Winter 2007

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Save-the-Date:

Moving Forward:
A conference on healthy solutions for communities impacted by trade, ports and goods movement.
November 30 - December 1, 2007!
Carson Community Center in Carson, CA
More info. soon

Organized by

USC scientist studies potential cancer fighting properties of green tea

Tea drinking dates back over 5,000 years. Anna Wu, Director of the Cancer Research Core of the Southern California Environmental Health Sciences Center (SCEHSC), is studying whether green tea lowers estrogen levels in women. In earlier studies Wu looked at eating habits of Asian-American women and found that soy played a significant role in reducing breast cancer risk when consumed from childhood to adulthood. Wu hopes to find another key to reducing breast cancer risk by turning her attention to green tea. View the HSC Weekly article.

Center Member Profile: Anna Wu

Anna Wu, PhD, MPH, is a Professor in the Division of Epidemiology in the Department of Preventive Medicine at the USC Keck School of Medicine and Norris Comprehensive Cancer Center. She is also the Director of the Cancer Research Core of SCEHSC. Dr. Wu's research focuses on the epidemiology of cancer with emphasis on understanding the increase of various cancers, including breast, ovarian, prostate, and colon, among Asian-Americans. She is also interested in tobacco-related cancers of the lung, stomach, and esophagus and genes that may be important in the metabolism of tobacco ingredients. (Photo courtesy of USC)

* Anna Wu's biographical sketch as a faculty member
The Gene-Environment Interaction:
Disease risk comes from genes and the environment

Researchers at the Southern California Environmental Health Sciences Center study a wide range of factors in the environment that can affect people’s health. They also study the interplay between genes and these environmental factors. What does this mean, exactly? Let’s first look at what we mean by “environment.” The environment doesn’t just include rivers and trees; it also includes the air you breathe, the food you eat, and the water you drink. Your environment is a combination of external conditions that affect and influence your growth and development. Environmental health looks at the impact that these various environmental factors have on human health and disease. Along with these external factors, genes are also important determinants of your health. Genes are the genetic makeup that you inherit from your parents. Therefore, scientists use the term “gene-environment interaction” to describe any combination of effects on health due to the interaction between the environment and genetics. Neither the environment nor genetics alone are responsible for our individual variations; the combination of these two determines our health. This means that not everyone is born with the same risk – some may be more vulnerable to certain diseases than others. And in some cases, the environment may play a greater role than our genes. All of our traits, features, and differences show the results of gene-environment interactions.

Gene-environment interaction research at our Center

The goal of the SCEHSC is to improve health by identifying environmental risks, genetic co-factors, and other characteristics (such as economic status and behavior) that make certain groups of people susceptible to particular diseases. Many of our Center investigators are studying gene-environment interactions and susceptibility; this newsletter features the work of several of these scientists.

Center member Beate Ritz explores the hypothesis that gene and environmental toxins combine to increase the risk for Parkinson’s disease in at-risk individuals through interactions with environmental pesticides and our own genes.

Center members Wendy Cozen, Thomas Mack,
We hope that our newsletters will help you learn more about our research efforts and community outreach and education activities.

Dr. Frank Gilliland
Center Director

If you missed any issues of the newsletter, please go to our website.

and W. James Gauderman conducted a study of twins looking for a potential gene-environment interaction relating to multiple sclerosis (MS).

New models and markers for pesticides and Parkinson’s

When looking to understand the complexity of gene-environment interactions, there is no better place to begin your journey than in your own backyard. Here in Los Angeles Beate Ritz is your guide. Ritz explores the hypothesis that genes and environmental toxins combine to increase the risk for Parkinson’s disease in susceptible individuals through interactions with environmental pesticides and our own internal mechanisms.

For more than two decades, reports and studies have proposed that pesticides and herbicides (weed killers) may be causes of Parkinson’s disease (PD), a degenerative disorder of the central nervous system. According to Ritz, the main feature of Parkinson's is akinesia and rigidity, the inability to initiate movement and move certain muscle groups in the normal way. However, no epidemiological studies exist that have drawn clear associations between Parkinson's and specific pesticides.

Ritz and her colleagues collected California Pesticide Use Reports (PURs) describing the type and quantities of pesticides applied to agricultural fields near the homes of subjects in the study. Then they made maps using Geographic Information Systems (GIS) techniques. The maps showed where fields were located compared to where the study subjects lived. The researchers also asked the subjects questions about the use of pesticides in or around their homes. Ritz concluded that this new environmental GIS-PUR-based approach appeared to provide a valid, and possibly even more effective, model to assess residential exposures to agricultural pesticides. This model can now be used by other researchers interested in looking at the gene-environment interactions between environmental pesticides and our genes.


Center Member Profile: Beate Ritz

Beate Ritz, MD, PhD, is a Professor of Epidemiology in the Department of Epidemiology and Environmental Health at the UCLA School of Public Health and Neurology at the UCLA School of Medicine. She is also a member of the Center for Occupational and Environmental Health, the Southern California Environmental Health Sciences Center, and participant in the UCLA
Multiple sclerosis twin study at USC

A recent National Institutes of Health (NIH) analysis shows that nearly 1 out of every 1,000 people in the US – around 266,000 people – suffers from multiple sclerosis (MS). The NIH analysis also found that neurological disorders such as MS are becoming more common in the United States. Center members Wendy Cozen, Thomas Mack, W. James Gauderman, and USC graduate student Islam Talat conducted a study of twins to look for a potential gene-environment interaction regarding MS. The study suggests that living far north of the equator greatly increases the risk of developing MS in those who already have a genetic susceptibility to the disease. The study included 700 pairs of twins diagnosed with MS. Twins were divided into two categories, either monozygotic (identical twins, identical genetic makeup, coming from one egg) or dizygotic (fraternal twins, coming from two separate eggs). Thomas Mack, lead author of the study, explained, “By looking at the number of times [MS] occurs in twins—both identical and fraternal twins—we could see whether it was just a matter of latitude [where you live, environmental factors] or if there is something else. This study suggests there’s more concordance [the presence of the same trait in both of the twins] among identical twins, which means there is some environmental exposure and it is interacting with the genes.”


Center Member Profile: Wendy Cozen

Wendy Cozen, DO, MPH, is an Associate Professor at the Keck School of Medicine of
USC and a member of the Cancer Core of the Southern California Environmental Health Sciences Center.

Dr. Cozen's areas of interest include the epidemiology of cancers of the blood, particularly Hodgkin's disease, non-Hodgkin's lymphoma and multiple myeloma. She is currently conducting several case-control studies examining genetic and environmental risk factors for these cancers, focusing on early childhood infectious exposures and the immune response. In addition, Dr. Cozen is the medical epidemiologist for the USC Cancer Surveillance Program responsible for responding to community cancer concerns and has expertise in the areas of cancer surveillance and cancer cluster analysis.*

* View Wendy Cozen's biographical sketch as a faculty member of the Keck School of Medicine.

Center Member Profile: Thomas Mack

Thomas Mack, MD, is a Professor at the Keck School of Medicine of USC and the Co-Director of the Cancer Core of the Southern California Environmental Health Sciences Center.

Dr. Mack possesses expertise in the epidemiology of both infectious and chronic disease. He has served as director of the Los Angeles County Cancer Surveillance Program, where he studied descriptive patterns in the occurrence of various types of cancer. More recently, he initiated the International Twin Registry, a continent-wide series of comparisons between patients with chronic diseases and their unaffected twins, and the California Twin Program, an analogous program of studies among twins who differ in lifestyle or personal exposures and experiences.

His research interests include the epidemiology of chronic disease and use of twins for research into genetic and environmental causes of disease.*

* View Thomas Mack's biographical sketch as a faculty member of the Keck School of Medicine.

SCEHSC welcomes Scott Fruin

Scott Fruin, DrPH, formerly of the California Air Resources Board (ARB), joins the faculty of the USC's Keck School of Medicine and the SCEHSC's Exposure Assessment Research Core this month. While at the ARB, Dr. Fruin oversaw, participated in, and conducted several important studies of on-road motor vehicle exposures, including a series of school bus studies characterizing diesel
exposures inside the moving vehicle. He most recently has served as a critical liaison in the coordination of a series of state and regionally-funded studies recently launched in the Harbor communities of Wilmington, San Pedro and Long Beach. Dr. Fruin received his doctoral degree at the UCLA School of Public Health with Center member Dr. Arthur Winer serving as his advisor. Welcome, Scott!
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