



# Cancer Research Center Hotline

## Major New Grant in Cancer Epidemiology

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Faculty in the Epidemiology Section of the Cancer Etiology Program have recently received a major grant award (\$14 million over five years) from the National Cancer Institute to establish a biorepository of blood and urine specimens from more than 40,000 persons on Oahu. The award begins the fourth 5-year cycle of a continuing Program Project Grant in the Epidemiology Section and reflects the high confidence of the NCI in the continuing productivity and peer-reviewed contributions of its research faculty. Program Project (P01) Grants are large grants that support several projects and investigators, sharing a common theme.

The proposed research builds on another ongoing activity of the epidemiologists at the Cancer Research Center. This is a large multiethnic cohort study of Diet and Cancer, which was begun by some of the epidemiology faculty in 1993 with the collaboration of colleagues at the University of Southern California. More than 215,000 men and women in Hawaii and California provided baseline information on their diets, physical activity, medical and reproductive histories, as well as sociodemographic variables. The study includes representative samples from five ethnic groups: Japanese-Americans, Native Hawaiians, Caucasians, African-Americans, and Latinos. The participants are being followed prospectively for cancer incidence, as well as incidence and mortality from other causes, in order to identify risk factors for these diseases. For example, the role of dietary fat components in influencing the development of prostate cancer, the role of folate in the risk of colorectal cancer, and the role of legumes, including soy products, in possibly reducing the risk of breast and prostate cancers will be studied. An additional aim is to identify reasons for the vast ethnic variations in cancer incidence that exist in Hawaii and elsewhere in the U.S.

The Program Project extends the research potential and value of this enormous cohort, by the addition of a major biological component. Fasting blood and 12-hour urine specimens will be collected from participants at their homes or through an arrangement with Diagnostic Laboratory Services. The blood specimens will be aliquoted into multiple cryotubes containing serum, plasma, erythrocytes, and buffy coat and stored in a state-of-the-art biorepository, using -150 °C liquid nitrogen freezers. Urine will be stored in separate aliquots at -80 °C in mechanical freezers. These valuable samples will permit the researchers to test several hypotheses related to biological markers and selected cancer sites. For example, blood or urine levels of

vitamin D metabolites, homocysteine, insulin-like growth factors, and isothiocyanates will be investigated for their relationships to colorectal cancer; phytoestrogens, tocopherols, and estrogens will be studied in relation to breast cancer; vitamin C, total phenol, isothiocyanates, and selenium will be studied with respect to lung cancer; and fatty acids, insulin-like growth factors, and androgens will be examined in relation to prostate cancer.

In addition to the study of biochemical markers, the Program Project and other grants related to the Multiethnic Cohort will be exploring the relationship of genetic markers of susceptibility to cancer. Considerable work has already been done on newly identified polymorphisms in genes involved in estrogen and androgen metabolism in relation to breast and prostate cancers, in genes involved in the metabolism of foods and their constituents in relation to colorectal cancer, and in genes involved in the metabolism of tobacco carcinogens and lung cancer. It is hypothesized that differences in the distributions of the allelic forms of these polymorphic genes may explain in part the wide ethnic differences in cancer risk that are seen in Hawaii. The interactions between such inherited gene variants and exposure to dietary and other risk factors, so-called "gene-environment interactions," are thought to play a major role in determining the risk of cancer in individuals and in explaining variations at the population level. Research on the Multiethnic Cohort, especially the proposed studies under the newly-funded Program Project Grant, should make a substantial contribution to the understanding of the role of diet and other risk factors in the etiology of cancer.

Researchers on the Program Project Grant include Laurence Kolonel MD, PhD, Abraham Nomura MD, DrPH, Loic Le Marchand MD, PhD, Marc Goodman PhD, Lynne Wilkens Dr PH, Daniel Stram PhD, Terrilea Burnett PhD, Adrian Franke PhD, and Chuanfa Guo, PhD. Additional information on the Cancer Research Center's activities can be found by visiting the website at [www.crch.org](http://www.crch.org).

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