THE CANCER RESEARCH EDUCATION CONTROL LETTER

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GRANT APPLICATIONS POUR INTO NCI, NIH; DOWNWARD TREND IN FUNDING DUE TO BE REVERSED IN FY 1979

NCI and NIH are being "overwhelmed" with grant applications, the increasing numbers of which are placing a severe strain on the review process. The problem will get worse before it gets better, with the impending phaseout of many NCI research contracts and a corresponding increase in grant funds which will encourage the phased out contractors to compete for grants.

John Kalberer, program planning officer in NCI's Div. of Cancer Research Resources & Centers, told the National Cancer Advisory Board that the work load has been exacerbated by the trend to shorter grant award periods. In 1964, 8.6% of NCI competing research grant awards were for seven years; there have been none since 1967. Five year

(Continued to page 4)

In Brief

"... IN CASE MRS. LASKER HAPPENS TO SEE A SENATOR"; WHITE, POTTER DEFEND CENTER PROGRESS

BUDGET TALK (during a meeting of the National Cancer Advisory Board Subcommittee on Planning & Budget): Jonathan Rhoads, NCAB chairman—"I think the director should indicate to Mrs. Lasker some of his strongest arguments for what is needed in the budget, just in case she happens to see a senator." Board member Mary Lasker—"When we win (the fight against cancer) we'll save $20 billion a year, every year until the end of time, to say nothing of the lives we save and misery we prevent. Providing money for cancer research is not like paying for hospital care, where it's gone and lives are not necessarily saved" .... **CENTER DIRECTORS** Jack White and John Potter of the Georgetown/Howard Comprehensive Cancer Center, responding to the evaluation of their center by the NCAB reviewers: "Our position, as the joint directors of this center, is that significant progress has been made in the space of only a few years both at our conjoint cancer center and at our individual institutions and this has been achieved with one of the lowest core budgets in the centers program. Furthermore, continuing progress is being made in the development of cancer research, education and patient care. This is not to state that areas for improvement do not exist. Clearly they do, and we are working diligently to attain them" .... **VINCENT DEVITA**, director of NCI's Div. of Cancer Treatment, is taking a sabbatical through the summer to catch up on his writing. He'll return in September; until then, Deputy Director Saul Schepartz is in charge of the division. ... **NEW PUBLICATION**: "In Vitro Carcinogenesis," based on presentations at a 1976 seminar at the Univ. of Colorado, available from NCI. The report provides a guide to the literature, recent advances and procedures for short term studies of carcinogenesis in laboratory systems. Write to Office of Cancer Communications, NCI, Bethesda, Md. 20014.

DCT ASKS FOR CARCINOGENICITY TEST FOR CIS-PLATINUM, WON'T PAY FOR IT

Among the hundreds of compounds that have been through or are being considered for NCI's carcinogenesis Testing Program are a number of anticancer drugs that are suspected carcinogens. The Clearinghouse on Environmental Carcinogens Chemical Selection Subgroup, considering recommending cis-platinum for testing, raised some questions about the need for and value of testing anticancer agents.

Would a test of a drug that has been proven against one or more tumors make any difference in the use of the drug? Physicians have known for years that alkylating agents are carcinogenic, to one degree or another, yet they continue to be widely used because they offer the best chance for long term remissions or cures.

The Food & Drug Administration has not attempted to halt the use of anticancer drugs, even when animal tests strongly suggest they are carcinogenic or when followup studies of treated patients show increased incidences of second tumors.

The Chemical Selection Subgroup drew up a list of 17 questions on the issue and submitted it to NCI's Div. of Cancer Treatment. DCT Deputy Director Saul Schepartz appeared at the next subgroup meeting with the division's responses. The questions and Schepartz' answers:

1. Would a test result in any way influence FDA's regulatory posture?

"It's doubtful at this time. With the present state of drug therapy and the kinds of patients being treated, the benefits still outweigh the risks. The question of carcinogenicity becomes more important as drugs are used in adjuvant therapy, and with patients living longer. If the cure rate without the drug is pretty good, we have to consider the side effects. As long as the incidence rate of second tumors is small, there is still a positive risk to benefit ratio."

2. Is scientific curiosity an adequate reason for testing?

"No."

3. Is this inorganic form (cis-dichlorodiammine platinum) the proper one to test?

"This is the one that will soon be on the market (Bristol has submitted an NDA to FDA, and the indication probably will be limited to ovarian cancer. It has been and will continue to be used in clinical trials for testicular and bladder cancer, cervical cancer, head and neck cancer and possibly others). There are analogs in preclinical development, and we hope to select one in the near future but it could be years before we reach this stage with it."

4. Would a research test, using 20 or 30 animals, be in order, rather than a full-scale bioassay?

"I can't judge that. That question is for carcinogenesis experts."

5. Would practitioners use it only as an antineoplastic agent or would it be likely to be used for non-neoplastic diseases?

"There is no other indication at this time."

6. Isn't it probably a carcinogen and, therefore, not worth spending the money to find the answer that is nearly obvious?

"There are degrees of carcinogenic potential. Even if it is carcinogenic, the degree would be a consideration in its use. Knowing the degree would be helpful in determining the development and use of analogs."

7. Should a drug like this be allowed to take up a slot in the test system?

"Yes."

8. Does it make any difference whether it is positive or negative?

"Yes, from our standpoint. The way it is used in adjuvant studies could be influenced quite a bit."

9. Could our failure to test result in an epidemic like that in Denmark in the late 40s and early 50s which resulted from using 2-napthylamine mustard?

"No. There would be no prospect of an epidemic, since its use is limited to cancer patients."

10. Is there a likelihood that we might test and then find our results indeterminate?

"I can't judge that."

11. Would it be used for both children and adults?

"At the moment, it is used only in adults."

12. Would followup studies on patients who have been treated with the drug be a better investment of scientific effort?

"No, not alone. Epidemiological studies are long and difficult. It would be many years before we would get some answers."

13. Given the universal acceptance of regimens developed by DCT, can we refuse to test the drug?

"That gets into the policy area. That should be an NCI staff decision, not DCT's alone."

14. In view of the fact that other known carcinogens are used in cancer therapy, why should we test this one?

"It is a very active drug (and thus probably will become widely used. Scehpartz estimated that 22,000 patients would be treated with the drug this year, with a threefold increase in three years). Every drug is different, with different uses and different patients. Any drug suspected of being carcinogenic should be tested."

15. In view of the previous question, is it possible to determine which of several potential therapeutic agents is less carcinogenic?

"I assume their test systems are able to do that. It is an important question to answer, especially when we get to analogs."

16. What are the alternative drugs? What do we know of their carcinogenicity?

"Cis-platinum is not replacing other drugs. The alternatives would be analogs, which we do not yet have."

17. Would it be proper to transfer funds from DCT to pay for the bioassay? Is DCT willing to pay the cost?"

"NCI's policy is for the Div. of Cancer Cause & Prevention (which conducts the bioassays) to be responsible for carrying out carcinogenesis studies. If they can talk industry into paying for it, fine. Nobody has asked Bristol for a carcinogenesis study, as far as I know."

Schepartz' strong feeling that the drug should be tested and his arguments for doing so swayed subgroup Chairman David Clayson, who had raised some of the questions. But members Verne Ray, Kenneth Wilcox and Norton Nelson were critical of DCT's unwillingness to pay for the test.

The subgroup recommended the drug for testing, with a priority score of 6.0 on a scale of 1-10, with 10 the highest priority. Individual scores ranged from 2.0 to 9.0. The mean rating of eight compounds considered at the meeting for testing was 4.7.

Other compounds and ratings were:

Phenytoin sodium, 7.2; picloram, 7.0; hexylresorcinol, 5.6; 1-(2H)-phthalazinone, 2.6; diatriazoate sodium, 2.6; oxymetholone, 1.6; and 2,4-dinitrotoluene, deferred.

At the subgroup's previous meeting, 24 compounds were considered. The ratings on 19 and actions on the others:

Isoproterenol hydrochloride, 8.7; phenylephrine hydrochloride, 8.2; ephedrine, 7.2; chlorpromazine, 7.0; epinephrine, 6.8; erythromycin, 6.0; a-methylbenzyl alcohol, 4.8; succinic anhydride, 4.7; chloramphenicol, 4.3; amphetamine, 4.1; benzyl alcohol, 3.8; methyldopa, 3.8; sodium dichloroisocyanurate, 3.3; pentaerythritol tetranitrate, 3.2; amobarbital sodium, 2.8; cyclandelate, 2.5; isosorbide dinitrate, 2.2; chlorinated trisodium phosphate, 1.7, and 4-aminopyridine, 1.3.

Deferred—allpurinol, cis-dichlorodiammine platinum, 1-(2H) phthalazinone and diatriazoate sodium.

Recommended for short-term testing—3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane carboxylate.

ILLINOIS CENTER ORGANIZES COOPERATIVE GROUP – ACADEMIC, COMMUNITY PHYSICIANS

The Illinois Cancer Council Board of Trustees has approved plans to develop a regional cooperative, multimodality clinical trials program, "geared to bring into partnership academic and community based oncologists in an enterprise intended to improve the overall quality of care in the state," according to Jan Steiner, director of the Council.

ICC, a consortium of eight medical schools, is one of the 19 (soon to be 20) NCI recognized comprehensive cancer centers. It has been having some problems, the most serious of which was not getting its core support grant last year from NCI. The center reapplied and is being reviewed again this month.

Steiner feels that some review of centers has been "inappropriate" and has not fully or fairly considered the unique opportunities offered by consortia center models. The regional clinical trials program, he contends, comes closer to complying with the intent of Congress as expressed in the National Cancer Act than most other efforts by comprehensive centers.

"Fulfilling the intent of Congress means more and better research in cancer programs and it also means more and better medicine," Steiner told ***The Cancer Letter.*** "The eight medical schools on 12 campuses which make up our consortium are beginning to enjoy the rational relationships developed among themselves and between the research and service communities."

Steiner said that with the new cooperative group, "by applying rigorous quality controls and melding research, education and effective control activities, the center hopes to bridge not only the gown/gown but also town/gown dichotomy." The group has been accepted into membership of the Gynecologic Oncology Group, one of the national cooperative groups.

"Innovative splicing of research and control foresees a two-tier system in which technology transfer from research bench to oncologist occurs under auspices of each academic participant in the consortium," Steiner said. "The academe-community transfer is effected under the ICC umbrella. Interaction among basic scientists is fostered by ICC where multi-institutional, multidisciplinary projects are deemed appropriate, or where such collaboration might bring bench scientists into interaction with clinicians in a service relationship. The region's resources in patients and professionals are so large as to warrant the assumption that the regional concept is a workable proposition.

"It is only three years since ICC planned its first collaborative programs, but early acceptance of ICC's role by the region makes it likely that the center can produce what it promises," Steiner continued. "The development of ICC is vigorously supported by Paul Peterson, director of the Illinois Dept. of Public Health and a former dean of the Univ. of Illinois School of Public Health. ICC executive members constitute the cancer advisory board to Gov. James Thompson. The center has been named the principal advisory body to health systems agencies in developing areawide plans for cancer control. For the first time in its history the state budget will include a line item for the cancer program.

"The center holds the key to starting and keeping the collaborations working. The Epi-Stat unit of the center, directed by Richard Warnecke and William Haenszel, has developed a central protocols office to support the clinical research effort, and administrative support arrangements have removed the problems associated with multi-institutional sharing of funds," Steiner said.

NATIONAL CANCER INSTITUTE 1980 PRELIMINARY B
RESEARCH GRANTS—TRADITIONAL PROGRAM COMPETING PROJECTS

TRADITIONAL PROGRAM		APPROVED		
		NUMBER	AMOUNT	NUM
FY 1970	RENEWAL	219	$ 10,141	110
	NEW	332	12,009	89
	TOTAL	551	22,150	199
FY 1971	RENEWAL	249	11,645	155
	NEW	331	11,806	164
	TOTAL	580	23,451	319
FY 1972	RENEWAL	212	11,593	132
	NEW	564	24,063	346
	TOTAL	776	35,656	478
FY 1973	RENEWAL	160	10,279	100
	NEW	674	32,200	331
	TOTAL	834	42,479	431
FY 1974	RENEWAL	237	16,509	186
	NEW	886	44,701	477
	TOTAL	1,123	61,210	663
FY 1975	RENEWAL	318	20,991	236
	NEW	953	46,125	561
	TOTAL	1,271	67,116	797
FY 1976	RENEWAL	337	24,015	220
	NEW	894	46,384	372
	TOTAL	1,231	70,399	592
FY 1977	RENEWAL	500	38,247	229
	NEW	1,011	56,306	
	TOTAL	1,511	94,553	
FY 1978	RENEWAL	580	46,281	300
	NEW	1,090	66,261	365
	TOTAL	1,670	112,542	665
FY 1979	RENEWAL	420	38,890	268
	NEW	1,077	69,519	512
	TOTAL	1,497	108,409	780
FY 1980A	RENEWAL	410	45,068	283
	NEW	1,267	96,377	676
	TOTAL	1,677	141,445	959
FY 1980B	RENEWAL	410	45,068	336
	NEW	1,267	96,377	949
	TOTAL	1,677	141,445	1,285

* Expressed as percent of number of grants approved by the National Cancer Advisory Board.

TERRY ON CENTER CORE GRANTS: PRIORITY SCORES "PRIMARY INDICATOR" IN FUNDING

(Continued from page 1)

awards were at a peak of 14.7% of NCI grants in 1967; they amounted to 8.7% in 1977.

Three year grants accounted for 79.8% of NCI awards in 1977; two year grants totaled 13.7%.

When the National Cancer Act was passed in 1971, NCI received 942 research grant applications. In 1977, the institute received 3,074 applications, up more than 600 over 1976. There were 2,241 new applications and 833 renewals. Those figures do not include construction, training, careers, fellowships, scientific evaluation, support grants or cancer control grants.

Board members agreed that the trend to shorter grants was not healthy and approved a motion asking that its Subcommittee on Special Actions, chaired by Harold Amos, consider the problem. One suggestion was that more five-year awards should be made to outstanding senior investigators, perhaps by definition those receiving very high priority scores.

Kalberer pointed out that the more often a grant is renewed, the greater is the dollar increase. A four year award will have an increase of approximately

DGET
DOLLARS IN THOUSANDS)

AWARDED		PERCENTAGE AWARDED*
	AMOUNT	
	$ 4,955	52
	3,803	27
	8,758	37
	7,941	62
	5,633	49
	13,574	55
	8,106	62
	15,405	61
	23,511	62
	7,281	63
	16,491	49
	23,772	52
	14,107	79
	26,812	54
	40,919	59
	17,101	74
	29,128	59
	46,229	63
	17,305	65
	21,272	42
	38,577	48
	20,767	46
	20,630	35
	41,397	38
	26,342	52
	24,165	33
	50,507	40
	25,859	64
	35,685	48
	61,544	52
	31,970	69
	50,119	53
	82,089	57
	36,742	82
	74,955	75
	111,697	77

8-12% per year; a two year award coming in for renewal will often request an amount 50% greater than the prior award.

The pressures on NIH study sections and NCI review committees could be eased if HEW complies with the language in the House report on the appropriations bill. The report directs that 19 additional study sections be established and suggests that $570,000 of the money in the bill be used to pay the costs.

HEW has been most reluctant to approve new study sections, in line with the Administration's drive to reduce the total number of citizen advisory groups.

The downward percentage trend in funding approved new and renewal R01 (traditional investigator initiated) grants by NCI started in the 1976 fiscal year when 65% of approved renewals and 42% of new grants were funded. In the previous year, 74% of renewals and 59% of new grants were funded. The numbers of awards in 1976 were 220 renewals and 372 new grants, down from 236 and 561 in 1975.

The 1975 fiscal year was the high water mark for NCI support of new and renewal R01s. The buildup of ongoing multiple year grants which accumulated in the first three years following the National Cancer Act coupled with a sharp decrease in the rate of increase of NCI's budget in FY 1976 was responsible for the downward trend.

In 1977, 229 renewals and 351 new grants were awarded, a percentrage of 46 and 35, respectively. The estimate for 1978 is 300 renewals and 365 new grants, 52% and 33%. A sharp upturn is predicted for 1979, reflecting the NCI reorganization, the determination of NCAB to gradually increase the percentage of NCI's budget supporting investigator initiated research, and congressional directives earmarking funds for basic research and R01s.

If the trend continues into 1980, as estimated in the preliminary budget, a new high of 959 R01 new and renewal grants would be awarded.

The chart above includes the 1980 "level B" projection, which is based on a total NCI appropriation of $1.155 billion, a figure that is probably out of reach barring a complete turnaround by Congress. The "level A" projection is based on a more realistic $1.055 billion.

The charts on pages 6 and 7 compare the estimates for 1979 and 1980 funding of program projects and cancer center core grants with previous years.

The number of new core grants to be awarded in 1979 was estimated at two, from an estimated 13 approved applications. But William Terry, Cancer Centers Program director, told ***The Cancer Letter*** those figures are "soft"—that is, based more on guesswork than facts.

The 1979 estimate also guesses that 100% of 22 approved renewals would be funded, compared with only 15% of approved new core grants. That probably would ignore the recommendation by the Assn. of American Cancer Institutes that new centers with priority scores higher than those coming in for renewals be funded ahead of the renewals.

"I'm told that priority scores are not absolute," Terry said. "You can't really compare new grant applications with renewals. The committees don't handle them the same. As far as I'm concerned, the primary indicator would be the priority score, conditioned by other factors."

The other factors would include geographical considerations, Terry said. That might be particularly important for a clinical center with regional activi-

CORE GRANTS

		APPROVED		AWARDED		PERCENTAGE AWARDED*
		NUMBER	AMOUNT	NUMBER	AMOUNT	
FY 1976	RENEWAL	6	$ 5,514	6	$ 4,989	100
	NEW	10	3,846	7	1,425	70
	TOTAL	16	9,360	13	6,414	81
FY 1977	RENEWAL	10	17,576	10	15,947	100
	NEW	5	2,817	2	1,404	40
	TOTAL	15	20,393	12	17,351	80
FY 1978	RENEWAL	24	24,418	21	19,525	88
	NEW	9	4,459	4	1,869	44
	TOTAL	33	28,877	25	21,394	76
FY 1979	RENEWAL	22	20,044	22	19,472	100
	NEW	13	6,240	2	980	15
	TOTAL	35	26,284	24	20,452	69
FY 1980A	RENEWAL	12	20,633	12	20,633	100
	NEW	15	7,200	5	2,667	33
	TOTAL	27	27,833	17	23,300	63
FY 1980B	RENEWAL	12	20,633	12	20,633	100
	NEW	15	7,200	11	5,369	73
	TOTAL	27	27,833	23	26,002	85

ties. A new center with emphasis on clinical activities located in a region already served by a clinical center with a strong outreach program might have to wait for funding it it would mean displacing an existing center in another region not being otherwise served, even if the new center had a higher priority score.

The dollar figures in the charts apply only to funds for the new and renewal awards. They do not include amounts funding the noncompetitive renewals of ongoing multiple year grants.

As the money available for center core support tightened, NCI policy was to spread it around, funding as many core grant renewals as possible by reducing the size of each award. Flat percentage levels substantially less than recommended by the review committee were established.

One NCI executive told *The Cancer Letter* that policy may soon be changed. "Bill Terry is taking a new look at the problem. I think we'll see fewer renewals funded, with the others getting the full amounts recommended."

NCI LEADING GOVERNMENT'S NATIONWIDE EFFORT TO ALERT ASBESTOS WORKERS

NCI's Div. of Cancer Control & Rehabilitation and Office of Cancer Communications are spearheading the federal government's nationwide asbestos alert aimed at informing the 10-15 million who may have been exposed to the substance of the threat to their health.

DCCR Director Diane Fink said that of those who have had heavy exposure to asbestos, 7% will develop asbestosis, 20-25% carcinoma of the respiratory tract, 7-10% mesothelioma, and 8-9% cancer of the GI tract. The long latent period of 30-40 years makes it difficult to find those who have been exposed, but NCI is trying with a massive media campaign plus letters to 400,000 physicians.

The alert has begun to take effect. The New York Cancer Information Service at Roswell Park has reported "a deluge" of telephone inquiries from persons who worked in shipyards, made brake linings, worked as plumbers, manufactured gaskets, installed insulation.

PROGRAM PROJECTS

		APPROVED		AWARDED		PERCENTAGE AWARDED*
		NUMBER	AMOUNT	NUMBER	AMOUNT	
FY 1976	RENEWAL	26	$25,899	24	$20,764	92
	NEW	31	15,875	20	9,399	65
	TOTAL	57	41,774	44	30,163	77
FY 1977	RENEWAL	24	19,964	17	13,003	71
	NEW	31	14,422	13	7,352	42
	TOTAL	55	34,386	30	20,355	55
FY 1978	RENEWAL	40	23,894	33	19,728	83
	NEW	34	14,472	18	8,807	53
	TOTAL	74	38,366	51	28,535	69
FY 1979	RENEWAL	45	39,177	40	33,123	89
	NEW	36	16,202	11	5,402	31
	TOTAL	81	55,379	51	38,525	63
FY 1980A	RENEWAL	21	16,457	19	14,158	90
	NEW	43	19,393	14	6,753	33
	TOTAL	64	35,850	33	20,911	52
FY 1980B	RENEWAL	21	16,457	21	16,457	100
	NEW	43	19,393	34	15,305	79
	TOTAL	64	35,850	55	31,762	86

Any occupational exposure to asbestos fibers presents a potential health risk. While the risk appears to increase with increasing duration and amount of exposure, even workers exposed only a month or two have developed asbestos-related diseases years later.

One of the objectives of the alert is to inform those exposed of the dangers and encourage those who smoke to stop. A smoker who worked with asbestos is 30 times as likely to develop lung cancer as a nonsmoker employed in the same job, according to NCI.

RFPs AVAILABLE

Requests for proposal described here pertain to contracts planned for award by the National Cancer Institute, unless otherwise noted. Write to the Contracting Officer of Contract Specialist for copies of the RFP, citing the RFP number. Some listings will show the phone number of the Contract Specialist, who will respond to questions. Listings identify the respective sections of the Research Contracts Branch which are issuing the RFPs. Their addresses, all followed by NIH, Bethesda, Md. 20014, are:

Biology & Diagnosis Section — Landow Building
Viral Oncology & Field Studies Section — Landow Building
Control & Rehabilitation Section — Blair Building
Carcinogenesis Section — Blair Building
Treatment Section — Blair Building
Office of the Director Section — Blair Building
Deadline date shown for each listing is the final day for receipt of the completed proposal unless otherwise indicated.

RFP N01-CN-85419

Title: *Development of an informational data base for public health strategies*

Deadline: *Approximately Aug. 10*

NCI is requesting proposals for a project to: (1) update current data base on chemical carcinogens, (2) identify newly reported potential carcinogens, and (3) assess primary prevention options.

Expertise in public health, informational systems, preventive medicine, carcinogenesis, epidemiology, industrial hygiene, environmental health sciences, chemical economics, education, and social sciences will be required. Materials developed from past similar works supported by the Div. of Cancer Control &

Rehabilitation will be available to all respondees in our reading room.

Contract Specialist: Susan Yablon
Control & Rehabilitation
301-427-7984

SOURCES SOUGHT

RFP NCI-CP-VO-81045-54

Title: *Herpesvirus papio studies*
Deadline: *Undetermined*

The Virus Cancer Program is seeking sources capable of conducting comparative studies of two specific strains of herpesvirus papio (HVP) isolated from baboon species. The two specific strains to be compared are the herpesvirus isolated from papio anubis and the herpesvirus isolated from papio hamadryas. To be considered qualified to receive an RFP, an offeror must meet the following minimum criteria:

1. Possession of nonhuman primate cell lines carrying both HVP isolates.
2. Possession of specific reagents (sera, DNA) from both HVP isolates.

If no other qualified sources are found, NCI intends to award a contract, on a sole source basis, to Rush-Presbyterian-St. Luke's Medical Center.

Resumes only of experience and capability should be submitted within 10 days following publication of this notice.

Contracting Officer: J. Thomas Lewis
Viral Oncology & Field Studies
301-496-1781

NCI CONTRACT AWARDS

Title: Identification of mammary tissue, continuation
Contractor: Medical College of Ohio, $88,300.

Title: Osteotropism in mammary carcinoma metastatis
Contractor: Univ. of Connecticut, $109,300.

Title: Studies and investigations on endocrine therapy plus chemotherapy in patients with breast cancer, continuation
Contractor: Univ. of Minnesota, $90,000.

Title: Evaluation of information requirements for image processing of cell samples as basis for development of an automated cell recognition system, continuation
Contractor: Univ. of Chicago, $702,575.

Title: Transplantation and preservation of plasma cell tumors in mice
Contractor: Litton Bionetics, $353,243.

Title: Resources modelling and analysis, extension
Contractor: JRB Associates, $49,332.

Title: Provision, maintenance and transfer of tumored laboratory animal models for investigation
Contractor: Litton Bionetics, $811,080.

Title: Purification of human tumor associated antigens
Contractor: Scripps Clinic & Research Foundation, $141,097.

Title: Diagnostic applications of human tumor or organ-associated antigens
Contractors: Mallory Institute of Pathology, $101,750; and Univ. of Washington, $106,068.

Title: Systems analysis and information services resources for registries of human clinical protocols in cancer therapy
Contractor: Informatics Inc., $74,300.

Title: Procurement of melanoma cell vaccine and in vitro assays for humoral and cellular cytotoxicity
Contractor: Litton Bionetics, $226,026.

Title: Program planning, evaluation and related support services for the Div. of Cancer Control & Rehabilitation, modification
Contractor: JRB Associates, $436,309.

SOLE SOURCE NEGOTIATIONS

Proposals are listed here for information purposes only. RFPs are not available.

Title: Comprehensive cancer centers communications network
Contractors: New York State Dept of Health, Sidney Farber Cancer Institute, Fred Hutchinson Cancer Research Center, Fox Chase Cancer Research Center, Mayo Foundation, and Illinois Cancer Council.

Title: Natural occurrence of RNA tumor viruses (genomes) and host-gene control of their expressions
Contractor: The Jackson Laboratory.

Title: Purification and characterization of viruses
Contractor: Electro-Nucleonics Laboratories Inc.

The Cancer Letter —*Editor* JERRY D. BOYD

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