National Cancer Institute Support for Scientific Conferences

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Abstract

In this paper, we discuss the value of scientific conferences to both the discipline area and the individual participants and trace the growth in grant support of biomedical meetings by the National Institutes of Health and, in particular, the National Cancer Institute.

Introduction

Conferences and workshops provide a forum for the exchange of scientific information and a setting for personal interaction among scientists and clinicians, which can rarely be accomplished through other means. Such gatherings represent an important opportunity for recognized experts as well as accomplished through other means. Such gatherings represent an important opportunity for recognized experts as well as promising young investigators to come together to exchange new knowledge and ideas.

Conferences are of particular value to disciplines that are undergoing rapid change. The more dynamic the discipline, the greater is the need for frequent and rapid interaction and communication among scientists in the field. In such an environment, the scientific meeting “takes on a perspective as one vital component in the information diffusion, regulation, and utilization dynamic of a discipline” (6).

Science is also served by the “invisible college” or intellectual “social circle” which prevails at most conferences. This informal aspect afforded by conferences should not be overlooked, as it has been asserted by many participants that more information is exchanged informally than is formally transmitted through the scheduled presentations and lectures.

Young investigators in particular are served by scientific conferences, which represent a prime opportunity for acceptance into the research community. As one organizer of a series of conferences and workshops in the area of cancer research remarked: “Many cancer seminars are restricted to one area, limited to small groups of people well established in the field, and allow little entree to the graduate student, postdoctoral fellow, and younger faculty investigator” (7).

The NCI1 and other Institutes at the NIH have long recognized the value of conferences as a means of involving young investigators in the research effort. Most of the NIH conference grants approved by Study Sections, in fact, stipulate that a certain percentage of the allotted funds (usually between 20 and 40%) be used to pay the travel expenses of young investigators (those under 40 years of age).

A senior investigator at a recent NCI-sponsored tumor immunology conference designed for the primary benefit of young investigators commented:

...it is absolutely essential that the mechanisms of funding these research programs also provide various means for the training of young

investigators. Training grants and institutional fellowships provide an important component of these training programs, and in my opinion they accomplish their goals quite well. However, there is an additional training device which has not received sufficient emphasis until only recently as a trial program sponsored by the NCI. This is the small, informal conference format.2

NIH Position on Conference Support

The NIH supports approximately 41% of all medical research and development in the United States and provides over two-thirds of all Federal funds for health research. Of the $2.2 billion NIH expenditure for research and development in FY 1977, only 18% supported studies by Federal scientists; the balance was used to support the extramural research community (9). Owing to the size and geographical expanse of its research effort, the NIH must depend upon the scientific community to perform most program planning and evaluation. This is due to the fact that:

It is the investigators themselves who know when an evaluation and planning session should take place, and the NIH relies on them to plan and conduct most of the sessions. These research progress evaluations and program planning sessions occur in the form of scientific conferences and workshops ... it is from this forum that NIH obtains information and data on research progress in each operational segment and can develop practical program plans. Furthermore, the NIH could not develop effective program plans on a realistic basis without the extensive research progress reporting and evaluations that occur in the many scientific meetings that occur each year. (5)

NCI’s Emphasis on Conferences

The NCI has been in the forefront in recognizing the need for informal, personal information exchange (as generated by scientific meetings) and, accordingly, has obligated over $3.3 million in conference grants in the past 5 years. NCI’s grant support of conferences has exceeded that of the other 10 NIH Institutes combined for each of the last 3 years, making it the largest single sponsor of biomedical research conferences in the Federal government. In the private sector, the ACS sponsors several national conferences and many workshops each year, often in conjunction with the NCI. The ACS has sponsored 44 separate research conferences of the workshop variety since 1956, each having up to 50 participants, and, in addition, sponsors a number of conferences annually dealing with professional education (Ref. 1 and Footnote 3).

1 The abbreviations used are: NCI, National Cancer Institute; NIH, National Institutes of Health; FY, Fiscal Year; ACS, American Cancer Society; R13, conference grant application.

2 D. B. Wilson, personal communication by letter to Dr. B. Sanford (former Director, Immunology Program, Division of Cancer Research Resources and Centers, NCI) sent upon request for appraisal of tumor immunology conferences sponsored by NCI, March 1977.

3 The Professional Education Program of the ACS assures that the members of the medical and allied professions in every community are informed and carry out the best possible cancer detection and management techniques. The conferences serve to bring together members of the medical and allied professions for an immediate interchange of information, which is then disseminated to the medical community at large through publication and distribution of the proceedings.
The NCI has stressed conferences because of the previously stated general advantages of such gatherings and for 2 other more specific reasons. (a) Because the field of cancer research is such a rapidly changing, dynamic field, e.g., one in which new techniques, modalities, and therapies are constantly being identified, it is therefore crucial to promote the most rapid means for sharing and disseminating these findings. (b) The other specific reason the NCI has emphasized the support of conferences is a more pragmatic one. The National Cancer Act of 1971 (2) expressly directs the NCI and its Director:

> To take necessary action to insure that all channels for the dissemination and exchange of scientific knowledge and information are maintained between the National Cancer Institute and the other scientific, medical, and biomedical disciplines and organizations nationally and internationally.

### Funding of NCI Conferences

The NCI’s support of conferences via grants has increased dramatically since passage of the National Cancer Act of 1971. From awards totaling $161,556 for FY 1968, conference grant support rose nearly 9-fold to $1,239,694 in FY 1976; 93% of this increase has occurred since passage of the Act.

A rapid increase would be expected in view of the concurrent growth in the total NCI budget following the Act; however, data indicate that conference grant support has increased more than twice as rapidly as has total research grant funding over the same period (Table 1). In the 4 FY’s immediately preceding the Act, a total of 26 grants was awarded for national conferences, however, research grants increased by 133% while conference grants rose by a startling 284%. The 9-year increase in total NCI conference grant obligations (FY’s 1968 to 1976) was 667%.

Conference grant allotments have also increased with respect to their portion of the total NCI research grant program budget. In 1968, conference grants accounted for just 0.2% of the total research program expenditures. By 1976, the proportion was still negligible, but it had risen to 0.5% ($1.2 million of a $275 million program). Nevertheless, despite this increase in conference grant expenditures, they can hardly be viewed as a major competitor or threat to traditional research grants for funding in these times of fiscal austerity.

If we compare the NCI with the NIH as a whole, the NCI has provided more conference support than any other Institute and has, for each of the past 3 years evaluated (FY’s 1974, 1975, and 1976), furnished a larger amount of conference grant funds than the other 10 NIH Institutes combined. In 1975, for example, NCI provided 65% of the total conference grant dollars awarded by NIH, 86% more than the sum total funded by the remaining 10 Institutes (Chart 1). Total NIH conference support as of FY 1976 exceeded $2.2 million, $1.2 million of which was provided by the NCI. Although it is true that the NCI has by far the largest budget of any NIH Institute, its portion of the total NIH conference grant expenditures in FY 1976, for example, was 55%, a figure that greatly exceeds by 2.5 times its portion of total NIH research grant awards (which was 22%).

### National versus International Conferences

Funding for national conferences over the past decade exceeded that for international meetings by a factor greater than 3, and the gap is widening. In the 5-year period studied, support for national conferences increased by $887,000 (a growth of 370%) while international conference awards rose by $118,000 (or 142%). In FY 1976, 5.6 times the funds ($1.4 million versus $201,000) sponsored nearly 7 times the number of conferences (34/5) on the national, as opposed to the international, scene (Chart 2).

The sheer number of conferences has also increased markedly since passage of the National Cancer Act of 1971. In the 4 FY’s immediately preceding the Act, a total of 26 grants was awarded to support both national and international conferences. In one FY alone (1976), 39 conference grants were made. However, despite this overall increase, there have yet to be more than 6 international conference grants in any given year.

The most prominent example of an international conference sponsored in significant part by the NCI is the quadrennial International Cancer Congress held in Houston in 1970, Florence in 1974, and Buenos Aires in 1978. The awards for such events do not greatly inflate the annual figures for international conferences, however, as they are frequently spread over the intervening years between gatherings. The Tenth International Cancer Congress in 1970, for example, was supported by NCI (which in other years has augmented the host country) through an R13 grant in FY 1968 ($50,000), 2 grants in FY 1969 (totaling $118,000), and one in FY 1970 ($101,000). Thus, the total NCI grant support over 3 years for the Houston meeting was $269,000, which is far greater than the total NCI grant support for all international conferences in any single year.

Other examples of international conferences supported in large measure by the NCI in recent years are the Fifth International Congress of Radiation Research, the International Particle Radiation Therapy Workshop, the First International Symposium on Cancer Pain, the International Cancer Detection and Prevention Symposium, and an International Congress on Cell Biology.

### Contract Support of Conferences

One fact which may account for the gap between national and international conference allotments is the support furnished via the contract mechanism. In the case of the Tenth International Cancer Congress (Houston), for instance, more than $330,000 in contractual support was provided by the NCI in addition to the $269,000 awarded through grants.

A frequent source of contractual support to conferences is through joint sponsorship of a meeting in which the NCI awards a contract to another agency that has primary responsibility for...
the event. A recent series in which this occurred was the Joint United States-Union of Soviet Socialist Republics Symposia on Membrane Biology and Biochemistry of Proteins for which the NCI furnished $92,000 in contract support to the National Academy of Sciences, the organization responsible for coordinating the event. As mentioned previously, support was furnished in conjunction with private foundations and professional organizations representing public interests, such as the ACS.

Another frequent use of contracts is to obtain logistical, i.e., conference management, support services for meetings being sponsored by the NCI. The inclusion of these support service funds would, however, present a misleading picture in comparison to conference grant support, and, even if data were useful, precise figures for all activities that may be relevant to conference support are extremely difficult to separate out from comprehensive support service contracts.

For this reason, and because accurate contract allotments for conferences cannot be obtained from the individual Institutes or programs, we have not included contract figures in this analysis. It is clear from available data, however, that contracts represent a smaller but significant complement to grant support of conferences and, in some areas of cancer activity, are actually the preferred means of support. In the area of carcinogenesis, for example, which ranked surprisingly low in the 1975-1976 rankings of grant support by activity (as noted in the next section), most NCI conference support appears to have been furnished via the contract mechanism.

Conference Support by Program Area

All of the major program areas have shared in the increase in NCI conference support. The areas of Viral Oncology, Carcinogenesis, and Clinical Oncology, however, have received by far the largest portions of the allotment.

Of the $4.1 million obligated by NCI for conference grants during the past 9 years (FY’s 1968 to 1976), nearly $1 million have been in the area of Viral Oncology. An additional $825,000 have sponsored Carcinogenesis conferences while $487,383 have been directed toward Clinical Oncology. The activities of Drug Development and Pharmacology and of Detection and Diagnostic Research have received the least conference support (Table 2).

Despite the predominance of the aforementioned 3 disciplines, certain funding trends are discernible. For example, nearly two-thirds of the Viral Oncology conference support has come in recent FY’s when Viral Oncology was considered a
priority area for investigation. Conversely, more than 94% of the Carcinogenesis conference grant support was awarded prior to that time (before FY 1975 to 1976), and only $46,356 were allocated in the succeeding 2 years (Table 2). This is surprising, considering that both the Congress and the public have emphasized environmental carcinogenesis in recent years. However, as stated earlier, many carcinogenesis-related conferences have been supported through contracts. To cite the most extreme sample, total NCI grants for conferences in the Carcinogenesis area were just $46,356, yet one Division alone (Division of Cancer Cause and Prevention) provided $416,000 in contract support for Carcinogenesis conferences during that period. Other disciplines on the rise with respect to conference grant funds include Immunology, Tumor Biology, and Detection and Diagnostic Research. Those on the decline (in addition to Carcinogenesis) are Epidemiology and Radiation.

Examples of recent conferences for each cancer area include: Viral Oncology, Third Herpes Virus Workshop at Cold Spring Harbor; Carcinogenesis, Modern Concepts in Brain Tumor Therapy; Radiation, Fourth International Conference on Radiation Research; Tumor Biology, Annual Symposium on Fundamental Cancer Research; Immunology, Decennial Review Conference of the Tissue Culture Association; Epidemiology, Ninth International Biometric Conference; Detection and Diagnostic Research, International Cancer Detection and Prevention Symposium; Drug Development and Pharmacology, Rational Synthesis of Compounds for Cancer Therapy; and Multidisciplinary, National Cancer Act of 1971—Retrospective Perspectives. Other major conferences to which the NCI contributed support include the aforementioned International Cancer Congresses (1970, 1974, and 1978), An Interdisciplinary Exploration of Carcinogenesis Problems, and Workshops in Techniques of Cancer Research.

An example of outstanding conferences which have traditionally been sponsored by the NCI is the Cold Spring Harbor Symposia, a series of events under the guidance of Nobel Laureate James D. Watson. In the past, this series has included several of the most comprehensive meetings yet held on the origins of human cancer (September 1976); Origins of Lymphocyte Diversity (June 1977), which brought together 325 prominent immunologists and featured 86 formal presentations; and the symposia endowed by the Robertson Research Fund, of which two-thirds of the funds are committed to supporting young investigators.

Consensus Development Conferences

In the past 2 years, a modification in the state of the art of scientific meetings has arisen: the recently introduced technical consensus development conferences sponsored by the NIH. In these conferences, usually 1 or 2 days in duration, knowledgeable biomedical researchers, practicing health professionals, and other interested parties are brought together to exchange information and opinion and to seek a general consensus on the suitability of a particular health care technology for general application in the practice of medicine.

The NCI has been one of the most active participants and sponsors in these consensus conferences since their inception in September 1977, believing that such exercises are of value not only to the subject discipline being debated but also to the practicing physicians who must implement the technology and to the public who must avail themselves of it.

Recent examples of highly visible and successful consensus conferences sponsored by the NCI include the initial NIH consensus meeting (Breast Cancer Screening), which produced a recommendation for only limited use of mammography for women with neither a personal nor familial history of breast cancer; a meeting (Education Needs of Physicians, Workers, and the Public Regarding Asbestos), which improved notification, awareness, and occupational exposure information methods nationwide and urged establishment of an asbestos clearinghouse; and the June 1979 conference (Primary Breast Cancer: Management of Local Disease), which recommended the modified over the radical method of breast cancer surgery for women with Stage I and selected Stage II breast cancer and came out in favor of a 2-step treatment procedure in most cases.

Consensus conferences to be sponsored by the NCI in 1980 include Adjuvant Therapy for Breast Cancer, Carcinembryonic Antigens and Immunodiagnosis, and Computerized Tomography Scanning of the Central Nervous System. The last of these will be jointly sponsored by the NCI; the National Institute of Neurological and Communicative Disorders and
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Stroke; and the National Center for Health Care Technology, which performs comprehensive assessments of high-priority medical technologies based upon such criteria as prevalence of use, cost to the nation, and considerations of safety and efficacy.

These consensus development exercises represent the most recent example of the role that scientific conferences can play; in this case, they serve as a mechanism for promoting true medical innovation and for fostering appropriate utilization.

Guidelines for Conference Support

The review, funding, and monitoring of conference grants present special problems to their sponsoring organizations. This process has been difficult at the NCI principally because "most conference grant applications do not specifically relate to any specific DCCR [Division of Cancer Research Resources and Centers] grant programs" (4). It is also difficult to weigh the relative merits of conference grant applications (where there is little substantive information to evaluate and often only a prospectus to consider) and nearly impossible to assess the benefits derived from these meetings following their completion. To counter these problems, the NIH has set forth guidelines (8) for its grant support of scientific meetings. These guidelines clearly state that the Public Health Service of which the NIH is a part recognizes a responsibility to assist in the support of conferences planned for the purpose of coordinating, exchanging, and disseminating information when such activities are directed toward objectives clearly within the areas of PHS [Public Health Service] program interests.

In other words, the NIH will assist in supporting scientific meetings (usually in concert with the host organization), but it will not support the entire event. This is reiterated in the NIH guidelines (3) that state: "The NIH policy is to participate with other scientific organizations in the support of meetings, where practicable, rather than to provide the sole support."

Other important policies governing conference grant support, as provided by the NCI, include the following. (a) An individual is not eligible to receive a grant in support of a conference. (b) An R13 does not ordinarily undergo review by a standing initial review group; instead, a mail review utilizing ad hoc consultants is conducted. An R13 does not undergo dual review unless it exceeds $35,000 in direct costs for its initial year, in which case it must be reviewed by the NCAB. (c) Conference applications are subject to the same funding guidelines as other grant applications (e.g., priority limits and program relevance). (d) Funding has traditionally been limited to 3 years, and, in fact, most conference grants have been for a single event (1-year awards). Four- and 5-year awards are currently being considered for a few ongoing symposia, such as the series held at Cold Spring Harbor. (e) Indirect costs are negotiable but generally not allowed. Grantees are sometimes permitted to rent a facility for a conference (which would include such indirect costs as heat, light, maintenance, etc.), but they never are to purchase one. (f) A separate budget allocation is sometimes set aside for funding conference grants, but a Division Director may elect to pay such a grant out of his or her Division’s funds if monies are not available from the conference budget due to low priority.

With these exceptions, conference grants are reviewed similarly to other grant applications. The well-established evaluation criteria are that there be:

1. Objectives that are sound and conform to the goals of the National Cancer Program
2. A record of past success by the grantee organization in presenting conferences, seminars, etc.
3. A demonstration of skill, efficiency, and style on the part of the institution
4. An able administrator, preferably well known and well regarded
5. A central location (easily accessible) for the event
6. A first-rate faculty in residence
7. No undesirable overlap with other meetings (applicants are required to list all related conferences held on the subject within the preceding 3 years)

An examination of representative summary statements for conference grants reveals that review is less stringent than that for basic research projects. Without the benefit of being able to determine scientific merit via the applicant’s methodological approach and without clearly defined goals, evaluators must rely heavily on the reputation and experience of the presenters and grantee institutions. Nevertheless, there appears to be quite a careful review of the conference’s value to the discipline as the following comments of representative reviews indicate: "There is a need to make generally available to actual and potential cancer investigators practical means to enlarge their technical approaches to problems in cancer"; "The objectives of these educational programs are consistent with an explicit objective of the National Cancer Program"; and "It is conceivable that the Institute could become a home for carcinogenesis, as Cold Spring Harbor is for Viral Oncology."

Summary and Conclusions

Conferences clearly appear to be viewed by both their participants and sponsors as being extremely useful and informative, and they seem to represent a highly efficient mechanism for focusing many basic research approaches on a single biomedical problem. It has been argued that one of the major problems in effecting the advancement of health care in the United States has been the isolation of basic scientists from doctors more directly involved with patients. In the words of Dr. Xandra O. Breakefield of the Yale University School of Medicine: "Basic scientists need to exchange unpublished knowledge and information with scientists both in and out of their fields of expertise and to learn and become concerned about human diseases." Carefully planned conferences are a most effective means of accomplishing this goal.

As we have indicated, the NCI has recognized the need for providing a forum for scientific interchange and, accordingly, has enthusiastically and generously supported conferences in the past. In so doing, the NCI has stressed national over international conferences, has kept pace with trends in various disciplines, and, importantly, has made a concerted effort to include young investigators in the meetings it sponsors.

The overriding question, of course, is what does the NCI (and more significantly, the public) gain from this increased emphasis on sponsorship of biomedical research conferences? Perhaps the response of Darcy B. Wilson (10), senior investi-
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gator and participant at a 1977 NCI conference for young investigators, best illustrates the Institute's view:

The answer to this question rests with the logical probability that among a group of imaginative, enthusiastic, tuned in and turned on, young investigators, exposed to new ideas and given the opportunity to explore these new concepts and to discuss them with senior investigators, some proportion of them will be the movers of the next generation of productive scientists. It seems axiomatic to me that the greater the number of imaginative investigators interested in a discipline, the faster the discipline will develop.

References

3. NIH. NIH Support of Meetings: Special Information and Instructions (supplemental information to Form PHS 398), Bethesda, Md.: 1976.
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