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13. ABSTRACT (Maximum 200 Words) The Cancer Institute of Long Island offers specialized and unique cancer research in the integrated areas of signal transduction, growth control & differentiation, molecular carcinogenesis & DNA repair, cancer genetics & gene therapy, and cancer invasion & angiogenesis. The five areas of specialization provide a platform to address fundamental questions in the prevention, early detection, molecular understanding, and therapeutic intervention of cancers, such as breast, prostate, and others that are of central importance to the Department of Defense. The proposal requests funds to (1) recruit medically and scientifically-trained, clinician-scientists; (2) to provide support for establishing a laboratory and support for technicians and/or postdoctoral researchers to assist in establishing a new laboratory; and (3) to acquire several powerful, state-of-the-art instruments essential to the conduct of forefront cancer research. These instruments include a MALDI Time-of-Flight mass spectrometer, 2-photon laser-scanning confocal microscope, quantitative polymerase chain reaction light-cyclers, an advanced Affymetrix DNA microarray system and Laboratory Informatics Management system for computational needs. These funds will be used to develop the integration of the five thematic programs that address questions in breast, prostate, and other specific cancers. The Cancer Institute is an active-matrix cancer center providing a platform for cancer research and therapy for the Long Island region that has some of the highest rates of breast cancer. Integrated Cancer Research in Five Thematic Areas of Interest Signal Transduction, Cancer Genetics, Angiogenesis, Carcinogenesis, DNA repair, Growth Control, Cancer Invasion.				
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Programmatic Overview:

Stony Brook University and Medical Center have rapidly developed infrastructure for creating a major comprehensive cancer center in central Long Island.

The director of the Long Island Cancer Center (LICC), Dr. John Kovach submitted (01/14/02) a planning grant to the National Cancer Institute for development of the Cancer Center at Stony Brook (a copy is being sent under separate cover). The grant requested \$175,000 annually (the maximum) for three years at which time, the full application for a comprehensive cancer center at Stony Brook will be submitted. As part of the planning process Dr. Kovach created a new internal and external advisory committee and revised the programmatic organization of the planned center to include Molecular Carcinogenesis and DNA Repair, Signal Transduction, Cancer Cell and Developmental Biology, Cancer Control and Prevention, and Experimental Therapeutics.

The planning application was strengthened by the recent renewal of the program project grant "Tumor Virology/Signal Transduction" from the National Cancer Institute (2PO1CA2814622) with annual direct support for 5 years of \$1,150,000. This successful renewal was based in significant part on expansion of cancer research at the institution. Dr. Patrick Hearing, member of the LICC, (*Cancer Genetics & Gene Therapy*) submitted an expanded proposal to the National Cancer Institute for renewal of a training grant entitled "Cancer Biochemistry and Cell Biology" (5T32CA0917624) requesting \$300,000 annually for 5 years.

Dr. Daniel Bogenhagen, member of the LICC, (*Molecular Carcinogenesis & DNA Repair*) has submitted a proposal to the National Institute of Environmental Health Sciences to create an NIEHS Center at Stony Brook University. As with Dr. Hearing's training grant, this request is based in significant part on the early success in developing a coordinated cancer program at Stony Brook. Another grant relevant to the development of the cancer center is a ten-year merit award to Dr. Dafna Bar-Sagi, member of the LICC, (*Signal Transduction*) from the National Cancer Institute, to continue her studies on the mechanisms of signal transduction by RAS proteins (2R37CA5536011).

Dr. Cristina Leske, Chair, Department of Preventive Medicine, member of the LICC (*Cancer Epidemiology*), and the leader of the cancer control and prevention program at the developing cancer center has succeeded in expanding her long time studies on hereditary glaucoma in Barbados to a family-and population-based study of prostate, uterine and breast cancers, as well as DNA repair and tamoxiphen use. Barbadians have a 60% greater incidence of prostate cancer than do African-Americans. In addition, the morbidity from breast cancer like that of African-American woman is higher in Barbadian woman than in white woman. Dr. Leske has had talks with governmental, academic, and health care leaders in Barbados. They are enthusiastic about collaborating on this project. Dr. Leske is working with Dr. Jeffrey Trent, a leader in genetics of prostate and breast cancer at the National Human Genome Search Institute, will coordinate the molecular genetic analyses of this unique database. Initial funding from NIH for the study is expected in the spring, 2002.

- The Cancer Center also is developing studies of breast and prostate cancer on Long Island. By having data from Barbados and Long Island, investigators will be able to make comparisons between individuals of predominately African heritage to Caucasians, both groups being at high risk for these cancers.

There has also been success in achieving extramural funding by individual investigators who received pilot funding from the Cancer Center. Thus, the LICC supported with \$40,000 Dr. Kanokporn Rithidech for a period in which she developed a proposal to the Department of Energy to study the effects of low dose radiation on genomic stability. Dr. Rithidech was recently funded (DEFG0202ER63311) at approximately \$1million (total funds) for the next three years. In addition, a new recruit to the Cancer Center, Dr. Richard Lin, from the San Antonio Cancer Center, was recently was told he would receive an RO-1 NCI grant for his studies of rapamycin in the treatment of a murine model of lymphoma.

Recruitment of individuals relevant to the development of the cancer program at Stony Brook is proceeding at two levels. One of these is the search for chairs of Pathology, Pharmacology, Preventive Medicine, and Molecular Genetics and Microbiology. Outstanding well-funded candidates have been identified. Each candidate has specific interests in cancer research ranging from the molecular characterization of cancer specimens and molecular epidemiology of cancer to the details of genetic alterations in cells, which lead to continual proliferation. Dr. Kovach also advertised broadly for human geneticists specifically interested in cancer. The ads resulted in responses from more than 100 investigators exploring the possibility of joining the cancer program at Stony Brook. Of this initial group, eight have been interviewed, all of whom have expressed interest in the Center.

Core Facilities:

Funds from the award have been match with institutional sources to help create a *world-class* Proteomics Research Core to support the LICC investigators. USAMRMC/CDMRP funds have been used to purchase a research grade MALDI-ToF instrument. An Applied Biosystems Incorporated Q-STAR Pulsar LC/MS/MS Hybrid Quadrupole / Orthogonal Time of Flight Mass Spectrometer has been acquired to be the focal point of this core. This instrument complements an Applied Biosystems Voyager Maldi-ToF acquired via a National Center for Research Resources *Shared Instrumentation Grant*. Each instrument has its own distinct capabilities and used in tandem are a very powerful tool of discovery for cancer research.

The School of Medicine has provided 1,000+ square feet of newly renovated wet laboratory space in the Basic Sciences Tower to house these instruments, and serve as a platform for cancer proteomics research activities. The institution has supported two dedicated technical lines for this core. (1) A high-level mass spectropist has been secured to operate these instruments. (2) In addition, we are conducting a search for a technician to prepare samples for analysis on these instruments. A third recruitment for a Bioinformatics Programmer no completed. This PhD level recruit, although somewhat removed from the "*wet lab*" aspects of the core, is vital to help the investigators manage the data that will come from these instruments. The bioinformatician will develop specialized searches of databases and craft unique scripts and algorithms to homogenize data from dissimilar sources. These instruments, in this newly renovated facility, with the support of the dedicated technical lines will enable true scientific discovery for cancer investigators of the LICC.

Junior-Faculty Recruitment:

Dr. Howard Adler appointed in the Department of Urology has been designated as one of our Junior Faculty, Physician-Scientists appointed for support from this program. Dr. Adler is a well-trained translational researcher from Baylor University. His research interest is the use of gene therapy for the disruption of prostate cancer. He collaborates closely with Dr. Patrick Hearing of the Department of Molecular Genetics and Microbiology who is a nationally-recognized cancer virologist.

Additional appointments in this aspect of the award are currently under negotiation. The next appointments are expected in the Department of Surgery, Division of Cardio-Thoracic Surgery, and the Department of Medicine, Division of Neoplastic Diseases. The nominee from Surgery specializes in lung and pleural cavity cancers. The candidate from Medicine has broad interest in the development of engineered dendritic cells that target prostate cancer cells.

Dr. Craig Malbon, the Vice-Dean, University Hospital Medical Center and member of the LICC (*Signal Transduction*), has been working with the chairs of the Departments of Medicine, Radiation Oncology and Surgery to recruit physician-scientists to the LICC.

Publications:

(of interest, selected)

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