NORTHERN CALIFORNIA FAMILY REGISTRY FOR BREAST CANCER

funded by the National Cancer Institute

CANCER **PREVENTION** INSTITUTE OF CALIFORNIA

Preventing Cancer. Promoting Life.

Newsletter Winter 2015

Dr. Esther John Receives Award

Dr. Beverly Mitchell (right), director of the Stanford Cancer Institute and CPIC trustee presented the award to Dr. John.

Dr. Esther John was awarded the Saul A. Rosenberg, M.D. Research Award at the 40th anniversary celebration of the Cancer Prevention Institute of California (CPIC) on June 26, 2014. Dr. John has been the Principal Investigator and co-investigator of more than 60 research studies over the past 20 years at CPIC, including the on-going ***Northern California site of the Breast Cancer Family Registry (BCFR)*** and ***the LEGACY Girls Study,*** two international studies.

The award was established in 1999 to honor Dr. Rosenberg's role in founding and early governance of CPIC. This award is given to an individual who, like Dr. Rosenberg, demonstrates extraordinary commitment and dedication to improving our understanding of cancer, has played a major role in cancer research, is a respected and honored teacher, has demonstrated leadership and vision, and is nationally recognized for the excellence of his or her work.

From left to right: Judy Goldstein, Daisy Lubag, Esther John and Enid Satariano at CPIC's 40th Anniversary celebration.

15-Year Follow-up Complete

A big thank-you to all of our Family Registry participants who completed the 15-year follow-up questionnaire! This past year we continued to follow over 11,000 families from the six Breast Cancer Family Registry sites in the US, Canada, and Australia, including over 3,500 families from the San Francisco Bay Area. We are grateful to these families, some of whom enrolled in the Family Registry as early as 1996, for their continued participation. More than 4,000 individuals from the San Francisco Bay Area completed the 15-year follow-up questionnaire either by mail or by phone interview. The brief questionnaire asked each participating family member to provide updates regarding changes that may have taken place since their last contact with Family Registry staff. Data collection is now complete and analysis of the data is underway. Analysis will address how various factors, ranging from hormonal and lifestyle factors to genetics, are associated with the development of breast cancer. We will begin contacting participants again in 2015 for the next follow-up questionnaire.

New Pilot Study: Assessing Patient Readiness for Personalized Genomic Medicine

The Family Registry has received funding for a new pilot study. The purpose of this pilot study is to help researchers better understand thoughts, interests, attitudes, and concerns with regard to new types of genetic tests. This is important for anticipating some of the challenges and opportunities health care might face as personalized genetic testing becomes part of standard medical care.

The goal is to interview 42 participants across the six Family Registry sites. Participants are asked questions about their health attitudes and understanding of genetic testing. The telephone interviews are being administered by an interviewer from the University of Utah site. Interviews for our California participants are now complete, but recruitment is still in progress at the other Family Registry sites.

Participation in this pilot study will help us to develop questions that will be part of the next follow-up questionnaire for all Family Registry participants, scheduled for Spring 2015.

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Not All Breast Cancers Are the Same

There is increasing evidence that not all breast cancers are the same. The majority of breast cancers are estrogen receptor (ER) and progesterone receptor (PR) positive and some of the known risk and protective factors for breast cancer only apply to this common subtype. However, there is an urgent need to find factors that protect against ER/PR negative breast cancer, a subtype that occurs more often in African American and Latina women than in non-Latina white women, responds more poorly to treatment, and has worse survival than other subtypes. With over 11,000 participating families, the Family Registry is a unique resource to study less common breast cancer subtypes. Below is an example of our research on ER/PR negative breast cancer:

Reproductive risk factors and estrogen/progesterone receptor-negative breast cancer in the Breast Cancer Family Registry. Work ME, John EM, Andrulis IL, et al. British Journal of Cancer, 2014 Mar 4;110(5):1367-77.

It has been long known that high parity (number of live births) is associated with a lower risk of ER/PR positive breast cancer, the most common breast cancer subtype. More recent studies have shown that high parity is associated with a higher risk of ER/PR negative cancer and new evidence points to breastfeeding as a factor that may reduce this increased risk. In this Family Registry study, reproductive risk factors in more than 4,000 women with breast cancer were compared to reproductive factors in about 3,000 women without breast cancer. Women with 3 or more live births who never breastfed were approximately 50% more likely to be diagnosed with ER/PR negative breast cancer. No increased risk was found in women with 3 or more live births and a history of breastfeeding. Oral contraceptive (OC) use was also associated with a 30% higher risk of ER/PR negative breast cancer, but only for women who started OC use before 1975 when OC formulations were different. This report's findings help to identify modifiable factors for ER/PR negative breast cancer, a subtype for which few risk factors are known. Breastfeeding in particular may decrease the risk of ER/PR negative tumors in women with high parity. This finding is particularly important for African American women who are more likely to be diagnosed with ER/PR negative breast cancer than other racial/ethnic groups.

Genetic Alteration Protects Some Latina Women

Rates of breast cancer diagnosis and survival are not equal across all racial/ethnic groups. Differences in genetic factors may explain some of the differences by race/ethnicity. In order to explore genetic risk factors, very large studies are needed, especially since some genetic changes are so rare. One such large study that combined data from multiple studies, including the Northern California Family Registry, recently discovered a genetic change that protects Latina women from developing breast cancer. The results are summarized below:

Genome-wide association study of breast cancer in Latinas identifies novel protective variants on 6q25. Fejerman L, Ahmadiyeh N, Hu D, et al. Nature Communications, 2014 Oct 20 [e-published ahead of print].

Latina women have a lower incidence of breast cancer compared to non-Latina whites. Furthermore, breast cancer risk is lower among Latinas with more Indigenous American ancestry than among those with less Indigenous American ancestry. A study of Latina women enrolled in the Northern California Family Registry and other California studies discovered that a single difference in just one of the three billion letters of biochemical DNA in the human genome was associated with a lower risk of breast cancer. Those who inherited a copy of this genetic change were 40% less likely to be diagnosed with breast cancer. The protection was even stronger for ER negative disease. This genetic change is found in 5% to 15% of Latin American populations, depending on the proportion of Indigenous American ancestry. In other racial/ethnic groups, it is rare or absent. These findings were also confirmed in DNA samples from women in Mexico and Columbia. This study highlights the importance of understanding the genetics of breast cancer in all racial/ethnic groups, as genetic factors may differ between populations.

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