



This newsletter is published by the **Center for Environmental Health and Susceptibility** at the University of North Carolina at Chapel Hill, with funding from the National Institute of Environmental Health Sciences (P30 ES010126).

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the center for environmental health and susceptibility
at the university of north carolina, chapel hill

inside the sentinel

RESEARCH HIGHLIGHT

Group Facilitates Interdisciplinary Research on Airway Biology, Asthma and Other Diseases



RESEARCHER PROFILE

Exploring Possible Links Between Pregnancy, Obesity and Breast Cancer



COMMUNITY OUTREACH AND ENGAGEMENT

Helping UNC Researchers Communicate Effectively with African American Women About Breast Cancer Risks



Conducting Healthy Homes Assessments in Kinston



welcome to the
summer 2011
edition of
the sentinel!

The UNC Center for Environmental Health and Susceptibility conducts state-of-the-art, interdisciplinary research to improve understanding of environmental and genetic determinants of disease in different populations and disseminates knowledge to help reduce the burden of environmentally related disease.

Group Facilitates Interdisciplinary Research on Airway Biology, Asthma and Other Diseases

AIRWAY BIOLOGY AND DISEASE IS ONE OF SEVERAL FLEXIBLE

Interdisciplinary Research Groups (FIRGs) established by the UNC CEHS to bring together basic, clinical and epidemiologic scientists to address emerging research areas in environmental health. Through the Airway Biology and Disease FIRG, immunologists, pulmonologists, toxicologists, biostatisticians and other specialists collaboratively explore the effects of air pollution on various lung diseases.

“At UNC’s longstanding Center for Environmental Medicine, Asthma and Lung Biology and through this FIRG, we study how air pollutants and ozone affect asthma and Chronic Obstructive Pulmonary Disease (COPD), response to infections, and risk for cardiovascular events, and we look for potential interventions to minimize those health issues in humans,” explains Dr. David Peden, who leads both entities.

UNC researchers have been studying the effects of inhaling ozone, diesel exhaust and tobacco smoke on airway inflammation. In one recently published study of genetic influences on response to ozone, Peden and his colleagues identified a specific gene linked to susceptibility to ozone exposure.

“We found that people who are deficient in that gene actually have increased inflammatory response to ozone compared to people



who do not. So if you have asthma, and you’re one of the 30–40% of people who are deficient in that gene, you may be more likely to have increased asthma events associated with ozone.” Armed with this new knowledge, the group is studying potential interventions to mitigate the impact.

NIEHS recently approved the CEHS request to use Center Director Funds for additional pilot projects to target new ideas from the FIRGs. Following a competition of seven proposals, the CEHS funded two FIRG pilot projects of \$50,000 each. One of these was awarded to Drs. Terry Noah and Samuel Jones to launch a collaborative study between burn surgeons and immunologists at the N.C. Jaycee Burn Center, to determine whether people who have suffered burn injuries are at higher risk for respiratory tract changes, inflammation and infection due to smoke inhalation.

Exploring Possible Links Between Pregnancy, Obesity and Breast Cancer

WITH THE SUPPORT OF THE NATIONAL INSTITUTE OF ENVIRONMENTAL Health Sciences, researchers at the UNC Breast Cancer and the Environment Research Program (BCERP) and their colleagues around the country are working together to understand the environmental risks associated with breast cancer over a woman's lifespan. UNC epidemiologist Dr. Melissa Troester is focused on the period around pregnancy and immediately post-partum — specifically how weight gain during that time influences the risk and progression of a particular form of breast cancer called basal-like.

"My lab is studying the conditions where the 'seed' of breast cancer is growing: the tissue adjacent to the tumor cells," says Troester, who is collaborating with Dr. Liza Makowski, an expert on obesity and metabolism. In culture dishes, Troester's team grows human cancer cells together with immune cells, which produce proteins that may change the way cancer cells behave and have been shown to be more abundant in obese humans and animals.

Troester is particularly interested in basal-like breast cancer, which is more

prevalent in African American women under age 50. African Americans tend to have a lower incidence of breast cancer, but they have higher mortality, perhaps in part due to the characteristics of this aggressive type of cancer. Troester is working closely with the Community Outreach and Engagement Core in CEHS to share study results with the community. (See article on [page 4](#).)

Troester was drawn to breast cancer research while completing her PhD in environmental health sciences at UNC, and pursued postdoctoral research with two of Carolina's highly regarded investigators in this field. As a promising young faculty member, she was awarded a CEHS pilot grant to launch the research that led to the funding of the UNC BCERP.

"I love studying the molecular biology of breast cancer and the public health relevance of what we're finding, and hope that we will gain a better understanding of what causes this cancer so we can develop effective prevention strategies."

Troester is the co-director of the Integrative Health Sciences Facility Core in the Center for Environmental Health and Susceptibility.



Photo by Will Owens



Helping UNC Researchers Communicate Effectively with African American Women About Breast Cancer Risks

CEHS RESEARCHERS ARE ENGAGED IN CUTTING EDGE RESEARCH

to determine the links between pregnancy, obesity and breast cancer — in particular a specific, aggressive type called basal-like breast cancer that is more prevalent in young African American women.

(See article on [page 3](#).)

To ensure that the study's outcomes are communicated effectively to women who may be at risk, the CEHS Community Outreach and Engagement Core (COEC) has formed a Community Advisory Committee (CAC) to provide guidance and feedback on the best ways to share these important messages with the public.

"The outcomes from this program will increase the information we have regarding the risk and susceptibility of breast cancer in African American women, and will hopefully enhance our work in reaching out to this community to encourage healthy lifestyle habits, screening behaviors and other steps needed to reduce the rate of breast cancer death in this population," says Lakeisha Johnson, NC WISEWOMAN Project Coordinator for the N.C. Breast & Cervical Cancer Control Program.

In their roles coordinating the outreach activities of the UNC Breast Cancer and the Environment Research Program (BCERP), COEC Manager Neasha Graves and Director Kathleen Gray assembled a group



of stakeholders from state and local public health agencies, media, advocacy groups and the African American community to advise on effective strategies to reach target audiences with these public health messages. The CAC provides feedback on educational materials and strategies used to relay messages about breast cancer risk to women.

"This is very exciting, because scientists don't usually have an opportunity to get this type of direct feedback," says Dr. Melissa Troester, BCERP principal investigator. "Our CAC has provided great input to help us ensure that our message is actually going to be understood."

COEC staff has also conducted focus groups to determine what African American women know, and do not know, about breast cancer risk and to understand how they learn about breast cancer and breast health. Interviews were also conducted with physicians, health educators and other health professionals to gain insight on tools used to convey breast cancer information to their patients and clients.

Conducting Healthy Homes Assessments in Kinston

IN FALL 2010, AS PART OF THE COMMUNITY OUTREACH AND Engagement Core's (COEC) efforts to train community health workers on "healthy homes" issues in vulnerable NC communities, COEC staff partnered with the Kinston Community Health Center in Lenoir County. Kinston has a large population of Hispanic migrant farm workers living in rental property with conditions that may present environmental hazards in the home.

Since then, with COEC support, bilingual Patient Navigator Marina Bravo has visited nearly 20 homes to identify asthma triggers, lead hazards, pest problems and home safety concerns, and to advise residents on how to remedy these environmental health hazards.

Pests are among the most prevalent issues Bravo sees, which often leads residents to use large amounts of pesticides. "There's also a lot of water damage from leaks, which can lead to mold, an asthma and allergy trigger. I go around the house and explain how to fix these issues, then I return three months later to follow up and see if things have improved."

Anna Kinsey, Kinston Community Health Center's Director of Outreach, says that the COEC's healthy homes assessment training has been invaluable for awareness about household health



*Eventually, we'd like everyone
in our community to
have an assessment.*

*Anna Kinsey
Kinston Community Health Center's
Director of Outreach*



hazards. "Eventually, we'd like everyone in our community to have an assessment."

COEC Environmental Health Educator Amy MacDonald agrees, noting "We hope that through our healthy homes trainings, we will continue to build capacity in vulnerable communities across the state to reduce environmental hazards in the home and, ultimately, improve children's health." The seven-hour Healthy Homes for Community Health Workers training is conducted by MacDonald and COEC manager Neasha Graves and is certified by the National Center for Healthy Housing. The statewide outreach and education efforts on healthy homes have also been supported by funding from the NC Department of Environment and Natural Resources.

Expanding Environmental Health Knowledge

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Reaching Out to the Community

The Community Outreach and Engagement Core (COEC) of the UNC Center for Environmental Health and Susceptibility (CEHS) works to improve public understanding of how susceptibilities and environmental factors interact to cause disease, with a goal of enabling people to make informed decisions about reducing disease risk and hazard exposure.

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