The Colon Cancer Family Registry Newsletter

A project sponsored by the National Cancer Institute

About C-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 8th anniversary of the Colon Cancer Family Registry (C-CFR), and there are many accomplishments to celebrate! Thanks to you, as of early 2005, enrollment in the registry has reached 11,375 families and 30,356 individuals. This makes the registry one of the largest resources available to researchers studying the causes of colon cancer.

We are delighted to have this opportunity to share with you news about the current work of the registry. The number of research projects that rely on the registry has risen dramatically. Through scientific collaborations with researchers all over the world, 85 projects have been or currently are being conducted. More than 40 reports about the studies and their findings have been published in scientific journals. Topics range from information about the molecular characteristics of tumors, to the genetics of colon cancer, to examining factors related to cancer screening. In this newsletter, we share with you news about one of the most recent findings to emerge from these studies.

We expect the excitement to continue during the coming years and that many more important scientific contributions will be forthcoming. The registry now is moving from general recruitment to a focus on enrolling minority families, families with early onset colon cancer, and families with multiple cases of the disease.

Participating Sites:

University of Southern California (USC) Consortium

Australasia Colorectal Cancer Family Study

Hawaii Family Registry of Colon Cancer

Mayo Colorectal Cancer Family Registry

Ontario Familial Colorectal Cancer Registry

Seattle Familial Colorectal Cancer Registry

Affiliated Institutions:

Galicia, Spain

Newfoundland, Canada

Northern California Cooperative Family Registry for Colon Cancer

Our guiding aim is to answer important questions about the causes of colon cancer that can be translated into the development of better ways to prevent and treat the disease. This 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

C-CFR Research Highlights: More Advanced Test To Detect HNPCC

Dr. Graham Casey

C-CFR researchers have discovered that a newer form of genetic testing can be used to more accurately pinpoint genetic abnormalities in patients with certain inherited forms of colon cancer. The study found that conversion analysis, a technology used to separate chromosomes, can identify genetic defects in patients with hereditary nonpolyposis colorectal cancer (HNPCC) that sometimes go undetected when more common genetic sequencing is used. Traditional gene sequencing examines chromosomes in pairs rather than individually, which can result in one chromosome masking an abnormality in another. Conversion analysis overcomes this limitation.

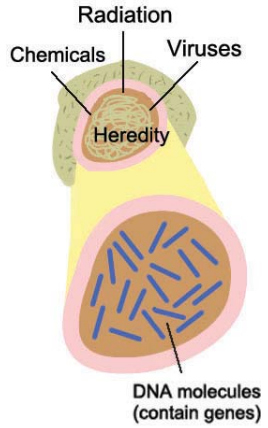
"This research indicates that by using conversion analysis, genetic mutations associated with this inherited form of colorectal cancer can be identified in a larger percentage of these patients," said study leader Dr. Graham Casey of The Cleveland Clinic (USC Consortium). "Without this technology, certain genetic mutations would be missed. From a clinical standpoint, it is important to be able to define a disease as accurately as possible because we can offer more accurate surveillance and prevention recommendations to those at high risk." More research will be needed to confirm the findings.

Casey G et al. Conversion analysis for mutation detection in MLH1 and MSH2 in patients with colorectal cancer. JAMA 2005;293(7):799-809.

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.

Cancer Family Registry Model Expands to Spain

Pictured: Dr. Daniela Seminara, NCI; Dr. Alejandro Pazos Sierra, University of La Coruña; Dr. Manuela Gag-Dominguez, USC Consortium; Mr. Jonathan Haile; Dr. Robert Haile, USC Consortium; and Dr. Esteban Castelao, USC Consortium.

The C-CFR USC Consortium is collaborating with academic and medical institutions in Galicia, a region in the northwest part of Spain, to expand the colon cancer family registry. Colon cancer is a leading form of cancer in Spain as it is in the United States. Galicia offers an excellent opportunity for genetic epidemiology studies of colon cancer because of the high incidence of the disease in the region; the homogeneous population; the geographic proximity of relatives from large, multigenerational families; and the nationally sponsored health-care system. During the last two centuries, many Galicians migrated to the United States and Latin America, adding to the mix of heritages of U.S. Hispanics. The affiliation with Galician researchers will permit comparative studies of Galician and U.S. Hispanic families to help increase our understanding of the mechanisms that underlie the development of colon cancer. This project is led by Dr. Robert Haile and Dr. Alejandro Pazos Sierra, in collaboration with Dr. Manuela Gago-Dominguez, and Dr. Esteban Castelao.

Minority Recruitment

The C-CFR currently is enrolling minority families who have been affected by colon cancer. Certain minority groups are affected more adversely by colon cancer than others. The disease disproportionately affects African Americans, who tend to be diagnosed at a younger age, at a more advanced stage, and have a lower survival rate than other ethnic groups. Japanese Americans also are at a greater risk of developing colon cancer after migrating to the United States. Japanese Americans have better survival rates for colon cancer than African Americans and non-Hispanic whites, however. The reasons for these disparities are not well understood, and known lifestyle risk factors do not fully explain these patterns.

African-American and Japanese-American families are being enrolled at the following sites: University of Hawaii, Northern California Cancer Center, USC, University of North Carolina at Chapel Hill, The Cleveland Clinic, and Mayo Clinic. Enrolling these families will enable researchers to address pivotal questions related to the etiology of colon cancer in minority populations. Areas slated for study include the role of metabolism-related genes in colon cancer development, tumor growth in colon cancer stages, and the response of genes to chemotherapy.

By examining the genes and lifestyle factors that affect colon cancer risk within minority families, researchers can learn more effective ways of preventing and treating colon cancer in these populations.

Contributed by Terri Goode, University of North Carolina (USC Consortium).

Cancer Family Registry Model Expands in Canada

In 2003, the C-CFR expanded its registry model to Newfoundland and Labrador, Canada's most easterly province. The island part of the province can contribute uniquely to our understanding of cancer and genes because the communities in this area once were very isolated by lack of roads and segregated by religious differences. Also, the population typically experienced little emigration and had large families.

"If someone arrived in Newfoundland 200 years ago carrying a gene predisposed to cancer and that person had a large family and that large family begot other large families for, say, eight generations, we would see in that family group a good research source for that particular gene," said Dr. Patrick Parfrey, co-Principal Investigator of the Newfoundland and Labrador C-CFR-affiliated site.

Dr. Parfrey, Newfoundland Principal Investigator Ban Younghusband, and colleagues currently are studying the determinants of hereditary colon cancer. Families have been enrolled into the registry who appear to have genes associated with an increased risk of colon cancer, and the researchers are working to identify the particular regions of DNA involved. The knowledge gained will provide insight regarding the relationship between certain genes and risk of colon cancer that would be far more difficult, if not impossible, to discern in populations from other geographic areas. "Our ultimate goal is to identify carriers for disease genes and prevent the disease from occurring in them," said Dr. Parfrey.

Contributed by Carol Negrijn, Memorial University, Newfoundland.