

Letter to the Editor

Training Programs of the National Cancer Institute

Historical Background

Research Fellowships, Institutional Training Grants, Career Awards, and Clinical Traineeships. The NCI¹ has supported training activities since 1938,² when research fellowships and clinical traineeships were initiated as the result of a directive in the National Cancer Institute Act of the preceding year. The 1st fellowship applications were screened by the National Advisory Cancer Council (NACC), which also reviewed all research applications. In 1946, when the DRG was established, the review of fellowship applications became the responsibility of that Division. Research fellowships were initially used to train individuals to staff the expanding research programs at NCI, whereas clinical traineeships were designed to meet an acknowledged need in clinical medicine. In 1948, grants to schools of medicine (and later dentistry) were initiated at the direction of the Council for improvement of cancer education among undergraduate medical and dental students. These were known as the Undergraduate Cancer Training grants, and amounts were limited to \$25,000 and \$5,000 for the medical and dental schools, respectively. In 1957, institutional research training grants were initiated for the purpose of enlarging the number of appropriately trained scientists in specific disciplines. In the same year, the clinical traineeships and cancer control activities were transferred from the NCI to the Bureau of State Services.

In 1962, Research Career Awards and Research Career Development Awards were established. They were designed to promote the professional careers, in cancer research, of individuals who were already scientifically productive and showed promise of sustained future development. No new Research Career Awards were made after 1964. In 1966, the Undergraduate Cancer Training Program was replaced by a new institutional training program known as the Clinical Cancer Training Program. These 4 types of training activities (research fellowships, institutional research training grants known as Graduate Training grants, Research Career Development Awards, and Clinical Cancer Training grants) functioned successfully until January 29, 1973.

The review of applications for training programs at the NCI has ranged from staff review of individual fellowships to special committees for each type of training program. In the early days, a Council Specialty Board at the NCI assisted in the review of grants and fellowships, whereas the clinical traineeships were reviewed by the Cancer Control

Advisory Committee. When the DRG was established, a Fellowships Qualification Review Board was set up to review fellowships only. In late 1959, a Specialty Fellowship Board was organized at NCI to conduct a 2nd review of these applications. These boards were abolished in 1970, and since then fellowships have been reviewed by the Graduate Training Grant Committee and, in FY 1975, by the DRG Study Sections. Research Career Development Awards have always been reviewed by Study Sections. A Training Committee was first created by the NCI in 1956 to review institutional training grants. In 1965, when the Clinical Cancer Training Program was established, applications were reviewed by 2 committees, one for proposals from medical schools and hospitals and the other for those coming from dental schools. All training committees were abolished in 1973. A Clinical Cancer Education Committee was chartered in 1974 to review Clinical Cancer Education applications, and an *ad hoc* review committee has examined applications for institutional fellowships in FY 1975.

Phase-Out of Training Programs: New Training Programs. In the mid-1960's the Office of Management and Budget began to express strong reservations about the magnitude of the NIH training effort. That agency questioned "whether it is appropriate for the Federal Government to accord so high a priority to an elitist program when the need for funds for fundamentally egalitarian purposes (e.g., income redistribution to the poor) is so great," and "whether the Federal Government is fostering excessive production of scientists in the face of a shrinking market for their skills." Despite the best efforts of all the Institutes, the NIH budget for fellowships and training was reduced in FY 1970 by \$18,000,000 below the amount appropriated; this fixed level was maintained until December 1972, when NIH training funds for FY 1973 were ordered impounded and the Institutes were directed to phase out all fellowships and training programs. No new or competing applications approved after January 29, 1973 were to be paid, but commitments made before this time would be honored. The reaction to this announcement from the scientific community was immediate. As a result of court actions, impounded funds were released. With these funds, NCI awarded 5 new Clinical Cancer Training grants and 10 new Graduate (institutional) Training grants; previously awarded training grants were supplemented to recommended budget levels. Approved applications for fellowships were supported, and 7 postdoctoral fellowship awards were made.

In July 1973, Secretary Weinberger initiated new research fellowships for NIH, which have come to be known as the "Weinberger" Fellowships. These differed from previous fellowships in that (a) a larger stipend was offered, (b) support was limited to 3 years, (c) a payback provision was included, and (d) support could be offered only in areas

¹ The abbreviations used are: NCI, National Cancer Institute; DRG, Division of Research Grants; FY, fiscal year; NRS, National Research Service.

² Twentieth Anniversary Commemorative Symposium. *J. Natl. Cancer Inst.*, 19: 133-349, 1957.

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Table 1
NCI training programs, 1938-1974

FY	Direct traineeships (CLT)		Undergraduate Training grants (T02)		Graduate Training grants (T01)		Research Career Awards (K6)		Research Career Development Awards (K3E4)		Clinical Training grants (T12)		Pre-doctoral fellowship (F01) ^a		Postdoctoral fellowship (F02) ^a		Special fellowship (F03) ^a		Individual research fellowship (F22)		Total training awards (\$) (\$)	Total NCI obligations (\$) (\$)	Training % of total NCI obligations (\$) (\$)
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$			
38	8	9 ^b																			23	399	5.8
39	10	13																			70	390	17.9
40	26	56																			130	562	23.1
41	28	58																			139	527	26.4
42	27	48																			123	530	23.2
43	18	36																			74	481	15.4
44	17	31																			63	516	12.2
45	14	24																			49	553	8.9
46	11	24																			57	544	10.5
47	69	182																			292	1,866	15.6
48	87	209	95	1,684																	2,201	6,641	33.1
49	103	229	104	1,847																	2,566	13,466	19.1
50	137	347	114	2,049																	2,889	14,560	19.8
51	134	359	115	2,028																	2,873	14,665	19.6
52	129	374	114	2,093																	2,966	14,802	20.0
53	173	499	100	1,583																	2,707	16,610	16.3
54	149	491	132	2,275																	3,517	19,538	18.0
55	159	499	132	2,283																	3,642	21,691	16.8
56	135	511	133	2,305																	3,512	24,830	14.1
57	188	730	131	2,344	27	390	1,200														5,147	42,556	12.1
58	227	882	133	2,374	29	500	1,199														5,500	55,454	9.9
59	285	930	133	2,418	39	493	2,536														7,107	69,398	10.2
60	273	987	134	2,418	53	524	3,163														8,568	85,030	10.1
61	233	1,102	135	2,393	54	547	3,388														8,426	106,254	7.9
62	232	973	134	2,398	72	616	4,341														9,798	117,634	8.4
63			134	2,398	74	702	4,874	13	286	24	344										9,416	132,765	7.1
64			136	2,396	87	708	5,830	14	351	37	587										10,954	131,325	8.3
65			137	2,483	87	744	5,830	18	470	52	884										11,378	147,995	7.7
66			132	1,238	89	712	6,006	15	409	68	1,200										13,528	161,313	8.4
67			94	730	94	730	6,504	14	394	70	1,431	73	183 ^c								15,075	173,342	8.7
68			90	719	89	719	5,585	13	382	80	1,778	100	419								14,919	177,346	8.4
69			89	768	89	768	5,961	11	329	81	1,865	112	587								15,889	182,436	8.7
70			87	703	87	703	5,317	11	331	68	1,588	103	580								14,246	181,352	7.8
71			86	638	86	638	5,317	11	331	71	1,681	105	652								14,469	232,856	6.2
72			97	804	97	804	9,217	11	341	75	1,685	104	628								20,101	378,636	5.3
73			97	826	97	826	7,576	10	317	60	1,501	96	269								15,500	425,407	3.6
74			101	710	101	710	10,174	9	280	61	1,393	72	248								25,236	581,149	4.3
																							5,495 ^d

^a Fellowship figures exclude supply allowance.

^b Amounts in thousands.

^c Numbers in italics, number of trainees on Training Grants (T01 and T12).

^d Weinberger Fellowships.

having an acknowledged shortage of appropriately trained manpower. In FY 1974, NCI awarded 361 Weinberger Fellowships totaling \$5,494,500. Research Career Awards and Research Career Development Awards were not considered training instruments and were spared phase-out following an appeal to the Office of Management and Budget.

Accompanying the Weinberger Fellowships were Institutional Research Fellowship Awards, which offered program directors in selected institutions support for fellows whom they would appoint to be trained in shortage areas. The areas selected by the NCI were carcinogenesis, epidemiology, and radiation. Before this program could be initiated, however, it became obsolete.

An overview of support for training programs by NCI between 1938 and 1974 is presented in Table 1.

Present Status of NCI Training Programs

Clinical Cancer Education Program. In the Spring of 1974, a renewal of the National Cancer Act entitled "The National Cancer Act Amendments of 1974" gave the NCI authority to support manpower programs in both basic and clinical disciplines. Prior to this time, a new program designed to replace the Clinical Cancer Training grants, called the Clinical Cancer Education Program, had been developed and was approved by the end of June 1974. Applications for these grants were first reviewed by the National Cancer Advisory Board in March 1975.

NRS Awards. In July 1974, the National Research Act (PL 93-348) was signed into law. This replaces all research training and fellowship authorities at the various components of NIH with a new authority known as NRS Awards. These awards may be made both to individuals and to institutions in a manner similar to that for the fellowships and training grants, but with certain stipulations. (a) Recipients of traineeships are subject to service obligations or must repay the United States Government for the costs of their training. (b) As of July 1, 1975, NRS Awards may be made only in subject areas for which there is a need for personnel as determined by a mandated study of biomedical and behavioral research personnel (being done by the National Academy of Sciences). (c) NRS Awards must be approved by the respective Advisory Councils. (d) The duration of NRS Awards may not exceed 3 years, although the Secretary may waive this limitation. (e) NRS Awards may not be used to support residencies.

Announcement of the availability of NRS Awards for individual postdoctoral fellows was made on October 15, 1974. The NCI accepts applications in the areas of carcinogenesis, chemotherapy, drug development, epidemiology, immunology, radiation, tumor biology, and viral oncology. Other institutes also have announced their particular areas of interest. Since July 1, 1975, however, these areas have been limited to those determined by the National Academy of Sciences study. Applications for Weinberger Fellowships and institutional grants awaiting review were converted, with consent of the applicant, to NRS Awards.

The NRS Award guidelines to institutions for appoint-

ment of fellows were announced by NIH on December 13, 1974. Both predoctoral and postdoctoral trainees may be supported if either or both levels of training are justified in the application and approved. In addition to stipends and allowances for trainees, the institution may request up to 25% of the total award for other costs deemed essential for the training.

Research Career Development Awards may be made as usual.

Prospective Awards for FY 1975. The current status of training programs at the NCI follows.

(a) Graduate Training grants are being phased out. Of 101 currently active grants, 63 have continuation support for which the commitments total \$6,100,000. (b) Clinical Cancer Training grants also are being phased out. Of 72 currently active grants, 44 have continuation support for which the commitments total \$3,800,000. (c) Applications for the new Clinical Cancer Education grants were received to meet deadlines of December 1, 1974, and February 1, 1975. Fifty-one grants totaling \$5,000,000 were awarded in FY 1975. (d) Fellowships (including the Weinberger Fellowships) are being phased out. There are currently 19 active (11 postdoctoral and 8 special) fellows in the "old" fellowships program. Less than 10 will remain by the end of FY 1975. In FY 1975, 128 Weinberger fellows received a total of \$2,547,450. An additional 161 applications for Weinberger Fellowships were recommended for approval; the amounts recommended for these awards total \$1,728,400. With the consent of the applicants, the Weinberger Fellowships have been converted to NRS Awards. (e) NRS Awards for postdoctoral fellows have been announced. The 1st deadline for receipt of applications was January 2, 1975. In FY 1975, \$2,500,000 was awarded to support approximately 233 postdoctoral fellows. (f) Institutional grants for NRS Awards for Research Training have been announced. The 1st deadline for receipt of applications was February 15, 1975. Approximately 65 grants totaling \$7,000,000 were awarded in FY 1975. (g) Research Career Development Awards are available. The 1st deadline for receipt of applications was January 2, 1975. In FY 1975, 114 awards (including 52 new) totaling \$2,600,000 were made. (These are considered to be research and not training awards.) No new Research Career Awards were made after 1964; only noncompeting awards have been made since then. Nine awards totaling \$284,000 were made in FY 1975.

The future for training programs at the NCI appears promising. The Cancer Act as amended in 1974 gives the Institute unrestricted authority for clinical training but excludes authorization for research training. However, research training authority for the Institute is provided by the National Research Act. As noted earlier, all trainees supported under the National Research Act must comply with its restrictions. In addition to the Clinical Cancer Education grants, guidelines for other clinical training programs are being developed. Announcements for these programs will be prepared so that they can be funded in FY 1977. Guidelines for additional research training programs will be forthcoming in the near future.

The following resource materials are offered for the

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prospective applicant. (a) The Training Programs of the Institutes of the National Institutes of Health, Fiscal Year 1974, Vol. 1. Office of the Director, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare. (b) NIH Guide for Grants and Contracts: National Research Service Awards for Individual Postdoctoral Fellows, Vol. 3, No. 15, Oct. 15, 1974; Clinical Cancer Education Grants, Vol. 3, No. 16, October 18, 1974; NIH Research Career Development Program,

Vol. 3, No. 17, Nov. 1, 1974; Institutional Grants for National Research Service Awards for Research Training Vol. 3, No. 20, Dec. 13, 1974.

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