clean, his case had grown into one of the most expansive cases of scientific fraud in U.S. history.

"I need to start out by apologizing," Poehlman said now, standing at the lectern before the judge. Speaking quickly and stammering occasionally, he apologized to friends and former colleagues, some of whom were listening in the back of the courtroom. He apologized to his mother, who sat in the front row, crying. And he apologized to Walter DeNino, the former protégé who turned him in, who was also sitting in the courtroom, several rows back on the prosecution's side.

"I have wanted to say I'm sorry for five years," Poehlman said, without turning around to face DeNino. "I want to make it very clear I am remorseful. I accept the responsibility. There's no way that I can turn back the clock. And I'm not that individual that I was years ago."

Before his fall from grace, Poehlman oversaw a lab where nearly a dozen students and postdoctoral researchers carried out his projects. His research earned him recognition among his peers and invitations to speak at conferences around the world. And he made nearly \$140,000, one of the top salaries at the University of Vermont. All of that began to change six years ago, when DeNino took his concerns about anomalies in Poehlman's data to university officials. The subsequent investigation — a collaboration among the University of Vermont, the Office of Research Integrity (which is within the Department of Health and Human Services) and the United States Department of Justice — uncovered fraudulent research that stretched back through almost half of Poehlman's career. The revelations led to the retraction or correction of 10 scientific papers, and Poehlman was banned forever from receiving public research money. He was only the second scientist in the United States to face criminal prosecution for falsifying research data.

At 50, with his career in ruins and his reputation destroyed, Poehlman could only hope to avoid one final

humiliation: becoming the first researcher sentenced to prison for scientific misconduct. Citing the nearly \$200,000 Poehlman had paid in restitution, his attorneys had asked the judge to sentence him to supervised probation. "I am hoping that you can consider this sentence fair and just to me, as well as the community," Poehlman pleaded, without "a sentence of incarceration or imprisonment."

In the fall of 2000, Walter DeNino was comparing measurements in some data Poehlman had given him when he found something odd. DeNino, who was then 24, had started working in Poehlman's lab during his senior year at UVM. The young man admired the senior researcher and enjoyed the camaraderie of his peers. Poehlman pushed his team hard, but he was also charming and energetic, and he attracted people who were active athletes like himself. Lab members regularly went to the campus gym during lunch breaks and often competed in marathons together. Poehlman ran daily with students and colleagues alike.

DeNino fit in right away. A driven athlete, he ran so much in high school that he suffered dozens of tiny stress fractures in both legs. When a doctor suggested he run less, DeNino responded by riding his bike more. During college, after finishing in the top three in three triathlons, he was invited to join the U.S.A. Triathlon Olympic Resident Team to train in California and Colorado.

Professionally ambitious, DeNino graduated with a double major in nutritional sciences and dietetics at UVM and won several awards for the research he completed under Poehlman's tutelage. When Poehlman invited him back to the lab as a paid technician — allowing him to continue to train for the Olympics part time — DeNino saw it as the ideal way to strengthen his candidacy for medical school. Although technicians are usually at the bottom of the lab hierarchy, carrying out the more mundane aspects of their principal investigator's work, a generous scientist will give them credit on publications. DeNino figured that getting his name on one of Poehlman's papers could make the difference on a med-school application.

The fall that DeNino returned to the lab, Poehlman was looking into how fat levels in the blood change with age. DeNino's task was to compare the levels of lipids, or fats, in two sets of blood samples taken several years apart from a large group of patients. As the patients aged, Poehlman expected, the data would show an increase in low-density lipoprotein (LDL), which deposits cholesterol in arteries, and a decrease in high-density lipoprotein (HDL), which carries it to the liver, where it can be broken down. Poehlman's hypothesis was not controversial; the idea that lipid levels worsen with age was supported by decades of circumstantial evidence. Poehlman expected to contribute to this body of work by demonstrating the change unequivocally in a clinical study of actual patients over time. But when DeNino ran his first analysis, the data did not support the premise.

When Poehlman saw the unexpected results, he took the electronic file home with him. The following week, Poehlman returned the database to DeNino, explained that he had corrected some mistaken entries and asked DeNino to re-run the statistical analysis. Now the trend was clear: HDL appeared to decrease markedly over time, while LDL increased, exactly as they had hypothesized.

Although DeNino trusted his boss implicitly, the change was too great to be explained by a handful of improperly entered numbers, which was all Poehlman claimed to have fixed. DeNino pulled up the original figures and compared them with the ones Poehlman had just given him. In the initial spreadsheet, many patients showed an increase in HDL from the first visit to the second. In the revised sheet, all patients

showed a decrease. Astonished, DeNino read through the data again. Sure enough, the only numbers that hadn't been changed were the ones that supported his hypothesis.

Confused by the discrepancy between the data sets, DeNino went back to Poehlman and asked to see the patient files. When Poehlman brushed him off, a disquieting feeling came over DeNino. Seeking advice, he e-mailed Andre Tchernof, a former postdoctoral fellow of Poehlman's who had recently left to head his own lab in Quebec City. Tchernof confided to DeNino that something similar had happened before to another lab member.

"He confronted him with the fact that it did not add up," Tchernof wrote in an e-mail message to DeNino. "The response was a job-loss threat, more or less." Tchernof warned DeNino to proceed cautiously. Being associated with either falsified data or a frivolous allegation against a scientist as prominent as Poehlman could end DeNino's career before it even began. Poehlman also had a reputation for playing favorites in the lab. While DeNino had always been on Poehlman's good side, both he and Tchernof had seen Poehlman reduce other subordinates to tears for relatively minor infractions. If Poehlman's career was on the line, there was no telling what he would do to protect himself.

DeNino shared his concerns over the data with a handful of graduate students and postdocs and discovered that others had questions, too. Emboldened, he approached Dwight Matthews, a faculty member who shared lab space with Poehlman. Matthews and Poehlman had written a number of papers and grants together over the years, and DeNino worried that Matthews might alert Poehlman to his suspicions. But DeNino could not shake the feeling that Poehlman was hiding something, and he wanted guidance from a faculty member.

"First, understand that no matter how you proceed, everyone loses," Matthews told DeNino when they met to discuss Poehlman. "Your career will be ruined because no one is going to protect you." Matthews was brutally frank. "The university will come out bad," he continued, "and Eric's reputation will be destroyed." He told DeNino that he would have to decide for himself what to do. As an afterthought, Matthews told me in a recent interview, he offered one suggestion: "If you're going to do something, make sure you really have the evidence."

DeNino spent the next several evenings combing through hundreds of patients' records in the lab and university hospital, trying to verify the data contained in Poehlman's spreadsheets. Each night was worse than the one before. He discovered not only reversed data points, but also figures for measurements that had never been taken and even patients who appeared not to exist at all. In the mornings he would return to the lab and continue working as Poehlman's technician, waiting for the right moment to confront the principal investigator.

The scientific process is meant to be self-correcting. Peer review of scientific journals and the ability of scientists to replicate one another's results are supposed to weed out erroneous conclusions and preserve the integrity of the scientific record over time. But the Poehlman case shows how a committed cheater can elude detection for years by playing on the trust — and the self-interest — of his or her junior colleagues.

The principal investigator in a lab has the power to jump-start careers. By writing papers with graduate students and postdocs and using connections to help obtain fellowships and appointments, senior scientists

can help their lab workers secure coveted tenure-track jobs. They can also do damage by withholding this support.

A less self-assured person than DeNino might never have questioned Poehlman's revised data in the first place — and not just because it might have meant risking future job prospects. The principal investigator is not just a boss; he is also a teacher with knowledge and experience. "Trust is an essential component in any relationship, but especially between a student and mentor, especially in a research environment," Tchernof told me in a telephone conversation last spring, before Poehlman's sentencing hearing. "If you didn't trust the person you were working with, you'd have to check every single raw data point. It simply would not work. But then it takes a substantial amount of doubt to overcome that established trust."

Once that trust has been breached, the aftershocks can be far-reaching. Not only does any research touched by tainted data have to be re-examined, but high-profile cases of misconduct can also shake public confidence. "We already have a large subculture in society of people who don't trust science to begin with," says John Dahlberg, one of the Office of Research Integrity investigators who oversaw Poehlman's case. "This doesn't help at all."

Most people involved in Poehlman's case say that fraud as extensive as his represents an uncommon pathology, similar to what drove the South Korean scientist who claimed to have cloned human stem cells or the Lucent Technologies physicist who falsified extensive amounts of nanotechnology data. More frequent, according to a study published in *Nature* in June 2005, are smaller lapses in ethical judgment, like failing to present data that contradicts your previous research or inappropriately assigning author credit. Brian Martinson, who conducted that study with colleagues from the University of Minnesota, suggests that those gray areas, which many scientists inhabit at one time or another during their careers, portend a greater ailment for the scientific process. Minor transgressions, largely undetected and easily rationalized, can build up like plaque, compromising scientific integrity over time.

In late October 2000, as DeNino's suspicions festered, Poehlman was presented with the Lilly Scientific Achievement Award at the annual conference of the North American Association for the Study of Obesity. The weeklong event took place in Long Beach, Calif., and Poehlman and his entire lab flew out to celebrate. More than 100 scientists attended Poehlman's 40-minute lecture, in which he summarized the research he had conducted over the past decade. Much of the work he discussed focused on energy dysregulation — an imbalance between the energy a person consumes and what he expends. This imbalance grows more pronounced as a person ages, or when a woman reaches menopause, and it can lead to a loss of muscle mass and an increase in total body fat, which, in turn, may predispose older people to obesity and cardiovascular disease.

Because most studies that examine the physiology of aging look at only one point in time, researchers can't tell whether the differences measured are because of age, menopause or individual variation. Poehlman's longitudinal study on menopause collected the same measurements from each person twice over a six-year period. This enabled him to show, for the first time, that some metabolic changes were from menopause, not aging. Published in 1995 in the *Annals of Internal Medicine*, the study confirmed a long-held assumption and helped establish Poehlman's reputation.

As he summarized this and other work for his colleagues, Poehlman exuded grace and confidence, mixing scientific slides with pictures of his lab team and waxing philosophical about the themes that had shaped his career. He mentioned the outstanding work of his assistants and concluded with the following advice: "Work with people who are smarter than you."

Andre Tchernof left Poehlman's lab two months before the Long Beach meeting but attended the Lilly Award lecture with his former labmates. The facet of Poehlman's research that most interested Tchernof involved whether hormone-replacement therapy — providing menopausal patients with supplemental estrogen — could help them lose weight. When he was still in Poehlman's lab, Tchernof had analyzed H.R.T. data from what was apparently the same group of patients Poehlman was discussing in his talk and had found no significant difference in abdominal-fat loss between women who took estrogen and women who didn't. But the slides Poehlman presented at the meeting showed a big difference: women who had received estrogen lost twice as much abdominal fat as those not taking supplements.

"I have no idea where those numbers came from," Tchernof whispered to DeNino, who was sitting next to him in the front row. "That's not what we found, at all."

After the presentation, Tchernof and Poehlman went running along the beach outside their hotel. The two enjoyed a warm relationship during Tchernof's time as a postdoc. Now Tchernof found himself questioning Poehlman on the H.R.T. data he'd presented. Poehlman assured him that the data were fine and brushed off Tchernof's suggestion to double-check the numbers. As he stretched his muscles under the waning Pacific sunlight, Tchernof could not shake the feeling that something was very wrong.

By December, DeNino's relationship with Poehlman had deteriorated badly. When Poehlman learned that DeNino was raising questions about data integrity with other people in the lab, they all but stopped talking to each other. Late in the month, following a series of letters, e-mail and confrontations between Poehlman and DeNino, none of which laid the technician's concerns to rest, DeNino went to Thomas Mercurio, the university's general counsel, to lodge a formal, written accusation of scientific misconduct against his former mentor. The process he set in motion would take almost six years to conclude.

All universities that receive public money to conduct research are required to have an integrity officer who ensures compliance with federal guidelines. But policing its scientists can be a heavy burden for a university. "It's your own faculty, and there's this idea of supporting and nurturing them," says Ellen Hyman-Browne, a research-compliance officer at the Children's Hospital of Philadelphia, a teaching hospital. Moreover, investigations cost time and money, and no institution wants to discover something that could cast a shadow on its reputation.

"There are conflicting influences on a university where they are the co-grantor and responsible to other investigators," says Stephen Kelly, the Justice Department attorney who prosecuted Poehlman. "For the system to work, the university has to be very ethical."

Dr. Burton Sobel, the chairman of Poehlman's department, was determined to do everything by the book. After meeting with DeNino, whom he later described as "forthright, composed, clearly troubled," he contacted Poehlman, saying he needed to discuss something unpleasant with him. Sobel was astonished by Poehlman's response. The accused scientist gave him the impression that nothing was wrong and seemed

mostly annoyed by all the fuss. In his written response to the allegations, Poehlman suggested that the data had gotten out of hand, accumulating numerous errors because of handling by multiple technicians and postdocs over the years.

“I found that noncredible, really, for an investigator of Eric’s experience,” Sobel later told the investigative panel.

“There had to be a backup copy that was pure,” Sobel reasoned before the panel. “You would not have postdocs and lab techs in charge of discrepant data sets.” But Poehlman told Sobel that there was no master copy. Once the formal inquiry got under way, Poehlman called Sobel at home and asked him to stop the proceedings, telling him there was nothing to it. Sobel refused, assuring Poehlman that it was in everyone’s best interest to proceed. He sensed that Poehlman’s facade of indifference was beginning to crack.

Two days after DeNino filed his formal accusation, Richard Galbraith, the program director of the university’s General Clinical Research Center, escorted the campus police chief to Poehlman’s office. It was the week between Christmas and New Year’s Day, and only a handful of researchers continued to hunch over their lab benches. Galbraith had the task of impounding the evidence necessary for an investigation into DeNino’s claim.

Galbraith had personally recruited Poehlman to UVM. Poehlman started his career at the university in 1988 but left during a mass exodus of clinical researchers. When Galbraith came to the university in 1995, he figured the best way to revive the ailing clinical-research center was to hire prominent scientists with the potential to secure grants. Poehlman, who had just published his menopause study, seemed an ideal candidate to bring both prestige and grant money to the institution.

Some faculty members had expressed misgivings about Poehlman. Galbraith never quite got the full story about why he left in the first place, but during the recruitment, rumblings surfaced about Poehlman’s tactics and data. When he met with the investigative panel, five years later, Galbraith recalled questioning everybody he could think of. Poehlman had definitely stepped on some toes and made a name as an aggressive self-promoter, but this was nothing remarkable for a successful researcher. And no one had any evidence of misconduct. Not wanting to disqualify such a promising candidate based on rumors, the university decided to hire Poehlman in 1996. And Poehlman delivered for the university, securing \$2.9 million in N.I.H. grants out of the \$11 million he had applied for.

The inquiry itself fell to five faculty members picked by the dean of the medical school. One of them, Charles Irvin, had just joined UVM’s College of Medicine from a research institute affiliated with the University of Colorado. Irvin had only one experience with a misconduct investigation, and he remembered it as an insignificant case. “What we’d been told at U.C. Denver was that most of these cases are alike — they tend to be trivial or they tend to be ‘he said, she said,’ ” he told me. “You just don’t know because there tends to be insufficient data to do anything.”

When the panel investigating Poehlman began to meet in January 2001, however, Irvin realized that this case was different. The panel’s search quickly expanded beyond DeNino’s initial accusation, and the body of evidence it accumulated — through a careful review of Poehlman’s computer hard-drive and interviews with DeNino and others — revealed a disturbing pattern of blame-shifting and backpedaling.

“It was clear after a very short period of time that this was not trite, it was not trivial, but the allegations were in all likelihood some substantive thing,” Irvin explained. “And then once you get a little further down, after you come across a couple of things, well, for me, it was like, Oh, boy.”

On Feb. 9, 2001, Poehlman appeared before the panel to address the charges against him. Irvin was appalled by his responses. Poehlman’s entire defense seemed to hinge on a series of flimsy notions. First, he attributed his mistakes to his own self-proclaimed ineptitude with Excel files. Then, when pressed on how fictitious numbers found their way into the spreadsheet he’d given DeNino, Poehlman laid out his most elaborate explanation yet. He had imputed data — that is, he had derived predicted values for measurements using a complicated statistical model. His intention, he said, was to look at hypothetical outcomes that he would later compare to the actual results. He insisted that he never meant for DeNino to analyze the imputed values and had given him the spreadsheet by mistake. Although data can be imputed legitimately in some disciplines, it is generally frowned upon in clinical research, and this explanation came across as hollow and suspicious, especially since Poehlman appeared to have no idea how imputation was done.

“Why did Walter . . . say all these things and go to this length?” Irvin asked Poehlman, according to the hearing transcript. “I mean, to me that is the crux of it, is the motivation” for the allegations.

Poehlman responded that DeNino was very popular in the lab and had influenced others to follow his lead.

“I feel like they were plotting during this time,” Poehlman told Irvin. “I am as shocked as you are.”

When the university decided to proceed from an inquiry to a formal investigation, Poehlman fought back, seeking an injunction from Judge William K. Sessions against UVM and stalling the proceedings for several months. During this time, Poehlman tried to undermine DeNino’s credibility as a whistle-blower by suggesting that the technician was homophobic — Poehlman is gay — among other things. Eventually, DeNino hired his own attorney, Philip Michael of the New York firm Troutman Sanders.

“A lot of whistle-blowers are retired,” Michael, who specializes in such cases, said recently. “For Walter, this is something that will follow him for the rest of his life.”

Poehlman’s desperate defense, however, eventually unraveled. After the injunction was dropped, a two-year investigation by UVM led to further review of Poehlman’s work by the integrity office. By March 2005, his case had expanded to include a rare criminal prosecution by the United States Department of Justice. By then Poehlman had left UVM for the University of Montreal. But with the threat of prison looming, Poehlman changed his mind and offered his full cooperation.

He waived his right to an indictment and pleaded guilty to falsifying information on a federal grant application. He also agreed to pay \$180,000 to settle a civil complaint filed by the University of Vermont plus \$16,000 in attorneys’ fees for DeNino. The plea came with an especially devastating admission: he acknowledged that his most noted research, the longitudinal study on menopause, was almost entirely fabricated. Poehlman had tested only 2 women, not 35.

The length of time that Poehlman perpetrated his fraud — 10 years — and its scope make his case unique,

even among the most egregious examples of scientific misconduct. Some scientists believe that his ability to beat the system for so long had as much to do with the research topics he chose as with his aggressive tactics. His work was prominent, but none of his studies broke new scientific ground. (This may also be why no other scientists working in the field have retracted papers as a result of Poehlman's fraud.) By testing undisputed assumptions on popular topics, Poehlman attracted enough attention to maintain his status but not enough to invite suspicion. Moreover, replicating his longitudinal data would be expensive and difficult to do.

"Eric excelled at telling us what we wanted to hear," Matthews, Poehlman's former colleague, told me. "He published results that confirmed our predisposed hypotheses." Steven Heymsfield, an obesity researcher at Merck Pharmaceuticals in New Jersey, echoed Matthews's sentiments and added that Poehlman's success owed more to his business sense and charisma than to his aptitude as a scientist.

"In effect, he was a successful entrepreneur and not a brilliant thinker with revolutionary ideas," Heymsfield wrote me via e-mail. "But deans love people who bring in money and recognition to universities, so there is Eric."

At his sentencing hearing, Poehlman took responsibility for his actions, but between the lines, he seemed to be placing some blame on the system that requires principal investigators to raise money for their research through government grants.

"I had placed myself, in all honesty, in a situation, in an academic position which the amount of grants that you held basically determined one's self-worth," he told the court in June. "Everything flowed from that." With a lab full of people dependent on him for salaries, Poehlman said he convinced himself that altering some data was acceptable, even laudable. "With that grant I could pay people's salaries, which I was always very, very concerned about."

He continued: "I take full responsibility for the type of position that I had that was so grant-dependent. But it created a maladaptive behavior pattern. I was on a treadmill, and I couldn't get off."

Having all those people to pay, of course, was not just a burden; it was proof of his success. Poehlman wasn't after the grant money for his own material benefit. He was seduced by a different kind of status. "Certainly there is this point of having a grant because it raises your esteem and raises your standing vis-à-vis your colleagues," he told the court. The big publications, the National Institutes of Health grants, the invitations to speak, all gave him a feeling of importance. He was a man of prestige in his community.

Had Poehlman done the hard work in the menopause study, had he followed through on the unexpected data on lipids, he might have eventually achieved the same status. That is the tragic twist. "Much is revealed when studies don't go the way you expect them to," says Sally Jean Rockey of the N.I.H. "Because Poehlman was working in critical areas for lots of people, what he learned would have been important either way."

On that day in the courthouse just a few miles from the university where he had so enjoyed playing the role of prominent scientist, Poehlman cast himself as a changed man, one with a new, humbler vision for his future. He implored the judge to spare him a prison sentence so that he could spend time with his ailing

father and continue teaching science to elementary-school children, which he had been doing for the past year. He also outlined a plan for community service that included talking to other students and scientists about the error of his ways.

Federal sentencing guidelines called for five years in prison based on the amount of grant money Poehlman had obtained using fraudulent data. But no scientist had ever spent time in prison for fabricating data. (One did spend 60 days in a halfway house.)

Rockey, who delivered a statement to the court on behalf of the N.I.H., said that lost grant money was not the only, or even the most significant, cost incurred. "Science is incremental," she said, explaining that most scientific advances build on what came before. "When there's a break in the chain, all the links that follow that break can be compromised." Moreover, she said, fraud as extensive as Poehlman's would inevitably lead to further erosion of the public's trust in science. Poehlman's sentence, she said, should send a clear message to the scientific community and the public at large that fraud would not be tolerated.

The sentencing judge was William Sessions, the same judge to whom Poehlman denied all allegations of misconduct at the injunction hearings four years earlier. He told Poehlman to stand and receive his sentence: one year and one day in federal prison, followed by two years of probation.

"When scientists use their skill and their intelligence and their sophistication and their position of trust to do something which puts people at risk, that is extraordinarily serious," the judge said. "In one way, this is a final lesson that you are offering."

DeNino, who wore a dark suit and tie to the hearing, betrayed no emotion as the sentence was read. When I asked him about it later, he said that Poehlman "deserves every single day he serves in prison." Nothing Poehlman had said, not the least his personal apology to DeNino, changed the young man's opinion about his former mentor. "I don't believe for a second that any of what he said was sincere," he told me. "Of course he's going to say those things now that he's facing a prison sentence."

After the hearing, Poehlman walked through downtown Burlington with his mother and a group of young colleagues from Montreal who had come to show their support. The rain had stopped and the sun cast a bright shimmer over the wet cobblestone streets. When I approached Poehlman on Church Street, he was warm and gracious. We talked briefly about his time teaching at the American University in Tehran, his plans to continue teaching elementary school — anything but his impending prison sentence. We agreed to have that discussion in the near future. But there were just 60 days standing between Poehlman and a year in federal prison, and he wanted to sort out his affairs and prepare himself for what lay ahead.

"I just need some time," he said apologetically. "We can sit down one day soon." But as the summer progressed and 60 days became 30 and then 20, Poehlman did not respond to repeated e-mail messages, telephone calls and letters. Finally, two weeks before his sentence was set to begin, I reached his mother. Eric had decided to start his sentence early, she explained, and he wouldn't be talking about what happened anymore.

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