

## Studies Show Link Between HTLV and AIDS

Scientists from the National Cancer Institute and Harvard University recently reported in *Science* that some patients with acquired immune deficiency syndrome have been infected with a virus associated with an unusual form of adult leukemia and lymphoma.

Another paper, from the Pasteur Institute in Paris, reported the virus infection in a homosexual patient with a series of infections and persistent lymph node enlargement, who may be at risk of developing AIDS.

The virus is a member of a family of rare viruses called human T-cell leukemia/lymphoma viruses, or HTLV.

"Taken together, these studies demonstrate a relationship between HTLV and AIDS, not that the virus causes AIDS," said Dr. Vincent T. DeVita, Jr., NCI Director.

He added that HTLV, one of several viruses seen in AIDS patients, may be simply a passenger, or part of the pattern of opportunistic infections that characterize people with the disorder.

In addition, Dr. DeVita said, scientists believe HTLV is not easily transmissible, apparently requiring prolonged and intimate contact for transmission between individuals.

AIDS is a recently recognized, often fatal condition that leads to a breakdown of the body's immune function. Resulting AIDS disorders include Kaposi's sarcoma, a rare tumor that starts in cells of blood vessel walls, *Pneumocystis carinii* pneumonia, and other opportunistic infections. Cases of AIDS have been reported primarily among homosexual men, intravenous drug abusers, recent Haitian immigrants and hemophiliacs.

"Using a wide variety of studies, we hope to find answers to the pressing questions remaining about the exact role of HTLV in the development of AIDS," Dr. DeVita said.

Answers may come relatively quickly, he said, because scientists can easily grow the T-cells that are targets of the HTLV infection. "A great deal of work now can be done."

### Big Question

A big question, Dr. DeVita noted, is whether the research on HTLV will lead to ways to prevent or control AIDS.

Other questions he identified include: Are there important differences between the viruses isolated from the adult T-cell leukemia and lymphoma patients compared to the AIDS patients? Is the virus detectable in other tissues or fluids? How does the virus spread in such an apparently limited way?

In addition, he said, scientists need to look for HTLV viruses in blood samples stored for long periods to determine whether the viruses are new or simply newly identified.

One of the papers by Dr. Robert C. Gallo, chief of the NCI Laboratory of Tumor Cell Biology, and his colleagues, in collaboration with the New York Veterans Administration Hospital (affiliated with New York University), reported the isolation of an HTLV virus from T-cells of a patient with AIDS. The paper also reported that two other AIDS patients had T-cells with proteins

from the core of the virus, suggesting that they also were infected.

In another paper from Dr. Gallo's laboratory, Dr. Edward Gelmann and NIH laboratory and clinical colleagues and the New York Veterans Administration Hospital and New York University, reported that 2 of 33 patients with AIDS had the genetic sequences of an HTLV virus in the DNA of their T-cells. This indicates those cells were infected by the virus. When tested at a later time, the patients' T-cells showed no evidence of the virus.

### Meaning Uncertain

However, the scientists detected antibodies in the patients' blood to core proteins of the virus. Antibodies to core proteins are found only when the virus is actively reproducing in the target cells. The precise meaning of these findings is not understood yet, Dr. Gallo said.

Dr. Max Essex and other scientists from the Harvard School of Public Health and the Centers for Disease Control provided the first report of a striking increase in HTLV-related cell surface antibodies in AIDS patients.

A group of homosexuals with lymphadenopathy but not AIDS also had relatively high levels of HTLV antibodies. It is not known whether lymphadenopathy is an early stage of disease that may lead to AIDS. The antibody levels of both groups were compared to matched healthy homosexuals, whose tests for these HTLV-related antibodies were essentially negative.

Dr. Gallo directed the research that led to the first isolation of a human retrovirus in 1980. This is the virus called HTLV. Since then, the virus has been reisolated several times by Dr. Gallo and his colleagues, and by other investigators in this country and abroad. □

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## Elvira Carter Dies; Former NIH Employee

Funeral services were held May 11 at St. Ambrose Catholic Church in Cheverly, Maryland, for Elvira Deasar Carter, a retired NIH employee, who died suddenly, May 8, 1983.

Mrs. Carter worked as a data transcriber in the Division of Computer Research and Technology from 1965 until her retirement in 1978.

Her husband, James V. Carter, who has served since 1968 as an aide and driver to NIH Directors Marston, Stone, Fredrickson, and Wyngaarden, is one of the best-known members of the NIH community.

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Our chief want in life is someone who will make us do what we can.—*Ralph Waldo Emerson* □

## 3-D Microscopic Viewing Devised at Oak Ridge

A team of researchers at the Oak Ridge National Laboratory in Tennessee, headed by Drs. Donald E. and Ada L. Olins, has developed a new technique for visualizing the three-dimensional structure of biological specimens viewed in an electron microscope. This will enable scientists to observe spatial relationships within cell structures with greater accuracy.

The technique, which the researchers call electron microscope tomography (EMT), uses an image-processing computer system somewhat similar to that in a CAT scanner (where it produces cross-sectional images of internal structures in the human body).

In EMT, the computer uses tiny gold spheres absorbed on the specimen as reference points to align a series of electron photo-micrographs (photos made with an electron microscope) with each other.

The image-processing system then reconstructs the three-dimensional object, which can be viewed on a television screen with 3-D glasses.

The Olinses' work on EMT is an outgrowth of their research on basic chromosome structure and function and, of their need to know the three-dimensional structure of chromosomes in various active and inactive states.

They have been involved for many years in the studies of the macromolecular structure of chromosomes, and were the first to observe the fundamental subunit of the chromosome—the nucleosome—with the electron microscope.

In an article published in the Apr. 29 issue of *Science* magazine, the researchers describe their use of EMT to define the three-dimensional arrangement of newly synthesized RNA within a highly active gene that is present in chromosomes of the water midge, *Chironomus tentans* (an insect model for these studies).

Collaborators and coauthors on the *Science* paper were S. David Dover, of the University of London, who developed an earlier, limited version of EMT, and Richard C. Durfee, Stephen M. Margle, Ed P. Tinnel, and Henri A. Levy of the Oak Ridge National Laboratory.

The laboratory is operated for the Department of Energy by Union Carbide Corporation's Nuclear Division.

The work was supported by the National Institute of General Medical Sciences, the Department of Energy, the American Cancer Society and the Wellcome Foundation. □

### FAES Sponsors Art Lecture

The Foundation for Advanced Education in the Sciences, Inc., is sponsoring a lecture on "What's Happening in Los Angeles Art?"

It will be presented by Jan Myers and B. J. Wilson, both from Southern California, on Friday, June 3, at 8 p.m., in Bldg. 10, ACRF Little Theater (in the Visitor's Center). □