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The Inception and Evolution of a Unique Masters Program in Cancer Biology, Prevention and Control

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Abstract

The University of the District of Columbia (UDC) and the Lombardi Comprehensive Cancer Center (LCCC), Georgetown University Medical Center established a Masters Degree Program in Cancer Biology, Prevention and Control at UDC that is jointly administered and taught by UDC and LCCC faculty. The goal of the Masters Degree Program is to educate students as master-level cancer professionals capable of conducting research and service in cancer biology, prevention, and control or to further advance the education of students to pursue doctoral studies. The Program's unique nature is reflected in its philosophy "the best cancer prevention and control researchers are those with a sound understanding of cancer biology". This program is a full-time, 2-year, 36-credit degree in which students take half of their coursework at UDC and half of their coursework at LCCC. During the second year, students are required to conduct research either at LCCC or UDC. Unlike most cancer biology programs, this unique Program emphasizes both cancer biology and cancer outreach training.

Keywords

Unique master program; Cancer biology; Prevention and control; Inception of a new masters program; Masters in cancer prevention and control; Masters in cancer biology

The University of the District of Columbia (UDC), a Historically Black College or University (HBCU) located in the Nation's Capitol was established in 1976 through the merger of the District of Columbia Teachers College, Federal City College, and Washington Technical Institute. UDC is the nation's only comprehensive urban land-grant institution and values the land-grant mission of education, research, and public service [1, 2]. For residents with low to marginal incomes, UDC is their only viable option for higher education. The UDC has a rich history in training students who are first in their families to attend college. It is a commuter institution with about 85% of its 5,300 students residing in the District of Columbia. Its student body, with a median age of 29, is diverse consisting of a cadre of students from diverse ethnic backgrounds, mostly minorities. In contrast, Georgetown

University was founded in 1789 and the School of Medicine began in 1851. In 1970, the Georgetown University Medical Center authorized the establishment of a Cancer Center named in honor of Vincent T. Lombardi, former coach of the Green Bay Packers and the Washington Redskins, who had died of colon cancer at Georgetown University Hospital. The Lombardi Comprehensive Cancer Center (LCCC) has an extensive history in teaching, cancer research, and working with minorities in medical education, through the Georgetown University School of Medicine [3]. In 1974, the LCCC became the 16th National Cancer Institute-designated Comprehensive Cancer Center. The LCCC has an independent PhD. degree-granting status in Tumor Biology through the Georgetown University Graduate School. More recently, two Masters Programs were established at LCCC, one in tumor biology and the other in biostatistics and bioinformatics. The LCCC has a strong track record of developing scientists committed to cancer research through postdoctoral training and junior faculty development. Over 100 postdoctoral and clinical fellows and numerous faculty members have received career development training awards.

In 2001, an National Cancer Institute (NCI)/P20 grant established a partnership between UDC and LCCC that emphasized cancer research education. Before the partnership, there were no collaborations between UDC and LCCC, and in fact there was no faculty at UDC either conducting cancer research or teaching about cancer. Thus, the partnership was established with practical but limited goals that adhered very closely to UDC's land grant mission of education, research, and public service. Initially, the partnership offered two courses that were extremely successful. The great success of the two undergraduate courses, Cancer Causes and Prevention and Tumor Biology and requests from students to gain greater involvement in cancer prevention provided a major rationale for a Masters Program in Cancer Biology, Prevention and Control.

The goal of the Masters Degree Program is to educate students as master-level cancer researchers who are capable of conducting research in cancer biology, prevention and control or to further advance their education by pursuing doctoral studies. The specific objectives of the Masters Program included: (1) to enroll and graduate approximately five students per year, where year1 was dedicated to coursework and year2 was research-oriented, and (2) to obtain funding for this degree program through grant support. The graduates of the Masters Program are best suited for translating basic science knowledge into cancer prevention and control practices.

The program has as its philosophy "the best Cancer prevention and control researchers have a sound understanding of cancer biology." The UDC and LCCC partnership implemented the degree program through the UDC Department of Biological and Environmental Sciences with a student composition reflective of the UDC student body, which consists primarily of African Americans.

The Masters program is a full-time, 2-year, 36-credit degree program in which students take about half of their coursework at LCCC and about half at UDC. During the second year, students are required to conduct research either at LCCC or UDC under the mentorship of a senior research advisor. In order to begin year2, the student must earn a cumulative average of B or better in 26 credit hours of graduate courses at an advanced (500) level taken toward

the masters degree. The 2-year curriculum is thoroughly reviewed annually. This masters program has been designed with the understanding and appreciation for flexibility in course offerings to meet societal needs, therefore careful curriculum evaluation occurs each year.

The masters program is particularly attractive to residents of DC and surrounding areas because of its low cost, its proximity to UDC via Metro and to LCCC via shuttle, and its affiliation with a top comprehensive cancer center. This program is competitive among graduate programs in area universities that have master's degrees in the natural sciences in general and tumor biology in particular. The Masters Program in Cancer Biology, Prevention and Control has a major focus on minority needs with an emphasis on health disparities. Most universities in the Washington and Baltimore area participate in the Washington and Baltimore University Consortium Agreement. This agreement was significant in the implementation of this program. It allows students enrolled in one university to attend classes for credit at another area university. In the case of the Masters Program in Cancer Biology, Prevention and Control, Georgetown has agreed to waive the payment difference that UDC (the least expensive University in DC) would otherwise have had to pay to Georgetown (one of the most expensive universities in the Nation).

The Program provides several support activities to enhance students' basic academic skills and impart information on cutting-edge research in the areas of cancer biology, prevention, and control [4, 5]. These activities include: annual UDC graduate and undergraduate student research days, tutoring services, annual bridges student-faculty retreat, a distinguished lecture series, and attendance and participation in scientific meetings, research skills workshops, testing services for the Graduate Record Examination (GRE) and Medical College Admission Test, and the transition interest groups (TRIGs). Each TRIG consists of a masters level student, a doctoral-level student in the same or similar major, the masters-level research advisor and one of the two directors of the Masters Program. The TRIG is a multi-tiered mentoring component that provides individualized mentoring, tutoring, thesis proposal assistance, and guidance on research projects and final presentation, information on doctoral programs, and other career information.

By summer 2009, 14 students had graduated from the Masters Program. The pool of targeted students have consisted of a variety of student profiles; however, in most cases selection of students admitted had credentials that adhered closely to the published admission requirements (Masters Brochure, Web Pages at UDC and LCCC). Student had a Bachelor's Degree or greater from an accredited educational institution in biology or science-related discipline (e.g., chemistry or psychology), a minimum overall GPA of 3.00, at least 1,000 score (based on national norms) on the verbal and quantitative skills sections of the GRE and 4 on analytical writing. Also required is a written essay explaining reasons for wanting to pursue a Masters Degree in Cancer, Biology, Prevention and Control. Most of the students that have been selected graduated from HBCUs and in the upper 10% of their university's graduating science majors. Students admitted to the program had academic honors at graduation from cum laude to summa laude. Of the 14 graduates, one is an astronautical biologist at NASA, one heads an electron microscopy facility at the National Institutes of Health (NIH), four are PhD candidates, two are research associates at Georgetown, two of

the 2009 graduates plan to enter MD/PhD programs and two have plans to attend medical school.

It has been voiced by both administrators and faculty at both universities, that this new Masters Program in Cancer Biology, Prevention and Control between the UDC and the LCCC, has been beneficial to both institutions. Because it is jointly administered and taught by both UDC and LCCC faculty, minority students get the advantage of having role models that are like themselves and of gaining a highly academic and research-intensive curricular exposure. The goal of the Masters Degree Program is to educate students as master-level cancer researchers who are capable of conducting research in cancer biology, prevention and control or to further advance their education by pursuing doctoral studies. Many of these students will choose to enter the community and work with a population that they understand greatly in reference to health problems and implementing the best corrective measures. We feel that the graduates of this program are individuals best suited for translating basic science knowledge into cancer prevention and control practices. The program's uniqueness is reflected in its philosophy "the best Cancer Prevention and Control researchers are those with a sound understanding of cancer biology. It provides the rigor of cancer biology and the compassion and focus of cancer outreach. The impetus for developing this program came from students in the UDC undergraduate course "Cancer Causes and Prevention", the UDC/LCCC partnership's community outreach component funded by the NCI/NIH, and the pressing need to address health disparities. This full-time, 2-year, 36-credit degree has students taking about half of their coursework at LCCC and about half of their coursework at UDC. During the second year, students will be required to conduct research either at LCCC or UDC. With an ongoing evaluation, this program will remain current and relevant by making additions and revisions to its curriculum when needed.

Unlike most cancer biology programs, the Masters Program in Cancer Biology, Prevention and Control partners a major comprehensive cancer center with a minority serving institution. The former brings its skills and expertise in cancer research and the latter brings with it many contacts with 70% minority population in the District of Columbia and its extensive pool of highly qualified minority students. These students are potential minority researchers that can assist in the alleviation of some of the health disparities heavily impacting minority populations. The presence and voice of these new cancer researchers can help erase some of the nation's health disparities concerns, not only in the District of Columbia, but the nation.

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