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BIOMEDICAL SUPERCOMPUTER WILL BE AVAILABLE TO NIH, EXTRAMURAL SCIENTISTS; NO PAYBACK PLANNED TO START

NCI's plans to buy a "supercomputer" and make it available to both intramural and extramural scientists are taking shape. The computer will be housed at Frederick Cancer Research Facility with high speed communications capabilities to enable scientists at NIH and institutions around the country to make use of its enormous power to attack research problems which can only be handled by

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In Brief

DCE BOARD NIXES NIH INTRAMURAL POSTDOCTORAL PROGRAM; MAGAZINES RAPPED FOR CIGARETTE ADS

NIH PROPOSAL to establish a new intramural postdoctoral program, already disapproved by the National Cancer Advisory Board and the Board of Scientific Counselors of the Div. of Cancer Prevention & Control, also was disapproved unanimously by the Div. of Cancer Etiology. NCI advisors have objected to the plan largely because it would pay trainees at substantially higher levels than those participating in the NIH Research Fellows Program. . . . **CORRECTION:** The Cancer Letter June 15 incorrectly reported that the four year contract recently awarded to Information Ventures Inc. for screening, indexing, abstracting and keying cancer literature was $3,361,272. The actual figure is exactly $2 million less. . . . **RICHARD SIMON,** chief of the Biometric Research Branch in NCI's Div. of Cancer Treatment, has been elected a fellow of the American Statistical Assn. Only five percent of the 16,000 ASA members hold that rank, the highest distinction which can be bestowed on a member. . . . **THEODORE COOPER,** former director of the National Heart & Lung Institute and former assistant secretary for health, has been elected vice chairman of the Upjohn Co. He has been executive vice president of the company. . . . **PETER GREENWALD,** director of the Div. of Cancer Prevention & Control, recently did a survey of some of the magazines looking for the number of cigarette ads carried in each. The supposedly wholesome, family oriented "Better Homes and Gardens" and "Redbook" led the list with 13 and 11, respectively, in the May issues. "Family Circle" wasn't much better, with nine (April 17) and "Time" had six (April 30). The best: "Good Housekeeping" and "Seventeen," each with none. "We all know that much advertising is directed at blue collar workers, Black and Hispanic populations, women, and youth," Greenwald said. "These groups might wonder whether their lives are being targeted for someone else's profit. In regard to fiber, the difference is that with diet, we are talking about physical fiber, and with smoking, moral fiber."

DCBD TO OPERATE NCI SUPERCOMPUTER AT FCRF WITH PEER REVIEW OF ITS USE

(Continued from page 1)

such a machine. It will be the only supercomputer in the country dedicated solely to biomedical research. Best of all, use of it will not cost scientists a dime, at least for the first few years.

The computer will be operated by the Laboratory of Mathematical Biology in the Div. of Cancer Biology & Diagnosis. DCBD Director Alan Rabson has had the assistance of Jacob Maizel, presently a section chief in the Laboratory of Molecular Structure in the National Institute of Child Health & Human Development, in developing plans for the computer. Rabson and Maizel discussed the project with the DCBD Board of Scientific Counselors at the Board's meeting last month.

Rabson emphasized that NCI does not intend to charge for time on the computer, although a system probably will be set up in which requests for use of it will undergo peer review. "We want to encourage people to use it," Rabson said. "We do not want them to feel that money is draining away with every tick of the clock."

"We've said we won't seek reimbursement or payback," NCI Director Vincent DeVita also told the Board. "It ought not be restricted to those with computer costs built into their budgets or grants. For the present time, there will be no cost recovery."

"You mean like an opium dealer," Board member Stewart Sell commented. "Once people get addicted, then you start charging them for it."

Maizel described the plans as developed so far:

"There is growing awareness in the scientific community and the nation that we should be applying the new high speed computer technology to problems in biomedical research. In fact, it is often stated that availability of the most powerful computers changes the scope of creative imagination. With this powerful new computational ability, new problems can be defined and approached in ways that didn't previously exist. At the present time the U.S. does not have a single supercomputer devoted to research in the biomedical sciences.

"The practical utility of a supercomputer would be quickly realized in such areas of research as nucleic acid and protein sequence analysis; crystallography; three dimensional structure analysis of macromolecules; three dimensional graphic representation of molecules; and analysis of digital images of biological specimens.

"A number of considerations has led us to plan to acquire a supercomputer.

"1. The machine should service advanced biomedical research with emphasis on molecular biology, an important part of NCI's intramural and extramural programs. Research problems that are too large for existing machines or would provide new insight through high speed answers to questions could be run on this machine.

"2. To ensure that research functions remain the supercomputer's central activity, the operation should be closely coupled with the researchers so that scientists can have direct control over its operation. Only in this way will such a machine serve the scientists rather than the scientists serving the computer center. It is a recurring theme in scientific computing workshops that traditional computer center policies for accounting and resource allocation have made it nearly impossible to do large scale research computation on the fastest available machines.

"3. Availability of this kind of research computing power without charge to scientists will serve as a valuable resource for the National Cancer Program, NIH and the biomedical community. NCI would be in the lead position in applying the best proven technology to cancer and general biomedical research. Most of the applications will be of interest to all the NCI divisions and the FCRF basic science contract. The opportunity will be available to researchers who want to make special programs for design of drugs, for analysis of treatment, for sophisticated analysis of data bases, and surely other projects that will arise as the biomedical community becomes aware of this capability.

"Several additional considerations have led us to conclude that such a facility should be located at FCRF.

"1) Availability of space and the presence of research programs in molecular oncology, cell biology, and sequence analysis led to the conclusion that FCRF would be the best environment in the NCI-NIH domain that could house such a machine for research purposes.

"2) Operation funding and support personnel can be provided through the contract mechanism at FCRF, with its attendant advantages of flexibility and responsiveness.

"3) New developments in communications have made high speed link up between Frederick and Bethesda possible, and these capabilities are increasing. At this time two commercial high speed lines (56,000 bits per second, or approximately 5,600 characters per second), and access through the NIH data switch are proposed. One high speed line would link a computer of the NCI Laboratory of Mathematical Biology in Building 10 with the front end of the supercomputer at FCRF; the other line would be available for connection to the Div. of Computer Research & Technology of NIH or other computers in any of a number of ways if desired. By standard

connections the machine could be available from anywhere. At the outset, this level of accessibility would be sufficient for transfer of printed results. Work requiring very high speed online access such as image analysis could be accomplished at FCRF. Shuttle transportation exists between the main campus and FCRF.

"Some biomedical applications in which the supercomputer would have immediate impact are:

"1. Sequence analysis. The best way to discover relationships between genes is through their nucleic acid and protein sequences. An example is the relationship of platelet derived growth factor (PDGF) and the "sis" oncogene product. Other examples arise daily. Published nucleic acid sequences are entering the Genbank collection at a rate in excess of 100,000 bases per month from journals. The present size of the collection is 2.8 million bases. A highly desired and essential analysis is to compare all new sequences with existing ones in the data base. Tests for identical sequences are needed, along with ones that detect subtle relationships indicative of functional relationships between genes and their products, if we are to understand the complex interaction of macromolecules in normal and abnormal cells.

"To compare the sequences by the most thorough programs currently in use would require dozens of our typical research computers working continuously. The VAX 11/780, a widely used high speed computer by the Digital Equipment Corp., is often regarded as the standard for comparison. About 30,000 hours or 40 VAX equivalents of time per month would be required. Even quick programs that skim through the data in various ways would take hundreds of hours each. But that is only half the problem because some of the most important analyses use the protein sequences derived from nucleic acids. Since there are spliced genes, overlapping genes and genes on either DNA strand this must be done for all possible translations, leading to some 200,000 amino acid residues to search per month. The problems are similar but somewhat more sophisticated for detecting protein relationships. At minimum, the time needed would double.

"A supercomputer is typically 30-150 times faster than a VAX and could perform these analyses fast enough to keep up with the published data. Its first priority would be to examine the estimated tens of thousands of bases per month of newly determined sequences being generated in NCI and NIH. These should be analyzed in the fullest possible detail before they are published. There are some decisions concerning sequencing strategies that would benefit greatly by an almost immediate search of known data. Rapid changes could be made to reach the goals most efficiently. As investigators desire more penetrating questions and hypothesis it will be necessary to retest many of the sequences examined previously.

"Another computationally intensive area of increasing importance is the prediction of RNA structure from sequence data. This property is important for regulation of expression and processing of mRNA and interactions between proteins and nucleic acids. The only computer currently suitable for these calculations on most mRNAs is a VAX in the National Institute of Child Health & Human Development. One thousand bases uses two and a half hours on a VAX. For 2,000 bases it increases to 24 hours. There are likely to be dozens or hundreds of such structures to be done per month.

"2. Crystallography. An area of proven and increasing importance that is expanding rapidly is the use of computation in x-ray crystallography. Crystallography research is in iteself becoming more, and more active, driven to some extent by a possible new solution to one of its most vexing problems, namely obtaining pure material for crystals. Molecular cloning promises two great contributions to this research. One is the ability to produce quantities of pure proteins that are otherwise impossibly scarce and the other is the possibility of altering their sequence under the combined guidance of molecular biologists and crystallographers. With these capabilities, knowledge on structure and function of proteins will expand enormously. As the knowledge grows and the ability to look for relatedness in three dimensions develops through the use of stronger computers, we can expect more and more success at understanding molecular oncology and other molecular diseases.

"3. Molecular dynamics. A crystal structure is a static representation of a molecule. In reality the different parts of a protein can move to interact with substrates and regulatory molecules. One of the most exciting ways to examine these properties is molecular dynamic calculations. Starting with a single structure all the atoms are moved step by step as predicted from classical laws taking into account changes in times and interatomic forces. In this way dramatic movies of the opening and closing of catalytic sites and the writhing of protein chains have been made. They completely change our mental image of proteins. The computation methods are much like those of crystallography except that thousands are needed to cover the steps needed to represent significant transitions from one molecular state to another. Similar methods are used in predicting how drug molecules interact with proteins and how a modified protein sequence would differ from its parent.

"4. Three dimensional graphic analysis. Methods similar to those of molecular dynamics can be used

to display drawings of proteins in three dimensions. To obtain maximal use of this method in the design of drugs and proteins, very fast computation and transfer of data is needed. This can be achieved if the computer is capable of interactive operation as is the supercomputer. The expected increase would be 50-100 fold and the graphic capabilities are already proven.

"5. Image analysis. Analyses of large digital images obtained from radioautograms, light micrographic images of cells, electron micrographs of cells and molecules and Fourier analysis of images need speeds that cannot be obtained on ordinary machines. The speed of the supercomputer will greatly facilitate these studies.

"6. Rapid analysis of data base. Large databases of patient information, clinical observations, mutations, sequences, two dimensional and three dimensional images will require larger and rapid retrieval capabilities. An appropriate supercomputer has, in addition to its fast central processor, a number of special processors that move data very fast from discs to core memory. The speedups are large, and vary depending on the exact applications." and vary depending on the exact applica-

Rabson noted that NIH has had some concerns about the project but has agreed to support it.

An advisory committee which will review requests for time on the computer will be established and will be a committee of the DCBD Board, supplemented with additional expertise, Rabson said.

Maizel, answering Board member Nelson Fausto's question on how fast that type of computer becomes obsolete, said that better equipment probably would be available in five years. "The machines don't become worthless even when better ones come along. They probably are redeemable at 80 per cent of the price."

Maizel said that it will require a little more than a year to renovate the space at FCRF for the computer and get it installed.

Board members expressed some concern that purchase of the computer would be done at the expense of support for grants. DeVita explained that "in a billion dollar budget, some dollars fall out at the end of the year" through negotiations tightening up contracts, changes in procurement plans, and other reasons. Some of that money is used to fund additional grants, but "if we do too much, that would commit more money (for the subsequent years of those grants) than we have. We can't do what the Defense Dept. does and spend more than we have. But we can use some of that money for one shot spending. With the flexibility we have that money will be used to purchase this equipment. We will have sufficient money to put into the Frederick contract to pay for this equipment. Although it is an expensive piece of equipment, with a billion dollar budget, we ought to be able to take a risk like this. How to handle the use of it, the peer review of the use as a shared resource, shouldn't be difficult to solve."

"What will it cost to run this a year, bearing in mind that the service contract is not negligible?" Board member Bernard Amos asked.

"The service contract will be about a half a million a year," DeVita said. As for operating costs, "I can't tell you because I don't know. We'll provide the support, and redirect resources at Frederick to do it."

"The prime outside users will be people trying to develop new approaches," Board Chairman Matthew Scharff said, ending the discussion.

ACS TO MAKE AVAILABLE $1.5 MILLION IN ANIMAL INTERFERON FOR LAB USE

The American Cancer Society announced this week that it will spend up to $1.5 million on newly available mouse and rat interferons for laboratory studies.

The animal interferons, made commercially through recombinant DNA technology, will be purchased by ACS and supplied to researchers. It will help investigators to optimize doses and schedules of human interferon used to treat cancer patients, according to Frank Rauscher, ACS senior vice president for research.

"Thus far, ACS has spent $6.8 million on interferon research, mainly to determine whether it had any potential as an anticancer agent," Rauscher said. "We've found that it has, but until now we've had to postpone detailed pharmacological studies routinely performed in animals before a drug is tested in patients."

Such studies were impossible before animal interferon became available because interferons are species specific. So far, ACS and NCI sponsored trials have revealed that human interferon is active against kidney cancer, melanoma, breast cancer, Kaposi's sarcoma, and certain types of leukemia and lymphoma.

"But without the results of animal studies to help us plan and refine interferon treatment, we've been something like a jet pilot who knows how to taxi his plane around the runway but hasn't found the controls needed for a takeoff," Rauscher said.

At least three major classes of interferons are made in mammals, including man and mouse. These can be produced separately, in unlimited quantities and in very pure form, thanks to genetic engineering. The different types of interferons could be used individually to treat cancer patients or in

various combinations and combined with conventional chemotherapy and radiation.

"The possible treatment strategies are infinite, but it would take years to find out the best one for each type of cancer if we had to rely on what we can learn from using interferon in patients," Rauscher said. "Now that animal interferons can be assessed in laboratory animals, we may start getting preliminary information in a matter of months."

The mouse and rat interferon studies will be performed by independent investigators at institutions to be chosen this summer by an ACS advisory committee.

DCE BOARD APPROVES CONCEPT FOR NEW STUDY ON BLACK/WHITE CA DIFFERENCES

The Board of Scientific Counselors of NCI's Div. of Cancer Etiology gave concept approval to a $2.5 million, four year investigation of tumors that occur excessively among blacks, to be funded through a contract, at the Board's recent meeting. Approval also was given to the recompetition of nine existing contract supported projects at a total estimated cost of $17.9 million.

Staff description of the projects:

Investigations of tumors that occur excessively among blacks. Proposed first year award, $1.5 million, total over four years, $2.5 million.

Racial variation in cancer incidence and mortality is one of the most useful descriptive epidemiologic tools in developing hypotheses about cancer etiology, as best illustrated by the differences in cancer risk between Orientals and Caucasians. With some notable exceptions (e.g., studies of South African Bantus), there has been little systematic evaluation or pursuit of differences in malignancy risk between Blacks and Whites. Within the past 20 years, however, malignancy has become an even more significant problem for Blacks in this country than for Whites. The overall cancer mortality rates for Blacks surpassed that of Whites in the late 1960s, and the difference has become greater since that time. With the Third National Cancer Survey (1969-1971) and the subsequent establishment of the SEER program it has become possible to quantify the site specific differences in incidence rates between Blacks and Whites in this country.

Overall, Blacks had an age adjusted incidence rate six per cent above that of Whites in 1969-71. This climbed to a 10 per cent excess in the time period 1973-77, due mainly to elevated risks among Blacks of both sexes for cancers of the esophagus, stomach, pancreas, lung, and multiple myeloma, along with a substantial excess among Blacks of prostatic cancer and invasive cervical cancer.

The cancer experience of Blacks has been a concern of NCI in general, and of the epidemiology program in particular for some time. We are currently attempting to assess the reasons for the excess of lung cancer among Black males and for the excess of cancers of the uterine cervix among Black females via a large case control study of lung cancer in New Jersey and collaborative study of cancer of the uterine cervix involving five cancer centers. A field investigation of a hot spot of cancer mortality for stomach cancer in Blacks in Southern Louisiana is also currently nearing completion. In addition, a study was conducted of esophageal cancer among Blacks in the District of Columbia by the Environmental Epidemiology Branch several years ago which raised some specific questions about possible reasons for the differences between Blacks and Whites. A pertinent new hypothesis suggested by this study is related to specific measures of nutritional deficiency as potential risk factors for esophageal cancer. However, the study design did not allow a direct assessment of which risk factors might explain the excess among Blacks. Thus, based on the differences in site specific cancer incidence rates between Blacks and Whites and on what is currently under investigation, we believe that there is a substantial unfilled need for analytic investigations to address the reasons for the excess risk among Blacks of four types of cancer--esophagus, pancreas, prostate and multiple myeloma.

Esophageal cancer. Among all cancers which occur more frequently among Blacks than Whites, the Black excess is greater for esophageal cancer. The racial disparity is increasing, as incidence rates among Blacks have risen steadily over the past 30 years while remaining nearly constant among Whites. Differences at younger ages are even more pronounced than for the overall rates, exceeding 10-fold at ages 40-49, for example, suggesting that there is a strong cohort effect, with Blacks born later in this century at increasingly greater risk of this fatal cancer.

Reasons for the Black excess of esophageal cancer are not known. Part of the higher rates may be due to a higher prevalence among Blacks of tobacco and alcohol consumption, the major risk factors for esophageal cancer in the U.S. The differences in smoking and drinking seem not great enough, however, to fully account for the substantial racial differences in incidence. Other factors likely contribute. Dietary intake is suspect since our case control study of esophageal cancer in Washington D.C., where esophageal cancer is the third leading cause of cancer death among Black men, showed fairly consistent patterns of lowered nutritional status during adulthood among the cases. Similar results were found in a case control survey in New York, and poor diet has been a characteristic of areas of the world (China, Iran, South Africa) with clusters of exceptionally high esophageal cancer mortality.

To evaluate the role of tobacco, alcohol, diet and other factors in the Black/White differences in esophageal cancer, a population based case control study is proposed. Only males will be included because the much lower rate among females make the assembly of sufficient numbers of cases impractical. The study will be large enough (600 cases) to enable the assessment of dietary factors

within each of several tobacco by alcohol strata for both Blacks and Whites. It will also provide, for the first time, an adequate evaluation of smoking among nondrinkers, drinking among nonsmokers, and the role of smokeless tobacco, as well as further quantify the interaction between these risk factors. It will enable determination of whether tobacco and alcohol affect Blacks and Whites equally, and of the extent to which intake of these substances accounts for the racial differences in incidence.

Pancreatic cancer. Incidence rates for Blacks have been reported to be 1.5 to 2 times higher than those for Whites in the U.S. During the 20 year period from the Second to the Third National Cancer Survey, incidence rates increased sharply for Blacks and less rapidly for Whites. The reported increases may be partly due to better accuracy of diagnosis and consequent improvement in case ascertainment, but many investigators believe that at least part of the observed increase reflects a true increase in occurrence of pancreatic cancer. Data collected during the TNCS also indicated that observed differences in pancreatic cancer incidence between Blacks and Whites cannot be explained by differences in socioeconomic variables, such as income and education.

The etiology of pancreatic cancer is not well understood, and the extent to which potential etiologic factors explain Black/White differences in pancreatic cancer has not been examined. The following risk factors are suspect:

1. Cigarette smoking is the factor most consistently associated with increased risk.

2. Several dietary factors may play a role in the etiology of pancreatic cancer. Coffee consumption has recently emerged as a potential risk factor, although no association between coffee drinking and risk has been apparent in some studies. A British study recently suggested, however, that the increased risk observed for coffee drinkers in some studies may be due to a slight increase in fluid intake among pancreatic cancer patients, presumably caused by impaired glucose tolerance during the early stages of the disease. Alcohol consumption has also been associated with increased risk, but this too has not been observed consistently. In addition, consumption of raw fruits and vegetables has been associated with decreased pancreatic cancer risk in two case control studies. Descriptive studies of per capita food consumption and cancer rates in a number of countries have shown positive associations between pancreatic cancer rates and annual consumption of fats, oils, animal protein and sugar.

3. Some medical conditions may predispose to pancreatic cancer, including diabetes, pancreatitis, and gallbladder disease.

4. Occupational exposures have also been suggested as playing an etiologic role. For example, dry cleaners, chemists, oil refinery workers, and workers with exposure to gasoline have been reported at increased risk. However, these findings are based on small numbers of workers and have not been confirmed.

5. Familial occurrence of pancreatic cancer has also been reported, suggesting a hereditary predisposition. The extent to which Black/White differences may be due to genetic differences in susceptibility has not been examined, but recent research has indicated that the Lewis blood type may be a genetic marker for susceptibility to pancreatic cancer. Thus, comparison of the distributions of Lewis phenotypes in Black and White cases and controls, in conjunction with serum assays of gastrointestinal cancer antigens, may provide useful information.

Prostate cancer. Mortality and incidence is second only to lung cancer among American men. The most striking features of prostate cancer include higher rates among Blacks than Whites, rising incidence in the U.S. and most countries around the world, an extremely steep age pattern, and a high prevalence of latent carcinoma among the elderly. Despite its prevalence, however, the tumor is poorly studied and its etiology remains relatively obscure. International variation in incidence and mortality and findings from studies of migrants indicate an important etiologic role for environmental factors. Current hypotheses focus in six major areas: diet and nutrition, hormone levels, infectious agents, sexual activity, occupational exposures, and family history. Associations with occupational exposure to cadmium and family history have been reported in several studies. Some studies have suggested that the risk of prostate cancer is associated with number of children, number of sexual partners, late sexual development, venereal disease, higher testosterone and lower estradiol and estrone levels, high fat intake, higher titers for herpesvirus and cytomegalovirus, low serum cholesterol and selenium levels, tobacco and alcohol use, exposure to particular metals and chemicals, and medical conditions including diabetes, cirrhosis of the liver, and benign prostate hypertrophy. However, there have been few studies to date seeking etiologic explanations for the higher incidence of prostate cancer among Blacks as compared with Whites, and many causal hypotheses remain to be studied.

We propose a population based case control study of 800 incident cases (400 Blacks and 400 Whites).

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CONCEPT REVIEW FIGURES ARE ESTIMATES ONLY: RFPs, RFAs NOT YET AVAILABLE

The dollar estimates with each concept review brought before the various boards of scientific counselors are not intended to represent maximum or exact amounts which will be spent on those projects. They are intended only as guides for board members to help in determining the value of the projects in relation to resources available to the entire program or division. Responses should be based on the workscope and description of goals and methods included in the RFPs (contracts) and RFAs (grants and cooperative agreements). Availability of RFPs and RFAs will be announced when the Institute is ready to release them.

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Each subject would be interviewed to obtain information to evaluate current etiologic hypotheses. Blood and urine specimens will be obtained from a

sample of the cases and controls to be used for hormone (testosterone, estradiol, estrone), nutrient (cholesterol, selenium, zinc, vitamin A), and viral (herpesvirus, cytomegalovirus, Epstein-Barr virus) assays.

Multiple myeloma. This is a malignant plasma cell dyscrasia which primarily affects individuals age 55 and older. It accounts for approximately one per cent of all malignant neoplasms in Whites and two per cent in Blacks. However, it is the most common form of malignancy of the lymphohematopoietic system in Blacks (29.7%) and is the second most common in Whites (13.7%). Blacks have higher incidence rates of myeloma than Whites at virtually all ages. The incidence of multiple myeloma in the U.S. appears to be increasing. A comparison between the incidence data from the Second to Third National Cancer Survey indicated that the percentage increase in reported rates for myeloma was greater than for any other form of cancer. The upward trend was greater for Blacks than Whites. The prognosis for multiple myeloma is extremely poor. The five year survival rate for 1973-79 provided by SEER was 22 per cent for Whites and 23 per cent for Blacks.

Little is known about the epidemiology of multiple myeloma. The majority of the etiologic hypotheses have been suggested by county mortality data, cancer surveys, mortality studies of specific occupational groups, and clinical series. To date, no findings from case control interview studies have been published. Exposure to ionizing radiation has been suggested as a risk factor for multiple myeloma but the evidence is not conclusive. Some occupational exposures have also been suggested, including farming, wood related industries, rubber and petrochemical manufacturing, and metal exposures. Chronic antigenic stimulation may play an etiologic role, and a familial component may also be involved based on case reports. Finally, racial differences have been noted in immunoglobulin profiles, both with respect to quantity and the prevalence of so called benign gammopathies. How much of these deficiencies might be due to environment (e.g., nutrition), and how much may reflect genetic factors is unknown.

Since the intent of this investigation is not only to identify race specific risk factors for these four separate tumors, but also to estimate the extent to which these risk factors can explain the differences between the races, the study will be a population based case control study conducted in areas where race specific rates for these particular malignancies can be calculated. In addition, the areas will have to cover a large enough Black population, so that stable incidence rates can be calculated, and an adequate number of cases can be accrued. Sample size calculations have been done for each site based on the major hypotheses to be tested, and have yielded the projected number of cases as follows: esophageal and pancreas, 300 each for both White and Black males, 250 pancreas for both White and Black females, 400 prostate for both Whites and Blacks, 200 multiple myeloma for both White and Black males and 150 for both White and Black females. There will be 800 controls for both male groups and 400 for both female groups.

A total of 3,200 cases will be sought, equally split between Blacks and Whites. When the final determination of study areas has been made, the result may be the inclusion of either all cases occurring in Blacks or a random sample thereof, along with a random sample of the cases occurring in Whites. Controls will be drawn from the general population of the study areas from which the cases are representive. Four separate questionnaires will be developed for administration to various components of the case and control groups. The core questionnaire which will be administered to all cases and controls will contain sections on tobacco, alcohol, occupation, demographic factors including social class, access to medical care, biomedical conditions, and a limited dietary interview. Each of the four questionnaires will contain this core material, plus one or two other sections. The other sections include an extended dietary history, a sexual history, and a history of exposure to ionizing radiation along with an assessment of prior, antigenic stimulation. Our intention is to do first person interviews. In order to achieve this, special mechanisms will have to be established to allow us to ascertain and reach the patients with esophageal cancer and pancreatic cancer shortly after their diagnosis. If the logistical constraints become prohibitive, interviews with next of kin for at least a portion of the sample will be considered.

At the present time we envision a biochemical component on a sample for the pancreas cancer cases, prostate cancer cases, and the patients with multiple myeloma as well as the controls. These efforts will be directed towards the hypotheses noted in the discussions of these individual sites. At this time, we are not sure of the sample size, the number of assays to be conducted, or the costs for these efforts and, therefore, these are not included under the current concept statement but will be brought to the Board in the fall when they are more fully developed. The estimated costs for this concept are for the identification of the cases and controls, development of the materials, interviewing and abstracting, quality control, and the data preparation and management.

Coproject officers are Robert Hoover, William Blot, Aaron Blair, Linda Pottern, Debra Silverman, Patricia Hartge, Regina Ziegler, Abby Ershow and Jerome Wilson.

Board member Dietrich Hoffmann commented that studies "clearly show" association of esophageal cancer with cigarette smoking and the type of cigarettes smoked. He called for an emphasis on nutrition, diet and biochemical assays. "The key question is which are the major causes of esophageal cancer."

"In esophageal cancer we will compare nutritional status of Blacks and Whites," Hoover said. "But nutrition studies are compromised by the fact that the disease and symptoms leads to nutritional impairment."

The concept was approved unanimously.

Technical and logistical support services for the Div. of Cancer Etiology. Estimated cost, $300,000

per year, three years. This will be a recompetition of a contract presently held by Verve Corp. and will be a small business set aside.

The purpose of this contract is to provide services not normally available in DCE and to assist in logistics and management of activities within program areas. These services fall into three major areas—report documentation, conference and meeting management, and planning and evaluation support.

Report documentation can be divided into two major categories: preparation of documents describing past, current and planned Division programs or specific activities; and preparation of handouts, slides, and other graphics for use in presentations to various organizations. The site visit booklets and information for the Board of Scientific Counselors are typical of major documents which would be prepared using the support services provided.

Under the next task area, conference and meeting management, the contractor will provide logistical support services for Division conferences, meetings and workshops. In general this will include providing assistance in site selection; preparation and distwribution of invitations, agenda, and other pre and postconference materials; hotel and air reservations; reimbursement of participant expenses; recording services, etc.

In the third task area, the contractor will provide general planning and evaluation support to the Division. This support may include collecting, summarizing and analyzing information necessary to the Division planning function.

This contract will function as a task order contract. The project officer is Anne Bozak.

Other concepts approved by the Board will appear next week in The Cancer Letter.

RFP NIH-ES-84-28
Title: Examination of immunotoxicity by chemical xenobiotics
Deadline: Approximately Oct. 16

The National Institute of Environmental Health Sciences is soliciting proposals from offerors having the capability of examining the immune system in laboratory animals following chemical exposure. The objectives of this project are to establish and demonstrate proficiency in the use of the immune testing panel provided by the National Toxicology Program to detect chemical induced alterations; test up to 18 chemicals for potential to induce immune alterations; and examine cellular and subcellular events associated with chemical induced immunotoxicity.

NIEHS
Contracts Management Office
Attn: Elizabeth Ford
P.O. Box 12874
Research Triangle Park, N.C. 27709

Title: Data on radiologic procedures
Deadline: Aug. 1

The Food & Drug Administration is seeking summary data on the numbers and types of diagnostic radiological procedures, including conventional x-ray, computed tomography, digital subtraction, angiography, nuclear medicine, ultrasound, and nuclear magnetic resonance performed annually in U.S. hospitals. The data shall be:

1. Based on a nationally representative sample of short stay, general medical and surgical hospitals in the U.S. Representative data from nonhospital sources of radiological procedures are also of interest but are not part of the requirement.

2. Include all procedures performed in hospitals including inpatient, outpatient and emergency room procedures.

3. Categorized as to types of procedures and must include at least the following--conventional x-ray, at least 20 body part categories including heart catherizations, pelvimetry and mammography; computed tomography, at least 10 body part categories; nuclear medicine, at least 10 body part categories; ultrasound, at least 15 body part categories and must include echocardiography.

4. Data must represent procedures performed in the calendar year 1984.

5. Quality control procedures must be such as to assure accuracy and reliability of data obtained from hospitals and to assure accurate processing of data.

6. Data must be available in the form of printed summaries; computer tapes of raw and processed data are of interest but are not part of the requirement.

7. Summary data on numbers of procedures must be available for publication or release by the government.

Concerns having the ability to furnish this data are requested to give written notification including the phone number for a point of contact by the date above. This is not a formal solicitation. However, concerns that respond should furnish detailed data concerning their capabilities and may request to receive a copy of the solicitation when it becomes available.

Food & Drug Administration
Procurement & Property Management Branch
HFA-266, Room 8C-03
5600 Fishers Lane
Rockville, Md. 20857

NCI CONTRACT AWARDS

TITLE: Computer support for cancer information dissemination
CONTRACTOR: IIT Research Institute, $523,400.
TITLE: Development and implementation of an international food composition data system
CONTRACTOR: Mass. Inst. of Technology, $2,098,416.

The Cancer Letter _Editor Jerry D. Boyd

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