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NEW INSIGHTS INTO THE ROLE OF HIV IN THE AETIOLOGY AND PATHOGENESIS OF AIDS

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INDEX

FOREWORD

In the first part of this thesis I analyze current hypotheses on AIDS aetiology and pathogenesis using the deconstructive analytical approach just as proposed by Jacques Derrida, *i.e.* I conducted thorough, careful, sensitive, and yet transformational readings of scientific texts on HIV and AIDS, to determine what aspects of those texts run counter to their apparent systematicity (structural unity) or intended sense (authorial genesis).

In the second part of this thesis, I describe the experiments that I performed in order to demonstrate that some of the changes induced by HIV at the cellular and molecular level are identical to those induced by cadmium, a known environmental carcinogen and I elaborate on the relationship between HIV and human breast cancer. Finally, I describe some effects on angiogenesis attributed to HIV that could be due to endogenous factors.

PART I

The relationship between HIV infection and AIDS

The first step in the deconstructive analysis of the HIV/AIDS hypothesis is to remember that the belief, *correlation proves causation*, is a logical fallacy by which two events that occur together are claimed to have a cause-and-effect relationship. The fallacy is also known as *cum hoc ergo propter hoc* (Latin for "with this, therefore because of this") and false cause. The *cum hoc ergo propter hoc* logical fallacy can be expressed as follows:

A (HIV infection) occurs in correlation with B (AIDS).

Therefore, A causes B.

In this type of logical fallacy, one makes a premature conclusion about causality after observing only a correlation between two or more factors. Generally, if one factor (A) is observed to only be correlated with another factor (B), it is sometimes taken for granted that A is causing B even when no evidence supports this. This is a logical fallacy because there are at least five possibilities:

A may be the cause of B.

B may be the cause of A.

some unknown third factor C may actually be the cause of both A and B.

There may be a combination of the above three relationships. For example, B may be the cause of A at the same time as A is the cause of B (contradicting that the only relationship between A and B is that A causes B). This describes a self-reinforcing system. The "relationship" is a coincidence or so complex or indirect that it is more effectively called a coincidence (*i.e.* two events occurring at the same time that have no direct relationship to each other besides the fact that they are occurring at the same time).

In the recent history of biomedical sciences there are numerous examples of such a logical fallacy. In a widely-studied example, numerous epidemiological studies showed that women who were taking combined hormone replacement therapy (HRT) also had a lower-than-average incidence of coronary heart disease (CHD), leading doctors to propose that HRT was protective against CHD. But randomized controlled trials showed that HRT caused a small and significant increase in risk of CHD. Re-analysis of the data from the epidemiological studies showed that women undertaking HRT were more likely to be from higher socio-economic groups, with better than average diet and exercise regimes. The use of HRT and decreased incidence of coronary heart disease were coincident effects of a common cause (*i.e.,* the benefits associated with a higher socioeconomic status), rather than cause and effect as had been supposed.

As far as the relationship between HIV and AIDS is concerned, in 2008 Professor Luc Montagnier, after having been awarded the Nobel Prize, stated: "We can be exposed to HIV many times without being chronically infected. Our immune system will get rid of the virus within a few weeks, if you have a good immune system." (quoted in the documentary "House of Numbers," 2009. URL: http://liamscheff.com/daily/2009/04/01/house-of-numbers/), thus reversing the long-assumed cause-effect relationship between HIV and AIDS whereby HIV inevitably brings on AIDS. Therefore, according to Professor Montagnier, HIV infection itself reflects an already deficient immune system; it is the immunodeficiency that causes chronic HIV infection and not vice versa, as

commonly believed. When Leung asked him, “If you take a poor African who’s been infected and you build up their immune system, is it possible for them to also naturally get rid of it [HIV]?”. Montagnier responded, “I would think so…It’s important knowledge that is completely neglected. People always think of drugs and vaccines.” Thus, Montagnier stated that someone with a healthy immune system could be exposed to HIV many times without being chronically infected and that it is malnutrition that makes the immune systems of Africans weak and the diseases of tuberculosis, malaria and parasitic infections. “Water is key”, clearly meaning clean water, without parasites and pollutants.

In this thesis I shall provide evidence demonstrating that the words of Professor Montagnier are fully substantiated and that between HIV and AIDS there is not a cause and effect relationship.

A brief history of AIDS-research

The birth of AIDS research dates back to the beginning of the Eighties. Starting from 1980 a new mysterious pathological condition killing previously healthy persons was observed in the United States of America (US) and soon recorded by the US epidemiological surveillance federal agency CDC (Centers for Disease Control). First patients suffered from an unusually severe form of Kaposi's sarcoma and from opportunistic infections, such as Pneumocystis Carinii pneumonia. They especially included young homosexual males from big urban areas (Los Angeles and New York City)1 and intravenous drugs users, but soon other populations were identified as involved in the epidemic (such as hemophiliacs and infants).

Susceptibility to opportunistic infections suggested a pathological lack of immunocompetence and was readily associated with lymphocytopenia observed in patients' blood. This connection guided the first official definition of the newly observed clinical phenomenon that was termed GRID, i.e. Gay-Related Immune Deficiency. Later on the phenomenon was identified as a syndrome, i.e., a condition which manifests itself as a collection of symptoms due to an underlying pathological condition, immunodeficiency, which is acquired, namely non-congenital, thus leading to the acronym AIDS.

In fact, as a syndrome defined by several conventional diseases, AIDS was seen as being the result of an underlying deficiency in the immune system. In many of the early patients, the main abnormality appeared to be a depletion of one specific subgroup of cells in the immune system, the T-helper cells; these cells respond to the presence of invading microbes and stimulate other cells to produce the proper antibodies against new germs. But the actual estimates of "proper" levels of T-helper cells were largely speculative because little research had previously been done on this aspect of the immune system. Because the average number of T-helper cells in AIDS patients was lower

than among other people, the notion developed that this syndrome was caused by something depleting these particular cells.

Early aetiological hypotheses have been directed to the causal role of an infectious agent, at first suggested on the basis of epidemiological data, as well as towards non-infectious pathogenic factors possibly associated with behavioral phenomena.

In fact, shortly after the origins of the AIDS epidemics in the US and Europe scientists had already discovered that illicit psychoactive and aphrodisiac drugs, consumed at massive doses, were the common denominators and probable causes of the new AIDS patients. Drugs such as cocaine, heroin, nitrite inhalants, amphetamines, steroids and lysergic acid had become widely available and popular in the US and Europe during and after the Vietnam war and the coincident era of the so called "gay liberation". The phenomenon was termed the "drug explosion" in the US and Europe. The first series of publications linking homosexual AIDS with drugs, particularly aphrodisiac nitrite inhalants was published in the New England Journal of Medicine in 1981 together with an editorial by AIDS researcher David Durack suggesting that drugs are the causes of AIDS. Dozens of further drug-AIDS studies soon followed from all prominent AIDS researchers of the time.

Even the CDC, normally just a survey agency, conducted epidemiological studies of their own, which confirmed that male homosexuals at risk for AIDS and with AIDS were using batteries of recreational and aphrodisiac drugs. Not even one male homosexual at behavioural risk for AIDS or with AIDS was found to be drug-free by the CDC. However, some CDC investigators suggested that nitrites depend on "infectious cofactors" to cause AIDS diseases.

The correlations between recreational drug use and AIDS became the basis for the hypothesis that drugs, or the drug use-"lifestyle" is the cause of AIDS. Moreover, the findings that specific drugs,

as for example nitrite inhalants, correlated with specific AIDS diseases, such as immune suppression and Kaposi's sarcoma, directly supported the lifestyle hypothesis. Thus, among the earliest proposed causes of AIDS were the nitrite inhalers used almost exclusively by homosexuals in the bath houses. Some early work connected their use to the incidence of Kaposi's sarcoma, but this hypothesis could neither account for the full spectrum of AIDS diseases nor for AIDS in heterosexuals, and it was soon dropped.

However, a great interest was also focused on the search for an infectious agent or co-factor causing AIDS. Beginning with the first report of AIDS cases, the CDC noted that all of the early cases had either current or previous infection by cytomegalovirus, a member of the herpes group of viruses. Cytomegalovirus was known to have immunosuppressive ability, and this possibility was pursued for some time. But, because this virus was widespread in the general population, and since not all AIDS patients had been infected, this was ultimately abandoned as well.

This line of thought, however, encouraged virus hunters: viruses were major candidates for aetiology given that antibiotics were clearly unable to control the disease and that, despite routine screening for bacteria in blood products, there was evidence of possible transfusion-associated AIDS.

The question of the cause of AIDS was officially settled on April 23, 1984, when the US Department of Health and Human Services announced the isolation of the AIDS virus. Called Lymphadenopathy-Associated Virus (LAV) by its French discoverer, and Human T-cell Leukemia Virus III (HTLV-III) by American scientists, it has since 1986 been officially referred to as the Human Immunodeficiency Virus (HIV). The belief that HIV causes the immunosuppression underlying AIDS became the generally accepted view in the scientific community with the 1986 benchmark publication "Confronting Aids," published by the National Academy of Sciences and

the Institute of Medicine. The predominant view today holds that this virus causes immune deficiency by depleting the body of T-helper cells, dooming 50 to 100 percent of infected people to develop AIDS and die.

The announcement of 1984 came after the 1983 and 1984 scientific reports by Luc Montagnier's, Robert Gallo's and Jay Levy's research teams announcing the isolation of a newly discovered virus in AIDS-patients, then still labeled LAV, HTLV-III, or ARV ("AIDS-Related Virus"). The virus was found to target a family of immune system cells (T-lymphocytes) whose depletion was typically observed in AIDS-patients' blood, and a decisive element of the chemical basis for this tropism was soon identified in the CD4 surface receptor. Moreover, some in vitro cytopathic activity was observed. Finally, several studies reported a strong association (association, not cause and effect relationship) between infection by the virus and the clinical symptoms of AIDS.

In a couple of years the viral approach in AIDS research was shaped in its essential lines and rapidly gained wide acceptance. In 1986 HIV was established as a unifying label, partly as the widespread recognition of a causal link between the virus and the disease. As mentioned before, the same year, the HIV-AIDS research programme was authoritatively established by the influential volume "Confronting AIDS", a survey of knowledge and a blueprint for action published by the US National Academy of Sciences' Institute of Medicine. Prepared by a panel consisting of prominent virologists, clinicians, public health experts, and social scientists, the book encapsulated the official body of knowledge about AIDS at the time as centered around three main theses. First, the committee concluded that the isolation of HIV and later research "led to its definitive identification as the cause of AIDS". This confusion between association and cause and effect relationship was the first hallmark of the logical fallacy mentioned above.

Secondly, HIV is considered a pathogenic agent newly introduced in human populations in the last decades and recently spread worldwide. In fact, one of the most powerful factors driving AIDS research at its beginnings and contributing to the elaboration of the viral approach has been the quest for an answer to the obvious question "why AIDS now?" and, although the details of the microbiological mutations and inter-specific breakthrough allegedly leading to the epidemic have been and somehow remain debated, a "new disease, new agent" principle has been explicitly invoked. This assumption proved false when a review in 2009 demonstrated that HIV has been present in humans since at least the early 1900s, thus definitely ruling out the possibility that it could have been responsible for a syndrome that appeared only at the beginning of the 1980s (Curr Opin HIV AIDS. 2009 Jul;4(4):247-52)

Moreover, and finally, unprotected sexual intercourse and blood exchange are identified as typical ways of transmission of the infection, and hence of the disease. As a consequence, unsafe sex and shared usage of needles (common in intravenous drug consumption) are classified as major at risk behaviors for AIDS. Meanwhile, AIDS epidemics were being registered in Europe and Africa and the AIDS case-definition was being importantly adjusted and expanded. Moreover, a different but related retrovirus, called "HIV type 2" or simply "HIV-2", was isolated in West Africa and also found to be associated with AIDS disease.

Then, between the end of the Eighties and the beginning of the Nineties, some researchers, notably Peter Duesberg and Robert Root-Bernstein, challenged essentially all the basic tenets of HIV-AIDS research and claimed that their acceptance had been premature and not well founded. Duesberg, in particular, presented a partially renewed and extended version of early views, according to which different AIDS-related pathological conditions are produced by the exposure to non-infectious factors which severely damage the organism on chemical grounds, such as drugs consumption and malnutrition. Mainstream HIV-AIDS researchers and distinguished scientific commentators have

repeatedly and vigorously rejected the criticisms and the alternative views of dissenters and have insisted on the necessity of continuous efforts to fully understand the pathogenic processes involved in HIV-infection in order to block more and more effectively its harmful consequences. Over the years other researchers (including the Tutors of this thesis) questioned the HIV/AIDS hypothesis and all those questioning the hypothesis were labeled as dissidents, skeptics or denialists utilizing this word in defamatory sense (for references on this and the following chapter, please see Logic and Philosophy of Science Vol. V, No. 1, 2007, 9-32; and J. Biosci. 28: 383–412, 2003).

Paradoxes of HIV/AIDS hypothesis

1. The paradox of pathogenesis: does HIV actually kill enough CD4 lymphocytes to cause immunodeficiency?

The guiding commitments of HIV-AIDS research constitute an original convergence of insights emerged in contemporary virology between the Sixties and Seventies. First, the suggestion of the existence of "slow viruses", i.e. viruses responsible for pathological conditions arising long after infection. HIV has been clearly taken as being a slow virus in this sense. Second, the involvement of viruses in the pathogenesis of some forms of cancer; and third, the birth of human retrovirology. HIV is itself a retrovirus, and among AIDS-defining conditions there are oncological pathologies, some of which are thought of as being virus-induced even though they may occur independently of HIV infection, such as the case of Kaposi's sarcoma.

As far as pathogenetic mechanisms are concerned, however, early hypotheses have been quite traditional. Many well-known viral diseases develop because the agent causes target host cells' death as a consequence of active infection, the typical case being that of direct cell-destruction by cytolysis during the productive phase of the viral life cycle. From the beginning, it was clear that AIDS patients lacked immunocompetence and, as we have already seen, two specific kinds of experimental data drew much attention from the researchers:

(D.1) it turned out that disease progression is associated with loss of CD4+ T-lymphocyes in blood,

and

(D.2) HIV was found to exhibit a strong tropism for these very immune system cells and to display some cytopathic activity against them.

Taken together, these data seemed to suggest a natural framework for pathogenesis, which can be summarized in two basic assumptions:

(B.1) the pathogenetically crucial consequence of infection is that HIV enters CD4+ T-cells and kills them;

(B.2) this causes a general CD4+ lymphocytopenia, which progressively impairs physiological immune system functions, thus exposing the organism to classical opportunistic infections and other AIDS-related pathologies (even though the majority of AIDS defining pathologies occur also in patients with no sign of immunodeficiency).

Over the years, a wide range of different mechanisms for CD4+ T-cells' death in AIDS have been considered and investigated (including cytolysis, formation of syncytiae, induction of apoptosis, and various immune and autoimmune host responses), and evidence has been reported of damages occurring in immune system cells of AIDS patients quite independently from active infection. However, even if some alternative accounts have been proposed, the most influential approach to pathogenesis has been for long the acceptance of the working hypothesis that the major event in AIDS is the destruction of immune system cells, largely due to active infection by HIV and causing their subsequent depletion.

Yet this point of view had to face a serious anomaly: according to early estimates, mainly based on blood sample measurements, the ratio of actively infected T-cells, even in clinically compromised individuals, was very low. On the basis of these numbers, the primary focus on direct cytopathic

mechanisms did not allow a convincing account of immunological collapse even assuming that all actively infected cells are invariably killed in vivo by HIV. As a consequence, a "HIV hunting" phase started. Ingenuity, determination and improvements in observational techniques yielded two partially encouraging results. First, it turned out that the virus was biologically active and significantly more widespread in lymphoid tissues. Second, by ultrasensitive methods of detection (such as PCR) it was estimated that large quantities of viral RNA – and, therefore, high levels of "free floating" viral particles (termed viral load) – were present in plasma.

The latter results, dating the beginning of the Nineties, were readily received as good news for research in AIDS pathogenesis and soon incorporated into pathogenetic hypotheses and speculations. Yet, according to these studies (as well as more recent ones), even in lymphoid tissues actively infected T-cells are typically no more than 1 out of 100 – still not enough to be reconciliated with the then prevailing trends in AIDS pathogenetical research given the regenerative capacity of the immune system. Moreover, the overwhelming majority (~99.9%) of detected "free" viral particles appeared to be defective, *i.e.* unable to successfully infect cells.

This puzzling state of affairs – *i.e.* evidence of low levels of active HIV-infection despite substantial loss of immunocompetence and of circulating CD4+ T-cells in AIDS patients – has also been labeled the "central paradox of HIV infection" and has represented a major challenge in the study of AIDS pathogenesis. Some have observed that, assuming the view that AIDS is mainly caused by infection-mediated killing of immune system cells by HIV, it seems one is facing a "murder scene with more bodies than bullets".

This very paradox was summarized by Duesberg et al in the following "prediction versus facts".

Prediction: Following “exactly the same criteria as for other viral diseases”, HIV causes AIDS by killing more T-cells than the body can replace. Thus T-cells or “CD4 lymphocytes . . . become depleted in people with AIDS”.

Fact: But, even in patients dying from AIDS less than 1 in 500 of the T-cells “that become depleted” are ever infected by HIV. This rate of infection is the hallmark of a latent passenger virus.

This “central paradox” of HIV infection was recently underlined in the Journal of the American Medical Association (JAMA. 2006 Sep 27;296(12):1498-506). In this paper the Authors state that “Presenting HIV RNA level predicts the rate of CD4 cell decline only minimally in untreated persons. Other factors, as yet undefined, likely drive CD4 cell losses in HIV infection” thus implying that factors other than HIV are responsible for CD4 lymphocyte loss. These results hence demonstrate that HIV infection and AIDS are at best two associated phenomena without a recognizable cause and effect relationship. The Authors state “We sought to estimate the extent to which presenting plasma HIV RNA levels can account for interindividual variability in CD4 cell depletion rate among chronically HIV-infected individuals in the absence of antiretroviral therapy by providing a quantitative estimate of the coefficient of determination between plasma HIV RNA level andCD4 cell loss rate in a broad population of patients, including larger proportions of women and ethnic minorities. We report that plasma HIV RNA level can account for only a small proportion of the variability in rate of CD4 cell loss in chronic, untreated HIV infection.” And “These findings represent a major departure from the notion that plasma HIV RNA level is a reliable predictor of rate of CD4 cell loss in HIV infection and challenge the concept that the magnitude of viral replication (at least as reflected by plasma levels) is the main determinant of the speed of CD4 cell loss at the individual level”.

But, most important, this paper challenges the most fundamental dogma of the HIV/AIDS hypothesis, *i.e.* that HIV actually kills CD4 lymphocytes. In fact, it concludes with the following words that could have been written by a *bona fide* dissident "The results of our study challenge the concept that CD4 cell depletion in chronic HIV infection is mostly attributable to the direct effects of HIV replication".

2. Other paradoxes for HIV/AIDS theory: failed predictions.

A good theory can make predictions that turn out to be accurate, and it can explain new results as they come in. HIV/AIDS theory fails on both counts.

The first prediction was made already as the theory was being announced in 1984: a vaccine against the virus would likely be available within two or three years. Not only is there no vaccine: scores of attempts have all failed, and we have yet to discover what physiological properties of a vaccine would protect against "HIV infection".

A second prediction was that AIDS would spread into the general population since its cause was a sexually transmitted agent. There has been no spread into the general population. There has been no breaking out geographically either—Sub-Saharan Africa remains the only region with an HIV-positive rate ≥5%; the Caribbean remains the only other region with an HIV-positive rate ≥1%. In Italy, more than twenty five years after its onset, AIDS is still confined to intravenous drug (mainly heroin) users and male homosexuals. Thus, in the years 2006-2007, AIDS incidence in general (heterosexual) population was 1/100.000, in homosexuals, almost 5-fold higher, and in intravenous drug users, about 100-fold higher (compared with general population). These data are consistent with the statement that "in most Western settings, both HIV and AIDS remain within the higher risk groups" (The Lancet editorial team, personal communication). Furthermore, data provided by the Istituto Superiore di Sanità demonstrate that AIDS still shows a preference for males in Italy. At the beginning of the epidemic, the number of males with AIDS was four-fold higher than that of females, and since then, the ratio has changed very little: during the first years, the male-to-female ratio grew to 5/1, then it decreased, fluctuating around 2.5-3/1 between 1995 and 2006, just to rise again, in 2007, to more than 3.5/1. The decrease in 1995 can be explained by the fact that in 1994 the list of conditions that was used for the diagnosis of AIDS was modified, and invasive cervix

cancer was added to the list. Adding a women-only disease forced the female patient count to go up. For example, in our region, Tuscany, the male-to-female ratio for the incidence of AIDS has been essentially constant from 1985 to 2008 at ~3.6, whereas the purported mode of transmission changed drastically: from ~8% of HIV being transmitted heterosexually in 1985-1990, to ~44% being transmitted in that way in 2006-2008. These data place a very curious constraint on how infection via dirty needles occurred in males and in females respectively. It must have occurred in precisely the same relative manner as sexually transmitted HIV infection occurs in males relative to females. Otherwise the male-to-female ratio for the consequences of HIV, namely AIDS, should have changed. The data from the regions of Italy implementing a registry of new HIV infections demonstrate that also the relative rates of HIV-positive among males and females has remained the same while, as in Tuscany, the supposed mode of becoming HIV-positive changed from ~75% drug-related to only ~5% drug-related, and sexual transmission supposedly increased from less than 10% to ~80%. Another remarkable phenomenon in the Tuscan data is the upward drift in the median age for an AIDS diagnosis. The difference in median ages between men and women was seemingly constant at about 3 years, while both increased from 1987 to 2008 by about 2/3 of a year per year. All these data lend support to the hypothesis that HIV infection and AIDS are not correlated with a cause and effect relationship.

In addition, new results, far from being explained by HIV/AIDS theory, have brought conundrum after conundrum: the epidemiology of "HIV" is unlike that of any other sexually transmitted agent, indeed of any infectious agent; "infection" rates from this allegedly incurable illness have declined dramatically without the inevitably required increase in deaths. For example, in Italy, there have been about 60.500 AIDS cases in 26 years, *i.e.* from the beginning of the epidemic in 1982 until December 2008. Of these, 39.000 have died. Although this is only a rough estimate, the number of HIV-positive subjects is about 150.000. The estimated incidence of new HIV infections is 6 new cases for 100.000 residents (these data refer only to the Regions that implement a registry). Because

of such limited proportions, the Ministry of Health classifies AIDS as an infective disease that is (epidemiologically) not relevant, nor particularly interesting or highly frequent, nor susceptible of control interventions. Analysis of AIDS-related deaths in Italy also demonstrate that short after the beginning of the epidemics, AIDS lethality rate in Italy significantly decreased from 93.1% to 80.1% in five years (1990-1994); it can be assumed that this significant drop in lethality was due to early diagnosis and treatment of AIDS-defining diseases (such as tuberculosis), since no anti-retroviral treatment was available at that time. Lethality further decreased from 1994 to 1995, i.e. when the antiretroviral drugs (mainly azidothymidine, AZT) became available; however, in the year 1997 (i.e. about two years after the introduction of antiretroviral treatment), there was a decrease of prevalence of 820 cases. In fact, in the year 1997, lethality dropped, (2144 deaths vs 4198 in the year 1996), thus meaning that less AIDS patients died while about 1.200 new AIDS cases were reported. Nonetheless, prevalence also decreased from 14.596 (1996) to 13.776 (1997). These data are commonly interpreted as if causes other than AIDS itself were responsible for the death of these 2000 AIDS patients in 1997. High toxicity of early antiretroviral treatment is usually blamed for these deaths as stated in a recent paper (Duesberg et al., 2003) "A sudden 10-fold increase in the mortality of HIV-positive British hemophiliacs, right after the introduction of AZT in 1987, made scientific headlines in 1995 …". In the past few years, the number of AIDS deaths in Tuscany was very low: 7 deaths in 2005, and 4 deaths in 2006, with a lethality rate of 4.7% (lethality rate here is calculated by the Public Health Service as the ratio between the number of new AIDS cases diagnosed in the year 2006, i.e. 85 cases, and the number of deaths, i.e. 4).

Data about deaths from "HIV disease" in the United States show a trend similar to that observed in Italy. The following tables show some of the numbers. (The trends were the same for each individual year—2002, 2003, 2004—so I aggregated them to lessen the effect of stochastic (chance, random) variations in the smaller numbers. The reports are available at (http://www.cdc.gov/nchs/products/pubs/pubd/nvsr/nvsr.htm.)

"HIV" deaths, American males, 2002-4, by race and age

	White	Black	Hispanic	Asian	Native American
5-9		15		1	
10-14		16			
15-19		24		1	
20-24		159	52		1
25-34	1403	1685	554	29	25
35-44	5886	5481	1679	96	85
45-54	4874	5258	1365	79	17
55-64		1798	445		
TOTALS	12,163	14,436	4095	206	128
2005 US population	80.2%	12.8%	14.4%	4.5%	1.0%
"HIV" deaths in proportion to population	152	1128	284	46	128
Relative rates	**1.0 (reference)**	**7.4**	**1.9**	**0.3**	**0.84**

"HIV" deaths, American females, by race and age, 2002-2004

	White	Black	Hispanic	Asian	Native American
5-9		6			
10-14		25	2		
15-19		36	13		
20-24		157	13	1	
25-34	407	1330	163	11	3
35-44	1312	2968	503	9	27
45-54		2143	347		
TOTALS	1719	6665	1041	21	30
US population 2005 census	80.2%	12.8%	14.4%	4.5%	1.0%
"HIV" deaths in proportion to population	21.4	520	72.3	4.7	30
Rates relative to white	**1.0**	**24**	**3.4**	**0.22**	**1.4**

For both males and females, the numbers vary with age reaching a peak in middle age. The numbers for males are significantly higher than for females—except for that teenage phenomenon of females affected more than males: among the only groups where there were significant numbers of deaths among young teens—African Americans and Hispanics—the numbers for females are greater than

those for males in the years 10-14 and 15-19. However, it is worth noting that the CDC ascribes deaths to “HIV disease” whenever the person was HIV-positive, no matter what the real cause of death was, the manifest cause: cervical cancer, tuberculosis, unexplained weight loss, or just about anything else. So one would expect deaths from “HIV disease” to show the same demographic characteristics as “HIV infection” among living people, and the mortality statistics bear that out.

The HIV/AIDS hypothesis does not offer convincing explanation for the age and racial distribution of these deaths in the US on the basis of a supposedly sexually transmitted disease which, untreated, is supposed to bring death within a dozen or so years after infection: How is it that black and Hispanic females manage to survive to age 45-54 before succumbing to this disease whereas Asians, Native Americans, and whites don’t get beyond 44? How is it that black and Hispanic males manage to survive to age 55-64 before succumbing to this disease whereas Asians, Native Americans, and whites don’t get beyond 54?

3. A conspicuous paradox: HIV "infection" may disappears spontaneously

HIV/AIDS hypothesis states that there's no real cure because once infected by HIV — as demonstrated for example by confirmed positive HIV-antibody tests — there's no possibility of reversion to uninfected, not even by antiretroviral treatment. The long-term healthy "non-progressors" or "elite controllers" still remain infected, they just have some mysterious physiological protection that stops illness from developing.

However, the epidemiology of HIV in the United States shows that testing HIV-positive is not the mark of an infection, it is likely a quite non-specific reaction.

The latter view explains why HIV-positive people can and sometimes do spontaneously revert to HIV-negative. In other words, the condition of being HIV-positive may be temporary. This observation was recently published in a journal the report of "Spontaneous HIV-1 seroreversion in an adult male" (Sex Transm Dis. 2007 Sep;34(9):627-30). The man in question is in a high-risk group, he is a young gay man. The meticulous series of tests carried out by Coyne et al. gave results precisely in accord with what the HIV/AIDS hypothesis postulates for a newly infected person: negative HIV tests, risky behavior, an episode of "gastro-intestinal symptoms, sweats, rash, and lymphoadenopathy", followed by inconclusive tests, followed finally by positive tests. "This man was at high risk of HIV acquisition and had symptoms consistent with HIV seroconversion. His HIV antibody response evolved from negative to equivocal to a combination of reactions considered to be positive, and the interpretation was that he had developed HIV infection." The researchers used a significant array of tests from a variety of manufacturers. The implicit inference from the use of so many tests is that any given test kit is unreliable; and the data support that inference. For example (the Authors' Table 1), on the same day one test is negative, p24 antigen also negative, yet another test is positive. A few weeks later, again one positive and another

negative. Positive antibody tests are supposed to run parallel with appreciable viral load. “However, persistently undetectable viral loads prompted repeat antibody tests 10 months later, which were negative. P24 antigen and proviral DNA could not be detected. . . . Our patient did not have immunosuppression or antiretroviral drugs to account for his seroreversion. Nor did he have detectable proviral DNA to indicate he was infected with HIV. His results are therefore intriguing.” The Authors mention the possibilities of non-specific reactions and false positives, but in so dismissive a manner as to effectively discount them—“These findings appear to be exceptionally rare”.

In addition to this report, the literature reports data showing that the tests are unreliable, that seroreversions occur quite often, that CD4 counts are not consistent with viral load, and that neither viral load nor CD4 counts are consistent with patient health. For example another study reports that babies spontaneously revert from HIV-positive to HIV-negative (Clin Exp Immunol. 1995 Dec;102(3):476-80, Lancet. 1996 Jan 27;347(8996):213-5, N Engl J Med. 1995 Mar 30;332(13):833-8) and that drug abusers also revert spontaneously if they interrupt the habit (Am J Epidemiol. 1997 Dec 15;146(12):994-1002). In this regard it is also worth noting one well-documented case of an autopsy acquired HIV infection in 1992; the infection was not associated with the development of AIDS, and subsequent repeated attempts to isolate HIV from the wounded pathologist were unsuccessful.

4. What do HIV test determine? Can AIDS occur in the absence of signs of HIV infection?

Before discussing about sensitivity, specificity, diagnostic accuracy, reproducibility and reliability of HIV tests, a fundamental question has to be answered: can AIDS occur in the absence of signs of HIV infection? If HIV was the sole cause of AIDS, there should be no AIDS in the absence of signs of HIV infection. And, if there is AIDS in the absence of signs of HIV infection, then, by necessity, HIV cannot be the cause of AIDS.

This "predictions versus facts" was indicated by Duesberg et al. in 1993.

Prediction: Since HIV is "the sole cause of AIDS", there is no AIDS in HIV-free people."

Fact: But, the AIDS literature has described at least 4621 HIV-free AIDS cases according to one survey – irrespective of, or in agreement with allowances made by the CDC for HIV-free AIDS cases.

This paradox (HIV-free AIDS) is so well established that the Italian Ministry of Health felt the necessity to promulgate a directive with legal value in such a sense, *i.e.* recognizing that AIDS can occur in the absence of signs of HIV infection, thus accepting in its official definitions that HIV and AIDS are not related by a cause and effect relationship. According to the HIV/AIDS web page of the Ministry of Health (under the voice *normativa*) the definition of AIDS is reported in a document of 1994 (*circolare 29 aprile 1994, n. 9, riguardante la revisione della definizione di caso di AIDS ai fini della sorveglianza epidemiologica*). It is worth noting that some of the definitions listed in that directive have been repeatedly updated (in 1999 and 2001), thus confirming that the policy (*i.e.* the document) is still considered "viable" and valid. This document is a public act freely available. In this document, the Ministry appears to consider two forms of AIDS: one HIV-

associated, and another non associated with HIV infection and thus *bona fide* non infective or at least not caused by HIV. In fact, according to the document, AIDS can be diagnosed in the absence of signs of HIV infection if one of the diseases (mainly, but not uniquely, opportunistic infections) used to define AIDS is definitely diagnosed. In other words, AIDS can be diagnosed in the absence of signs of HIV infection (and in the absence of other known causes of immunodeficiency), if one of the diseases defining the syndrome is definitely diagnosed. From this definition, it follows that, for example, a HIV-free patient with chronic Herpes simplex mucosal infection (chronic here is intended as lasting one month) has to be classified as an AIDS patient. Another point that has to be taken into consideration in this regard is the possibility of a diagnosis of AIDS in the absence of signs of HIV infection, but in the presence of other causes of immunosuppression. In fact, looking further into the details of the Ministry of Health's definition, we read that " … in the absence of other known causes of immunodeficiency, AIDS can be diagnosed, even in the absence of signs of HIV infection, if a patient presents a disease suggestive of immunosuppression, such as cerebral toxoplasmosis, Pneumocistis carinii pneumonia or esophagic candidiasis" (In Italian: *In assenza di risultati positivi circa l'infezione da HIV, ed in assenza di altre cause note di immunodeficienza, ognuna delle forme cliniche di seguito elencate e' indicativa di AIDS se diagnosticata in modo definitivo*). In these cases the diagnosis of AIDS seems to be justified by the fact that these conditions identify a patient as immunodeficient, and this literal interpretation of the acronym "AIDS" appears to be logic and justifiable. As far as the "other known causes of immunodeficiency" are concerned, the Ministry of Health recognizes that immunosuppression is caused by a variety of known factors, and it lists a number of conditions that justify per se immunosuppression and that do not allow the diagnosis of AIDS in the absence of signs of HIV infection. Among these, high dosage steroid therapy, Hodgkin's disease, multiple myeloma, and lymphocytic leukemia. Consistent with this logic approach, if a (HIV-negative) patient on high-dosage steroid regimen shows signs of immunosuppression with the onset of an opportunistic infection (including one of those used to define AIDS), this patient cannot be labelled AIDS. The

same reasoning, however, does not hold true for other common causes of immunodeficiency, *i.e.* if a HIV-negative patient has diabetes, sarcoidosis or if she is pregnant. This conclusion comes from the paragraph where the Ministry of Health lists the immunosuppressive conditions that still justify the diagnosis of AIDS in the absence of signs of HIV infection (given the presence of an opportunistic infection) (*Altre possibili cause di immunodeficienza, esempio gravidanza, diabete mellito, sarcoidosi, di per sè NON squalificano la malattia opportunistica come indicatore di AIDS*). Thus, if a HIV-negative patient with a known immunosuppressive condition (diabetes, sarcoidosis or pregnancy) develops an opportunistic infection has to be labelled AIDS although not harboring signs of HIV infection. The paradox here is conspicuous: the cause of immunodeficiency is clearly recognized in the definition, there is no evidence for HIV (in the absence of laboratory evidence for HIV infection, *in assenza di evidenza di laboratorio per l'infezione da HIV*) and the diagnosis of AIDS has to be made.

This point (AIDS without HIV) can also be considered from another point of view. In fact, the claims that "AIDS develops only in those infected with HIV," was based on two references that showed a serious methodological error. The first, (AIDS. 1990 Nov;4(11):1059-66. AIDS incubation in 1891 HIV-seroconverters from different exposure groups. Biggar, RJ et al.) , was a collection of 1891 people who were entered into the trial because they had seroconverted (become HIV-positive). They were then monitored for AIDS and, indeed, 189 were diagnosed. It would have been impossible for AIDS to have occurred before HIV infection because people were only entered if they had a documented positive HIV test (and an earlier documented negative test). Whatever useful data this paper might hold, it cannot speak to whether AIDS occurs in HIV-negative people. The second citation (AIDS. 1997 Apr;11(5):621-31. Comparison of progression and non-progression in injecting drug users and homosexual men with documented dates of HIV-1 seroconversion. European Seroconverter Study and the Tricontinental Seroconverter Study. Prins M et al.) has exactly the same problem, "The HIV-positive study population comprised 418 IDU and

422 homosexual men in whom the dates of the last negative and first positive HIV-1 test were known.".

In addition, an accurate reading of the updated web page of the Ministry entitled Conoscere (To Know) HIV e AIDS demonstrates that the Ministry itself does not recognize a relationship of cause and effect between HIV infection and AIDS. In fact, nowhere in the web page is a cause and effect relationship between HIV and AIDS even mentioned. In other words, in a page specifically directed to lay public for the purpose of information, the most important information is missing; nowhere is it written that HIV is the sole cause of AIDS or vice-versa that AIDS is caused solely by HIV. A mere correlation between HIV infection and AIDS is described and it is well known that "correlation does not imply causation". As mentioned before, this is a phrase often used in science and statistics to emphasize that correlation between two variables does not automatically imply that one causes the other unless it is explicitly stated. It is quite likely that the Ministry prefers to maintain a neutral position between orthodox science and non-conventional views such as those expressed by HIV skeptics. This would not be surprising or unprecedented in Italy.

For example, the Public Health Service of Tuscany recognizes homeopathy as an integral part of the Regional Public Health Service. This appear to be at odds with the policies of other non-Italian, governmental agencies, For example, in a report published on Monday 22 February 2010, the Science and Technology Committee of the United Kingdom concludes that the National Health Service (NHS) should cease funding homeopathy (http://www.parliament.uk/parliamentary_committees/science_technology/s_t_homeopathy_inquiry.cfm). It also concludes that the Medicines and Healthcare products Regulatory Agency (MHRA) should not allow homeopathic product labels to make medical claims without evidence of efficacy. As they are not medicines, homeopathic products should no longer be licensed by the MHRA. The Committee carried out an evidence check to test if the Government's policies on homeopathy were based on sound evidence. The Committee found a mismatch between the evidence and policy.

While the Government acknowledges there is no evidence that homeopathy works beyond the placebo effect (where a patient gets better because of their belief in the treatment), it does not intend to change or review its policies on NHS funding of homeopathy. The Committee concurred with the Government that the evidence base shows that homeopathy is not efficacious (that is, it does not work beyond the placebo effect) and that explanations for why homeopathy would work are scientifically implausible. The Committee concluded-given that the existing scientific literature showed no good evidence of efficacy-that further clinical trials of homeopathy could not be justified. In the Committee's view, homeopathy is a placebo treatment and the Government should have a policy on prescribing placebos. The Government is reluctant to address the appropriateness and ethics of prescribing placebos to patients, which usually relies on some degree of patient deception. Prescribing of placebos is not consistent with informed patient choice-which the Government claims is very important-as it means patients do not have all the information needed to make choice meaningful. Beyond ethical issues and the integrity of the doctor-patient relationship, prescribing pure placebos is bad medicine. Their effect is unreliable and unpredictable and cannot form the sole basis of any treatment on the NHS.

Inadequacies of HIV tests

The central issue as to HIV/AIDS is whether HIV tests detect a viral infection; in fact it has never been shown that a positive "HIV test" corresponds to the presence of virus particles. Neville Hodgkinson (among others) has pointed out that the apparent correlation of AIDS with finding HIV antibodies (i.e. a positive HIV test) is the result of a circular, illogical, and unjustifiable set of procedures and assumptions. There are two types of tests. The more recent and less frequently applied type uses the polymerase chain reaction, PCR, to look for bits of RNA or DNA said (but not proven) to be characteristic of HIV; the inventor of PCR, Kary Mullis, concurs with what the manufacturers of PCR tests say in their instructions: these tests cannot be used to diagnose infection

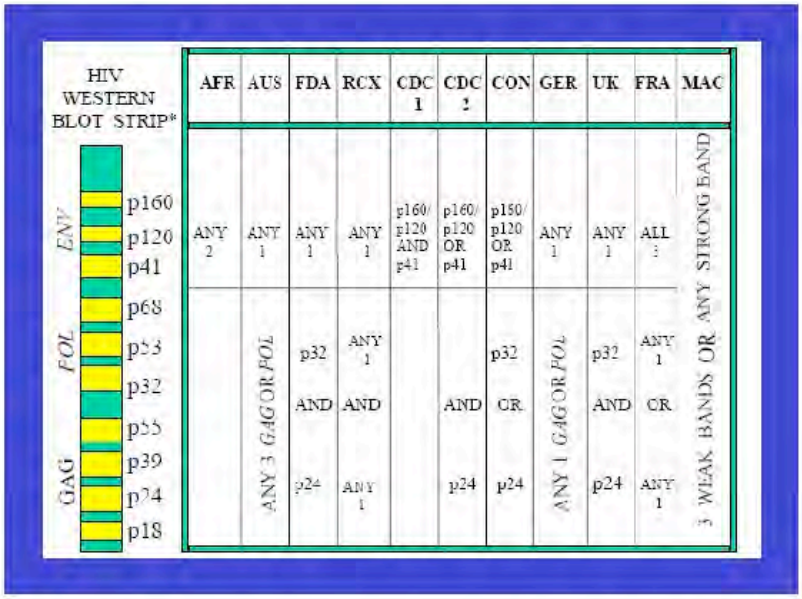
by HIV. Hodgkinson's comment applies to the more traditional tests which look for proteins said (but not proven) to be characteristic of HIV – the so-called ELISA and the so-called Western Blot tests. The accepted "best practice" in the US is to use ELISA and to confirm a duplicated positive result by the Western Blot. But the Western Blot is no better than the ELISA. It is anything but well defined or unambiguous.

"HIV" proteins are named by two properties, their molecular weight (for instance, p24) and the viral genes thought to code for their production (env, gag, pol). "Env" proteins include p160, p120, p41; "pol" comprise p68, p53, p32; "gag" have p55, p39, p24, p18.

A non-expert person might assume that, since HIV tests are looking for actual virus, they would be looking to find all those proteins, moreover in the fixed proportion to one another, since that's how they presumably occur in virus particles. The standard practice is grossly otherwise, however: in different countries, and even in different laboratories in a given country, what is called a "positive" Western Blot may be pronounced upon finding only a few of these proteins.

Dr. Valendar Turner of the Perth Group has written detailed analyses of the Western Blot: "in Australia a positive test requires particular sets of four bands (one band per protein). In the USA, different sets of two or three suffice, which may or may not include the bands required in Australia. In Africa only one designated set of two is required. Put simply, this means that the same person tested in three cities on the same day may or may not be HIV infected" (http://virusmyth.net/aids/data/vtyinyang.htm). In an affidavit for a law suit in Australia in 2006, Turner had this instructive diagram:

GLOBAL VARIATION IN THE CRITERIA DEFINING A POSITIVE HIV WESTERN BLOT



	AFR	AUS	FDA	RCX	CDC 1	CDC 2	CON	GER	UK	FRA	MAC
ENV	ANY 2	ANY 1	ANY 1	ANY 1	p160/ p120 AND p41	p160/ p120 OR p41	p150/ p120 OR p41	ANY 1	ANY 1	ALL 3	3 WEAK BANDS OR ANY STRONG BAND
FOL		ANY 3 GAG OR POL	p32 AND	ANY 1 AND		AND	p32 OR	ANY 1 GAG OR POL	p32 AND	ANY 1 OR	
GAG			p24	ANY 1		p24	p24		p24	ANY 1	

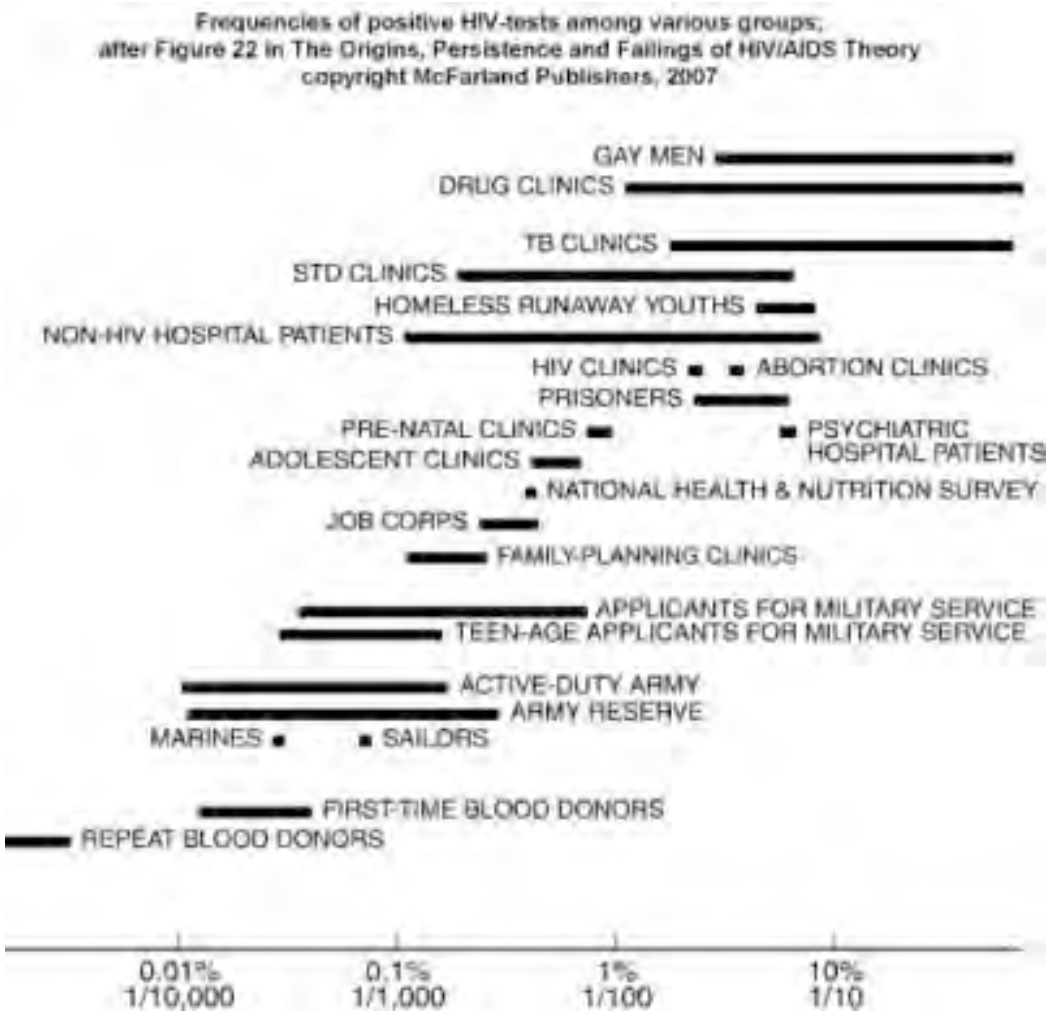
AFR=AFRICA;[1] AUS=AUSTRALIA;[2] FDA=US FOOD AND DRUG ADMINISTRATION;[3] RCX=US RED CROSS;[3] CDC=US CENTER FOR DISEASE CONTROL;[3] CON=US CONSORTIUM FOR RETROVIRUS SEROLOGY STANDARDIZATION;[3] GER=GERMANY; UK=UNITED KINGDOM; FRA=FRANCE; MACS= US MULTICENTER AIDS COHORT STUDY 1983-1992. * Bands not in electrophoretic order

The lay person might imagine, in line with ordinary common sense, that it would be enough to discredit the tests, that a person can be pronounced HIV-positive in one country but HIV-negative in another on the basis of tests with the same name. But this ambiguity also implies much more, namely, it raises the question whether these "HIV" proteins are even characteristic of HIV. Why does (for example) Australia require that four of the proteins be present? Because one or two of these supposedly "HIV specific" proteins are often found in perfectly healthy, "HIV-negative" people. So those one or two proteins are not specific to HIV, and finding them does not mean that HIV has been detected. So, then: what research has shown that the presence of four of these proteins means that HIV has been present? None. It has never been shown that one can isolate actual virus particles from samples "positive" by Western Blot. The very fact that criteria are so different in different places shows that the choice of what to regard as a positive test is a matter of judgment, not of soundly based scientific knowledge. The fact that different criteria have resulted from the judgment of different experts indicates further that none of them represents objective

science. In any case, if actual virus particles were present, and their protein composition were what it is assumed to be, then all these proteins should be found in the same proportion. They are not. A positive Western Blot does not demonstrate the presence of virus.

Perhaps the most consequential corollary is this: so-called “HIV” proteins are often found in people not classed as infected by HIV. What do these proteins signify?

An analysis of the totality of HIV tests in the US reveals that the probability of testing HIV-positive increases as there are more obvious challenges to health. People ill for any of many reasons are likely to have some of those “HIV” proteins in their blood and therefore to come up “positive” on an HIV test. The diagram below shows how the frequency of positive HIV-tests varies between different social groups. The progression from left to right corresponds to the likelihood that people in that group are experiencing a health challenge; it makes no sense in terms of the frequency of occurrence of a sexually transmitted infection.



(from The Origins, Persistence and Failings of HIV/AIDS Theory, McFarland 2007)

A "positive HIV test" can therefore mean many different things, in terms of the actual substances that have been detected: anywhere from almost any two to almost any four of a set of ten proteins. Dr. Turner offers an analogy: ". . . imagine this experiment. In place of the AIDS patient cell culture (with the proteins suspected to be from HIV) someone hands you a test tube containing milks obtained from half a dozen different animals. In other words, a mixture of several different proteins but you don't know from which animals. Now in place of a mixture of antibodies from AIDS patients you obtain a second test tube containing a number of different acids. You add the mixture of acids to the mixture of milks and produce curdles (a positive finding). Now you claim you've isolated (shown the presence of) a cow."

The point is that a "positive" ELISA or Western Blot only shows the presence of some mixture of a few of those "HIV" proteins – some or all of which are also found at times in people certainly not infected by HIV. That's why positive HIV-tests have been found in people with dozens of different conditions other than AIDS, see http://virusmyth.net/aids/data/cjtestfp.htm. "HIV" tests do not detect HIV and they are not proof of infection by HIV.

According to Dr. Turner, the so called "oxidative theory" could explain what a positive HIV test might indicate. This theory was first published in a paper entitled "Reappraisal of AIDS – Is the Oxidation Induced by the Risk Factors the Primary Cause?". It was initially submitted to Nature at the beginning of 1986 and was eventually published in Medical Hypotheses in 1988. In this paper the specificity of HIV antibodies is questioned. The substantial evidence in support of this claim included: "…the disulfide links of the antibody molecule play an essential role in the acquisition of immunological specificity and by virtue of their covalent nature, provide for the stabilisation of the particular structure underlying the specific activity of the molecule. Furthermore, the pattern of pairing of sulfhydryl groups to form disulfides is not an invariant property of the linear chain but depends on extrinsic factors including the redox. In other words protein synthesis and specificity in general and antibody synthesis and specificity in particular are redox dependent. If this is so, then any agents which will induce the same redox changes as a virus, could induce the synthesis of viral antibodies and antigens in the absence of the virus". It is concluded: "The only sensible conclusion is therefore that seropositivity does not mean virus positivity".

In 1991 the same Authors submitted a paper entitled HIV antibody testing – autoreactivity and other associated problems" to Research in Immunology, a Pasteur Institute publication. The paper was first accepted for publication in the Bulletin de l'Institut Pasteur, and then rejected. A modified

version of this paper was published in 1993 in Bio/Technology (now Nature Biotechnology) under the title “Is a positive Western Blot proof of HIV infection?”

In the 1991 (original) paper submitted to Research in Immunology the Authors wrote: “Currently the Western Blot is accepted as nearly 100% specific for HIV infection but the test is not standardised and because there is no suitable gold standard for the presence of HIV infection it is not possible to calculate its sensitivity and specificity…In healthy individuals as well as both non-AIDS and AIDS patients a positive Western Blot does not indicate HIV infection but represents a non-specific marker for a variety of unrelated conditions. Consequently, the general belief that almost all individuals, healthy or otherwise, who are HIV antibody positive are infected with a lethal retrovirus, has not been scientifically substantiated”.

Since then the Authors have published more evidence in support of our claims: (a) There is no proof that the antibody test proves HIV infection; (b) yet there is no denying that a positive antibody test, at least in the AIDS risk groups, increases the probability of the presence or the development of AIDS. The fact that the test does not prove HIV infection does not preclude its use as a non-specific test, along with many tests of the same nature employed in clinical practice. For example, the peripheral blood white cell count and erythrocyte sedimentation rate. Hence HIV antibodies may be nothing more than a non-specific indicator, serendipitously discovered in 1983/84, of altered homeostasis connoting a propensity to develop particular diseases.

This latter statement is consistent with the opinion of the Nobel Laureate Prof. Montagnier who stated that chronic HIV infection is just a symptom of immunodeficiency. HIV infection could then just be a “symptom” of immunodeficiency, just like left shoulder and arm pain is just a symptom of myocardial infarction. But only the minority of those who have left shoulder and arm pain have a

myocardial infarction and not all myocardial infarctions show shoulder and arm pain. Please always remember that “correlation proves causation” is a logical fallacy.

In addition, in response to the question, does a positive antibody test prove HIV infection, (the question does not refer to false positive results, which are characteristic of all antibody tests), “the HIV-positive individual” must consider the following:

A. There is no evidence that HIV antibodies neutralise the virus.

B. The only way to claim that a positive antibody test is proof of HIV infection is to compare the test against HIV, that is, to use HIV isolation/purification as a gold standard. To date this has not been done. Which means at present no evidence exists to prove a positive antibody test even in one person if caused by HIV infection.

C. If the antibodies are directed against the HIV proteins then all infected individuals would be expected to have at least similar if not identical Western Blot patterns regardless of where they live. This is not the case as demonstrated above.

D. All experts admit the “purified” virus contains cellular proteins which have the same molecular weight as the HIV proteins, including p24 and p41. However, to date nobody has shown that the electrophoretic bands, for example the p41 band, in addition to containing the cellular protein actin also contains an HIV specific, p41 protein. In other words, there is no certainty that the bands attributed to “viral” proteins are constituted exclusively by viral protein and not by cellular protein of the same molecular weight.

E. All experts admit that the p120 and p160 bands in the Western Blot are polymers of p41. Nobody has evidence which proves these polymers are those of an HIV p41 protein and not that of the cellular protein actin, which has a molecular weight of 41,000.

F. All experts accept that HIV-positive individuals and those at risk have auto-antibodies. Auto-antibodies are a sign of incipient or actual illness.

G. Unlike patients with other infections, HIV-positive individuals and those at risk have hypergammaglobulinemia. This is an immunological phenomenon not found in healthy people.

H. The epidemiological evidence of the last 25 years shows that an "HIV positive" test can be sexually acquired but cannot be sexually transmitted. This single fact proves that whatever the test may signify it cannot be infection with a sexually transmitted agent.

Then, according to Dr. Turner "A positive antibody test signifies exposure to foreign antigens (factor VIII and the impurities in it; antigens in dirty needles; semen, often from many individuals; and oxidising agents (factor VIII, drugs, oral or intravenous, semen). All are detrimental to health especially if exposure is large and prolonged. A positive antibody test can be avoided by limiting exposure to foreign antigens and oxidising agents or, wherever possible, eliminating such exposure".

And, consequently "The probability of a seropositive individual developing AIDS is higher than that of a seronegative individual. The development of AIDS can be avoided or at least diminished by avoiding or reducing exposure to foreign antigens and oxidising agents. Suffice to mention one example. By 1992 researchers found that following the acquisition of a positive HIV antibody test, factors associated with passive anal intercourse augment or determine, the development of AIDS.

Given its cytotoxic effects, semen must be one such factor, if not the only factor, especially in face of the epidemiological evidence showing that a positive antibody test and AIDS is significantly associated with trauma (bleeding) to the rectum during sexual contact".

Also this latter statement is consistent with the opinion of the Nobel Laureate Prof. Montagnier who stated that chronic HIV infection is just a symptom of immunodeficiency, even though the signs of chronic HIV infection (seropositivity) might be unrelated to the actual presence of HIV.

As mentioned at the beginning of this chapter, Everything about HIV/AIDS depends on one central point: Do HIV tests detect infection by a deadly retrovirus? It appears that there is no published proof of it. Indeed, manufacturers' pamphlets point out that their tests have never been approved for diagnosis of HIV infection. By contrast, a large body of well documented literature reports the fallibility of HIV tests: one may test HIV-positive for dozens of reasons, ranging from trivial, such as a vaccination, to more serious actual illnesses.

Thus, testing HIV-positive signifies about what having a fever signifies: something is going on that is out of the ordinary, and it may be something trivial and temporary or something more serious. It signifies a non-specific reaction by the immune system, or – what amounts to the same thing – a certain degree of physiological stress (perhaps, as the Perth Group insist, specifically oxidative stress).

The chief points supporting this interpretation are these:

A. HIV and AIDS numbers and rates are not correlated chronologically, geographically, or in their relative impacts on men and women, or in their relative impacts on members of the several ethnic and racial groups recognized officially in the US.

B. The number of HIV-positive Americans has not changed during the two decades since testing began; so this is not an epidemic of any sort.

C. The distribution of HIV geographically has not changed in the two decades since testing began. That is not true for venereal diseases – syphilis, gonorrhea, etc. “HIV tests” do not detect a sexually transmitted agent.

D. Testing HIV-positive varies in a predictable way with age, sex, and race, which no sexually transmitted infection does.

E. In the US demographic data was the consistent increase of HIV-positive rates with increasing population density (which is again not characteristic of sexually transmitted diseases). Such a correlation is, however, consistent with an explanation of HIV-positive as a non-specific physiological response to a variety of minor and major insults. Remarkably, the same trend with population density is found in Rwanda.

5. How paradoxes N. 3 (HIV "infection" may disappears spontaneously) and 4 (What do HIV test determine?) combine.

Professor Montagnier states: "We can be exposed to HIV many times without being chronically infected. Our immune system will get rid of the virus within a few weeks, if you have a good immune system." (quoted in the documentary "House of Numbers," 2009. URL: http://liamscheff.com/daily/2009/04/01/house-of-numbers/), thus reversing the cause-effect relationship between HIV and AIDS. According to his words, HIV infection itself reflects an already deficient immune system; it is the immunodeficiency that causes chronic HIV infection and not vice versa, as commonly believed.

The Nobel Laureate went on further when asked: "…If you take a poor African who's been infected and you build up his immune system… Is it possible for them also to get rid of it (the virus)?" Professor Montagnier's answer was "I would think so". When asked for further details in 2010, Professor Montagnier said: "My statement … is based on observations I made while I was director of the Centre of reference on AIDS virology at the Pasteur Institute: we actually met several cases of persons being transitively HIV-positive for a few months and then turning HIV-negative again. This is difficult to detect, keeping count of the furtive nature of the infection, but, when applied to AIDS, it simply reflects a general phenomenon that can be found in many viral infections: under the effect of a good immune response, these will disappear after a few weeks. In the case of HIV, this explains the enormous disparity of prevalence between the North (0,1% in our countries) and the South (5 to 10% in Africa). In southern areas, for a lot of reasons (such as co-infections or malnutrition), the immune system of many Africans is weakened and allows chronic infection to HIV (Nexus magazine, January–February 2010 issue (Issue 66, pp 10–11).

However, in so stating, the Nobel Laureate is explicitly reinforcing the idea that HIV tests (*i.e.* those very tests that serve to establish whether a person in infected or not) do not detect the presence of HIV. Otherwise they could never turn negative.

In fact, according to all the HIV experts, once infected with a retrovirus, always infected. This is because the retroviral RNA is reverse transcribed into DNA which is then incorporated into the host genome (DNA). Once in the host DNA it cannot be removed by any means. This is why HIV infection is incurable. As retrovirologist Harold Varmus said in 1998, "Trying to rid the body of a virus whose genome is incorporated into the host genome may be impossible". So Professor Montagnier has to explain how "general health measures", which has to be assumed equate to clean water, sanitation, a good diet and medical services, are able to excise approximately 9 thousand specific bases from the human genome while managing to leave all the rest intact. If general health measures can remove these particular 9 Kbases after "a few weeks" then why not also after a few months? Or twelve months? Or twelve years?

Therefore we are facing another paradox. In this case, however, the paradox can be easily resolved by a change of perspective. In fact if we assume that HIV-seropositivity is not (or at least not always) due to HIV infection, but it rather reflects a generic "stress" (due to oxidation, malnutrition, drug abuse, other infections and so on), then a reversal of these conditions will determine the seroconversion (from HIV-positive to HIV-negative) observed by Professor Montagnier.

CONCLUSIONS OF PART I

The relationship between HIV infection and AIDS: correlation but not causation

1. Many different agents impair immune system function and may cause AIDS independently of signs HIV infection; this is established by the Law (*i.e.* by an official directive of the Ministry of Health).

2. Most available evidence does not support a causative role for HIV in AIDS. If the Law establishes that there can be AIDS in the absence of signs of HIV infection, this automatically excludes HIV as the sole cause of AIDS.

3. The very existence of HIV as an independent pathogenic virus is questioned.

4. The putative pathogenic mechanism of HIV is unknown.

5. As Prof. Montagnier stated, is the immunodeficiency that causes chronic HIV infection and not vice versa.

6. The well documented association between HIV-seropositivity and AIDS could simply be indicative of pre-existing immunosuppression. *i.e*., different agents cause immunsuppression and immunosuppression (in addition to many other confounding factors) leads to HIV-seropositivity.

7. Signs of HIV infection could then just be "symptoms" of immunodeficiency, just like left shoulder and arm pain are symptoms of myocardial infarction.

PART II

HIV, human breast cancer, cadmium and angiogenesis

MATERIALS AND METHODS

The effects of non-toxic doses of cadmium (1-10 μM) on intracellular HIV targets were studied in human breast cancer cells (MCF-7) and in their normal counterpart (MCF-10A). Cell proliferation was studied by 5-bromo-deoxiuridine labelling. Hsp90β expression was evaluated by immunohistochemistry. PARP expression was studied by immunohistochemistry and Western blot. Angiogenesis was studied in chick embryo chorionallantoic membrane (CAM).

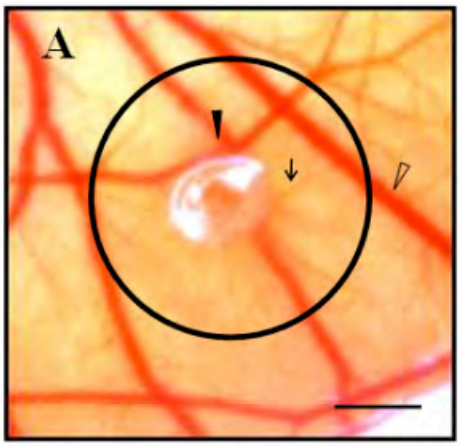
Chick embryo chorioallantoic membrane (CAM) assay

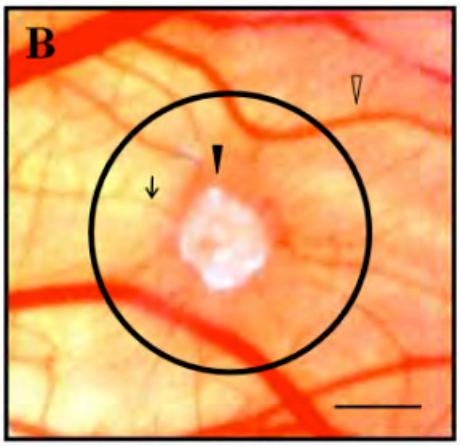
The effects on angiogenesis were studied in CAM assay. The CAM is an extra-embryonic membrane, which serves as a gas exchange surface. Its respiratory function is provided through an extensive capillary network. CAM is formed on the fourth day of incubation by the fusion of the ectodermal epithelium (chorion) and the endodermal epithelium (allantois). At this stage, undifferentiated blood vessels are scattered in the mesoderm of the CAM. They grow very rapidly until day 8, when some vessels differentiate into capillaries and form a layer at the base of the ectoderm. At day 14, 6 days before hatching, the capillary plexus is located at the surface of the ectoderm, adjacent to the shell membrane. The CAM includes the chorioallantoic fluid into which waste products are delivered. Because of its extensive vascularization, CAM has been extensively utilized as an in vivo model for the evaluation of angiogenic and anti-angiogenic molecules. For CAM assays, fertilized white Leghorn chicken eggs were incubated under routine conditions (i.e. 60% relative humidity at 37.5°C) and a square window of approximately 7 cm2 was opened in the egg shell at day 3 of incubation, after removal of 3.5 ml of albumen to detach the shell from the developing CAM. The window was sealed with a glass, and the eggs were returned to the incubator. Gelatine sponges (Upjohn Company, Kalamazoo, USA.) were cut to a size of 1 mm3 and placed on the top of the CAM at day 8 under sterile conditions. The sponges (one per egg) were then absorbed

with 5 µl of tested compounds. The amount of each tested compound is indicated in the corresponding tables and figures. PGE1 (1 mg/ml) was used to induce angiogenesis. In each experiment we used six eggs per experimental point (i.e. six eggs treated with PBS, six eggs treated with PGE1, and so on). Each experiment was repeated three times. Thus, the results refer to a total of 18 eggs per experimental point.

Quantitative analysis of angiogenesis

CAMs were examined daily and photographed in ovo at day 12. Eggs were examined by microscopy, and positive angiogenesis was considered if new microvessels (in particular, microvessels surrounding the sponge, defined as circumfocal microvessels) had developed. Live images of the CAM were captured using a high-resolution digital camera connected with the microscope. The corresponding figure depicts examples of the angiogenic response of the CAM after implantation of gelatine sponges adsorbed with different substances. In each panels, we report the picture of one egg, representative of 18 treated in the same manner. Captured images were digitized and analysed for number of angiogenic blood vessels (i.e. those surrounding the sponges), using a customized image analysis software program (Scion Corporation, USA). Small (< 1 mm dia.), large (> 1 mm dia.), and tortuous microvessels were observed at the magnification used (X5). Angiogenesis was assessed by scoring the circumfocal microvessel number (CFMN). The area surrounding the sponges where CFMN was scored is indicated by a circle. Since the CAM is an anatomical structure similar to a disc about 400 um thick, all the angiogenic vessels within the circumfocal area could be scored as if they were on a flat surface. Observers (two for each experiment), were blinded for what concerned the experimental conditions. Examples of CAM assays are provided in the following Figure.


A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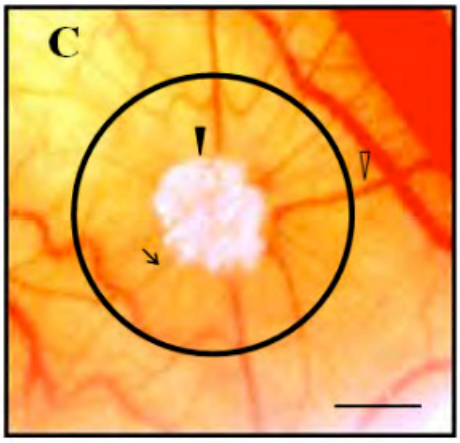
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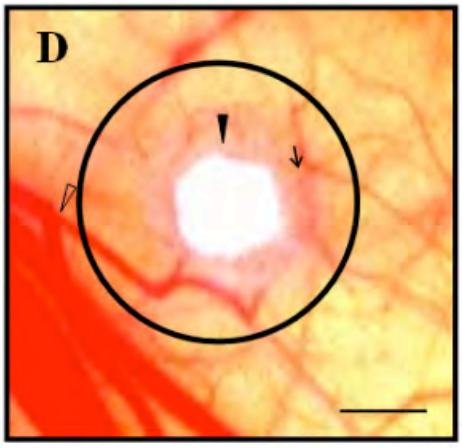

D

RESULTS

The relationship between HIV infection and cancer is intriguing. Among non-AIDS defining cancers (NADCs), breast cancer is of particular importance because of its incidence in industrialized and developing countries. As far as the relationship between HIV and common cancers is concerned, it is worth noting that despite the potential for different divergent (HIV) viruses to spread, surprisingly few viruses successfully expanded and, in approximately 80% of cases, productive infection is the result of infection with only a single virus (Curr Opin HIV AIDS. 2009 Jul;4(4):247-52). This is suggestive of the establishment of a symbiotic relationship between HIV and humans leading to a delicate survival balance. We hypothesize that HIV-induced apoptosis of human cancer cells in common cancers might have contributed to this symbiotic relationship. In fact, there exists a HIV protein termed viral protein R (Vpr) (a 14kD, 96 amino acid, accessory protein of HIV) that induces selective killing of rapidly dividing cancer cells, cell cycle arrest, inhibits inflammation and provokes p53- independent apoptosis (Curr Drug Deliv. 2004 Oct;1(4):335-44). Vpr-mediated apoptosis was observed in all tumour cell lines tested (Cancer Cell Int. 2009 Aug 12;9:20), and, *in vivo*, Vpr induced inhibition of melanoma growth and the induction of complete tumour regression coupled with long-term survival of mice in a highly aggressive and metastatic solid tumor model (Mol Ther. 2006 Nov;14(5):647-55). Free Vpr is detectable in the serum of HIV patients, and *in vitro* studies implicate extracellular Vpr as an effector of cellular responses mediated through its ability to transduce through intact cytoplasmic membranes (DNA Cell Biol. 2002 Sep;21(9):679-88). These results suggest that HIV infection could be associated with reduced risk of developing neoplasms in humans. However, in humans the anti-tumour properties of HIV could be masked by widespread use of HAART; thus, HAART increases the risk of developing cancer (Curr Opin Oncol. 2006 Sep;18(5):469-78) and there was statistically a larger proportion of non-AIDS-defining cancer cases in the post-HAART period compared to the pre-

HAART period (J Natl Med Assoc. 2008 Jul;100(7):817-20). Also in Italy a significant excess of liver cancer emerged in 1997-2004, *i.e.* after the introduction of HAART in 1996 (Br J Cancer. 2009 Mar 10;100(5):840-7). HAART potential oncogenicity is currently under investigation (Curr HIV/AIDS Rep. 2008 Aug;5(3):140-9; Curr Opin Oncol. 2008 Sep;20(5):534-40).

As far as breast cancer is concerned, epidemiologic data from Western countries and Africa demonstrate that HIV infection is not permissive for breast cancer (J Womens Health (Larchmt). 2003 Apr;12(3):227-32. Breast cancer and human immunodeficiency virus infection: issues for the 21st century. Guth AA.). These data might indicate that HIV could exert a sort of "protective" or "preventive" effect toward breast cancer. This concept would not be quite novel. In fact, the use of bacteria as anticancer agents has been repeatedly proposed. Historically, bacteria were used as oncolytic agents for malignant brain tumours. Advances in bacteriology and molecular biology have widened the scope of bacterial approaches to cancer therapy and various possibilities include the use of bacteria as sensitising agents for chemotherapy, as delivery agents for anticancer drugs, and as vectors for gene therapy. Bacterial toxins can be used for tumour destruction and cancer vaccines can be based on immunotoxins of bacterial origin. The most promising approaches are the use of genetically modified bacteria for selective destruction of tumours, and bacterial gene-directed enzyme prodrug therapy. Knowledge gained from study of bacterial genomes forms an important basis of use of bacteria as anticancer agents. TAPET (Tumour Amplified Protein Expression Therapy) uses a genetically altered strain of Salmonella as a bacterial vector, or vehicle, for preferentially delivering anticancer drugs to solid tumours. Verotoxin 1 (VT1) of Escherichia coli has been used for ex vivo purging of human bone marrow of cancer cells before autologous bone marrow transplant. E. coli genes and enzymes have become part of well-known prodrug approaches to cancer in which inert prodrugs can be converted in vivo to highly active species. IL-4 fused with Pseudomonas exotoxin has been administered directly into malignant brain tumours and binds with high affinity to IL-4 receptors, which do not exist on normal brain cells, thus destroying a major

part of the tumour without harming the normal brain tissue. It is in Phase I/II clinical trials in patients with glioblastoma. No ideal anticancer agent of bacterial origin that is applicable to all types of cancers has been discovered yet. The most promising approach to malignant brain tumours appears to be the use of genetically engineered bacteria that destroy the tumour selectively while sparing the normal brain tissue (Expert Opin Biol Ther. 2001 Mar;1(2):291-300). In addition to bacteria, microorganisms, such as viruses with selectivity for tumor cells or tumor micro-environments, have been investigated as potential arsenals for decades (Curr Opin Drug Discov Devel. 2002 Mar;5(2):194-9). In brief, it is conceivable that HIV infection could be associated with a reduced risk of developing breast cancer and this might explain the persistence of the virus in humans.

This rather paradoxical observation is similar to that observed with cadmium. In fact, cadmium, a highly persistent heavy metal, has been categorized as a probable human carcinogen by the U.S. Environmental Protection Agency and it shows an estrogen-like activity in breast cancer cells stimulating their proliferation. Although several studies suggested an association between cadmium exposure and breast cancer risk, a direct cause-effect relationship is still missing and past and recent studies concluded that the "results seem neither to prove nor to disprove the role of cadmium in breast cancer initiation, promotion or progression", and "… whether the association reflects the effects of cadmium on the initiation o promotion of tumor growth or possible effects of treatment or the disease itself on cadmium levels is unclear ". Thus, although cadmium is a well recognized environmental carcinogen, its effects on human breast cancer are not clear cut, in a manner similar to that observed with HIV infection. In other words, these discrepant observations seem to suggest that HIV and cadmium could somehow protect against the insurgence of breast cancer. As far as cadmium in concerned, we demonstrated that uncertainty in establishing the exact role of cadmium in breast cancer onset or progression could be found in its anti-angiogenic properties that counteract the pro-carcinogenic effects in the course of tumor progression (J

Environ Pathol Toxicol Oncol. 2009;28(1):85-8. *A paradox of cadmium: a carcinogen that impairs the capability of human breast cancer cells to induce angiogenesis*. Pacini S, Punzi T, Morucci G, Gulisano M, Ruggiero M.). In fact, angiogenesis is essential for normal function in the female reproductive tract and it is also a prerequisite for growth and metastasis of solid tumors. Inhibition of angiogenesis counteracts carcinogenesis and it has demonstrated clinically significant improvements in outcomes in a variety of malignancies, including breast cancer. It was recently demonstrated that cadmium per se effectively inhibited angiogenesis by inhibiting endothelial nitric oxide synthase. However, it is not known whether cadmium also impairs the ability of breast cancer cells to stimulate angiogenesis, a key process in breast cancer progression. In order to test this hypothesis, we exposed estrogen-responsive breast cancer cells (MCF-7) to sub-toxic levels of cadmium, and, after having removed cadmium in order to rule out a direct effect of the metal, we evaluated the pro-angiogenic potential of the cells in chick embryo chorioallantoic membrane (CAM) assay. As expected, MCF-7 cells, directly implanted in CAM, strongly stimulated angiogenesis to an extent comparable to that of a known stimulator of angiogenesis, i.e. prostaglandin E1. Exposure of MFC-7 cells to sub-toxic levels of cadmium for 48 h, followed by exhaustive washing in order to remove cadmium from the medium, significantly impaired the capability to induce angiogenesis. Since no cadmium was detectable in MCF-7 medium after washing, these results suggest that cadmium impaired the ability of MCF-7 cells to produce and release pro-angiogenic factors.

Cadmium effect on angiogenesis induced by MCF-7 cells

in chick embryo chorioallantoic membrane (CAM)

Treatment	CFMN
DMEM	16.2±2
PGE1	34.5±4
$CdCl_2$	13.3±2
PGE1 with $CdCl_2$	34.1±3
MCF-7	31.5±3
Exp-MCF-7	20.4±4

Legend to Table. Cadmium effect on angiogenesis induced by MCF-7 human breast cancer cells in chick embryo chorioallantoic membrane (CAM).

The number of angiogenic blood vessels, expressed as circumfocal microvessel number (CFMN), derived from scoring small (diameter < 1 mm), large (diameter > 1 mm), and tortuous microvessels, is reported for each experimental point. The medium used as control (DMEM) was phenol red free. Prostaglandin E1 (PGE1, 1 mg/ml) was used as positive control being a potent stimulator of angiogenesis. Cadmium, indicated as "$CdCl_2$", was resuspended in phenol red-free DMEM at the final concentration of 10 μM and placed in CAM. Cadmium (10 μM final concentration) added to PGE1 did not affect the stimolatory effect of PGE1. Control MCF-7 cells (*i.e.* un-exposed cells, indicated as "MCF-7"), and cells exposed to $CdCl_2$ (10 μM) for 48 h (indicated as "Exp-MCF-7"),

were exhaustively washed, re-suspended in phenol red-free DMEM, and implanted in gelatine sponges placed in CAM. Data are reported as means ± S.E.M. (n=18).

The mechanisms by which cadmium inhibited MCF-7-induced angiogenesis could be possibly found in the known effects of cadmium on up- and down-regulation of genes and on protein folding and assembly. Since cadmium is known to accumulate in several organs and cadmium binding proteins exist in human breast tissue, our results suggest that cadmium might exert a paradoxical effect in breast cancer: on one hand, it could promote carcinogenesis by mimicking the effects of estrogens and by perturbing p53 function; on the other hand, it could delay the progression of tumors by inhibiting breast cancer cell-induced angiogenesis. This newly described paradoxical effect in breast cancer cells is somehow reminiscent of the known paradoxical effects of cadmium on reproduction; thus, the difficulty of demonstrating a causal association between cadmium exposure and breast cancer might be due to this dual effect.

In addition to the molecular mechanisms quoted above, here we demonstrate that the effects of cadmium on cell proliferation angiogenesis and on two of the main intracellular targets of HIV, heat shock protein 90 (hsp90, targeted by Tat protein, known to be imported into the nucleus of human breast cancer cells), and poly(ADP-ribose) polymerase (PARP, involved in DNA repair and oxidative stress associated with HIV infection) are similar to those exerted by HIV.

Proliferation of normal and transformed human breast cells in serum-starved medium was inhibited by cadmium in dose-dependent manner. This effect was partially reversed by zinc. Hsp90β and PARP expression levels were increased by cadmium in dose-dependent manner in both types of cells, thus mimicking the effects of HIV on those intracellular targets. The effects of cadmium on angiogenesis were opposite in the two cell lines; MCF-7-induced angiogenesis in CAM was inhibited, whereas MCF-10-induced angiogenesis was stimulated.

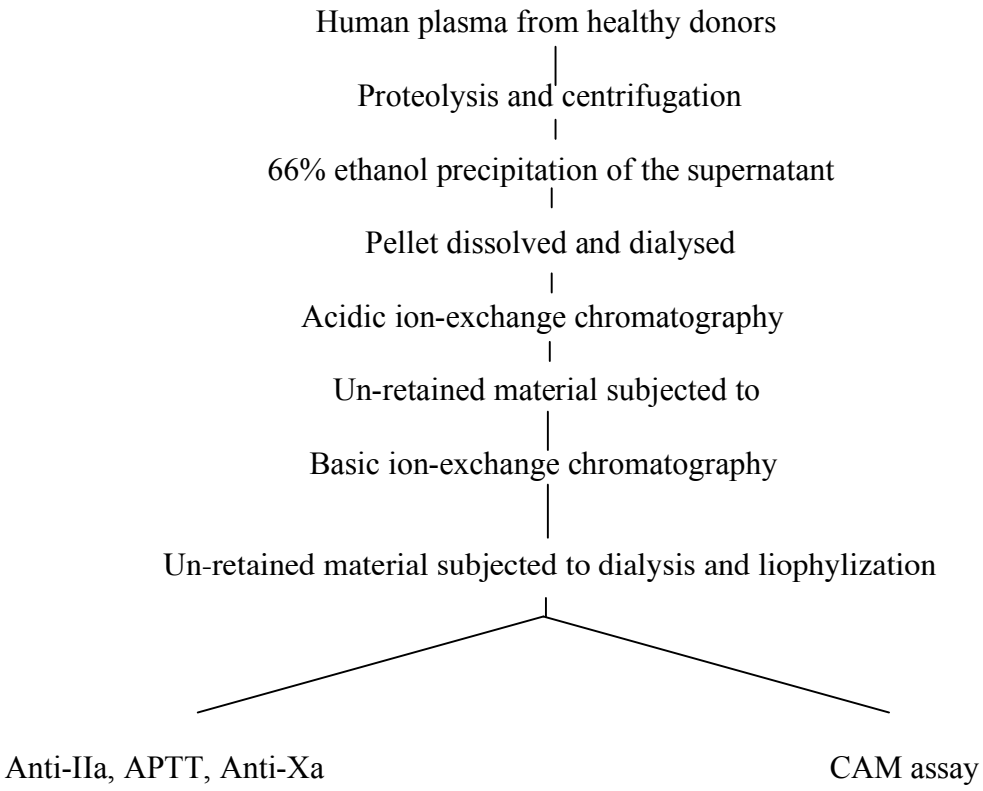
These results indicate that cadmium and HIV recognize as intracellular molecular targets two of the principal regulators of cell responses to stress, *i.e.* hsp90 and PARP. In human breast cancer cells, increased expression of hsp90 and PARP was associated with reduced cell proliferation and inhibition of angiogenesis. These results open the perspective of studying HIV-

associated angiogenesis in NADCs with the goal of controlling the progression of NADCs via inhibition of angiogenesis.

However, the relationship between HIV infection and angiogenesis is complex and it is of particular interest is the strong affinity of Tat protein for heparin, a known regulator of angiogenesis (Oncol Res. 2004;14(10):501-11. *Proteolysis of human plasma reveals the presence of complexes formed by endogenous heparin and peptides that stimulate angiogenesis*. Pacini S, Ruggiero M, Cecchi F, Peruzzi B, Vannucchi S.). In fact, we demonstrated that human endogenous plasma heparin associates with proteins that mask its anticoagulant activity and Tat could be one of these proteins. This association persists after exhaustive proteolysis of plasma, and resulting peptide/heparin complexes have no anticoagulant activity (see following scheme of the experimental protocol). Looking for functions other than inhibition of coagulation, we considered that commercial preparations of heparin from bovine or porcine sources show alternative effects on angiogenesis, either stimulating or inhibiting the process. However, the effects of endogenous human heparin on angiogenesis are unknown. In a previous study, the fraction of plasma containing endogenous heparin was prepared by means of exhaustive proteolysis, either in the presence or in the absence of 35S-labeled heparin. Plasma from healthy, HIV-negative donors was digested and the supernatant was precipitated with 66% ethanol, dialyzed, and submitted to basic and acidic ion-exchange chromatography. 35S-Labeled heparin as well as endogenous heparin bound plasmatic peptides, forming acidic, basic, and neutral complexes. Binding of peptides, eluting from both resins, impaired migration of heparin on cellulose acetate electrophoresis. Endogenous neutral complexes (*i.e.*, those formed by human endogenous plasma heparin and peptides) were tested for angiogenic activity in CAM assay. Bovine heparin induced a moderate angiogenic response. Neutral complexes of human endogenous plasma heparin and basic plasma peptides induced a very strong angiogenic response. Treatment of neutral complexes with nitrous acid, which degrades

heparin, abolished the angiogenic effect, thus demonstrating that it was due to the presence of heparin.

Scheme of the experimental protocol



Quantitative evaluation for angiogenic response

in chorioallantoic membrane (CAM) assay

EXPERIMENTAL POINT	**CFMN**
PBS (control)	19.3±0.8
Bovine heparin EP 756 (50 mg/ml)	25.4±1.2*
PGE1 (1 mg/ml)	39.1±1.9*
Neutral complexes (0.2 mg/ml)	47.3±2.0*
Neutral complexes 0.2 mg/ml) + nitrous acid (0.24 M)	20.2±0.9
Bovine heparin EP756 (50 mg/ml) + proteases	24.5±0.8*
Untreated human plasma	19.4±2.0

The number of angiogenic blood vessels (expressed as circumfocal microvessel number, CFMN), derived from scoring small (< 1 mm dia.), large (> 1 mm dia.), and tortuous microvessels, is reported for each experimental point. Please notice that the indicated concentration for "neutral complexes" refers to the peptide/protein content measured by the method of Bradford. At this peptide concentration, calculated concentration of human heparin was 0.01 mg/ml (i.e. 1.0 x 10^{-6} M assuming that the average molecular mass of human heparin was 10 kDa). In the experimental point "Bovine heparin EP 756 + proteases", bovine heparin EP756, was dissolved in PBS at the concentration of 50 mg/ml, and submitted to sequential treatment with proteolytic enzymes (trypsin, chymotrypsin, collagenase and pepsin, each at final concentration of 1 mg/ml) as described in Pacini et al., 2004 (Oncol Res. 2004;14(10):501-11. Proteolysis of human plasma reveals the presence of complexes formed by endogenous heparin and peptides that stimulate angiogenesis. Pacini S, Ruggiero M, Cecchi F, Peruzzi B, Vannucchi S). Data are reported as means ± S.E.M. (n=18). The asterisk (*) indicates significant difference from control (PBS) (p < 0.02).

These results demonstrate that proteolysis of human plasma generates angiogenic peptide/heparin complexes. Thus it is conceivable that some of the effects attributed to Tat protein are in reality due to endogenous heparin.

Taken together, our results support the hypothesis that many of the effects attributed to HIV could in reality be due to cellular stress or to endogenous factors.

CONCLUSIONS

It's generally believed that HIV causes AIDS, in part because it seems incredible that "science" could be so wrong. But history of science teaches that it's anything but incredible.

The considerable evidence that HIV doesn't cause AIDS includes:

— Lack of correlation between HIV numbers and AIDS numbers

— No correlation among "viral load", CD4 counts, and clinical prognosis

— Published data on deaths and "infections" show no sign of purported latent period: "infection", symptoms, deaths all show the same age distribution peaking in early middle age

— Impossible level of promiscuity needed to explain African prevalence of "HIV-positive"

— Failure of every vaccine trial

— Failure of every microbicide, even those containing antiretroviral drugs

— Constant number of "HIV-positive" Americans for three decades

— Constant demographics of "HIV" by age. race, and sex

— No actually observed sexual transmission

— Condom use has no effect on incidence of "HIV-positive"

— Pregnant women more likely to become "HIV-positive"

— Health-care workers at no risk of infection

— More breastfeeding protects babies against becoming “HIV-positive”

Thus it can be concluded that AIDS is a lifestyle phenomenon, not an infectious ailment and“HIV” is a misnomer for misinterpreted “HIV” tests. HIV/AIDS theory became established as a result of political and social pressures, not because of scientific evidence.

Those points are set out in a just-published article in *EdgeScience — Current Research and Insights*, #3 (April-June 2010) 6-8. The magazine is published by the Society for Scientific Exploration and edited by Patrick Huyghe, a science writer whose credits include many articles in such major magazines as OMNI and co-authorship of books with scientists, for example, with (Louis A. Frank) *The Big Splash*. The Journal of Scientific Exploration, founded in 1987, contains peer-reviewed and rather technical articles; *EdgeScience* is intended to make technical matters accessible to a general audience. Some of these points were also covered in two recent publications in the Italian Journal of Anatomy and Embryology (Ruggiero et al., Italian Journal of Anatomy and Embryology, vol. 114, 97-108, 2009; Galletti and Bauer, Italian Journal of Anatomy and Embryology, vol. 114, 179-192, 2009) *i.e.* the official journal of one of the most prestigious Italian and international scientific societies, the Italian Society of Anatomy and Histology, founded in 1929. Among the founding fathers of the Society, Professor Giulio Chiarugi heir of Vincenzo Chiarugi the founder of modern psychiatry. The journal is peer reviewed and listed in major indexing systems including www.pubmed.org . The journal has no commercial purpose and does not host advertisements.

In conclusion, all experimental data and meta-analyses considered in this thesis point to a non-causal association between the virus termed “HIV” and the syndrome termed “AIDS”.

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