BOOKS: HISTORY OF MEDICINE

Double Jeopardy for Gallo

Martin Delaney

In *Science Fictions*, science journalist John Crewdson provides a seemingly meticulous description of the discovery of the AIDS virus, the development of the HIV blood test, and the subsequent patent dispute between France and the United States. The book details these controversies and the resulting federal investigations of Robert Gallo and his associate, Mikulas Popovic. Crewdson tells the story from an adversarial perspective; his conclusions and beliefs about Gallo are clear from the earliest pages rather than arrived at as the evidence is presented. This bias is not surprising because the author had established his position in a 50,000-word account in the *Chicago Tribune* in 1989 (*1*). Though the book adds little new information, it represents Crewdson's best—and perhaps last—chance to convince the world that Gallo stole the virus as well as the glory from Luc Montagnier and associates at the Pasteur Institute, while allegedly enriching himself and endangering the world's blood supply in the process.

In contrast, the historical record shows that the National Institutes of Health investigations, which Crewdson's article helped trigger, failed to substantiate charges of any kind against Gallo and Popovic. No doubt this was a very unsatisfactory resolution to the story that had been the author's primary focus for nearly a decade. How, then, should one review the work of a writer who, years later, still insists that all conclusions but his own are wrong?

Much of the book is a "you are there" account of the events that began in 1981. This veneer of authenticity is the book's greatest strength and perhaps its greatest weakness. To those unfamiliar with the story, Crewdson seems to provide an intensively researched and heavily documented account. Either one simply takes the author's word for the accuracy of what he writes, as some reviewers have, or one doesn't. But Gallo and others have long since offered their own, contrary evidence and documented refutations of the author's claims. The curious reader can find literally thousands of pages of publicly available documents and transcripts of the federal investigations for study.

Science Fictions
A Scientific Mystery, a Massive Cover-Up, and the Dark Legacy of Robert Gallo
by John Crewdson
Little, Brown, New York, 2002. 688 pp. $27.95, C$39.95. ISBN 0-316-13476-7.

Checking the story told in *Science Fictions* against these documents would show that the author's preconceptions are woven into almost every page. Gallo is described as arrogant and incompetent. He is seen as someone who has inexplicably had a huge impact on science—supposedly through corruption, bullying, and even thievery. He is characterized as having never made any scientific contributions, yet graced with almost every national and international award short of the Nobel and blessed with the loyal friendship and respect of many of his colleagues. This striking contrast should prompt all but the most naïve reader to wonder, "Can all this really be so?"

Putting the controversy behind them. Gallo **(left)** and Montagnier **(right)** embrace after being honored at a 2000 ceremony in Spain for identifying HIV.

Given the prosecutory tone of the book (and the absence of any defense), readers will find it very difficult to form an independent view. From the very first pages, Crewdson denigrates everything Gallo has ever done. He claims that Japanese researchers, not Gallo, were the first to find a human disease caused by a retrovirus, T cell leukemia virus–type 1 (HTLV-1), despite the publication history clearly indicating the contrary. He credits two postdocs in Gallo's lab as the "real" discoverers of HTLV-1, and he likewise gives credit for discovery of interleukin-2 to people in Gallo's group who did the lab work. If such a standard were routinely applied, senior scientists, including most contemporary Nobel laureates, would never be credited with anything. Similar unfairness continues relentlessly through to the book's conclusion, where Crewdson dismisses Gallo's role in the discovery of HIV-suppressive chemokines. To do so, he glosses over the differences between chemokines and their receptors as well as the distinction between saying something is present and actually identifying and isolating it.

The author also ridicules a number of potential therapies Gallo's lab has worked on, concluding that his entire body of work on AIDS is worthless because none of it has cured the disease. Yet other AIDS researchers appearing in the book escape this standard. There is no mention of Jean-Claude Chermann's association with the failed therapy HPA-23, or Montagnier's claims that mycoplasma was the elusive "co-factor" in AIDS and the antibiotic doxycycline, the disease's cure. Nor does Crewdson note that Don Francis (one of his principal sources) spent 10 years on a quixotic search for value in an old gp120 vaccine.

The real question raised by *Science Fictions* is not "Did Gallo steal the virus?" (That is an accusation Crewdson deftly avoids but constantly implies.) Few in the scientific community believe it any longer, because independent testing in the early 1990s showed that a particularly aggressive French isolate of HIV had contaminated many of the labs involved in early HIV research. Even Montagnier's earliest samples turned out to be the contaminant rather than the virus he thought he had stored. Instead, the critical issue is the credibility of Crewdson's account, because it contradicts the conclusions of the single most intensive investigation of a scientific discovery. One wonders how much of the documentation, how many of the quotations on the critical questions of the discovery of HIV were gathered before the contamination problem became known? How many of the views changed afterwards?

Although Crewdson's narrative style appears to include extensive quotations from Gallo and Popovic, the author fails to mention that he never interviewed Gallo at all and had only a few short conversations with Popovic, conversations that Popovic claims were misreported in the press. Crewdson has gathered their dialogue from third parties, press reports, magazine articles, and other sources; thus much of it would be considered hearsay. Without the footnotes, the reader often cannot determine when or where such quotes come from, or their applicability. And the publisher's choice in handling the footnotes greatly adds to the reader's task. A set of "informational notes" (denoted by superscript letters and organized by chapter at the end of the text) cover background points. But the extensive set of "citational notes," which might have provided an all-important sense of context, exist only online (at www.sciencefictions.net). The reader only learns of this on reaching page 541. Even then, few people are likely to read the book while surfing the Web.

The numbers of pages and footnotes are often hallmarks of the thoroughness of scholarly tomes, and at 684 pages and

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1000-plus footnotes, the book is duly impressive. But numbers alone do not ensure correct conclusions. Edward Hooper, for example, included some 2288 footnotes in the 1104 pages of *The River* (*2*), but apparently still drew the wrong conclusions. Peter Duesberg's book (*3*) offers 872 footnotes in 736 pages, yet does not change the fact that HIV causes AIDS.

Science Fictions spends a great deal of time on what was supposedly said around and during the federal investigations that followed the *Chicago Tribune* article. But it spends precious little time digesting the ultimate conclusions of the legal process or considering what was different about the final legal step, which led to the exoneration of Popovic and Gallo. The appeals process of the Department of Health and Human Services invoked by Popovic offered—for the first time in all the years of investigation, hearings, testimony, newspaper articles, and accusations—the application of the rules of evidence and due process of law. Accusers were finally held accountable for what they said, evaluated for their qualifications, and required to prove their claims. The accused was able to question the accusers, who were required to testify under oath and in the light of cross examination—according to the basic protections of Anglo-American law. The case against Popovic disintegrated. A stinging, 79-page decision issued by the appeals panel not only found Popovic innocent of all charges, but it harshly criticized the fairness of the entire process to which he and Gallo had been subjected. A few days later, the remaining case against Gallo was dropped. Government prosecutors claimed and the author argues that this decision set a higher bar for proving scientific misconduct, but their objection makes little sense except as face-saving. Why should scientists be denied due process? Why allow them to be judged on the basis of hearsay, unsubstantiated claims and opinions, or the pronouncements of witnesses who lack knowledge of the relevant science?

In addition to this misrepresentation of the legal findings, major errors appear throughout the book. In this short review, it is impossible to delineate them. But the author would no doubt resent such a claim without substantiation, so I will let others speak on the matter. Montagnier, seen as the most aggrieved party in the book, has commented: "As a living actor of AIDS research since the early days, I regret to say that this is not a book I would recommend for anyone interested in medical history. I noticed many mistakes and fallacious statements in the description of the French contributions to HIV discoveries, which makes me think it is probably inaccurate on the American side as well..." (*4*).

It is difficult to understand the purpose of this book. Why would an obviously skilled writer indulge in such an over-the-top assault when a more even-handed approach might have provided a solid foundation for his case? Surely, Gallo was no saint in the early days of AIDS. He was often publicly arrogant and, like others at the time, probably couldn't fathom the idea that a small team of relatively unknown scientists in France was making major contributions. He was, he admits, "stuck" too long in the belief that the virus would be a member of the HTLV family. But there is no evidence that this delayed finding the truth. Who among us hasn't behaved foolishly in our youth, especially if swept up in sudden fame? None of these shortcomings make Gallo the unrepentant monster portrayed in *Science Fictions*.

In the end, what might have been an important book about AIDS research fell victim to the author's own passion and vendettas. Some of *Science Fictions* may be true, and there may be much we can learn from it. How might the bruising interplay of politics, ego, government patents, and nationalism demonstrated here help us do a better job when the next epidemic comes along? Likewise, perhaps there is an important case study here that could help set future standards of scientific etiquette. Still, the book's bias is profound and unmistakable, and bias is the antithesis of science. It is impossible to separate the book's wheat from its chaff. There appear to be no imaginable circumstances in which Crewdson would say, "I was wrong about these things." A full, accurate, and fair accounting can only come from a writer who has nothing riding on the outcome, someone whose own reputation and judgment are not entwined with the story.

References and Notes

1. J. Crewdson, "The Great AIDS Quest," *Chicago Tribune*, 19 November 1989, section 5, p. 1.
2. E. Hooper, *The River: A Journey to the Source of HIV and AIDS* (Little, Brown, New York, 1999).
3. P. Duesberg, *Inventing the AIDS Virus* (Regnery, Lanham, MD, 1996).
4. Montagnier's comment appears in a 6 March 2002 letter written in response to John Horgan's review of *Science Fictions* (*New York Times Book Review*, 3 March 2002, p. 9).

NOTA BENE: CHEMISTRY

Enticing and Informative Tales

The Genie in the Bottle
64 All New Commentaries on the Fascinating Chemistry of Everyday Life
by Joe Schwarcz

W. H. Freeman (Henry Holt), New York, 2001. 311 pp. $23.95. ISBN 0-7167-4601-8.

Chemistry has an image problem, and chemicals are now seen as a scourge of modern society. At best, people remember the smelly experiments from their high school days; at worst, they recall the latest explosion at a chemical plant or leak from a derailed train.

The problem has become severe enough that chemists' societies are now actively working to reverse it and to encourage more students to enter the field in order to meet the growing needs of industry. Joe Schwarcz, the director of the Office for Chemistry and Society at McGill University in Montreal, has been busy educating the public through newspaper articles and a weekly phone-in radio program. His new book, *The Genie in the Bottle*, is a sequel to his *Radar, Hula Hoops, and Playful Pigs* (Freeman, New York, 1999). In both books, he presents over 60 humorous vignettes that highlight aspects of chemistry encountered in everyday life, and he also debunks many scientific frauds perpetrated over the years. We learn about secret inks, the dangers of mixing drain cleaners, the Scoville Organoleptic Scale for rating spicy materials, and the use of a veterinary product as a beauty aid. He explains why some materials are sticky and, thus, how to make glue.

Schwarcz also covers many serious and timely topics, such as the fortuitous discoveries of the interactions between grapefruit, St. John's wort, and many prescription medications—an extremely important topic given the unregulated nature of the health supplement and herbal remedy industries. Perhaps the most notable of the stories he presents concerns thalidomide. Prescribed as a morning sickness treatment 45 years ago and subsequently shelved because it was found to cause severe developmental defects, this chemical is now back in the media spotlight because of its ability to block the formation of blood vessels. It might be useful in treating tumors as well as several other conditions. Though the emotional scars left by the drug's role in producing malformed babies still linger, the chemistry of thalidomide remains unchanged.

Chemistry and chemical interactions affect everyone on a daily basis, but we can influence how they do so. We can carefully choose the products we use in our homes and our diet and dietary supplements; we can use filters to screen out air and water pollutants; and much more. Schwarcz's two books (with more promised) demonstrate why a basic knowledge of chemistry is essential to each of us.

—MARC LAVINE