

## Preparing Oncology Nurse Scientists: Opportunities at the National Cancer Institute

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Doctoral preparation of nurse scientists has moved beyond the narrow goal of preparing nurses in the field of education. As nursing education shifted away from hospital-based programs toward baccalaureate and higher education, doctoral preparation in curriculum development and adult and higher education was the primary means for meeting the growing need for nursing academicians. As more doctoral programs opened with a wider variety of course work and research topics to explore, nurse scientists increasingly were being prepared to assume more diverse roles.

In 1986, Shores recommended that nursing should define the roles that doctorally prepared nurses would be expected to fulfill in the healthcare system. Since that declaration, revolutionary changes have occurred in the system. For oncology nurses, these changes have included a markedly changed profile of patients using the healthcare system, an expanded array of treatments available to patients, and increasing restrictions placed on patients in accessing adequate medical care. To address the critical challenges facing the nation's healthcare needs, oncology nurse scientists are responding by becoming prepared not only in the area of patient-centered research but also in the fields of basic science, epidemiology, health services research, and ethics. Nursing doctoral programs are responding as well. For example, Jones and Lusk (2002) argued for the potential for health services research to aid nurses in addressing issues associated with access, affordability, and quality of care.

This article outlines the fundamental elements of a typical postdoctoral experience and describes the array of postdoctoral programs at the National Cancer Institute (NCI), with a particular focus on the Cancer Prevention Fellowship Program (CPFP).

### Importance of Postdoctoral Training

The progress that has been made in the understanding of cancer and the ability to detect and treat it has changed the way we think about some cancers from acute to chronic illnesses. Doctoral preparation coupled with rigorous postdoctoral training experience will equip oncology nurse researchers with the necessary skills and knowledge to respond to this new challenge of change. By virtue of education in the diversity of methodologic approaches to studying cancer, nurse scientists are well positioned to contribute to the growing knowledge of the biology, etiology, prevention, and treatment of cancer and related morbidities.

Although doctoral preparation is a necessary first step in preparing nurse scientists, training beyond the doctoral level now is considered an essential next step. A number of experts have concluded that, in the life sciences, a formal, postdoctoral experience is "virtually mandatory for obtaining a regular position in academia or industry. One reason for this is that graduate school programs cannot alone provide the broad range of knowledge and skills required for modern research" (National Academy of Sciences, 2000, p. viii).

### Essential Components of Postdoctoral Training

Irrespective of the discipline, the primary purpose of any postdoctoral experience should be to broaden and deepen research and related skills necessary for contributing significantly to the field of study and, ultimately, society. To accomplish this goal, a high-quality postdoctoral experience should be a full-time program, range from three to five years in length, and offer a variety of learning opportunities, such as formal classes, lectures, and courses, as well as a structured mentored experience.

Sigmon and Grady (2001) noted that many nurse scientists pursuing postdoctoral training find that some requirements of training programs (e.g., full-time commitments, moving to different locations) preclude their applying for admission. This often is because many nurses eligible for postdoctoral training are older than the average "postdoc" and married with children. For this reason, nursing students at the baccalaureate and master's degree levels who show interest in research must be encouraged strongly to pursue doctoral- and postdoctoral-level work at a much earlier period in their careers.

### National Cancer Institute's Mission

The mission of NCI is broad-based, focusing on conducting and supporting research as well as training; disseminating healthcare information with respect to the cause, diagnosis, prevention, and treatment of cancer and rehabilitation from it; and continuing the care of patients with cancer and their families (NCI, 2001). With regard to its educational and training mission, NCI supports education and training in fundamental sciences and clinical disciplines for participation in basic and clinical research programs and treatment programs relating to cancer through career awards, training grants, and fellowships. NCI also collaborates with volunteer organizations and other national and foreign institutions engaged in cancer research and training activities.

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## Cancer Prevention Fellowship Program

To accomplish the goal of supporting the education and training of extramural scientists, the Cancer Training Branch of NCI manages the institute's research training, career development, and education programs for U.S. citizens, providing guidance to the extramural biomedical research community and administering awards (see Figure 1 for Web sites that provide further information). NCI's career track for prevention, control, behavioral, and population scientists is of particular interest to nurse researchers interested in furthering their development.

In addition to extramural support, NCI offers fellowship opportunities within the institute. NCI trains about 1,000 postdoctoral fellows from a variety of disciplines in more than 400 laboratories and program areas. The Cancer Research Training Award provides training support in basic, clinical, biomedical, or behavioral research related to human health. Candidates who hold bachelor's or master's degrees may apply, as well as those who hold doctoral degrees. This appointment mechanism is of particular relevance to nurses who do not possess doctorates but would like additional training or experience in selected scientific areas.

A specific training opportunity within NCI is the CFPF. The CFPF provides post-

doctoral training in the areas of basic laboratory studies, intervention trials, clinical studies, behavioral and epidemiologic research, prevention-related policy, and ethics of public health and prevention research. The duration of the program usually is three years. The current stipend range is \$42,004–\$53,597 annually, commensurate with level of experience, and health insurance is provided.

The CFPF has provided a number of rich and varied opportunities for nurses during the course of its history. Mentorship is a major focus of the program, and oncology nurses have an opportunity to identify a skilled investigator or member of the senior program staff who will serve as preceptor. A preceptor and fellow then embark on a mutually agreed upon study in the area of cancer prevention or cancer control. Fellows are expected to disseminate their findings by participating in scientific conferences and publishing the results of their studies.

Fellows have a great deal of latitude in determining the area of their mentored research and can choose topic areas that include but are not limited to health communication, basic biobehavioral research, cancer survivorship, health promotion, palliative care, tobacco control, nutrition, outcomes research, risk factor monitoring, clinical genetics, cancer surveillance and health services, and economics. Fellows may choose to work with one preceptor or have a primary and secondary preceptor, depending on their research interests. The CFPF scientific staff members function as mentors to fellows as well. This characteristic of the program provides a more broad-based approach than traditional postdoctoral experiences, where students work for principal investigators on their research before becoming independent.

Another aspect of the CFPF is structured training in the area of professional development. Applicants who are selected as cancer prevention fellows are given the opportunity to obtain a master's of public health (MPH) degree at any accredited, one-year program in the country. Fellows are encouraged to focus on a highly quantitative track in their respective MPH programs so that they are well grounded in the basics of biostatistics and cancer epidemiology. Tuition, fees, and a book stipend are provided.

Fellows participate in a six-week summer curriculum in cancer prevention after MPH training. The first part of this curriculum is a four-week course that focuses on the theories, methods, and issues related to cancer prevention and control. The second part of the curriculum is a two-week course in molecular prevention that provides a background in molecular biology and genetics and a hands-on laboratory experience. Other structured training opportunities include a variety of workshops on topics such as grantsmanship, public speaking and presentation skills, time management, and goal set-

ting, as well as lectures on networking, interviewing, and curriculum vitae writing. In addition, weekly writing support is provided through the Scientific Writing Group, an informal peer group that assists with technical writing and encourages submission of manuscripts to promote the importance of initiating a record of peer-reviewed publications.

The CFPF encourages leadership development by sponsoring a variety of activities that are directed by fellows. This includes the weekly Cancer Prevention and Control Colloquia lecture series, where fellows can host distinguished scientists in their fields who give presentations on their latest research. Fellows also take turns presenting their own research each week at the Fellows' Research Meetings and the annual Fellows' Scientific Symposium.

## Postdoctoral Success

The excellent foundation in cancer prevention and control provided by the CFPF has been an important element in developing the careers of nurses and those in other professions who have been part of the program. Former fellows have gone on to illustrious careers at more than 21 universities, 19 government departments and agencies, 9 research firms, and 7 cancer centers. The CFPF provides an opportunity for structured mentoring, protected research time, and professional development, with the goal of producing independent scientists in cancer prevention and control.

Whatever postdoctoral opportunity nurses choose, the postdoctoral experience should be a special opportunity to immerse themselves in the research process while developing collaborative, career-building relationships. Oncology nurses, who already have a firm foundation in the general principles of primary, secondary, and tertiary prevention, are suited perfectly to the research challenges offered at NCI.

## References

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### NCI Mission Statement

[www.cancer.gov/aboutnci/overview/mission](http://www.cancer.gov/aboutnci/overview/mission)

### The Fellowship Office of NCI

[www.nci.nih.gov/fellowships](http://www.nci.nih.gov/fellowships)

### Cancer Research Training Career Development and Educational Opportunities

<http://cancertraining.nci.nih.gov/overview/overview.html>

### NCI Cancer Prevention Fellowship Program

[www3.cancer.gov/prevention/pob](http://www3.cancer.gov/prevention/pob)

### Cancer Research Training Award

<http://ttb.nci.nih.gov/crta1.html>

### Research Training for Minorities

<http://cancertraining.nci.nih.gov/research/minority/minority.html>

### Research Training and Career Development Opportunities for Prevention, Control, Behavioral and Population Scientists

<http://cancertraining.nci.nih.gov/research/prevention/prevention.html>

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## Figure 1. Research Training Web Sites at the National Cancer Institute (NCI)