

BOOK REVIEW

Neanderthal. We have much to thank her for—well maybe.

Are these tales of evolutionary neurology? That I think depends on one's understanding of evolution. Using 'evolution' to link together the clinical themes, however, does work and the framework it provides leads to stimulat-

ing writing. Mostly these are tales of neurology patients and very interesting and well told they are. Neurologists, neuroscientists, students and interested general physicians will find this a book that entertains and stimulates their enthusiasm for wider aspects of the subject.

Virus

THE CO-DISCOVERER OF HIV TRACKS ITS RAMPAGE AND CHARTS THE FUTURE

by Luc Montagnier; Stephen
Sartarelli (Translator)

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Medical and scientific research is often competitive, sometimes even confrontational, and occasionally bitter and vengeful. A book recently written by Pasteur Institute virologist Luc Montagnier, entitled *Virus: The Co-Discoverer of HIV Tracks Its Rampage and Charts the Future*, is a personal account of such bitterness. The virus in question is HIV (or HTLV-III, LAV, IDAV or ARV as it was sometimes called). The result is Montagnier's autobiography of the acrimony experienced in the early days of AIDS research.

The AIDS era began in 1980 or 1981 as a few clusters of unexplainable Kaposi sarcoma, *Pneumocystis carinii* pneumonia or *Mycobacterium avium* tuberculosis that were unprecedented in previously healthy young adults. For those involved in the research at the beginning, the first controversy was whether AIDS, then called GRID (gay-related immunodeficiency), was an infectious disease at all. Popular hypothetical causes were autoimmunity due to rectal exposure to semen, or drugs such as amyl or butyl nitrate 'poppers' used to enhance sexual performance. In retrospect, such explanations seem irrational, but they did not seem so at the time.

At the same time, those with a background in infectious diseases or microbiology pushed for research to find an infectious etiology. Some concentrated on Epstein-Barr virus or cytomegalovirus (before the era of human herpes virus 8),

because of their association with chronic lymphoid infections and/or, however loosely, Kaposi sarcoma. Hepatitis B was also considered because it was known to be highly prevalent in homosexual men. The Centers for Disease Control conducted dozens of seroepidemiological surveys using various viruses, bacteria, fungi and protozoa as antigens, yet they did not include the human lymphotropic retrovirus found a few years earlier by Robert Gallo and his associates at the National Institutes of Health (NIH).

To some researchers working with retroviruses, such as Montagnier, it seemed logical to consider a potential retroviral etiology for AIDS. Montagnier was not alone. At the same time or perhaps even earlier, other scientists, such as Robert Gallo's group at the NIH and the Essex group at Harvard University, were looking for potential links between AIDS and new human retroviruses. In Gallo's case, the rationale was fairly obvious: He had recently discovered the first true human retrovirus and it preferentially infected CD4⁺ T lymphocytes—the exact cell type that was depleted in AIDS patients. The rationale of the Essex group was somewhat complementary as they were working with a lymphotropic retrovirus of cats that caused T-cell immunosuppression and fatality. It thus seemed logical to hypothesize that a new human T-lymphotropic retrovirus could be the cause of AIDS.

According to Montagnier, a retrovirus would be a logical cause of AIDS, but it wouldn't be related to the HTLV described earlier by Gallo, as Montagnier believed the latter caused only cell proliferation. At the same time the Harvard group and others sought evidence of a serologically related variant of HTLV in AIDS patients, Gallo looked for virus-like particles and reverse transcriptase activity. In Montagnier's portrayal, he was the only one who searched for and found the 'right' virus, initially called lymphadenopathy-associ-

ated virus (LAV). However, retrospective interpretations are always easy. Both patients described in Montagnier's initial *Science* paper were described as having antibodies that were capable of cross-reacting with HTLV-infected cells. The last sentence of the first paragraph of his now-historic paper states, "The virus appears to be a member of the human T cell leukemia virus (HTLV) family." This observation, which was presumably important to Montagnier at the time, has been conveniently overlooked or minimized in *Virus*.

In the book, Montagnier also reviews early life experiences that led him to a career in medical research: a serious auto accident that left him with an "attractive dimple," the chemistry lab in his basement, and the pride he felt in his first experiments with freshwater algae. He is critical of the "French nationalistic narrow-mindedness" that apparently drove him to pursue much of his research training in London or Glasgow. He vividly describes his personal frustrations while trying to pursue AIDS research in Paris in the early 1980s. However, he does not seem to recognize that others had the same problems.

Throughout the US and Europe, AIDS research would receive little or no targeted funding until several years later.

Montagnier also criticizes the scientific community's lack of support for his hypothesis that *Mycoplasma penetrans* was an important cofactor that allowed HIV to cause AIDS. He even proposes that mycoplasma alone might be responsible for the rare cases of HIV-negative 'AIDS-like diseases', a topic that had a brief flash of notoriety in the early 1990s but soon fell by the wayside as many of the HIV-negative 'AIDS cases' showed spontaneous improvement. As we learned more about the pathogenesis of AIDS, "essential cofactors" or other non-HIV causes became less and less interesting to almost everyone except perhaps Peter Duesberg.

For those who continue to wonder about the culture of AIDS research during the early days, *Virus* may be appealing. To neutralize some of the bias, *Virus Hunting*, by Gallo, might be read at the same time. While reviewing the latter for *The New York Times*, Natalie Angier stated, "Maybe we have heard quite enough about who discovered the cause of AIDS." Her comment seems even more appropriate for *Virus*.

