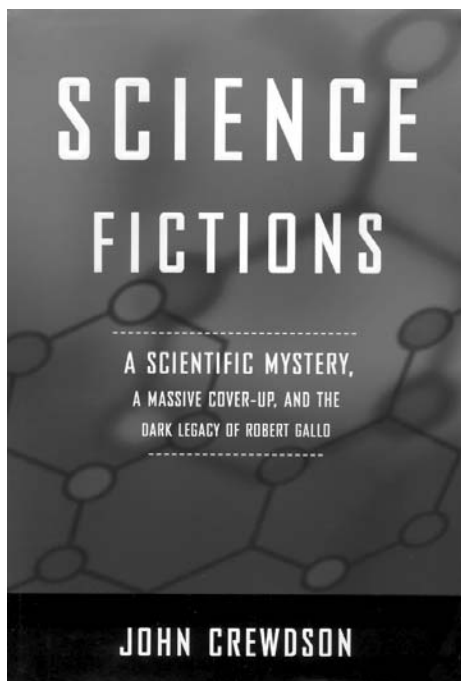


edited by Stephanie Deming



SCIENCE FICTIONS: A SCIENTIFIC MYSTERY, A MASSIVE COVER-UP, AND THE DARK LEGACY OF ROBERT GALLO. JOHN CREWDSON. BOSTON: LITTLE, BROWN AND COMPANY; 2002. 670 PAGES. HARDCOVER \$27.95. ISBN 0-316-13476-7.

Science Fictions, Journalistic Obsessions

In early 1981, young men were being admitted to hospitals in California with a bizarre syndrome that would later be called acquired immunodeficiency syndrome, or AIDS. To virologists, it was obvious or intuitive that an unknown virus was causing the illness. One of them, Robert Gallo, at the National Institutes of Health (NIH), had discovered the human T-cell lymphoma virus (HTLV) in a patient with mycosis fungoides, a T-cell skin cancer, several years previously. He wanted his next discovery to be the virus that caused AIDS, and he was convinced from the start that it was another HTLV. At almost precisely the same time in the early 1980s, virologists at the Institut Pasteur in Paris under the direction of Luc Montagnier were also searching for viruses in the blood of patients with AIDS. Both Gallo and Montagnier found a virus. Claims of precedence were important, not just for reasons of vanity (and the potential for a Nobel Prize) but also for patent rights on the HIV test. What followed is the subject of this book: a decade of scientific dispute, alleged (and some proven) scientific misconduct by Gallo and colleagues, investigations by the Office of Research Integrity in the United States, a congressional investigation, and even meetings between the presidents of France and the United States.

In early 1983, Montagnier had found the virus now called HIV in a patient. He was preparing his paper for submission to *Nature* when he received a call from Gallo. Gallo and his colleagues at NIH had isolated an HTLV from a patient with AIDS and were preparing to send the report to *Science*. Montagnier was convinced that the virus he had discovered was not an HTLV, and his paper made this clear. However, he agreed to switch journals and sent Gallo a copy of his paper to send on to *Science*. But Montagnier had neglected to write an abstract. In the

rush to get the papers to *Science*, Gallo wrote the abstract for Montagnier; however, the abstract written by Gallo indicated that the French scientists had also discovered an HTLV, thus in a sense confirming Gallo's discovery. Montagnier never saw the abstract until the paper had been published. In the postpublication fanfare—the popular press proclaimed the discovery of the cause of AIDS—Gallo got the credit. The Montagnier paper was largely ignored.

Thus began a long, confusing, and, in the end, tragic episode in the scientific history of AIDS—tragic, because the dispute between Gallo and Montagnier delayed for almost a decade scientific and clinical acceptance of the idea that AIDS was caused by HIV, the virus that Montagnier had found in January 1983.

Gallo finally admitted that he had the wrong virus and Montagnier had the right one. But Gallo then claimed that he had also discovered HIV and that he had done this (but not published his finding) before Montagnier's discovery. This also was untrue. As was common among virologists, the two investigators had exchanged samples and tissue cultures. Not all HIVs are alike—in fact, they are remarkably different in their genomic sequences. When genetic analyses were finally done, it was shown that the French and US viruses were not only similar but identical. They must have come from the same patient, and that was the patient first investigated by Montagnier years previously. Purposely or through negligence, Gallo had “discovered” Montagnier's virus.

This is a great story of scientists pursuing not so much truth as fame. There are wonderful accounts of how high-flying scientists like Gallo (in the period 1983-1994 he published, according to my PubMed search, over 70 papers per year—more than one per week!) negotiated with editors and how editors were influenced. For example, shortly after the *Science* papers were published, another virologist, David Purtilo, had tried to publish data showing that when he examined blood samples from patients with AIDS he failed to find any evidence of the Gallo virus. *Science* turned Purtilo's paper

down—and so did George Lundberg at the *Journal of the American Medical Association*, who ignored the author's cover-letter statement that "the undocumented implication that this virus (HTLV) causes AIDS has grave consequences to all of the individuals at risk for AIDS." The paper was eventually published in *AIDS Research*, a small and then-obscure journal edited by Joseph Sonnabend, a Greenwich Village physician who had a large practice devoted to AIDS patients. The paper was ignored.

Purtilo was correct, but for the next 8 years, the world was convinced that the cause of AIDS was an HTLV. Then, under increasing pressure from several sources—including the NIH Office of Scientific Integrity, which had begun an investigation into Gallo's AIDS research, and a congressional investigation led by John Dingell—Gallo admitted that "his" virus was indeed the "French" virus that had somehow "accidentally" contaminated cultures in his laboratory.

Not only did those events confuse scientists, clinicians, and patients, but they delayed implementation of an effective and sensitive blood test for HIV. Abbott Laboratories in the United States and the Institut Pasteur in France had each developed an AIDS test. Abbott used as its starting point a virus it had obtained from Gallo. The French, of course, used the correct virus from Montagnier. Abbott's test had low sensitivity, falsely reassuring patients that they did not have AIDS and letting thousands of HIV-infected blood donors in the United States continue to donate.

Not all readers will enjoy this book. It is not a biography: after almost 600 pages of dense text, we know little about Robert Gallo other than his penchant for first-class travel and his affair with his collaborator, Flossie Wong-Staal. But that is about all. We really don't get much of an explanation of why Gallo was so intent on getting credit

for the discovery of the AIDS virus—why fame seemed so much more important to him than truth. What author John Crewdson does provide reads a little like a police dossier or a presidential impeachment file. The writing style is almost staccato in its presentation of data, all of which are meticulously cataloged. The footnotes run to 100 pages in very small type. And the text is further backed up by a Web site (www.sciencefictions.net) that includes what must be thousands of references (each numbered to correspond to the cited text reference) and a huge list of documents in PDF, most of which were obtained by Crewdson under freedom-of-information legislation. One can, for example, read copies of memos from Wong-Staal to Gallo, along with reports of the Office of Research Integrity.

But I liked the book. In fact, flying to San Diego to attend the recent meeting of the Council of Science Editors, I couldn't put it down (or found it much preferable to the in-flight film). Crewdson, a Pulitzer Prize-winning journalist, first broke the story that the Gallo virus was identical with or very similar to the French virus (and reproduced the DNA nucleotide sequences that had been added to a database only a few weeks previously) in a 55,000-word article in the *Chicago Tribune* in November 1989. Writing this exhaustive book must have occupied most of the next 12 years of his life. The author's motivation? One might conclude that he was simply obsessed with Gallo. But perhaps he was trying to be as meticulous and accurate with his reporting of science as Gallo was sloppy or deliberately misleading with his doing of it.

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Complications

[A SURGEON'S NOTES ON
AN IMPERFECT SCIENCE]



COMPLICATIONS: A SURGEON'S NOTES ON AN IMPERFECT SCIENCE. ATUL GAWANDE. NEW YORK: HENRY HOLT AND COMPANY; 2002. 269 PAGES. HARDCOVER \$24.00. ISBN 0-8050-6319-6.

Books by a number of gifted physician-essayists—including Lewis Thomas, Oliver Sacks, John Stone, and Jerome Groopman—appeared in the latter decades of the 20th century. At least one more such book—*Complications: A Surgeon's Notes on an Imperfect Science*, by Atul Gawande—has already appeared since the 21st century arrived.

Gawande wrote this book while a surgical resident. He also brings to his writing a background in laboratory investigation, public-health research, philosophy and ethics, and health policy. Versions of some of the essays constituting this book have appeared in *Slate* or *The New Yorker*, for which Gawande is a staff writer.

Contrary to the stereotype of surgeons as highly self-assured and tending much more toward action than reflection, Gawande focuses largely on uncertainties in medicine and dilemmas resulting therefrom. In doing so, he does not hesitate to portray unsettling realities. Yet he also conveys a sense of hope—in part by depicting measures to deal with uncertainties and problems and in part by including clinical cases that had favorable outcomes despite the challenges.

The book consists of three sections, each containing four or five essays. The first section, “Fallibility”, begins with a piece centering on the tension between the need to practice new procedures and the need to give patients the best care possible. Gawande aptly describes the experience of mastering a surgical task: “Practice is funny that way. For days and days, you make out only the fragments of what to do. And then one day you’ve got the whole thing. Conscious learning becomes unconscious knowledge, and you cannot say precisely how.” How much like learning some editorial skills!

Another essay in the section, “When Doctors Make Mistakes”, argues that most mistakes in medicine are not the doing of bad doctors but rather result from systems failures that can be methodically resolved, as has been largely done in anesthesiology. A third essay, “Nine Thousand Surgeons”, describes Gawande’s experience in attend-

ing an American College of Surgeons convention for the first time. His reflections on the gathering’s providing a sense of professional kinship bring to mind the Council of Science Editors annual meeting.

The second section, “Mystery”, deals with “mysteries and unknowns of medicine and the struggles with what to do about them”. Topics of essays in this section include chronic pain, nausea and vomiting, severe blushing, and extreme obesity. A mark, perhaps, of Gawande’s skill as a writer: Even the piece on nausea and vomiting—hardly an appealing topic—proves extremely engaging.

The final section, “Uncertainty”, begins with an essay noting the recent decline in the number of autopsies and showing how we can continue to learn from them. Another essay in the section explores complexities regarding roles of patients and doctors in medical decisions. The final essay, centering on a woman ultimately shown to have necrotizing fasciitis (infection by “flesh-eating bacteria”), reiterates central themes of the book:

The core predicament of medicine . . . is uncertainty.

In the absence of algorithms and evidence of what to do, you learn in medicine to make decisions by feel. You count on experience and judgment. And it is hard not to be troubled by this.

Everyone understands . . . that a great deal of uncertainty about what we do will always remain. (Human disease and lives are too complicated for reality to be otherwise.)

One thing does seem certain, though: Gawande is a fine storyteller and, more broadly, an extremely skillful writer. In particular, he interweaves narrative and exposition very effectively. Often his essays begin by recounting initial phases of a memorable clinical case; other material, including discussions of issues at hand, then alternates with further

episodes of the case. This structure maintains suspense and otherwise supplies sound pacing.

Drawing extensively yet unobtrusively on medical and other literature, Gawande offers physiologic, psychologic, sociologic, philosophic, etymologic, and other perspectives. And, like Oliver Sacks, he sometimes recounts visits or conversations with former patients. At times, he also reflects on decisions regarding the medical care of his own family. The multiple types of material contribute to the richness of the essays. And the essays tend to end strongly.

Of possible interest to science editors, Gawande notes in his acknowledgments the roles of editors with whom he has worked. It might be interesting to learn more about Gawande's editorial interac-

tions—and to hear more about his observation that “a book editor . . . turns out to be a species as different from magazine editors as surgeons are from internists”. It also might be interesting to discover how, during a surgical residency, Gawande managed to write the essays constituting *Complications*.

With luck, maybe Gawande will address such items in another book. I look forward to further work from him and other physician-essayists of the 21st century.

Barbara Gastel

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Deputy Editor/Editor-Designate *Science Editor*

The Council of Science Editors seeks applications and nominations for the position of deputy editor, *Science Editor*. The chosen candidate will assume the position in May 2003, in preparation for becoming editor in May 2004, when the current editor steps down.

Applicants should submit a curriculum vitae or résumé and a one- to two-page vision statement. Applications and nominations should go to Blaire Mossman, Chair, Search Committee, telephone 480-991-4997, fax 480-991-4998, e-mail Blair.Mossman@asu.edu.

Questions about the position can be directed to Blaire Mossman at the phone number or e-mail address above.