January 1 to December 31, 1985

President's Cancer Panel

Report of the Chairman

U.S. Department of Health and Human Services

Public Health Service

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President's Cancer Panel

National Cancer Program National Cancer Institute

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February 13, 1986

The President
The White House
Washington, D.C.

Dear Mr. President:

As Chairman of your Cancer Panel, it is both my duty and my privilege to report to you on the status of the National Cancer Institute (NCI). Enclosed is my latest report. My two distinguished colleagues on the Panel, Dr. William P. Longmire and Dr. John A. Montgomery, both have been of enormous assistance in this effort. Dr. Elliott Stonehill of the National Cancer Institute has served as Executive Secretary of the Panel, and his efforts have been most helpful to the Panel.

I would like to point out a few highlights of the report. The first and foremost is the work, of which you are already aware, of Dr. Steven A. Rosenberg of the NCI using lymphokine-activated killer cells (LAK) and interleukin-2 (IL-2) in a most promising new treatment of cancer patients. Dr. Rosenberg's work continues to show favorable results, and I believe that this may be a major breakthrough in our efforts to stop the ravages of cancer. With the addition of money to fund a substantial number of clinical trials around the country using Steve's protocol, we could move the cancer effort a quantum step forward, saving many lives which otherwise would be lost. I do hope you and your advisors will give most serious consideration to this possibility. In 1985 I contributed over $500,000 to push this work forward at other cancer centers, but much more money is needed. You can be sure I will continue my personal efforts to make this treatment widely available throughout the country.

One of those efforts was a most successful conference which I sponsored in September 1985, at the Salk Institute in La Jolla, bringing together the leading experts in the field of so-called "biological" approaches to cancer treatment. Discussions were held concerning not only the LAK and IL-2 treatment, but tumor necrosis factor (TNF), monoclonal antibodies, and interferon, all of which use natural products of the body to fight disease and which can be applied to cancer treatment with very promising results. The experts at the conference were very encouraged with the reports they heard and exchanged information which should help move research farther at an expanded rate. The NCI has established a special research program to intensively explore applications of these substances called biological response modifiers.

In the important area of prevention and control of cancer, the NCI has programs on reduction in smoking, on dietary modification, on early detection of cancer, and on the accelerated and widespread application of the latest cancer treatment regimens. Although the effect of these programs may not be evident immediately, they should substantially reduce cancer deaths in the long term. It is very important that these programs continue to be supported by the NCI.

My colleagues and I hope the information in this report will prove useful and informative to the Administration and will be studied carefully.

As always, Mr. President, be assured of my deep gratitude for your confidence in me in designating me as Chairman of your Cancer Panel, and my continued dedication to effectively carrying out the responsibilities of that position.

With best personal regards,

Sincerely,

Armand Hammer

Chairman

1985 CHAIRMAN'S REPORT TO THE PRESIDENT

During 1985, the President's Cancer Panel witnessed very exciting and remarkable progress in cancer research in this country. These advances were made at the National Cancer Institute (NCI) in Bethesda and in affiliated laboratories and hospitals nationwide, in research programs supported by the NCI.

Continuing the successful approach initiated in 1981, when I was first appointed Chairman of the President's Cancer Panel, we visited five important regional cancer centers in the Nation this year. These were major academic and clinical facilities in Seattle, Honolulu, Philadelphia, Baltimore and New York. My Panel comembers, Dr. William P. Longmire and Dr. John A. Montgomery, and I observed the progress, problems and accomplishments at these centers, focusing attention on the most important and innovative developments in cancer research and steps taken by the NCI to achieve its goal of a 50 percent reduction in U.S. cancer deaths by the year 2000. The Director of the National Cancer Institute, Dr. Vincent T. DeVita, Jr., and appropriate members of his staff, accompanied us during these visits.

However, I feel that a 50 percent reduction by the year 2000, which would mean approximately 200,000 would still die each year for the next 14 years, while feasible, is not sufficient. In view of the progress made with enhancing the body's immune system to fight cancer at the National Cancer Institute and other cancer centers such as Memorial Sloan-Kettering, M.D. Anderson Hospital in Houston, Dana Farber's Boston Center at Harvard, the Jonsson Center at UCLA and others, I believe this goal is too low and we should be aiming at the substantial eradication of cancer by the year 2000.

Dr. Lloyd Old of Memorial Sloan-Kettering, one of the most respected cancer specialists in the U.S., recently told me that more progress had been made in the cancer field in the last several months than in the previous 25 years he has been in research. So the means to achieve our goals may be available, if we can only take advantage of them in an effective way.

This report will address the status of the National Cancer Program and its multiple facets as we have viewed them this past year.

Cancer Treatment

Substantial progess has been made in the treatment of cancers since the passage of the National Cancer Act and the establishment of the National Cancer Program in 1971. These advances are evidenced by a reduced mortality rate for breast cancer and greatly improved survival for testicular and ovarian cancers, childhood leukemias, and aggressive lymphomas.

However, we are still faced with the difficult task of improving the mortality from the most commonly occurring cancers, the so-called "solid tumors," i.e., lung, colon, breast, stomach, and pancreas.

The most promising and dramatic advance in cancer treatment this year was reported by Dr. Steven A. Rosenberg at the NCI. For the past decade, his research in immunology has explored mechanisms used by normal lymphocytes to attack and destroy cancer cells. He has demonstrated that a patient's own white blood cells can be stimulated by interleukin-2 (IL-2) to attack and destroy the patient's tumor cells.

These IL-2 armed white cells, called LAK or lymphokine-activated "killer cells," destroy tumors for months after administration in some cases, until the patient is clear of detectable cancer. It is important to recognize that this treatment has demonstrated effectiveness in 17 of 41 patients with the common "difficult to treat" solid tumors, such as lung, kidney, and colorectal cancers, and melanomas. Dr. Rosenberg's early results, using the adoptive immunotherapy procedure with LAK cells and IL-2, have been published in the prestigious, critically reviewed *New England Journal of Medicine* and have attracted worldwide attention. Steps are under way to confirm and extend these results in other centers.

The patients whose cancers have responded to Dr. Rosenberg's treatments have benefitted from a rapid series of scientific developments, which represent an excellent example of the speed with which exciting discoveries and developments are presently occurring in our knowledge of cancer and cancer treatment.

Dr. Robert Gallo and his coworkers isolated and characterized IL-2, originally named the "T-cell growth factor," in 1976. Dr. Tadatsuga Taniguchi of Osaka, Japan, reported in the March 1983 issue of the *New England Journal of Medicine* the discovery of the gene in T-lymphocytes responsible for the production of interleukin-2, and by means of genetic engineering was able to produce the substance in large amounts sufficient to be used by Dr. Rosenberg, and by others, in treatment of cancer patients.

It now seems that there are a number of substances that occur naturally in the body to maintain normal growth and development which may be utilized to stimulate

the body's natural defenses against cancer. The NCI has established a special research program to explore intensively the therapeutic applications of these naturally occurring substances called "Biological Response Modifiers." In addition to IL-2, this group includes thymosin, interferon, bombesin, and the tumor necrosis factor (TNF). Dr. Old is the chief proponent of TNF, and he started clinical trials at Sloan-Kettering. He thinks there may be some connection between TNF and IL-2. The use of recombinant DNA technology, referred to above, has made pure IL-2 and interferon available in sufficient quantities to conduct cancer treatment studies in a nationwide program.

Clinical trials of monoclonal antibodies have progressed this year at a heightened rate, following promising results in patients with chronic lymphocytic leukemia (CLL), T-cell lymphoma, colorectal and pancreatic cancer, and disseminated malignant melanoma. Current research involves the use of toxic substances linked to monoclonal antibodies which may then be used to kill specifically the targeted tumor cells. This type of therapy, combined with surgery, has been used successfully in the treatment of cancer of the liver, a cancer that has been largely unresponsive to previous treatments. A new sensitive diagnostic procedure uses monoclonals linked to radionuclides as detectors of extremely small tumors.

The Panel has recognized that collaboration among surgeons, radiotherapists, chemotherapists, and immunotherapists continues to improve the outlook for cancer patients. Combination therapy permits the use of less radical surgery when operations are supplemented by chemotherapy and/or radiation for patients with breast, rectal, prostate, and extremity cancers. Lumpectomy with radiation for early-stage breast cancer now appears to be an equivalent treatment to modified radical mastectomy, and salvages the breast.

In 15 years, breast cancer treatment has undergone dramatic revisions. Mutilating operations and poor survival are giving way to less extensive operative procedures and alternative treatment regimens, which preserve patients' bodies and prolong life of better quality. A former member of the President's Cancer Panel, Dr. Bernard Fisher at the University of Pittsburgh, won the prestigious Lasker Prize this year for his research work, done with NCI support, on the treatment of breast cancer.

Early treatment with chemotherapy has also demonstrated some encouraging results in rectal, head, and neck cancers, and childhood sarcomas. Surgery is now being used in a new way to remove lung and liver metastases and to successfully cure some patients with advanced colon cancer and sarcomas. An adjuvant study in colon cancer with very positive results is presently being repeated. Significant progress has also been made in therapy which overcomes drug resistance in certain metastatic cancers. Moreover, reseachers have recently discovered important biochemical mechanisms involved in the metastatic process, and for the first time, a model system is available which enables a scientific approach to combatting deadly metastases.

Prevention and Control of Cancer

Programs have been initiated over the past decade for cancer prevention, detection, and treatment techniques and have been disseminated to the widest possible population. In 1985, the NCI established several new programs to foster information transfer from the laboratory bench to the patient's bedside. A network has been developed which links basic science laboratories, cancer centers, cooperative clinical research groups, community oncologists, and practicing physicians. There is now wide access to PDQ, the new computerized data base which provides information on the latest cancer treatment directly to physicians nationwide. These networks have expanded through cooperation with state and local governments and private industry.

In 1985, the NCI expanded its research in chemoprevention and nutrition to identify agents capable of preventing or reversing the progression of cancer. This research will further identify dietary components that either induce or inhibit cancer. Folic acid, for example, is being studied in women with cervical dysplasia to try to prevent cervical cancer, and a low-fat diet is being studied as a preventive measure for breast cancer in women at increased risk. The NCI is supporting 25 clinical trials with chemopreventive agents or dietary factors believed to interfere with cancer progression in people at high risk for certain cancers. In addition, major prevention awareness programs are under way to reduce the incidence of several major cancers. These focus on the reduction of fat in the diet, and on smoking cessation.

In 1985, the incidence of lung cancer in white males decreased significantly for the first time, which correlates with the decline in smoking over the past 20 years. A reduction of 50 percent in smoking by the year 1990 alone, can lead to the saving of 75,000 lives annually by the year 2000. The public mood seems to be in the direction of smoking less. Lung cancer in American females, however, continues to increase, and is clearly related to increased smoking.

The NCI believes that diet and nutrition may be related to a significant number of cancer deaths and that screening and early detection could substantially reduce mortality for women with breast cancer. The NCI believes that the maximum national use of state-of-the-art cancer treatment would substantially reduce the mortality rate from cancer at some sites. Gains in treatment methodology, already reflected as improvements in survival rates for many cancers, can reasonably be expected to continue over the next 15 years.

To fulfill the NCI's goal of reducing cancer mortality by 50 percent by the year 2000, the Institute believes the following objectives must be met in four areas: a 50 percent reduction in smoking by 1990; dietary modification; early detection of cancer through effective screening; and accelerated and widespread application of the latest cancer treatment regimens. The Director of the NCI has established a national schedule, with annual benchmarks and ongoing monitoring systems, which I believe can assure the desired objectives.

The overall relative survival rate reported in 1985 for all cancer patients in this country has been estimated at approximately 50 percent. The public attitude toward cancer is one of fear and pessimism, in spite of steady progress in its management. Cancer is really over 100 different diseases. Many of them are curable by early available treatment, while others are not.

Cancers with the highest five-year relative survival rates are: thyroid, testis, endometrium, melanoma, female breast, bladder, Hodgkin's disease, and prostate. Unfortunately, survival continues to be poor for patients with pancreatic, lung, esophageal, and stomach cancers.

Human T-Cell Leukemia/ Lymphoma Virus (HTLV)

New associations of HTLV retroviruses with human diseases continue to be discovered in the laboratories of Dr. Robert Gallo and his associates. It is believed that the number of cancers caused by viruses has been underestimated in the past.

Over 15,000 cases of Acquired Immune Deficiency Syndrome (AIDS) have been reported in this country. The spread of this virus has been so rapid in high-risk groups that almost 90 percent of factor VIII-recipient hemophiliacs have been exposed to the virus.

A condition known either as pre-AIDS, lymphadenopathy syndrome, or AIDS-related complex is associated with early HTLV-III infections. During 1985, the NCI and the National Institute of Allergy and Infectious Diseases (NIAID) collaborated in developing treatments for AIDS patients, and several new drugs which show promise in early trials at the NCI and NIAID are about to be tested on a national scale.

Discovery of HTLV-III as the causative agent of AIDS created a demand for large amounts of the virus to enable the mass production of materials for screening tests and for potential vaccines. The Frederick Cancer Research Facility of the NCI produced the virus in sufficient quantities to allow the development of an economical and widely available assay which now protects the Nation's blood supplies. Licenses to produce and market the screening tests are held by several private industrial concerns.

Oncogenes

During the Panel's visits to the cancer centers and at meetings of the National Cancer Advisory Board, we have been presented with considerable evidence that cancer cell growth is probably controlled by oncogenes. Oncogenes are altered versions of normal genes involved in early embryonic development. In the cancer process, these dormant genes become active again due to the action of viruses, chemicals or radiation, or by gene rearrangement. Intensive studies are under way to characterize the 24 oncogenes and their protein products identified to date. The presence of oncogenes can be detected and the amount of their gene products measured by recombinant DNA and monoclonal antibody technologies.

Research at the NCI has identified oncogene products which are directly related to factors that are known to activate the unrestricted growth of cells. The production of abnormal proteins by these oncogenes may also enable cancer cells to metastasize throughout the body. Most cancer deaths result from metastases, not primary tumors.

One oncogene discovered by NCI scientists was found this year also to be a specific marker for cystic fibrosis (CF). This diagnostic oncogene will enable doctors to identify the 10 million Americans who carry the hidden recessive gene for CF, and to prevent the potential appearance of new cases. Cystic fibrosis is the most common fatal genetic disease in the Western world. There are at least 30,000 patients in the United States.

Conclusions

As Chairman of the President's Cancer Panel, I have examined the National Cancer Program in-depth in Bethesda and across the Nation. My colleagues and I have examined the basic research efforts, the clinical applications, and the progress being made toward prevention and elimination of those diseases collectively called cancer. One result of our regional Panel meetings has been an increased awareness of the diversity of the problems in various sectors of our Nation, and at the same time an appreciation of the great resources which are available to people through

the cancer centers and through the efforts of the National Cancer Institute.

It has been satisfying to see the magnificent outpouring of new scientific discoveries this past year, a harvest of true riches derived from the seeds planted in basic science supported by the Federal Government through the National Cancer Program. It is my view that the NCI, under its capable Director, Dr. Vincent T. DeVita, Jr., is working toward the NCI mandate to reduce the mortality and morbidity rates from cancer and is making great strides toward complete control of these diseases.

We as a Nation are spending over $400 billion annually on medical care, a great fraction of which is ultimately borne by the Federal Government. The bulk of this expenditure is for conditions that can be conquered or eliminated by research. I do not feel it is in the best interests of the Nation to spend only 1 percent of the cost of medical care on the only course open to us for the elimination or reduction of that cost. I believe the Nation would profit greatly if the Office of Management and Budget and the Congressional Budget Office increased expenditures for cancer research by two- or threefold. I believe we could see an almost immediate benefit from expanding the clinical trials of Steve Rosenberg's LAK and IL-2 protocol across the country. Such an expansion would cost approximately $20 million, but its benefits could be incalculable, both in saving lives and in lessening the economic costs of cancer to society as a whole. Dr. DeVita has authorized six centers to start these clinical trials, and the NCI is appropriating $2.5 million for this work. Although this is a good beginning, more funds will be needed in the future.

Dr. George Keyworth, before his retirement, was impressed by his meeting with Dr. Steven Rosenberg, which I arranged a year ago. Dr. Keyworth said in May 1985, "When Dr. Rosenberg has achieved successful results in the treatment of 20 cancer patients, I will speak to President Reagan and urge him to add $20 million to the NCI budget for the establishment of clinical trials at centers throughout the country using Dr. Steven Rosenberg's protocol." Dr. Rosenberg now has successful results with 17 patients. Mr. President, let's not wait any longer.

At present, our Nation's physical facilities for cancer research and medical education are in dire need of updating and replacement, as was found in a thorough study I helped to fund this past year and submitted to Congress and the White House. New laboratory and clinical research opportunities presently exist which can and should be made possible through increased support.

I believe under the present circumstances that this country is deriving the maximum benefit from its cancer research budget, but we should not delay the effort to maximize the best and most modern research efforts in the best and most modern physical facilities that this country can obtain.

This report has been prepared with the cooperation and approval of my colleagues, Dr. William Longmire and Dr. John Montgomery.

Armand Hammer

Dr. Armand Hammer, Chairman
The President's Cancer Panel

Concurred:

William P. Longmire J

Dr. William P. Longmire

John A Montgomery

Dr. John A. Montgomery

President's Cancer Panel

National Cancer Program National Cancer Institute

February 13, 1986

The Honorable George Bush
President of the Senate
Washington, D.C. 20510

Dear Mr. President:

As required by Section 415 (b) of the Health Research Extension Act of 1985, I am submitting herewith, as Chairman of the President's Cancer Panel, a copy of my Annual Report to the President of the United States. Section 415 (b) also asks that a copy be sent to the Speaker of the House; this is being done.

Because of your keen interest in our cancer research activities, I believe you will find this report of great interest as, according to one of our top researchers, Dr. Lloyd Old of Sloan-Kettering Cancer Center, more advances were made in cancer research in 1985 than in the past 25 years.

I shall also send copies of this report to certain key members of the Senate who might have a special interest in it.

With best personal regards,

Armand Hammer

AH:fa

Enclosure

President's Cancer Panel

National Cancer Program National Cancer Institute

February 13, 1986

The Honorable Thomas P. O'Neill
Speaker of the House of Representatives
Washington, D.C. 20515

Dear Mr. Speaker:

As required by Section 415 (b) of the Health Research Extension Act of 1985, I am submitting herewith, as Chairman of the President's Cancer Panel, a copy of my Annual Report to the President of the United States. Section 415 (b) also asks that a copy be sent to the President of the Senate; this is being done.

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Armand Hammer

AH:fa

Enclosure

President's Cancer Panel

National Cancer Program National Cancer Institute

February 19, 1986

The Honorable Otis R. Bowen
Secretary
Department of Health and Human Services
Washington, D.C. 20201

Dear Mr. Secretary:

I am pleased to enclose herewith a copy of the report I have submitted to the President covering the status of the National Cancer Program. As Chairman of the President's Cancer Panel, it is my responsibility under law to periodically submit such reports to the President, as well as to the Congress. Copies have therefore also gone to the President of the Senate and the Speaker of the House, as well as selected members of Congress.

I hope you will find the report of interest, particularly the reference to the work being done at the National Cancer Institute by Dr. Steven Rosenberg. As Secretary of the Department of Health and Human Services, you have every reason to be proud of the fine work being done at the National Cancer Institute under the leadership of its distinguished Director, Dr. Vincent T. DeVita.

With warmest good wishes,

Sincerely,

Armand Hammer

AH:ec

Enclosure

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