The Breast Cancer Family Registry Newsletter

A project sponsored by the National Cancer Institute

About B-CFR

NCI Cancer Family Registry Support Staff (left to right): Mr. Keith Richardson, Dr. Edward Trapido, Dr. Virginia Hartmuller, Ms. Emily Dowling, Dr. Alysa Lesemann, Dr. Daniela Seminara, and Ms. Linda Anderson (not pictured: Ms. Valeria Rodriguez).

This year marks the 10th anniversary of the Breast/Ovarian Cancer Family Registry (B-CFR), and there is much to celebrate! Thanks to you, enrollment in the registry reached a high of 12,507 families and 37,724 individuals as of early 2005. This makes the registry one of the largest resources available to researchers to study the causes of breast and ovarian cancer.

We are delighted to have this opportunity to share with you news about the current work of the registry. There has been a dramatic rise in the number of research projects that rely on it. Through scientific collaborations with researchers all over the world, 80 projects have been or are being conducted. More than 110 reports about the studies and their findings have been published in scientific journals. The topics covered in these reports range from information about the molecular characteristics of tumors, to the genetics of breast and ovarian cancer, to the best ways to communicate results from genetic testing. In this newsletter, we share with you news about some of the most recent findings to emerge from these studies.

We expect the coming years to be as exciting as the first and anticipate many more important scientific contributions. Currently, the registry is moving away from general recruitment to focus on enrolling additional minority families and family members of individuals who are enrolled. B-CFR also plans a follow-up of registry participants enrolled between 1995 and 2000 to obtain updated information on areas such as diet, family history, lifestyle, and environmental factors. This information will help us address important issues in the development of breast and ovarian cancer.

B-CFR's guiding aim is to answer important questions about the causes of breast and ovarian cancer that can be translated into development of better ways to prevent and treat these diseases. This crucial work would not be possible without the help of you and your family.

Once again, thank you,

Daniela Seminara, Ph.D., M.P.H.

NCI Program Officer

Participating Sites:

Australian Breast Cancer Family Registry

Metropolitan New York Registry

Northern California Cooperative Family Registry for Breast Cancer

Ontario Familial Breast Cancer Registry

Family Risk Assessment Program at Fox Chase Cancer Center

Utah Cooperative Breast Cancer Registry at Huntsman Cancer Institute

Minority Recruitment

Dr. Esther John

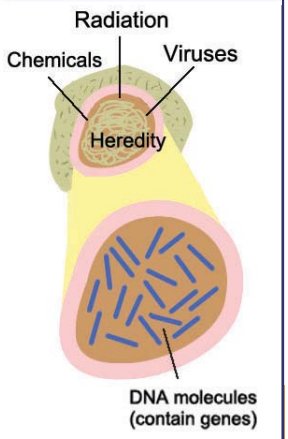
The National Cancer Institute (NCI) places considerable emphasis on studying cancer in minority populations because the racial/ethnic differences in the risk for cancer are not well understood. Recruitment of minorities into the B-CFR has been a major focus and more than 2,700 families of African, Hispanic, or Asian ancestry now are enrolled. However, to gain important knowledge about the interaction of genes, environment, and other lifestyle factors related to risk for breast cancer, large numbers of minority families are needed.

In the next phase of recruitment, the B-CFR will focus on the enrollment of African-American and Hispanic families. This effort is headed by Dr. Esther John, Principal Investigator at the Northern California Cancer Center. By the year 2010, the B-CFR intends to triple the number of African-American families and double the number of Hispanic families enrolled, making the registry an even more valuable resource for answering critical questions about breast cancer in minority populations.

National Cancer Institute

Science Behind the News

Behind the News is a user-friendly, online educational resource developed by the National Cancer Institute to better inform the public about cancer-related topics. The excerpt below is from the Understanding Cancer portion of the site. To reach Science Behind the News, go to ***www.cancer.gov/science behind***.



Genes and Cancer

Chemicals (e.g., from smoking), radiation, viruses, and heredity all contribute to the development of cancer by triggering changes in a cell's genes. Chemicals and radiation act by damaging genes, viruses introduce their own genes into cells, and heredity passes on alterations in genes that make a person more susceptible to cancer. Genes are inherited instructions that are regions within DNA molecules. Each gene allows a cell to make a specific product—in most cases, a particular kind of protein. Genes are altered, or "mutated," in various ways as part of the mechanism by which cancer arises.

B-CFR Research Highlights

DNA Repair Deficiency and Breast Cancer Risk - Researchers have found that cells from sisters with a history of breast cancer have significantly diminished capacity to repair damaged DNA compared to cells from sisters without a history of the cancer. DNA damage can result from environmental exposures, such as cigarette smoke or diet, or it may occur through normal cell division. While there are no methods of increasing the body's ability to repair DNA, individuals can reduce exposure to known cancer causing agents and maintain a healthy lifestyle. This study was conducted by Drs. David Kennedy and Regina Santella of Columbia University and colleagues. The study participants were from Metropolitan New York Registry of Breast Cancer Families.

Kennedy DO et al. DNA repair capacity of lymphoblastoid cell lines from sisters discordant for breast cancer. J Natl Cancer Inst 2005; 97(2):127-32.

Oral Contraceptive Use in *BRCA1* and *BRCA2* Carriers - Through the B-CFR, researchers have conducted the first large, population-based study focusing on the relationship between oral contraceptive use and risk for breast cancer in women with *BRCA1* and *BRCA2* gene mutations. Past studies have suggested that oral contraceptive use is associated with a small increased risk for breast cancer, but the risks for mutation carriers were unclear. This new study found no evidence of an association between use of current low-dose formulations of oral contraceptives and early-onset breast cancer risk (diagnosed before age 40) for either *BRCA1* or *BRCA2* gene mutation carriers. In fact, the risk for early-onset breast cancer may be reduced for *BRCA1* gene mutation carriers. In light of these findings and given that other research suggests that current formulations of contraceptives may reduce risk for ovarian cancer among mutation carriers, their use by women with *BRCA1* and *BRCA2* gene mutations does not appear to be harmful. The study was conducted by Mr. Roger Milne and Dr. John Hopper of the University of Melbourne, and Dr. Alice Whittemore of Stanford University, and other B-CFR investigators.

Milne RL et al. Oral contraceptive use and risk of early-onset breast cancer in carriers and noncarriers of *BRCA1* and *BRCA2* mutations. Cancer Epidemiol Biomarkers Prev 2005;14(2):350-6.

Cancer Family Registry Model Expands to Latin America

Hispanics/Latinos have a lower incidence and death rate from several major cancers, including breast cancer, when compared to non-Hispanic whites. This is true for Hispanics/Latinos who are recent immigrants as well as first generation offspring. Compared to non-Hispanic whites, however, Hispanics/Latinos have higher rates of other cancers, for example, stomach, cervical, and liver cancer. It is important to examine the role of genetics, environment, and acculturation in different Hispanic/Latino populations to understand the factors underlying this phenomenon.

A large number of cancer epidemiology studies involving Hispanic/Latino populations are conducted in North America, which represents only a fraction of this population worldwide. There are a wide variety of dietary, lifestyle, and environmental exposures, as well as genetic variations among the people in Latin American countries. Therefore, Latin American-based cancer family registries can provide valuable new information on factors that contribute to or protect against cancer. Scientists at NCI, including Dr. J. Fernando Arena and Dr. Daniela Seminara, are exploring the possibility of expanding the CFR model to Latin America. This would enable cancer risk factor comparisons of several Hispanic/Latino populations and provide more information on cancer etiology in different environments. Understanding differences by comparing populations around the world will contribute to our overall knowledge of cancer epidemiology, prevention, and treatment.

Dr. J. Fernando Arena

Other Research News: Molecular Genetic Test

Research supported by NCI suggests that a new genetic test can predict the risk of breast cancer recurrence and may identify women who will benefit most from chemotherapy. The test examined the levels of expression (either increased or decreased) of a panel of cancer-related genes. The results were used to predict whether estrogen-dependent breast cancer will recur. Researchers used the results of the panel to group women according to risk of recurrence, and found that 51 percent of the women were in the low-risk group, 22 percent were in the intermediate-risk group, and 27 percent were in the high-risk group.

Therefore, women with low recurrence scores may derive only minimal benefits from chemotherapy. Because this study looked only at women with breast cancer that responded to estrogen and had not spread to the lymphnodes, all types of breast cancer cases were not included. For more information about this study, see http://www.cancer.gov/newscenter/pressreleases/breastgeneassay.

Paik S et al. A multigene assay to predict recurrence of tamoxifen-treated, node-negative breast cancer. N Engl J Med 2004;351(27):2817-26.