

Human Retroviruses and AIDS

Proceedings of the Symposium,
Taipei, Republic of China, November 11-13, 1988

Sponsored by:

Academia Sinica;
Department of Health, Executive Yuan;
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Edited by

Che-Yen Chuang, Cheng-Hua Chuang and Chun-Jean Lee

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Department of Health,
Executive Yuan
Department of Health,
Taiwan Provincial Government

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Front cover: The New Park, evening gathering-place of homosexuals,
in downtown Taipei.

Message by the President of the Academia Sinica

Dr. Ta-You Wu

Mr. Chairman, Distinguished Guests:

I am indeed honored and pleased to have been invited to address the opening ceremony of this Symposium on Human Retroviruses and AIDS, being held in the Republic of China. On behalf of the Government and of the Academia Sinica, I would like to extend a very warm welcome to the distinguished medical professionals from around the world who have joined us here. To each of you, I express my sincere respect for your outstanding contributions to the health and welfare of mankind and thank you for your participation these few days.

The world is changing, and human retroviruses have played a part in that change. Few fields of biology have produced more scientific excitement than viral oncology. The isolation and characterization of human T-cell leukemia/lymphoma virus (HTLV) and human immunodeficiency virus (HIV) have resulted in a much better clinical definition of adult T-cell leukemia (ATL) and of acquired immunodeficiency syndrome (AIDS). It is evident that the advances made through world-wide study of AIDS owe much to the knowledge obtained in the course of research concerning ATL.

ATL and AIDS have invaded Taiwan. Though the prevalence is presently low, active counter-measures should be taken immediately. It is our hope that this symposium will serve as a forum for exchange of scientific information, which will in turn promote international cooperation and upgrade the quality of related research in Taiwan. This can be of great benefit to mankind in general.

This evergreen island of Taiwan is well known not only for its scenic beauty but also for the rich Chinese cultural traditions to be explored here. I extend to each of you a cordial welcome and our hospitality. We are confident that our guests and their families will enjoy and profit from their visit to Taiwan, the Republic of China.

Address by the Director-General, Department of Health, Executive Yuan

Dr. Chun-Jen Shih

Dear Colleagues:

Over the past seven years, acquired immunodeficiency syndrome (AIDS) has become a world-wide "Public Enemy Number One", and the people of Taiwan have not been spared from the menace presented by adult T-cell leukemia (ATL) and AIDS.

An Advisory Committee for the control of AIDS was founded in May 1985 in the Department of Health. A total of 481,389 serum samples from various risk groups have already been tested for AIDS antibody. Among 929 homosexuals, 30 were positive (3.2%); 14 had symptoms related to AIDS. Among 270 hemophiliacs, 39 were positive, of whom only 2 had symptoms. Since the beginning of 1988, the number of patients with AIDS and carriers of human immunodeficiency virus (HIV) has increased dramatically in Taiwan. Thus, I believe that it is the most useful to hold the symposium on ATL and AIDS.

Traditionally and culturally, homosexuality has been and is regarded as a disgrace by ethnic Chinese people. Thus, attempts to investigate the actual prevalence of AIDS in this group are greatly hampered by the difficulty of approaching them. In Taiwan many of the homosexual carriers will not declare themselves until they are at terminal stage of AIDS. Sex is not a matter we Chinese are used to talking about directly; we feel uncomfortable in doing so. I can easily understand that attitude, but the time has come for more open discussion in schools, in churches and temples, and at home. Sexual issues can potentially affect each of us, and we must recognize that and educate our children to do so.

It is striking how similar the problems from ATL and AIDS are in different countries and cultures, and we have much to learn from each other. We hope that your joint efforts, your contributions will be major steps toward finding

solutions for the difficult and growing health challenges ahead, both here and abroad.

I look forward to the symposium with much anticipation, and our wish is that each of you leaves Taiwan enriched in knowledge and in spirit by having joined us here.

adult T-cell leukemia in this country and world-wide.

May I express my appreciation for so many having travelled this long distance to contribute to a joint effort to stop AIDS. We wish you a pleasant stay in this beautiful country, the Republic of China.

**Address by the Director-General of the
Department of Health,
Taiwan Provincial Government**

Dr. Chun-Jean Lee

Mr. Chairman and Distinguished Guests:

It gives me great pleasure to extend to each of our colleagues - the distinguished guests from many countries of the world - a warm welcome to our professional gathering and to this beautiful Island.

It is a modern plague - a horrible pandemic of the century. AIDS has been identified only within the past ten years in central Africa; from there it quickly spread to Haiti and then to the U.S. and to Europe. It came very late to Taiwan: in December 1984 an American transiting Taiwan was found to have full-blown AIDS. This triggered our first major concern over the fatal disease. However a rapid increase in the number of AIDS patients locally, the spread of the disease to other parts of Taiwan, development of AIDS among HIV carriers in hemophiliacs, the diversification of risk groups - all have followed the same pattern seen in Western countries and throughout the world.

Rapid advances of scientific knowledge about HIV and AIDS were made possible by the discovery in 1978 of the first human retrovirus, the HTLV-I which causes leukemia. Taiwan is located close to Kyu-Shu and Shi-Koku, areas in Japan where ATL is endemic; and we must watch closely the future of ATL there. It is true that many reports convey discouraging results concerning the risks of AIDS and ATL after a decade of follow-up of these two diseases: the involvement of the central nervous system, the difficulties in producing an effective vaccine, and the side effects of new antiviral agents. No one can help but be impressed by the complex basic and clinical problems presented by both ATL and AIDS. It is justifiable to say that the effort to try to meet them has evoked global mobilization of biomedical and social sciences for a joint fight against retroviral infection.

Address by the Chairman of the Symposium

Dr. Che-Yen Chuang

On behalf of the Organizing Committee of the Symposium on Human Retroviruses and AIDS, I extend to all of our colleagues a sincerely warm welcome.

At no other time in the history of medicine has so much progress been made in so short a time on so complicated a disease as the acquired immunodeficiency syndrome (AIDS). Despite these efforts, and the accomplishments to date, the incidence of AIDS continues to increase worldwide. Infection with human immunodeficiency virus (HIV) has been recognized in all areas of the world, except Antarctica. AIDS has also been reported from many Asian countries which are Taiwan's neighbors, causing great public anxiety about the increase of this horrible disease on our Island, which is so often the goal of international travellers.

With regard to AIDS, Taiwan is far behind, both in terms of epidemiological data collected, and the quality and quantity of the research to date. Even the very few cases of AIDS thus far identified here, have created big problems. However, from these relatively few patients, we have obtained a great deal of information. The first case of AIDS positively identified in a Chinese had extensive CNS toxoplasmosis, visceral Kaposi's sarcoma, and disseminated cytomegalovirus infection with an Addison's disease-like manifestation. Moreover, HIV-like virus was demonstrated from the adrenal medulla. In another case, hepatocellular carcinoma co-existed with AIDS.

An AIDS epidemic in Taiwan on the scale of that presently ravaging the U.S. is, we sincerely hope, unlikely. However the risk groups here have diversified into female prostitutes, and I cannot venture to predict where we may go from here in the future. It is my sincere hope that this Symposium, with its review of the most recent advances by world-famous specialists, will bring forth new light on adult T-cell leukemia and AIDS, suggest measures for their

We know that you all have a very tight professional schedule and important tasks to accomplish here. However, we do hope that during your stay in Taiwan you will have an opportunity to learn more about our country and people and that each of our foreign guests can come to know personally many of our scientists of whose work and whose future we feel, I think, justifiably proud.

treatment and abolition, and help not only Taiwan but all areas of the world suffering this scourge to address the problem effectively, at the earliest date.

Taiwan is a magnificent Island. Its rich Chinese cultural heritage can be found all about you. We greet you cordially. We are confident that our guests will enjoy, and profit from, this visit to Taiwan, the Republic of China. Finally, I would like to thank the Academia Sinica, Departments of Health and National Science Council..... Without their scholarly confidence, active financial support, and hospitality this Symposium would not have been possible. We feel fortunate to have worked in concert to bring this distinguished audience - from both home and abroad - together.

Opening Remarks

Robert C. Gallo

First before I begin, there were lots of extra generous remarks just made, but the most extreme one was about the 700 papers on AIDS. That is my whole entire life's publications, not all AIDS ! I would like to think that I was before there was AIDS, but I am not too sure. Let me be more formal now and begin properly.

Minister and Commissioner, Deans, Members of Academia Sinica and friends and always special friend, Charlie Chuang. I tried to think of what to say before while I was sitting down because I only found out while I was walking in that I was supposed to say something new. I thought maybe I would emphasize one of the points that Dr. Huang KY mentioned at the beginning about the over-confidence that science and medicine had about infectious disease. He quoted a paper in Science from 10 years ago saying that influenza was the last significant epidemic disease. That very same title, by the same individual actually, was a famous lecture at NIH the year before it appeared in that paper. It was called the Dier Lecture and it was the year before I was to give the Dier Lecture. The year that I gave the lecture, the title again said that this was the end of significant infectious disease. That was 1980 and I said in my talk that human tumor viruses - the search for some is over. In these general remarks, let me go far back into history. Remember that it was three hundred years ago that microorganisms were first seen by a microscope. Of course it was first done by a Dutchman with no education. I think he had jobs like being a janitor. He ground a lens, kept working, became curious and discovered microbial agents. He did not know they would cause disease. Then about two centuries ago, an Italian, Spelenzani, demonstrated that these agents could reproduce and that they could produce biological effects. They could make meat decay. He did some experiments that really ruled out spontaneous generation but they were not completely believed. He too did not link them to disease, even though he knew they were biologically active. One hundred years ago, several scientists, but

notably Robert Koch in Germany and Louis Pasteur in France, above all, linked microbial agents to the causes of human disease. It was also about a century ago that viruses were discovered: foot and mouth disease, a virus of cattle; and tobacco mosaic virus, of the tobacco plant, were discovered. And even before they were discovered, Pasteur was playing around with dogs that had rabies; transferring rabies from one dog to another without knowing what he was transferring, except that it was very small.

It was about three quarters of one century ago that the first retrovirus was discovered by two Danes. It caused leukemia in chickens, but they did not isolate it. And the credit for the real isolation was given a few years later to Rous in New York City. These retroviruses were linked to some cancers - leukemia, sarcoma, lymphoma of chicken. It is about one half century ago that in many different mammals, the same kind of viruses were found. And they were linked to the causes of many different kinds of cancers, but especially to leukemia/lymphoma, and even sometimes to non-malignant disease: brain disease, neuro-degenerative disease, anemias and so on. This history, all of the discoveries listed, and of course, many hundreds more that one should mention, combined with the development of better hygiene, combined with better social conditions and combined with the discovery of antibiotics and other antimicrobial agents, meant that the status of infectious disease as an important problem for developed nations of course declined dramatically. And thus there was, as Dr. Huang mentioned and as I have mentioned, a big increase in confidence by many people that such things were of little concern for the future. They were really of the past and scientific efforts should be directed elsewhere. In fact, 10 years ago not only did that publication appear, or did talks like that appear, but at the Institute where I work, they terminated the virus cancer program. That work was finished because viruses could not really be important in human cancer. So this was all coming together about 10 years ago. Ten years ago it was widely believed among scientists and stated by some very openly, that retroviruses were interesting for the study of cancer of animals, but that they could not exist in people.

One of the most important lessons to learn from all of this is that nature should never be taken for granted. Humans, like other animals, are in a delicate equilibrium with a vast number, a sea of microorganisms. This balance can change. It can change because of mutation in the microorganisms that we cannot

control. It can change if a new microorganism enters humans from an animal. It can change if a microorganism in a small population becomes present in a much greater population, due probably to changing human habits. So the first lesson is that we can not ever take nature for granted. The second lesson is that we should always consider changes in human society when we predict from the past for the future. That is, we should soften our predictions if we have changed our habits. Thirdly, I think a lesson also, is that we have powerful biomedical technology. It may not necessarily be working on a certain virus, but it is biotechnology and basic research that can quickly be applied to a specific area when needed. So it's important to have a broad base of scientific finding and basic scientific research, so that one can move quickly, in order to have what we might call, a window on a given field of microbiology, as it is needed.

I guess that we can also say that there was the lesson of our failure to appreciate major changes in human habits in this century: the development of the airplane, the use of blood and blood products, the crazy habit of intravenous drug abuse, and the increase in sexual contacts of people all over the world. This made it possible for what was rare and remote, to become much more common and much more global. There is another point we should keep in mind. You may remember a famous book by Sinzer called Rats, Mice and History. In that book, Sinzer states that an epidemic of a certain disease never occurs in a vacuum by itself. What ever is responsible for one microorganism spreading widely very likely means that other microorganisms are spreading by the same kind of pathway. And these may be agents we have not yet discovered. There is already a serious suspicion, as you will hear at this meeting, that other retroviruses, not just the AIDS virus, are spreading slowly, more slowly, but reaching populations of the world in which they were not present, 20, 30, 40, or 50 years ago. I am speaking of course of the HTLVs. So with that introductory remark, I would like to close by saying that I believe that although Charlie spoke pessimistically that Taiwan is behind in epidemiology, behind in everything; that Taiwan is important and will play an important role in this disease and in related science. And I think you are likely destined to play a larger role in the future, not only of Taiwan, but of your brothers and sisters present all over the world for the simple reason that the talent of your people seems to me to be irrepressible. This meeting does demonstrate your interest in the problem, and I think it will demonstrate my other point about the quality that you have. Thank you.

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