

# Scientific Research and the Burden of Proof

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## ABSTRACT (ABSTRACT)

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## FULL TEXT

THE BALTIMORE CASE

A Trial of Politics, Science, and Character

By Daniel J. Kevles

Norton. 508 pp. \$29.95

Reviewed by Marcia Bartusiak, who writes on science for a number of national publications.

Her latest book is "Through a Universe Darkly."

What came to be known as science's Watergate began innocently enough 12 years ago. Researchers from the Massachusetts Institute of Technology published a paper in the journal *Cell* on the intriguing results of an immunology experiment. The gene from one type of mouse – a gene related to its immune system – was inserted into the genome of another type of mouse to see how the foreign gene might alter the mouse's natural immunity. The response was unexpected: The foreign gene, rather than activating its own antibody program, stimulated the production of uncommon antibodies from the mouse's native genes. It was as if the foreign gene had somehow turned on an unused spigot.

One of the co-authors, Thereza Imanishi-Kari, soon hired a young post-doc named Margot O'Toole to help her extend the experiment. But within a year, after O'Toole failed to duplicate some of the procedures, she began to question Imanishi-Kari's original findings. A spunky and impassioned Irishwoman, O'Toole had a history of battling authorities. Her concerns were examined by panels at both MIT and Tufts University, where Imanishi-Kari was headed for a new job. The post-doc's worries were not frivolous, but they were ultimately deemed of negligible significance to the experiment's final outcome. Yet the probe stayed alive. It moved to Washington, where new

critics joined the bandwagon and the charges escalated during investigations by both the National Institutes of Health and Congress. The case became primarily identified with the maligned paper's most famous co-author, hence the title of this book.

David Baltimore was the wunderkind of biomedical research. He had won a Nobel Prize at the age of 37, and at 52 left MIT to become president of Rockefeller University. But now it looked as if the exhaustive inquiry would be Baltimore's Waterloo. He was denigrated for both his belief that scientists could police their own and his unflagging loyalty to his tainted collaborator. Eventually, he lost his university presidency, while Imanishi-Kari's career lay in near-ruin. Daniel Kevles shows how all the fear and distrust that the public had about the new biology seemed to well up and converge upon this one case. "It was a projection of science as a corrupt enterprise," he writes, "no different from, say, defense contracting or the savings and loan business, and no more deserving of public trust." Based on preliminary hearings and leaked reports, the news media, as well as many scientists, concluded that Imanishi-Kari had indeed falsified her data. O'Toole, so reasoned and articulate, was sympathetically cast as the martyred whistle-blower, relegated to working for her brother's moving firm. Imanishi-Kari, a harsh and mercurial Brazilian of Japanese heritage, was hurt by her difficulty with English.

With *The Baltimore Case*, Kevles, a noted historian of science, offers an insightful and powerful corrective to that general perception of wrongdoing, which pervaded the news for so long. With painstaking care and assiduous research – following every scientific twist, turn, suspicion and rumor – he builds a persuasive case that overzealous fraud-busters took certain errors and omissions in the original paper, as well as sloppy jottings in Imanishi-Kari's laboratory notebook, and mistakenly transformed them into proof of scientific fakery. Kevles serves up a hard-hitting indictment of a Kafkaesque investigation run amok. It counters the verdict of an earlier book, Judy Sarasohn's *Science on Trial*.

The Baltimore Case is an invaluable document on the subject of scientific integrity and government oversight, but it is not an easy read. All the furor of the investigation centered on highly involved points of molecular biology and cellular immunology. Kevles does not spare the details, which he decidedly needs in order to make his case (although translating it into simpler terms at times would have been welcome). Perhaps to maintain a momentum amid this blitz of technicalities, Kevles sets up distinct heroes and villains in his storyline. He subtly stacks the deck: O'Toole and her supporters appear more strident and fanatical as the years pass, while the rougher edges of Baltimore and company are markedly softened. It is the one aspect of the book that gave me pause; life is usually not so black and white.

That the government needs to stand vigilant over the use or misuse of tax dollars spent for scientific research is without question. The pressures that scientists now face in maintaining their grants can certainly lead to misdeeds, and academia has been slow to install safeguards against such conduct. As Kevles puts it, "The country's biomedical scientists had become wards of the state and the way that many of them responded to the issues in the case was shaped by fear of antagonizing their most munificent patron." But he also skillfully demonstrates that without the appropriate background it can be very difficult to distinguish a scientific error (or even an honest difference in interpretation) from fraud.

The government had virtually made up the rules as the investigation proceeded; Imanishi-Kari had to fight to see the evidence against her. So Kevles ends his story with the silver lining to this lamentable episode. Procedures were at last put into place to give Imanishi-Kari her day in court. In 1996, 10 years after the infamous paper's publication, the final appeal exonerated her on all 19 charges of scientific misconduct. Imanishi-Kari is now a tenured professor at Tufts; O'Toole works for a biotechnology company in the Boston area; Baltimore was recently appointed president of the California Institute of Technology, where, as it happens, Kevles has taught for most of

his career.

## Illustration

PHOTO,,AP; PHOTO,,JAMES K.W. ATHERTON CAPTION: David Baltimore in 1989 ec CAPTION: Thereza Imanishi-Kari in 1985 ec

## DETAILS

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