Is HIV a virus-like form of acid-fast Tuberculosis-type bacteria?

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ABSTRACT:

Acid-fast tuberculous mycobacterial infections are common in AIDS and are regarded as secondary "opportunistic infections." Could such bacteria play a primary role in the progression of HIV infection to immunodeficiency and full-blown clinical AIDS? In screening tests for HIV, there is frequent cross-reactivity between the gag and pol proteins of HIV in patients with certain mycobacterial infections, including tuberculosis. Could HIV itself be a virus-like cell-wall deficient form (CWD) of tuberculous mycobacteria? Do laboratory cultures of HIV contain "pure" virus, or are they contaminated with cellular proteins and/or proteins from other infectious agents? Is there a correlation between the molecular proteins of CWD mycobacteria and those proteins (such as gag and pol) that have been ascribed specifically to HIV? There are unanswered questions and controversy concerning the role of HIV "as the sole cause of AIDS." This paper explores the possible role of acid-fast tuberculous mycobacteria as "primary agents" in AIDS.

INTRODUCTION

In a startling new report, a team of Slovakian researchers headed by Vladimir Zajac has found genetic sequences of HIV (the human immunodeficiency virus) in various bowel bacteria cultured from AIDS patients. It is well-known that HIV attacks blood cells of the immune system, but this is the first study indicating HIV can also infect bacteria naturally contained within the body. This novel finding gives rise to further questions concerning the transmissibility of HIV and the role that HIV-infected bacteria play in the transformation of HIV infection to full-blown clinical AIDS.

The team reported that HIV-negative people did not show these genetic sequences in their bacteria. HIV has nine genes. Three genes are essential for the reproduction of HIV (the *pol, gag,* and *envelop* genes). Using molecular PCR (polymerase chain reaction), these *pol-gag-env* genes were the ones Zajac detected in the bacteria of his AIDS patients.

In addition to HIV, what is the precise role of bacteria (particularly acid-fast mycobacteria) and so-called bacteria-like and virus-like "mycoplasma" in the transformation of HIV infection into AIDS? Bacteria which have lost their cell wall are called cell-wall deficient (CWD) bacteria, also known as mycoplasma. A key word search of "AIDS and mycobacteria" reveals 2,423 citations to medical reports on the PubMed website; a search of "AIDS and mycoplasma" reveals 209.

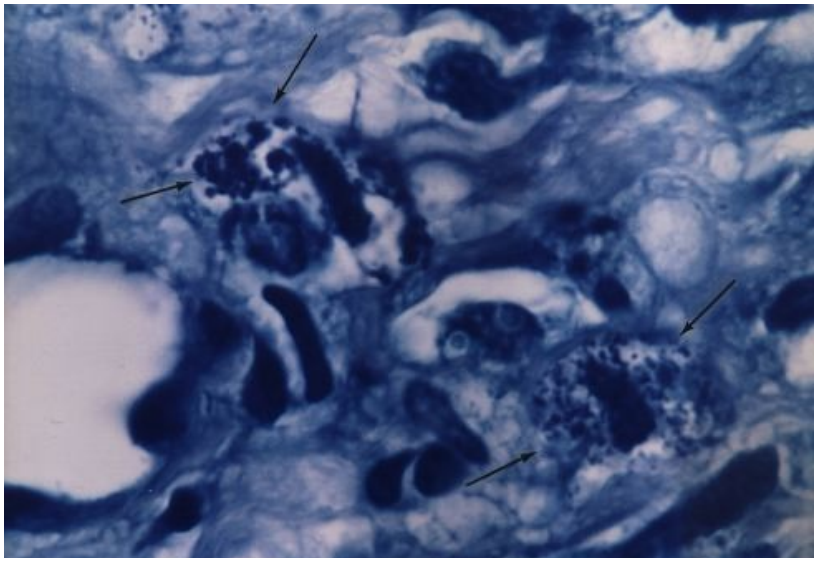

Figure 1: Microscopic tissue section of AIDS-related Kaposi's sarcoma of the skin. Arrows point to variably-sized acid-fast coccoid (round) and granular forms in the tumor. Acid-fast (Fite) stain, magnification x1000, in oil.

Gastrointestinal disturbances are universal in AIDS patients; and bacterial bowel infections have been assumed to be "opportunistic infections." Early in the epidemic, microbiologists Beca Damsker and Edward Bottone found frequent infection with *Mycobacterium avium* in the colon and rectal tissues in gay men with AIDS. It is not known if these mycobacteria were also infected with HIV genes. More details of Damsker's *M. avium* research can be found in Broxmeyer's paper, "Is AIDS really caused by a virus?", posted on his website.

HIV AS THE "SOLE" CAUSE OF AIDS

Ever since HIV was isolated in 1984 by Robert Gallo, the scientific mantra has been that "HIV is the sole cause of AIDS." However, since 1982 there have been reports by Cantwell *et al.* that "acid-fast bacteria," closely related to tuberculosis (TB) bacteria and to non-tuberculous acid-fast mycobacteria, might play a primary role in the pathogenesis of AIDS.

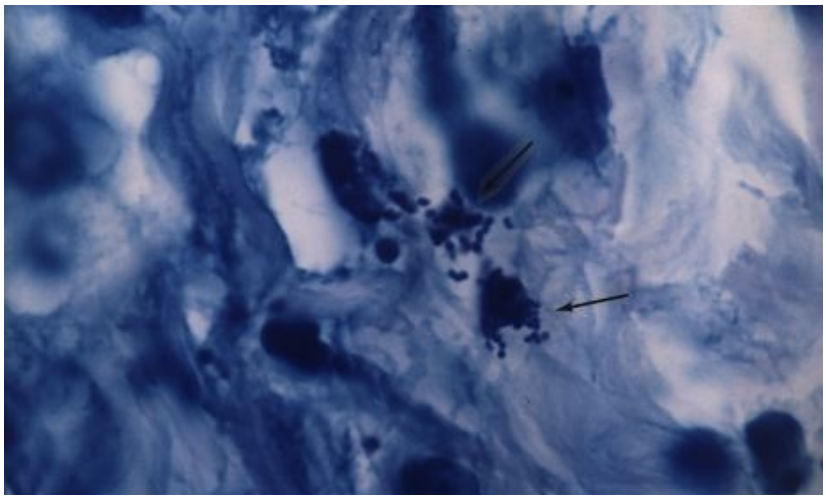

Figure 2: Microscopic tissue section of lung showing "interstitial pneumonitis" occurring in a fatal case of AIDS. Arrows point to round coccoid forms. Compare the size and form of these tiny round bodies to those seen in Mycobacterium avium (Fig. 3), which was cultured from bronchoscopic washings in this case. Acid-fast stain, x1000, in oil.

These "acid-fast bacteria", reported in AIDS-damaged tissue, are similar in appearance to acid-fast bacteria previously reported in certain immunologic diseases, such as lupus erythematosus. Cantwell's reports of acid-fast bacteria in AIDS have been largely ignored by the scientific community.

However, a small but highly vocal group of scientists called "the Perth Group" denies that HIV is the sole cause of AIDS. Other "dissident" scientists, headed by molecular biologist and virologist Peter Duesberg, claim that HIV is not the cause of AIDS and that the so-called AIDS retrovirus has never been isolated in a "pure state." As one of the first to actually define retroviral structure, Duesberg's opinion is not to be taken lightly.

The scientific arguments for and against HIV and its role in AIDS were published in *Science* magazine, July 29, 1988, and are posted on Duesberg's website (www.duesberg.com).

TUBERCULOSIS, ACID-FAST MYCOBACTERIA AND AIDS

When viewed microscopically, mycobacteria are stained red by carbol fuchsin, the color of the initial stain used in the acid-fast staining procedure. All other bacteria are decolorized by an acid-alcohol rinse, the next step in the staining procedure. Typical TB-causing bacteria are referred to as "acid-fast." For more details, Google: acid-fast bacteria.

Tuberculosis (TB), caused by *Mycobacterium tuberculosis*, remains the most frequent cause of death worldwide from any single infectious disease, and the numbers are increasing yearly. According to the National Institute of Allergy and Infectious Diseases, TB is the major attributable cause of death in HIV/AIDS patients. One out of every three people with HIV/AIDS worldwide dies of TB. People who are HIV-positive and infected with TB are 30 times more likely to develop active TB than people who are HIV-negative.

TB acid-fast bacteria enhance HIV replication and accelerate the natural progression of HIV infection. In developed countries such as the U.S., the most common acid-fast species found in AIDS is a non-tuberculous bacterium called *Mycobacterium avium*. These infections are often resistant to treatment with anti-TB medications.

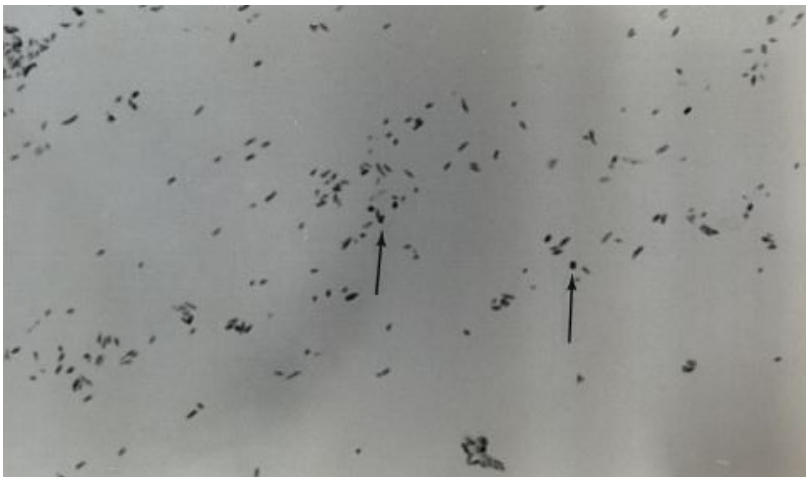

Figure 3: Laboratory culture of Mycobacterium avium cultured from a case of AIDS-related "interstitial pneumonitis". The culture is pleomorphic, in that it contains acid-fast rod forms and non-acid-fast round coccal forms, as indicated by arrows. Compare the size of these cocci with the tiny round forms observed in the lung in Figure 2. Acid-fast stain, x1000, in oil.

A half century ago only a few species of mycobacteria were known to cause infection in humans. Leprosy is

a well-known acid-fast mycobacterial disease caused by *M.leprae*. Using modern molecular biology techniques such as PCR, there are now more than 130 recognized species of tuberculosis-like mycobacteria. Mycobacteria are found everywhere in nature, in soil, food, and water.

CELL WALL DEFICIENT ACID-FAST MYCOBACTERIA

In laboratory culture and in tissue stained with an acid-fast stain, the red-stained and rod-shaped bacillus is the classic form of mycobacteria, easily identified by pathologists and microbiologists.

However, in AIDS, the acid-fast bacteria reported by Cantwell *et al.* in AIDS-damaged tissue sections are primarily in the CWD form (also known as mycoplasma). Such forms are "pleomorphic" (i.e. variably sized) and frequently appear as round coccal forms which are not stained a bright red, but rather a magenta color. These CWD and mycoplasma-like forms are generally not recognized or accepted by pathologists. Thus, they go undetected in diseased tissue.

Beginning in 1982, these pleomorphic acid-fast bacteria in AIDS were reported by Cantwell in the enlarged lymph nodes that appear early in the disease, in the lesions of AIDS-related Kaposi's sarcoma and immunoblastic sarcoma, and throughout the various organs and connective tissue at autopsy (Figures 1-4).

BACTERIA AS A NECESSARY CO-FACTOR IN AIDS

According to one website, 2,543 scientists and educators have expressed doubts that "HIV" causes AIDS(http://www.rethinkingaids.com/quotes/rethinkers.htm). Nevertheless, the mantra that "HIV is the sole cause of AIDS" is so well-known and accepted universally that any suggestion to the contrary is usually met with disdain by the AIDS establishment. One notable example of this disdain was provided by TIME magazine's Man of the Year in 1996, AIDS researcher David Ho MD, who famously declared: "It's the virus, stupid!"

Despite this, in 1993 Luc Montagnier, the original discoverer of HIV at the Pasteur Institute in Paris, reported on bacteria (via culture and biochemical techniques) in the form of mycoplasma (CWD bacteria) as a suspected necessary co-factor in AIDS. Montagnier's various papers on mycoplasma research can be found on the PubMed website, and details of his view of mycoplasmas in AIDS can be found in his book, *Virus* [2000].

"pleomorphic [bacteria]... frequently appear as round coccal forms which are not stained bright red, but rather a magenta color"

Remarkably, he has remained silent on Cantwell's reports of acid-fast bacteria in AIDS tissue. At present, the precise connection between Montagnier's mycoplasma and Cantwell's CWD acid-fast bacteria has not been established. In her classic text *Cell Wall Deficient Forms*, microbiologist Lida Mattman makes clear that the differentiation between mycoplasma and CWD bacteria is difficult at best. A study by Pachas et al. has confirmed that one mycoplasma, called *Acholeplasma laidlawii A*, was actually a CWD form of a bacterium closely related to the mycobacteria.

VIRUS-LIKE FORMS OF MYCOBACTERIA IN AIDS

Lost in the history of microbiology is the concept of a "tuberculosis virus." A century ago, in 1908, Hans Much first described the tiniest virus-like granules of TB bacteria, which eventually became known as "Much's granules," the precise nature of which remains controversial to this day. Two years later, A. Fontes proved the granules were filterable, meaning they were able to pass through laboratory filters designed to hold back bacteria. As they were too small to be seen microscopically, they became known as the TB "virus."

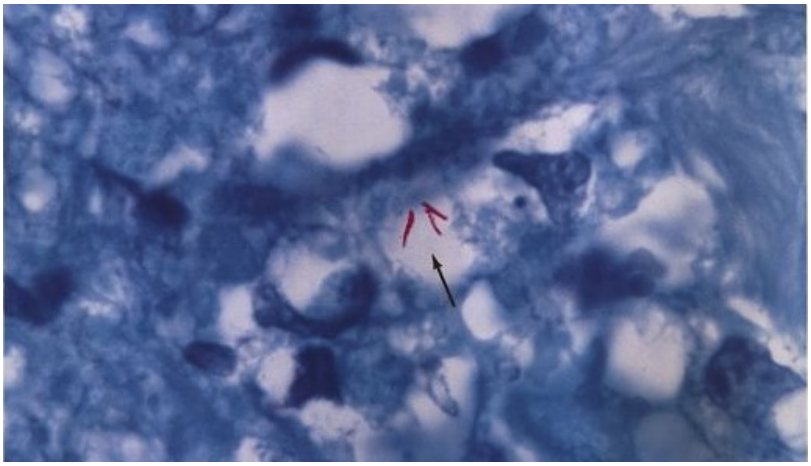

Figure 4: Microscopic tissue section of AIDS-related "immunoblastic sarcoma" tumor of the face showing 3 typical red-staining acid-fast rods. These rod forms were exceedingly rare. However, weakly acid-fast coccoid forms were more numerous in the tumor. Mycobacterium avium was cultured from this tumor. Acid-fast stain, x1000, in oil.

When injected into guinea pigs the granules and other forms of the filterable TB bacteria reverted and transformed back into their classic acid-fast rod-shaped bacillus form and produced immune system disease, and even tuberculosis in the animals. It is these tiny granular and coccal forms (not the typical bright-red-stained rod-shaped bacillus characteristic of the TB germ) that can be observed in acid-fast-stained AIDS tissue. One cannot help but wonder how all these "filterable" bacteria fit into, and may be a part of, modern day concepts of viruses, retroviruses, "virus particles," "virions," and so-called nanobacteria.

Physician Virginia Wuerthele-Caspe Livingston was the first to discover that the virus-like tuberculous CWD forms of pleomorphic bacteria that she found in cancer and other immunologic diseases were "acid-fast" at some stage of their growth, and that this staining reaction was the key to identifying these "cancer microbes" in cancer and in tissue. She also suspected the same type organisms were implicated in AIDS. Details of these cancer-associated bacteria as well as their filterable forms were reported by W-C Livingston and her team of cancer researchers in 1950.

THE SPECIFICITY OF THE HIV TEST AND THE "PURITY" OF HIV

AIDS dissidents question whether HIV is truly a virus, as well as the significance, accuracy and specificity of the HIV blood test. It should be noted that the manufacturers of the various HIV blood tests never claimed 100% specificity. A positive HIV test should be viewed as a starting point for physicians to follow-up with further blood tests to determine the immune system's status and the number of T cells in a patient suspected of having HIV.

A "positive" HIV test can be encountered in someone who is not infected with HIV. This can be due to "cross-reactivity" due to a variety of reasons. According to Kashala, false-positive HIV tests can occur in up to 70% of patients infected with acid-fast mycobacteria, such as TB or leprosy patients, or in lupus erythematosus patients or in other diseases, and even in a person recently vaccinated with influenza vaccine (i.e. a "flu shot"). (Acid-fast bacteria were reported in lupus in 1982, by Cantwell *et al.*)

AIDS dissidents believe HIV has never been isolated in "pure" culture. HIV was originally isolated in Gallo's virology laboratory by pooling the blood of ten AIDS patients and seeding the mix into a cell-line comprised of leukemic (cancerous) blood cells. Although this might make some bacteriologists cringe, this pooling of patients' blood enabled Gallo to grow enough HIV to devise a blood test for the virus. The HIV test has been highly successful in screening out HIV-infected blood donors.

False-positive HIV tests can occur in up to 70% of patients infected with acid-fast mycobacteria

AIDS skeptics believe the proteins specifically attributed to HIV in the blood test could merely represent other proteins in the blood cells of the person being tested, or could represent response to proteins of infectious agents other than HIV.

Could "pure" cultures of HIV contain cellular elements and/or CWD bacteria which might be misinterpreted as "a virus"? Etienne de Harven M.D., a renowned electron microscopist and authority on the microscopic appearance of retroviruses, thinks so. In a posting from 2003, he insists that so-called HIV purified cultures are contaminated with cellular debris; and that he has never been able to visualize any retroviral particle in the blood of an AIDS patient, even those with a very high "viral load."

But what about pictures of HIV widely promoted in the media? According to de Harven, "These pictures are extremely attractive, and are frequently rich in artificial colors. They clearly exemplify the danger of misinforming the public with computer graphics. To publish such images brings to the attention of the general public, and of the medical profession as well, an apparently crystal-clear message: 'Yes, HIV has been isolated since one can portray it under the electron microscope.' All these images represent computerized rationalizations and embellishments of actual electron microscope pictures… but not one of these pictures originated directly from one single AIDS patient! They all originated from complex cell cultures prepared in various laboratories, cultures that have been described as 'real retroviral soups'." De Harven, the first researcher to ever visualize a retrovirus under an electron microscope, concludes: HIV has never been properly isolated, nor purified, and, consequently, the HIV/AIDS hypothesis has to be fundamentally reappraised. (http://www.altheal.org/texts/isolhiv.htm)

Microbiologist and electron microscopist Phyllis Evelyn Pease, author of *AIDS, Cancer and Arthritis: A New Perspective* (2005), agrees with de Harven. She takes issue with the new techniques of molecular biologists and virologists, by stating, "Reliability has been placed on physical/chemical techniques, which

are greatly favored by biochemists but which are not suitable for microbiological materials unaccompanied by microscopic methods." Biochemists, Pease says, usually have a poor understanding of micro-organisms as living creatures. They tend to regard bacteria as laboratory tools—as bags of enzymes, or as culture media, for example—and to believe that biochemical techniques are all that are necessary for identifying and isolating viruses. The result of this simplistic approach is that it has been accompanied by the virtual abandonment of that *sine qua non* for a properly trained microbiologist, the microscope, and in the case of filterable forms of bacteria and viruses this means the electron microscope. Without these aids and the controls that they offer, it has become apparent that what have passed as preparations of pure virions have in fact been contaminated not only with filterable forms of bacteria, but also with cellular materials derived from the tissue cultures in which the viruses have been cultured.

In a review essay of Pease's book, former *London Times* science writer Neville Hodgkinson concludes, "Pease's book is the most authoritative and microbiologically precise account to date of the failings of the HIV theory of AIDS." (http://www.immunity.org.uk/images/Neville_H_Review.pdf)

Unfortunately, the unwillingness of most AIDS researchers to recognize the ubiquity and the microscopic appearance of CWD mycobacteria makes it difficult to evaluate the precise role of mycobacteria in causing AIDS. For example, unrecognized elements of tuberculous acid-fast bacteria could be present in the leukemic cell lines used to grow HIV. Largely unknown is the fact that acid-fast bacteria were identified and reported in leukemia, as well as in other forms of cancer, many decades ago by Seibert *et al*.

Florence Siebert Ph.D. (1897-1991) is a revered name in tuberculosis research. As a biochemist, she contributed greatly to the development of the modern TB skin test, still in wide use. Seibert devoted the last years of her life to cancer microbe research and she believed fully in bacteria as causative agents in cancer and leukemia. Along with dozens of other cancer microbe workers (including Pease), Seibert *et al*. reported on bacteria in leukemia at a symposium held at the New York Academy of Sciences in 1969; and her papers on cancer were published in 1970. In 1990, at the age of 92, she was inducted into the National Women's Hall of Fame. Her discovery of virus-sized bacteria in leukemia suggests that it is unwise to grow a virus, such as HIV, in leukemic cells.

... what have passed as preparations of pure virions have in fact been contaminated not only with filterable forms of bacteria, but also with cellular materials ...

In Seibert's privately-published autobiography *Pebbles on the Hill of a Scientist*, she wrote: "One of the most interesting properties of these bacteria is their great pleomorphism...and even more interesting than this is the fact that these bacteria have a filterable form in their life cycle: that is, they can become so small that they pass through bacterial filters which hold back bacteria. This (ability to pass through filters) is what viruses do, and is one of the criteria of a virus, separating them from bacteria. But the viruses also will not live on artificial media like these bacteria do. They need body tissue to grow on. Our filterable form, however, can be recovered again on ordinary artificial media and will grow on these. *This should interest the virus workers very much and should cause them to ask themselves how many of their viruses may not be filterable forms of our bacteria*." (Italics ours)

AIDS BACTERIA AND VIRAL BACTERIOPHAGE

Further complicating the precise role of bacteria in AIDS is the fact that bacteria can be infected with viruses called "bacteriophages" or phage, for short. There is no evidence to suggest that HIV is a phage. However, the reality that viruses commonly infect bacteria gives further credence to Zajac's discovery of HIV genes in bacteria. Are tuberculous mycobacteria in AIDS patients infected with HIV, or do they generate the virus? No one seems to know.

Could "phage therapy" be useful in treating AIDS? Phages are ubiquitous in the environment and have antibacterial properties. According to the Wikipedia, phages were discovered to be anti-bacterial agents and put to use as such soon after they were discovered, with varying success. However, antibiotics were discovered some years later and marketed widely, popular because of their broad spectrum; also easier to manufacture in bulk, store and prescribe. Hence development of phage therapy was largely abandoned in the West, but continued throughout the 1940s in the former Soviet Union for treating bacterial infections. Phage therapy is now seen as a hope against multi-drug-resistant (MDR) strains of many bacteria.

Broxmeyer has written about a proposed phage therapy in "*Bacteriophages. Antibacterials with a*

future?", and was the lead investigator of a 2002 study published in the *Journal of Infectious Diseases* to prove its efficacy. These and other reports are posted on his website: http://drbroxmeyer.netfirms.com

IS HIV A VIRUS-LIKE FORM OF TB-TYPE MYCOBACTERIA?

A quarter-century ago, Cantwell *et al*. first reported on acid-fast bacteria in AIDS. More recently, in a 2007 paper available at the www.joimr.org website, Cantwell explores research leading him to ask, "Do TB-type bacteria cause AIDS?"

Previously, in 2003, Broxmeyer made an equally challenging claim by suggesting that AIDS was not caused by "a virus," but was caused by infection with CWD forms of mycobacteria. In, *AIDS: What the Discoverers of HIV Never Admitted. Is AIDS Really Caused by a Virus?*, Broxmeyer reviews the AIDS literature and presents his arguments for AIDS being caused by a mix of atypical and typical tuberculosis mycobacteria. His conclusion was supported by Cantwell's repeated microscopic findings of acid-fast bacteria in AIDS-damaged tissue.

How are cell-wall-deficient forms of mycobacteria created? Antibiotics can be used in bacterial cultures in laboratories to transform ordinary bacteria into CWD forms. Supported by the previous work of Nelson and Pickett, Broxmeyer thinks it is mycobacteriophages inside the body that attack the cell wall of bacteria, thereby transforming them into CWD forms. In the process, genetic information can be transferred.

How does Zajac's research fit into this? Broxmeyer suspects the *gag-pol-env* genes of HIV may be mycobacterial in origin. He bases this on genomic phage studies reported by Lawrence and others, in *The Journal of Bacteriology* entitled *Imbroglios of Viral Taxonomy: Genetic Exchange and Failings of Phenetic Approaches*. Broxmeyer thinks molecular sequencing of CWD mycobacteria and their phages should be ascertained to determine if there are comparable genetic elements that could "cross-react" with those genes (*gag-pol-env*) presently attributed solely to HIV. However, to this date, no such study has been undertaken.

It is important to realize that the statement "HIV is the sole cause of AIDS" is a hypothesis. However, most scientists accept the HIV-AIDS hypothesis as fact.

In an attempt to make an AIDS vaccine, genetic engineers have inserted HIV genes into *Mycobacterium bovis*. In recombining HIV with a mycobacterium, Broxmeyer says HIV is acting more or less like a bacterial or mycobacterial phage. So far, no recombinant AIDS vaccine has proved effective. Efforts to vaccinate infants against TB at birth by use of the time-honored BCG vaccine (which contains an attenuated strain of *M. bovis*) have recently caused illness and even death in some HIV-positive infants. The fact that a "live" anti-TB vaccine made with a "harmless" strain of mycobacteria (*M. bovis*) can cause death is proof of how susceptible AIDS patients are to mycobacterial infections, even those thought to totally benign.

A PROPOSED VIRUS/BACTERIA HYPOTHESIS FOR AIDS

It is important to realize that the statement "HIV is the sole cause of AIDS" is a hypothesis. However, most scientists accept the HIV-AIDS hypothesis as fact.

The ability of bacteria to pass through filters —and the ability of viruses to infect bacteria— suggest a close (if not inseparable) relationship between viruses and bacteria.

Tuberculous mycobacterial infections are the ultimate cause of death in many AIDS patients. In African AIDS cases there is an ever-increasing associated epidemic of XDR (extensively drug resistant) TB. There is suspicion that HIV and *M. tuberculosis* may have exchanged genetic material to account for these resistant strains. However, drug resistant strains of TB are also found in patients who do not have AIDS.

Bacterial cells and human cells can also exchange genetic material via "horizontal" transmission. And retroviruses like HIV are used in human "gene therapy" experiments to "infect" cells with the required gene. Yet scientists still seem content to regard viruses and bacteria as separate and distinct from each other.

There is still much to be learned about how HIV infection leads to AIDS and health professionals should keep an open mind on the matter.

Perhaps someday an AIDS researcher will take the stage, with assurance and fervor, to declare: "It's the bacteria, stupid!"

FOOTNOTES:

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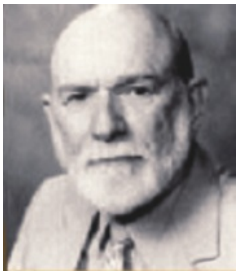
KEY WORDS:

AIDS
Bacteria, acid-fast
Bacteria, pleomorphic
Cell wall deficient bacteria
Histopathologic findings
Human immunodeficiency virus
Immunoblastic sarcoma
Kaposi's sarcoma
Mycobacteria
Mycobacterium tuberculosis
Mycobacterium avium
Tuberculosis

MESH CLASSIFICATION

Acquired Immunodeficiency Syndrome
Atypical Bacterial Forms
HIV-1
Mycobacteria, Atypical
Mycobacterium infections
Transformation, Bacterial Tuberculosis



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