

REVIEW ESSAYS

HIV, As Told by Its Discoverers

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Virus Hunting: AIDS, Cancer, and the Human Retrovirus: A Story of Scientific Discovery by Robert Gallo, BasicBooks, 1991.

Virus: The Co-Discoverer of HIV Tracks Its Rampage and Charts the Future by Luc Montagnier, W. W. Norton, 2000 (translated by Stephen Sartarelli from the French *Des virus et des hommes*, Editions Odile Jacob, 1994; parts of the text updated to 1998).

Since these books are by the co-discoverers of HIV, they are an important part of the HIV/AIDS story. Both are self-laudatory and distinctly self-serving. Each reads much like a pompous soap opera: the characters are black-or-white, either the best (those who side with the author) or the worst. From the viewpoint of the continuing controversy, whether HIV causes AIDS, their greatest interest is that—mostly implicitly but sometimes even explicitly—they afford evidence for the still-unorthodox view that HIV *does not* cause AIDS.

Most observers believe Gallo to be guilty of incompetence or misconduct. The “HTLV-III” he discovered is the “LAV” that Montagnier had sent him, and the now universal, compromise term “HIV” resulted from international litigation. Gallo’s book does not enhance his credibility, for example in his explanation (especially pp. 210–211) of how LAV turned into HTLV-III in his lab; as another reviewer commented, the book “will add more heat, but little light, to the controversy” (Shelton, 1991). Part of Gallo’s defense, eschewing false modesty, is to point to others who have been similarly accused of fudging—Mendel, Newton, and Kepler (p. 330).

Much of what Gallo says is blatantly wrong, and perhaps that is why the book lacks supporting citations or a bibliography. There are many assertions for which no support is offered, for example, references to “a country doctor” who overreacted to AIDS (p. 219), or to the notion that AIDS could be carried by mosquitoes, for which Gallo blames an unnamed collaborator though the media attributed it to Gallo (pp. 222–223). No citations are given for Gallo’s

suggestions that HIV might directly infect and damage the brain (pp. 249–250) and that it might be carried via giardia or amoeba (p. 251). He refers to work by several people without giving any citations (for instance, pp. 294 ff.), in the manner of "recent evidence from MIT scientists" (p. 296), a form of attribution usually found not in the writings of a scientist but rather in the sort of writing indulged in by Erich von Daniken and his ilk.

Historians of medicine and science can only smile grimly, or perhaps snort disbelievingly, when Gallo ascribes medical advances from the beginning of the 20th century to "an increased understanding of and reliance upon the scientific method" (p. 2); or when he calls interferon and cytokines "non-chemical" (p. 301), as though Wohler had not destroyed the basis for such distinctions in 1828. They would be utterly astounded at p. 297: "As I look back on medical history over the last fifty years, I see few examples in which the scientific-medical establishment arrived at an important conclusion about a disease and was later shown to be wrong". When he wrote that, Gallo could not of course know that the Nobel Prize in 1976 to Carleton Gajusek for identifying as the cause of kuru (and scrapie and mad-cow disease and its human counterpart, Creutzfeld-Jakob disease) a lentivirus (a slow virus) would be superseded in 1997 by the Nobel Prize to Stanley Prusiner for showing that the cause is *not* a slow retrovirus but rather prions ("PRoteinaceous Infectious particles"). But Gallo could have known that medicine had retreated from the use of brain surgery (lobotomy) for mental illness even though it had been thought worthy of the 1949 Nobel Prize. He should have known, since he was directly involved, that the general belief in viruses as the cause of cancer had proven to be a dead end. Most pertinent to the HIV/AIDS story, he fails to mention the SMON epidemic in Japan: decades of searching for the responsible infectious agent turned out to have been a wild-goose chase because the cause was not an infectious agent at all (Duesberg, 1996).

Gallo called AIDS "the most terrifying epidemic disease of the twentieth century" (p. 6) at a time (1991) when its incidence in the United States had already been on the decline for several years, the predicted spread into the heterosexual population never having eventuated. The promise of 1984 that a vaccine would be available within a couple of years Gallo attributes not to himself but to the Secretary of Health at the time, and defends its being broken by underscoring the difficulties facing invention of a vaccine (p. 194); which does not prevent him from spending 10 pages on the prospects for a vaccine (pp. 309–318)—all of which have been proven dead ends in the 15 years since this book was written.

Gallo has never publicly admitted in plain words that HIV is not the necessary *and sufficient* cause of AIDS; in his book, he "presents the irrefutable evidence that HIV causes AIDS (chapter 15)" (p. 7). Yet at several places he acknowledges that infection by HIV (p. 199) and progression to AIDS (pp. 252–252) depend on some co-factor, possibly certain venereal diseases (p. 199) or a new human herpes virus (p. 252), perhaps HHV-6 (pp. 254–255); the HTLVs that Gallo himself had earlier discovered being "the only known specific co-

factors for AIDS" (p. 248, emphasis in original). He insists that HIV is the *sine qua non*, that AIDS will still occur without co-factors, it will "probably just take longer", and he dismisses as "unlikely" Montagnier's belief that a mycoplasma is responsible for the depletion of T4 cells that produces AIDS (p. 297). On the other hand, he also writes that "If not all HIV-infected people develop AIDS (and that is a possibility)" (p. 302)—a possibility he nevertheless discounts at several other places in the book. Nowhere does Gallo come explicitly—one might say honestly—to grips with the facts discussed by others (Maggiore, 2000; Root-Bernstein, 1995), that HIV-positive people who are otherwise healthy have shown no signs of AIDS for as long as the two decades since HIV was discovered.

Gallo also wants to have it both ways over what is known about HIV: "we probably know more about how HIV produces its pathology than about the pathological mechanism of virtually any other microbe" (p. 296)—but, the "steps involved in virus penetration after binding to CD4 are poorly understood" (p. 304); "we know plenty about HIV and how it works, though of course we need to know more" (p. 297). The discussion of HIV-1 and HIV-2 (p. 201) clarifies nothing. He offers no explanation why HIV could be an exception to the general rule that enveloped viruses do not kill their target cells (p. 51), nor for how this unusual characteristic could be maintained as the virus mutates, which it is said to do to an extraordinary extent. Nor for the claim that some animal viruses cause abnormal excess cell growth but also the death of the same sort of cells, which later led him to consider "this type of agent as a cause of the immune-deficiency disease called AIDS" (pp. 61–62). Gallo's pet virus, HTLV, "tended to be transmitted within families and to stay within families for generations" (p. 114), which sounds less like an infectious disease than like a heritable, genetic factor. He also suggests that "multiple sclerosis itself may involve an HTLV-related virus" (p. 115). Gallo admits that HIV is "distinctively difficult to transmit" (p. 131) without considering how it could then be responsible for a galloping global epidemic.

The whole Chapter 14 is devoted to Kaposi's sarcoma (KS) without addressing the central conundrum. AIDS was first identified because several young gay men contracted KS at a time when it was almost unknown except in elderly men of Mediterranean heritage. The purple skin patches of KS became the characteristic identifying mark of AIDS, "the first clinical sign of HIV infection" (p. 264). Yet nowadays it is no longer included as an AIDS-defining condition, nor attributed to HIV, because KS has become rare in people with AIDS. Only HIV/AIDS dissidents have an explanation for this, namely, that KS developed because of continued use of nitrite "poppers" which damage the immune system in a particular manner (Duesberg, 1996: 272–273; Root-Bernstein, 1993: 229, 336); KS has become rare because poppers are not so widely used any more, with gay men—though not the National Institutes of Health or the Centers for Disease Control and Prevention—having acknowledged their role in KS.

If Gallo's description of how HIV was found to be the cause of AIDS is to be believed (p. 185), then it was more a hunch than any sort of proof: "We were already confident that blood cells from AIDS patients positive for RT [reverse transcriptase, the signature of a retrovirus] . . . were likely producing the new retrovirus. We would be even more confident when *in some instances* [emphasis added] we were also able to show that the virus exhibited a cytopathic effect"; which would sound even less impressive were it clearly stated that it was not "the virus" that exhibited the cytopathic effect, but an "isolate" from the blood of the AIDS patients—pure HIV, free of all other substances, has never been obtained from AIDS patients (De Harven, 2002, 2003; De Harven & Stewart, n.d.). Similarly, when Gallo made comparative "HIV" tests on sera from patients with and without AIDS and found that "we could reliably identify infection by the AIDS virus", it is more tautology than proof: the "HIV" antigens used for the test had been prepared from serum of patients with AIDS, so it is hardly surprising that serum from other AIDS patients would show similar reactions, no *matter what the cause of AIDS* is—it could be owing to any number of substances that typically occur in the blood of AIDS patients. Again, when Gallo says "the viral genome became available in purified form" (p. 195), the unwary reader might imagine that pure virus had been somehow prepared free of all other substances. Actually, the nature of that genome has only been *inferred* by indirect means, through the use of polymerase chain reaction (PCR), which multiplies the amounts of any desired bits of DNA in some mixture; Kary Mullis, who was awarded a Nobel Prize for inventing PCR, has stated that these claimed "isolations" of HIV are not valid (Johnson, 2001).

Chapter 15 is artfully titled "About Causes of Disease (and, in Particular, Why HIV Is the Cause of AIDS)". I say "artfully" because Gallo uses general points about diseases and infections to obfuscate the particular problems specific to the HIV-causes-AIDS hypothesis; even then he cannot avoid self-contradictions. He gives seven reasons (pp. 283–284), of which the first says that antibodies have been found in "88 to 100 percent of cases" and the virus isolated in "about 50 percent of cases"; while the fourth point claims that "Wherever the HIV was found, AIDS was present or soon present. Conversely, no HIV—no AIDS". The last point has been technically correct since 1993, because the Centers for Disease Control and Prevention then re-defined AIDS as *requiring* a positive HIV test; but substantively speaking it is quite wrong, because *acquired immune deficiency* is known to have quite a number of possible causes (Root-Bernstein, 1993)—among them chemotherapy and the use of steroids and other prescription and non-prescription and recreational drugs. On p. 288 Gallo repeats that "HIV can now be found in all patients with AIDS", but p. 293 has, "All or virtually all cases". As to how HIV can cause AIDS only years or decades after infection, Gallo cites kuru, Creutzfeld-Jakob disease, and scrapie (p. 294), which are now known not to be caused by a retrovirus at all.

Gallo is at his worst when referring to people who do not share his views: "there actually are people (I hope not many scientists) who do not believe the

United States placed a man on the moon. There is also, I am told, a Flat Earth Society, which has evolved a complex rationale to explain away all the evidence that the earth is round" (p. 297). Gallo discounts Duesberg because "he is not an epidemiologist, a physician, or a public health official" and "has never worked on any naturally occurring disease of animals or on any disease of humans, including AIDS" (p. 289); he is "a chemist, a molecular virologist" (p. 291). This is all sheer *ad hominem* and irrelevant to the substantive questions Duesberg has raised and that have not been answered. Gallo claims that Root-Bernstein "has rewritten many of Duesberg's arguments and is in agreement with all of them" (p. 287), again without offering any citations. In point of fact, it is common knowledge, openly acknowledged by both of them, that Duesberg and Root-Bernstein hold significantly different views. Duesberg believes that HIV is totally harmless and that AIDS resulted from promiscuous use of many drugs, whereas Root-Bernstein considers HIV one of a number of factors that may jointly produce severe immunodeficiency. As to the HIV test, which is a test for *antibodies* to HIV: "Some even claimed it might indicate protection against the disease!" (p. 206)—neglecting to mention that "some" includes expert retrovirologists, and that antibodies are even *typically* a sign of protection.

Montagnier's book is, like Gallo's, free of false modesty. It exemplifies an authoritarian style of discourse to which prominent French intellectuals seem prone, heavy on sweeping generalizations but light in supporting citations. Highfalutin and technical jargon seems intended to impress rather than to instruct the lay reader. In between the claims of knowing much about AIDS and how to treat it and how to prevent it, there are wide-ranging admissions of how much is *not* known: "a great many unknowns still remain . . . this illness . . . has no equal among human diseases" (p. 108). Among other unexplained peculiarities of HIV/AIDS are that interferon seems to be initially helpful but later harmful (p. 109).

The French edition of this book was published in 1994, the English one in 2000 with internal evidence that certain material was updated to 1998; but explicit dates are missing in some important places. For example, a promising Montagnier-pioneered vaccine is said to be in testing at the National Institutes of Health, and one would like to know whether that was before 1994 or only before 1998—though we know in 2005 that this vaccine, like so many others, has not lived up to early hopes. That the interests vested in HIV/AIDS are great is illustrated by the royalties on HIV tests, split between French and American governments and individuals: Gallo and his collaborators receive \$100,000 annually (p. 82). As to the scale of research effort, "The study of AIDS has become almost a discipline unto itself" (p. 82).

Montagnier insists that he and not Gallo discovered HIV, but Montagnier's first paper claiming LAV as the viral cause of AIDS had been rejected by *Nature* (p. 64). Where Gallo still claims that he discovered retroviruses that cause human cancer, Montagnier dissents: "Not the least egregious of these false hopes was the one announced by Robert Gallo in 1977" (p. 35); "His limited

experience with viruses at that time perhaps explains his misinterpretations and the contaminations that occurred in his laboratory" (p. 37).

Gallo misleads by implying that HIV has been literally isolated or purified, and Montagnier misleads in a similar manner when he says that "Through an electron microscope" one can witness the multiplication and maturation of viral particles (p. 161). Electron microscopy cannot show a continuing process: individual specimens must be "viewed" in high vacuum, and the best that one could possibly do is to have a series of snapshots of different stages of the process. No one has published such a series for HIV; Montagnier's claim here is based on a single photograph that appears to show buds forming at a surface—but that photograph is not reproduced in this book, nor is any citation to it given.

The origin of AIDS remains a great mystery (pp. 119 ff.); Montagnier suggests that it might even be an old disease [!] that somehow did not become virulent until recently (p. 116). Ten years is said to be the average time from HIV infection to the first symptoms of illness (pp. 86, 102). There is then something very odd indeed waiting to be explained, and not addressed by either of these authors. AIDS first struck thousands of people within a very short time, in the early 1980s, primarily in New York, Los Angeles, and San Francisco: there must therefore have been a hidden epidemic of HIV infection in *the early 1970s* that somehow remained largely restricted to just those places for something like a decade.

Among the indications that HIV is not the cause of AIDS is the fact that it has not been possible to isolate LAV-HTLVIII-HIV from every person with AIDS, as well as observed cases of non-transmissible AIDS (p. 100)—though Montagnier also says that "AIDS ... is essentially [whatever that means!] transmitted sexually" (p. 121) even though "the rate of transmission by sexual contact ... in 1993 ... was 1 in 1,000 for men in the United States", for some odd reason much less than for women in Thailand at 56 per 1,000 (p. 127). Moreover, regular sexual partners of HIV-positive people can remain free of HIV for years without practicing "safe sex" (p. 114). Yet Montagnier criticizes Peter Duesberg and Kary Mullis (mis-spelt "Cary") for pointing to such data as indicating that AIDS is not infectious (pp. 190–193); though he admits the fact emphasized by them and by Root-Bernstein that injected drugs weaken the immune system; in fact, Gordon Stewart saw the typical symptoms of AIDS displayed in drug addicts long before the HIV/AIDS epidemic (Hodgkinson, 1996: 103 f.).

Contradicting much of what Montagnier says elsewhere in the book is his conviction that HIV alone is no serious threat to health, that it requires some as-yet-unknown co-factor to lead from HIV infection to AIDS, most likely the mycoplasma that Montagnier's group has isolated from a number of AIDS patients (pp. 124, 169–178, 183 ff.).

As I said at the outset, these books are an important part of the HIV/AIDS story since their authors are the celebrated co-discoverers of HIV. I would not

recommend buying a used car from either of them, still less would I take their advice on matters of health or medicine.

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Kicking the Sacred Cow: Questioning the Unquestionable and Thinking the Impermissible by James P. Hogan. Baen Publishing Enterprises, 2004. 374 pp. \$24 (hardcover). ISBN 0-7434-8828-8, <http://www.baen.com>

Every reader of the *Journal of Scientific Exploration* will surely feel attracted to a book whose dedication is "To Halton Arp, Peter Duesberg—and all other scientists of integrity who followed where the evidence pointed, and stood by their convictions".

Many or most members of the Society for Scientific Exploration will feel kinship with Hogan's account of his growing realization that science, whose accomplishments and ideals had so attracted him, was becoming something quite different, akin to a dogmatic and bureaucratic religion. That growing realization shows that Hogan himself was following where the evidence pointed. Of course, most of us imagine that we do that; I certainly do. How can it then happen that I agree with Hogan on all significant points about what science is, has been, and should be—and yet differ from him sharply on several of the specific cases that he looks at?

This conundrum recalls a similar one that struck me soon after the Society for Scientific Exploration was founded. I met in the Society many competent, intelligent people, most of whom nevertheless seemed to take seriously