# The Scientist and Our Time

The African green monkey as it was presented by the Swedish medical establishment in brochures designed to enlighten the Swedish public about AIDS. Nothing was ever mentioned about it being the monkey most commonly used in laboratories throughout the world for medical experiments during the 1960s and '70s.

The molecular biologist and virologist, Professor Lennart Philipson, current President of the European molecular biology laboratory in Heidelberg, Germany, (former Professor of Virology, Uppsala University, Sweden) published this article on October 2nd 1988 in the leading Swedish newspaper Dagens Nyheter as he thought false rumours about the origin of the HIV virus were circulating. He was indignant about the lack of evidence behind the rumours.

# Absurd Image of Gene Technology

The mass media are relaying a dishonest and unobjective image of gene technology, writes Lennart Philipson.

The summer holiday season in Sweden is usually a quiet time, with many opportunities for recreation. This year, however, the flow of information did not dry up, and repeated reports of seal deaths caused by dioxins or viruses, of bacteria in bathing areas, of a political camarilla who imported surveillance equipment, and of renewed demands for laws against gene technology, disturbed the summer tranquility. We are beginning to be environmentally conscious, and that's good.

What is disquieting, however, is the nature and expertise of the news reports. Scientists must divulge their sources and methods when presenting research results. Newspapers and television, on the other hand, are proud of the fact that they need not cite sources, a practice that is even hailed as a code of honour. The inevitable result is the contradictory nature of the reports which are provided to the public, and those crude inaccuracies which serve to upset and question rather than to inform.

In the course of the the summer, *Dagens Nyheter* told its readers in an editorial that in "laboratories abroad, under the guise of vaccination research, a deadly virus for possible use in war is being developed", and that "the shadow of Hitler has been cast over gene technology". Such claims should be undermined by their own implausibility, and not result in action being taken, but constant repetition unfortunately tends to be more forceful than any single contribution to the debate could be.

The notion about the deadly virus probably came from unreliable sources in East Germany via the Greens in West Germany. Two years ago, they claimed that the American CIA had produced the AIDS virus through the fusion of a harmless retrovirus and the VISNA virus, which results in neurological symptoms in sheep. Because we know the order of the building blocks of genes in all three of these viruses, it has been possible to demonstrate – and indeed, it has been demonstrated – that the notion is preposterous.

Moreover, it turns out that the AIDS virus existed as early as the 1960s, long before the developments in gene technology that are thought to have facilitated the insane experiment. All the same, this example surfaces time and again in the debate, apparently with the sole intention of frightening people. If another reliable source relating to the virus experiment exists, it should be named so that an objective inquiry can be conducted into the matter.

Nor is there any reason for gene technology to have been used to create biological weapons, mostly because nature itself is, and will remain, better than mankind at developing hardy and rapidly changeable parasites. The AIDS virus can alter its surface characteristics in one and the same patient, increasing the difficulty of producing a possible vaccine. As soon as humans and animals begin forming antibodies against a surface antigen, *The Trypanosome,* a parasite that causes illness, switches between several dozen surface antigens so as to trick the host animal...

Reply to professor Lennart Philipsons article, published in Dagens Nyheter on October 2nd 1988.
(It has not been possible to get the following answer published in Sweden.)

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*"Within the next five to ten years it would probably be possible to make a new infective microorganism which could differ in certain important aspects from any known disease-carrying organisms. Most important of these is that it might be refractory to the immunological and the therapeutic processes upon which we depend to maintain our relative freedom from infectious disease (...) Without the sure scientific knowledge that such a weapon is possible and an understanding of the ways it could be done there is little that can be done to devise defensive measures. Should an enemy develop it, there is little doubt that this is an important area of potential military technological inferiority in which there is no adequate research programme."*

With these words, the US Defense Department applied for funds from Congress on the eve of the 1970 fiscal year. It was estimated that the project, lasting five years, would cost ten million dollars.[1]

The need for a new virus had arisen since virtually all the infectious diseases known to the world could by this time be cured or prevented.[2] Mankind's enhanced knowledge of how to produce vaccines had rendered the old bacteria and viruses worthless, from a military point of view.

What possibilities and knowledge, then, were available to the researchers of 1969, that they could promise a tested and fully developed product of this sort within a decade?

Preliminary work was well underway. For more than seven years, well-qualified microbiologists at the US Army Biological Laboratories had been busy developing methods for the genetic manipulation of microorganisms with the aim of being able to use them for military purposes. Furthermore, research in support of the project, funded by grants, was being conducted at many university laboratories.

In a Congress protocol of March 1962, the ongoing work of the microbiologists was described in thirteen points, the first four of which dealt with virus-genetic experiments:[3]

1. Combination, recombination and transformation experiments with virus particles and/or fragments of virus germ plasm.

2. Development of methods for bringing about mutations and the isolation of mutants.

3. Investigation of genetic changes in those viruses causing "chronic illnesses" (i.e. viruses against which immunities are ineffective or have been eliminated)[4] as well as investigation into genetic mutation in those cells which are infected by these viruses.

4. Attempts to isolate and recombine germ plasms from different viruses to produce a "new" virus.

In the early 1980s, the world became acquainted with an entirely new, infectious immunity disease called AIDS, caused by previously unknown infectious matter – a new virus.

It is worth noting that the AIDS virus has many of those qualities which the

American Defense Department sought for its new biological weapon. Any medically knowledgeable person must acknowledge this. With awareness of the orientation and purposes to which the aforementioned project testifies, and knowing that scientific development work does not, as a rule, simply yield finished products, the question must inevitably be posed: does the AIDS virus have anything to do with the activities described above, or did it occur naturally at about the same time as these microbiologists worked with the creation of a very similar virus?

Swedish medical authorities have dismissed the question on several occasions with invectives such as "confused" and "preposterous", and the head of the microbiological laboratory at the Research Institute of the Swedish National Defence (FOA) has emphasized that the US discontinued its military biological research in the 1960s.[5]

Of course, no one can state with any certainty that AIDS is a result of microbiological experimentation. At this point, we can only speak of what is and is not probable. Unfortunately, that which is least substantiated and least probable has become the official version of how the AIDS virus originated.

The authors of this story, our medical establishment, can be compared in this capacity with defence lawyers, who, in spite of everything, must admit that their client was at the scene of the crime and was observed firing a pistol at the victim, but who effect the release of the murderer on the grounds that the victim could have been hit by a bullet from an unknown assassin.

Something like this is possible only when the lawyers and the judges are the same people.

Is it really so important to establish how the most discussed and feared disease of our time came into being?

Of all the reasons suggesting that it is, indeed, extremely important, the following in particular should be noted.

Imagine that mankind was to find a cure for, or a vaccine against, the AIDS virus or variations of such an immune deficiency virus. Bearing in mind the excerpt of the Congress protocol that was mentioned earlier, it is obvious that the virus would then be rendered uninteresting, from a military point of view.

Biological research for military purposes is necessarily forced to concentrate on something to bypass this vaccine, because of suspicions that the enemy will do so. To be able to take "defensive measures", the weapon must be known. There is order and logic in all arms races.

It is, of course, conceivable that nature, as is so often the case, was a jump ahead, and spontaneously developed a similar virus, if one is to believe our experts. Faced with such a possibility, we can only hope and pray that we do not become infected when we laugh together.

If, on the other hand, we do not close our eyes to the fact that such devastating viruses both have had, and will continue to have, the possibility of developing through human activities in gene technology, we have something that will be of more use to us in the future than hope and prayers. We have the possibility of acting, of preventing the continuation of such destructive development work – even of it ever taking place. Should we fail in this, we will know the reasons why and, in spite of everything, need fear neither nature nor God.

With this insight, we gain the possibility of doing away with, for a while at least, not only the risk of our own destruction, but also the fertile soil in which superstition and mystification grow, as well as the unjust practice of singling out scapegoats.

Not all professors of medicine have been convinced that the military biological research was discontinued. Some have realized that, in the 1960s, this aspect of mi-

crobiology successfully developed products with effects as devastating as those of nuclear weapons.

In December 1968, the year before the American Defense Department applied for money to develop its immune deficiency virus, an article was published in the American microbiology journal *Bacteriological Reviews*, with the title "The microbiologist and his time".[6] It differs from the sort of thing usually published in this journal in that it is no conventional, scientific report, but rather a philosophical essay. The author was Salvador Luria, one of the fathers of modern molecular biology, according to the Swedish cancer researcher George Klein.

The title of Luria's article was purposely chosen. Because it plays on the title of the speech given by Albert Camus upon receiving the Nobel prize in literature, "The artist and his time", dealing with artistic responsibility, Luria was focussing the attention of scientists on the same question.

For over twenty years, he himself had investigated how those viruses which attack bacteria – "bacteriophages" – multiply in the bacteria, and discovering in the process that these viruses can exchange germ plasm, partly with the bacteria, and partly with other viruses which infect the bacteria at the same time.[7] Because the components of the germ plasm are the same in all living beings, he had also realized that an exchange of germ plasm is possible in higher organisms with other viruses involved. In other words, it was possible, if not yet confirmed, both to alter a virus and to create new ones from parts of different viruses.[8]

Moreover, he had established that these findings had aroused considerable interest among researchers at the US Army Biological Laboratories in Fort Detrick, as they saw the possibility of exploiting them militarily.

In the article, Luria urges his colleagues in the American Society for Microbiology to suspend cooperation with Fort Detrick, initiated in 1955, on the grounds that the assumptions on which the venture had been established – i.e. open scholarly exchange, without a veil of secrecy – no longer existed.

It is not known whether the American Defense Department received funds to develop the immune deficiency weapon which it presented for the congressional committee in 1969, nor of how the money was used if it did. But we do know that Salvador Luria won the Nobel prize for medicine that year, and that he undoubtedly raised a glass or two with several Swedish medical authorities. That he spoke with them about his article is less likely, as in it he also elaborated his view of the scientist's moral responsibility for the level of knowledge of his contemporaries in that about which it is important for them to know, and with the help of which society can prepare itself for the future. In Luria's view, omission, neglect, and sheer passivity are in this respect to be considered conscious acts with societal consequences.

Throughout history, the human fear of illness and death has often been exploited in attempts to win political influence, disseminate religious dogma, and achieve financial gain. The greater their desperation, the more receptive people have been to superstition, the creation of myths, and exploitation.

AIDS brings these questions to the fore once again.

It is thus to be welcomed that molecular biologists like Lennart Philipson, formerly professor at Sweden's Uppsala University and subsequently head of the European Molecular Biology Laboratory in Heidelberg, Germany, have spoken out in the mass media, with the aim of bringing scientific clarity to the history of the origin of the AIDS virus.[9] The notion that this virus could be a laboratory product is dismissed by Philipson, too, as an absurd, persistent rumour with a "probable" origin in the former GDR, subsequently spread by the West German Greens.

Philipson complains about the lack of objectivity and the dishonesty of the mass media in reporting such rumours without citing sources. In his view, such practices lead to the public being proffered crude inaccuracies and becoming upset and questioning rather than informed.

It is easy to agree with Philipson's demand for sources to be cited. But it is harder to understand why he himself should be freed from this obligation. For he himself dismisses the laboratory notion with an argument that not only lacks cited sources, but which is also incomplete and thus almost impossible to assess. From a scholarly point of view this is unacceptable, and his argument thus becomes, like all the others, nothing more than a claim, as unfounded as any of those at which he takes offence.

Such behaviour is, unfortunately, typical of all of our experts on this matter.

It turns out, says Philipson without naming any sources, that the AIDS virus already existed in the 1960s. Where it did so, and when in the 1960s, we are not told. His incomplete claim thus becomes, it is implied, yet another contribution to the established notion that the jungles of Africa were the place of origin of the AIDS virus, and perhaps that was the idea.

It is unfortunate that Philipson fails to disclose his evidence to the public. It is also unfortunate that he conceals it from his research colleagues at the University of Munich, who, with the help of all available computer banks, have been unable to establish the occurrence of antibodies peculiar to the HIV virus in Africa prior to 1976.[10]

Any glimpses afforded to the public into special disciplines like medicine and gene technology are virtually dependent on the information provided by representatives of the respective fields.

In virology and gene technology, Professor Philipson is an authority. He also complements his statements with an argument based on molecular biology, which unfortunately is also incomplete and lacking source references. According to him, the rumour that "probably" began in East Germany suggests that the AIDS virus is a fusion of a harmless retrovirus and a sheep virus called "VISNA". It has been clearly demonstrated, says Philipson, that this is absurd, as all three of these viruses are genetically mapped, i.e. nucleotide determined.

Philipson surely cannot mean that viruses cannot be combined, however, as he goes on to compare the germ plasms of the viruses. But it is not clear whether he means that the two viruses cannot alone have resulted in the AIDS virus or whether they could not have been involved whatsoever, particularly as he fails to mention by name the harmless retrovirus, or to specify for whom it is harmless.

Since the 1960s, it has been known that a virus which is innocuous for its natural hosts can often be dangerous when it is artificially transferred to other species.[11] One such example is the SIV virus, which does not harm its natural carrier, the African green monkey, but which in a laboratory environment has been shown to result in tumours and immune deficiency diseases in other animal species. This virus was not isolated or named until sometime into the 1980s, but has occurred in latent form in the classic laboratory primate ever since it was first used in virus research in the 1950s.[12]

It must be this, the SIV virus, to which Philipson is referring. No other genetically mapped, harmless retroviruses are to be found in the literature on virus research.

The three viruses – SIV, VISNA and the AIDS virus HIV – have been genetically mapped. The researchers who have conducted this work are agreed on one thing: namely, that there is approximately 55 percent correspondence between SIV and HIV,[13] and 35 percent between the VISNA virus and HIV.[14] The figures vary depending on which section of the germ plasm is compared, as well as from study to study.

The percentages are, however, too low to be able to claim that the AIDS virus originated in these two viruses alone. Up to this point, it is possible to agree with Philipson.

It is, however, important to make it clear that viruses are not mixed the same way as drinks – in a cocktail shaker, for example.

Viruses are mixed in living cells. Moreover, the aforementioned viruses belong to a group which can only be mixed in the innermost part of a cell, the nucleus, which comprises the germ plasm in that animal or human from which the cell is taken. The mix takes place either in a test tube cell cultivation, or through the simultaneous injection of two or more virus sorts into a living being.

What is above all characteristic for viruses is that they consist of no more than a fragment of germ plasm, not always enclosed by a protective membrane.

The combination of two or more viruses of this sort entails the combination of two or more germ plasm in the germ plasm of a cell. In mammals, the latter are hundreds of thousands of times larger than those of the viruses, and by no means genetically mapped.

If the combination of viruses takes place in an animal, or in a human, to whom the virus is alien – i.e. an unnatural carrier of the virus – the risk is great that unknown, normally passive components of the germ plasm of the cell are activated and exchanged with components of the germ plasm of the virus, through which means the virus obtains new characteristics, such as enhanced adaptation to new animal species.[15]

It was possible, if hazardous, to alter a virus in this way by the latter half of the 1960s.[16]

There is a risk, when viruses are combined, that not only parts of the germ plasms of the cell find their way into the mixture. There is also a risk that the virus will combine with another virus already existing in the cell, or with an unknown, undiscovered virus. This is the experience of many researchers.

When the Nobel prize-winning microbiologist Gajdusek experimented with the rare human Kuru virus (a still unmapped infectious substance that is harmful to the brain and evades the immune system) between 1963 and 1966, injecting it into chimpanzees and then transferring infected chimpanzee cells to the African green monkey, he discovered, to his surprise, during a follow-up evaluation that both sorts of primate had been carrying several, both known and previously unknown, viruses peculiar to their own species throughout the artificial Kuru infection.[17]

From the vantage point of the 1980s, we know it is likely that he also reaped additional unknown viruses, which would be discovered and identified much later – the aforementioned SIV virus, for example.

To discover, after mixing viruses, that the germ plasm of the final product is not exactly the same as that of the original viruses is hardly surprising today.

It can be seen that the rumour which "probably" began in East Germany that the AIDS virus originated in a combination of the SIV and VISNA viruses is not the best suggestion to have arisen in this discussion. But it is dishonourable and unscholarly to do as Philipson, and categorically dismiss the laboratory alternative with a faulty and unreliable conception.

This testifies to the lack of respect for the reader, and to the fact that Philipson's primary intention is not to relay knowledge about scientific reality, but to touch it up, and to withhold information from the public that would place gene technology in an unflattering light.

To be a scientist is to shoulder a responsibility for informing ones's contemporaries about all aspects of one's discipline.

This is the essence of the aforementioned article by Salvador Luria.

It is also the actual criterion of scholarship.

In the dictatorships of history, many researchers have certainly had to modify this code. But there should be no reason for Philipson or other representatives of our medical profession to do so.

Our age must be able to demand of its scientists at least some information about the scientific sources on the material with which the story of the AIDS virus has been created, a story which says the AIDS virus is the result of an evolutionary caprice of nature in Africa during the period of sexual liberation.

It is unscholarly of Sweden's state epidemiologist, Professor Margareta Böttiger, to claim without reference to any sources, that African blacks inject ape blood into their own bodies.

It is also unscholarly of her to allow the distribution of a picture of the African green monkey in the arms of a black man, without at the same time distributing a picture of herself with green monkey liver cells in a test tube.[18]

It is unscholarly of the chairman of the Swedish Hybrid DNA Delegation, Professor Erling Norrby, to speculate about upsetting the ecological balance between micro-organisms and humans as a result of sexual liberalism in the 1960s and '70s[19] without at the same time providing information about the countless experiments of that period with the combination of viruses and with infectious substances, insensitive to immunities, in which he himself played a leading role.[20]

It is unscholarly to fail to present the facts.

To give them the benefit of the doubt, it is possible to see such omissions as the expression of thoughtfulness, of a desire to give the youth of today a rosy picture of the world. Such action can be praiseworthy. When it is too late for anything else. As it was for the mothers who cooed to their children at the entrance to the gas chambers of Auschwitz.

ROY ANDERSSON, MARCH 1989

1. Department of Defense Appropriations for 1970. Part 6. Hearings before a Subcommittee of the Committee on Appropriations. US House of Representatives, 91st Congress, 1st session, Washington, 1969: 104-44, quoted in SIPRI (1973) *The Problem of Chemical and Biological Warfare*. Vol. 2:314.

2. Department of Defense Appropriations for 1963. Hearings before a Subcommittee of the Committee on Appropriations. US House of Representatives, 87th Congress, 2nd session. Washington, March 1962:175-84, cited in Ibid.

3. Ibid.

4. F. Fenner and D. O. White (1976) *Medical Virology*, Second Edition, pp. 140-61.

5. *Kvällsposten*, 26 March 1987.

6. *Bacteriological Reviews*, (1968) Vol. 32:401-3.

7. J. D. Watson (1977) *Molecular Biology of the Gene*. Third Edition, pp. 149-81.

8. J. A. Dodds and R. I. Hamilton (1976) *Structural interactions between viruses as a consequence of mixed infections* in Advances in Virus Research, Vol. 20, pp. 33-86; C. Altaner and H. M. Temin (1970) *A quantitative study of infection of rat cells in vitro by Avian Sarcoma Viruses*, in Virology 40:pp. 118-134.

9. See, for example, his article of 2 October 1989 in the Swedish daily newspaper *Dagens Nyheter*.

10. AIDS-*Forschung* (1987) AIFO Heft 12, December, p. 686.

11. L. Gross (1970) *Oncogenic Viruses*, Second Edition, pp. 1-931.

12. P. J. Kanki et.al. (1985) *The Lancet*, Vol. 1:1330-32; R. J. Biggar (1986) The Lancet, pp. 79-82.

13. AIDS-Forschung (1988) AIFO Heft 4, April, p. 180.

14. M. A. Gonda, et.al. (1985) Science, Vol. 227:173-77.

15. R. Weiss, et.al. (1982) RNA Tumor Viruses, pp. 209-260, 649-783, and T. Kuwata (1964) *Adoption of Rous Sarcoma Virus to Ducks* in Cancer Research, Vol. 24:947-52.

16. Dodds and Hamilton op.cit, and Altaner and Temin, op.cit.

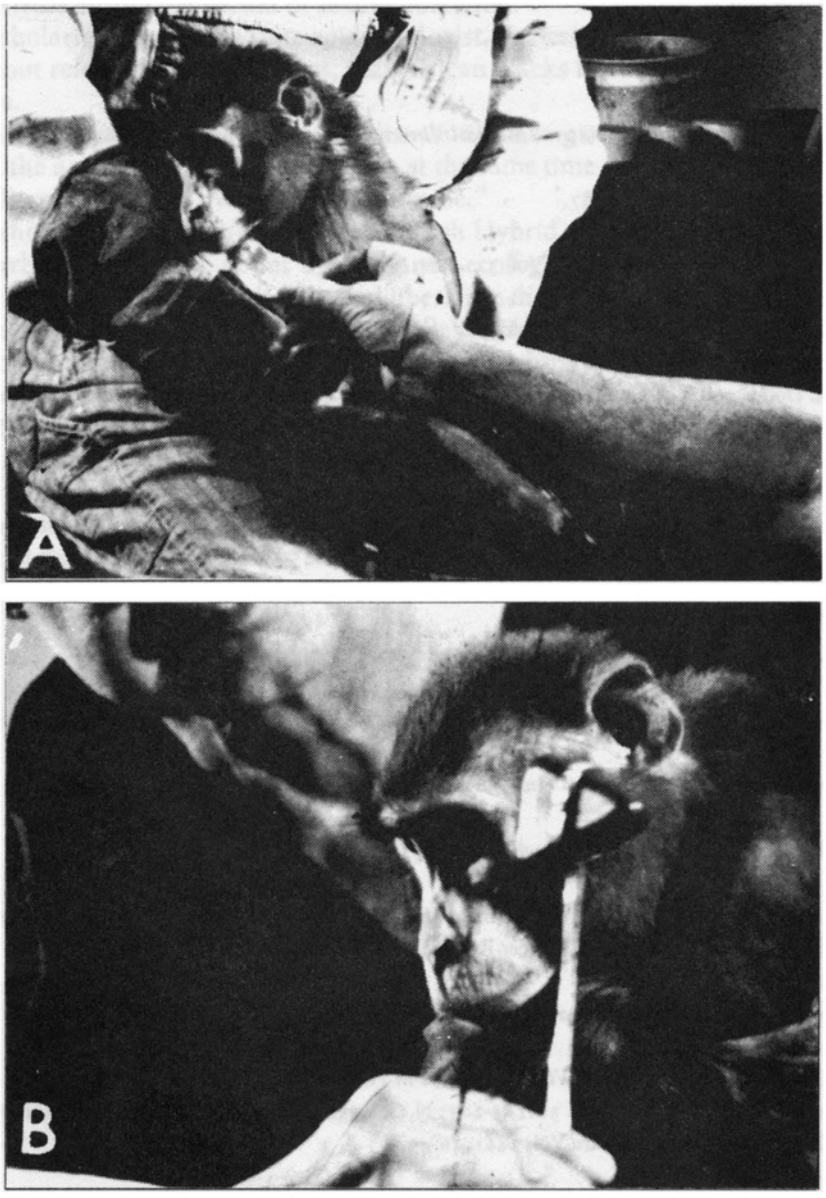
17. G. D. Hsiung (1968) *Latent Virus Infections in Primate issues with Special Reference to Simian Viruses*, Bacteriological Reviews, Vol. 32:185-205; N. G. Rogers, et.al. (1967) *Latent Viruses in Chimpanzees with Experimental Kuru*, Nature Vol. 216:446-49.

18. Expressen, 29 September 1987; M. G. Koch (1985) AIDS-*Vår Framtid?* (AIDS—Our Future? With an introduction by M. Böttiger); M. Böttiger (1967) *SV40 Replication in Presence of Monkey Kidney Antibodies*, Progress in Immunobiological Standardization, Vol. 3:34-8.

19. E. Norrby (1987) *Våra Virus*, (Our Viruses) p. 95.

20. Dodds and Hamilton, op.cit; E. Zeman et.al. (1973) *Slow Virus Diseases*. Symposium of the American Association of Pathologists and Bacteriologists, Washington D.C.

A rhesus monkey being injected with the TME (Transmissible Mink Encephalopathy agent) virus which causes "chronic illnesses", i.e. increased infection without reaction, or with insufficient reaction, from the immune system. The TME virus is not native to the rhesus monkey.




Motion picture frames of rhesus monkey, five months prior to euthanasia for terminal TME. Lack of fear of man and nonreactivity to olfactory (A) and visual (B) stimuli.

From a Scientific report presented at the annual symposium of the American Association of Pathologists and Bacteriologists, Washington, D.C., 1973.