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

inside the sentinel

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welcome to the
2011 edition of
the sentinel!

The *Sentinel* is now provided exclusively online, with articles that feature emerging Center research, information about our scientists, and activities that educate residents in North Carolina and beyond about the latest environmental health research.



from the director's desk

CEHS Celebrates NIEHS Funding and Renewed Commitment to Interdisciplinary Research Efforts

AT THE UNC CENTER FOR

Environmental Health and Susceptibility (CEHS), we strive to promote interdisciplinary research that improves our understanding and ability to probe gene-environment interactions that shape an individual's susceptibility to disease. Over the past year, the UNC CEHS has implemented an interdisciplinary research approach that enables us to both customize our programs to identify critical research issues, as well as assemble scientists with the interest and expertise to strategically attack these problems. This year, we celebrate the Center's first year of a new five-year funding cycle from the National Institute of

Environmental Health Sciences to pursue this interdisciplinary research approach through a number of strategies.

At the core of this interdisciplinary approach are our **Flexible Interdisciplinary Research Groups (FIRGs)**, which bring together scientists from diverse backgrounds to address emerging areas of interest in environmental health. The current FIRGs include Airway Biology and Disease, Elucidating and Reducing Risks from Superfund Chemicals, Environmental Cancer, Metal-Induced Disease, Obesity and Metabolic Disease, and Reproductive and Developmental Health. We have also **reorganized and strengthened**

our Facility Cores, which provide state-of-the-art tools and insight so that investigators in the Facility Cores also collaborate across Cores to provide a fertile environment within which the CEHS research can blossom. To facilitate collaboration and cohesiveness among the varying research entities in CEHS, Dr. William Kaufmann serves as the **Research Navigator**.

The CEHS also continues our commitment to disseminate new knowledge arising from our research to the scientific community, citizens, public health workers and educators in North Carolina through our **Community Outreach and Engagement Core**. Another ongoing priority for the CEHS

is the Career Development Program, which includes predoctoral and postdoctoral training and mentoring of junior faculty and our highly competitive **Pilot Project Program** that provides seed funding to both young and experienced investigators who have not previously worked in environmental health.

We are confident that this innovative approach is enhancing our investigators' ability to identify ways that environmental exposures affect disease, and we look forward to sharing the results of our interdisciplinary research, along with profiles of Center scientists, with you in this and future editions of the *Sentinel*.

Experienced Researcher helps Scientists Navigate CEHS Resources

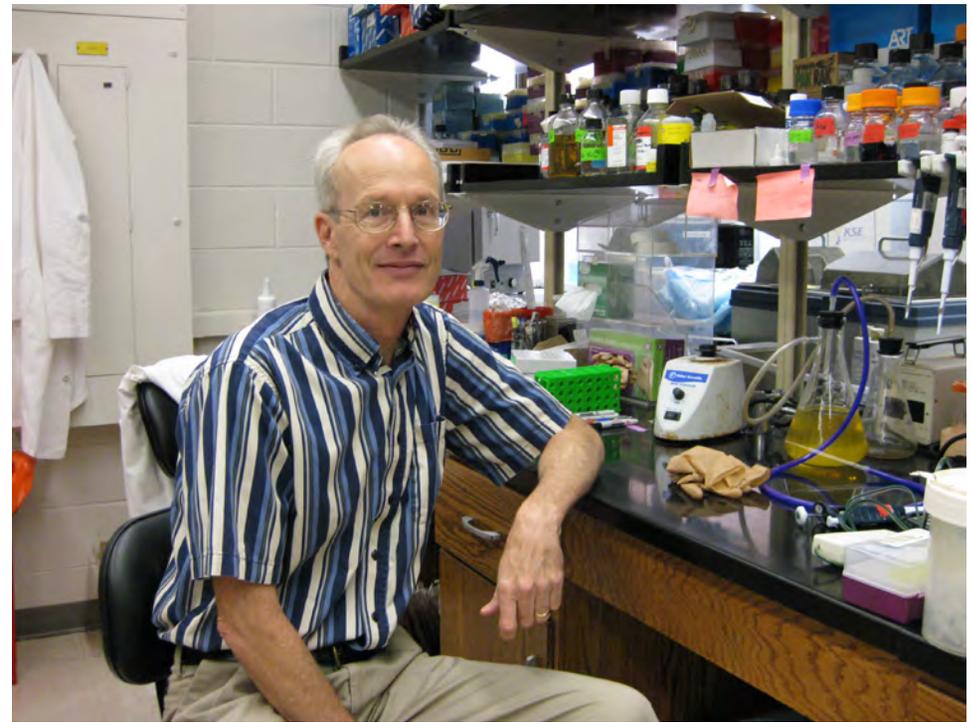
DETERMINING THE BEST WAYS FOR A RESEARCHER TO MAKE

use of the vast resources available in the UNC Center for Environmental Health and Susceptibility can feel overwhelming. Our Research Navigator helps researchers “navigate” through these resources and connect them with the people, technologies and services at CEHS and throughout the University that can help further their study of environmental health issues.

Taking on this role is Dr. William (Bill) Kaufmann, a UNC professor of pathology and laboratory medicine and one of the CEHS’s most successful scientists. Kaufmann’s extensive collaborations within CEHS, both as director of the Genetic Susceptibility Research Core and as a respected biomedical researcher, have demonstrated his ability to lead and organize multi-investigator research projects such as the UNC Program in Toxicogenomics and the UNC Program in Environmental Melanoma.

Kaufmann meets regularly with FIRG investigators and Facility Core directors to keep up-to-date on their services and needs to ensure that researchers throughout the organization are aware of the resources available to them.

“I am excited to help share with other researchers at UNC the breadth and depth of expertise we have in CEHS related to environ-



mental exposures that influence human health,” says Kaufmann. “In addition to facilitating interdisciplinary translational research, I’m here as a sounding board for other scientists to discuss research problems, talk about new proposals, or seek advice.”

Kaufmann also participates in the meetings of the Community Advisory Committee of the Community Outreach and Engagement Core, providing ongoing support of bidirectional communication between CEHS scientists and the public.

Dr. Kaufmann is available to talk with UNC researchers about their work, and about how the CEHS can help them. Contact him at bill_kaufmann@med.unc.edu or (919) 966-8209.

Facility Core Leadership helps Scientists Interpret Data to Support Emerging Environmental Health Research

“IF THE SIGNIFICANCE OF THE DATA GLEANED FROM RESEARCH was always clear cut, you wouldn’t need statistics,” notes Dr. Amy Herring, director of the CEHS Biostatistics and Bioinformatics Facility Core (BBFC). However, with the complex research studies being conducted by CEHS investigators, it is important to be careful about quantifying uncertainty.

“As science moves forward and new ways to collect information are developed, new statistical methods are often needed in order to analyze data to uncover interesting patterns,” she explains. “The BBFC analyzes new environmental data to determine if what we’re seeing is an important finding.”

Herring and her team help facilitate CEHS research projects by providing state-of-the-art biostatistics and bioinformatics support through study design, data analysis and development of new statistical methods.

“Investigators can come to our core and get as much or as little help as they need,” Herring, an associate professor of biostatistics, offers. “If you already have a statistical collaborator, we can simply review the analysis plan and offer constructive feedback. Or, if you need help with a study, we can show you how to choose an appropriate statistical model, determine the appropriate sample size to yield valid results,

consider combinations of experimental conditions, and implement the data analysis plan we help develop.”

The BBFC is currently involved in a number of projects, including working with Dr. Andrew Olshan, epidemiology department chair, and graduate student Tania Desrosiers, to help them determine whether there is a correlation between specific paternal occupations and the frequency of certain birth defects. The BBFC is also working on CEHS studies of air pollution’s effects on birth outcomes and gene-environment interactions in the Carolina Breast Cancer Study, among others.

The BBFC also educates researchers on how to use biostatistics tools and modeling to further their work. In addition to offering a walk-in clinic, the Core developed a *Biostatistics for Laboratory Scientists* course. And when an investigator proposes a study where no statistical test fits, the BBFC has the ability to develop new methods and theory.

Dr. Herring is available to discuss with UNC researchers how the Biostatistics and Bioinformatics Facility Core can collaborate with them in their research efforts. She can be reached at aherring@bios.unc.edu or (919) 843-6368.



Using “Train the Trainer” Model to Build Outreach Capacity in Vulnerable Communities

AS THE CENTER FOR ENVIRONMENTAL HEALTH AND SUSCEPTIBILITY pursues interdisciplinary collaboration between scientists on emerging environmental health concerns in the current five-year funding cycle, the CEHS Community Outreach and Engagement Core (COEC) has been working to build capacity among community audiences about the Center’s emerging environmental health research.

In the past year, COEC Manager Neasha Graves and environmental health educator Amy MacDonald have used a “train the trainer” model to train nearly 50 health practitioners and community leaders about emerging research at CEHS and other NIEHS-funded centers, as well as environmental health and “healthy homes” concepts. As participants learn about CEHS research, they are also provided with resources like presentations, discussion guides, hands-on activities, fact sheets, video clips, and web resources they can use to educate their constituents and patients. Graves and MacDonald will follow up with these participants, serving as mentors to these professionals and evaluating the effectiveness of the resources. These environmental health concepts have also been introduced in shorter, tailored workshops and presentations for over 500 other professionals in local health departments, as well as nursing students and community- and faith-based leaders.

Anna Kinsey, Community Outreach Director for the Kinston Community Health Center in Lenoir County, commented on the benefits



of the workshop for her outreach staff. “The obesity workshop *Promoting Healthy Living for Kids* was and will continue to be a wonderful training tool for the KCHC Outreach staff. They learned several different ways to engage their patients while presenting information about childhood obesity and nutrition. We were also given teaching materials that will be fun and easy to use with our patients.”

First grade teacher Tomika Altmann-Lewis shared how her students reacted to the educational tools Graves and APPLS student intern Kelly Robinson piloted at Burton Elementary School in Durham before they were provided in the trainings for professionals. “Mrs. Graves and her student provided us with an in-class field trip, with real-life examples of and discussions about many fruits and vegetables that many of my students had not seen before (such as the coconut and beets). They piqued the students’ interest, and now when we go to lunch, they even examine my lunch and ask me if I’m eating from all of the food groups!”

The COEC aims to provide many of its trainings for community- and faith-based leaders in vulnerable communities, where conditions like obesity, breast cancer and asthma often affect low income and minority residents. In the past year, some of those target communities have included Kinston, Durham, Siler City, Graham, and Henderson.

Healthy Homes: Helping Families Uncover and Prevent Hazards that Affect their Health

APPROXIMATELY TWO-THIRDS OF ALL US RESIDENTS LIVE IN a home that has at least one major health risk (National Center for Healthy Housing). Through a partnership with the NC Department of Environment and Natural Resources (DENR) and local health and housing agencies across the state, the COEC is working to reduce North Carolinians' exposure to home hazards like poor indoor air quality, pests and pesticides, lead contamination, and to prevent home injuries.

COEC Environmental Health Educator Amy MacDonald has been helping NC DENR develop an in-home assessment program, train environmental health staff, and educate the public about healthy homes concepts. To encourage North Carolina families to take advantage of a healthy homes assessment, MacDonald led a team to develop a short video *North Carolina Healthy Homes: Uncovering Hidden Hazards in Your Home*, which chronicles a local family's efforts to reduce asthma triggers in their home and make their home safer. MacDonald has also collaborated with Guilford, Forsyth, and Durham County Health Departments to develop the NC Healthy Homes website (www.nchealthyhomes.com), which provides a wide range of resources for health professionals and the public.

A key COEC partner for healthy homes outreach is the Guilford County Department of Public Health. Already a model county with

the first local ordinance in the state requiring blood lead testing for all children under six, the Environmental Health Division continues to lead by being the first county to launch a comprehensive Healthy Homes assessment program.

"Our local healthy homes initiative helps improve housing for the children of Guilford County through a comprehensive group of state and local stakeholders that provide education, resources and enforcement to make every home a healthy home," according to senior environmental health specialist Paula Weston-Cox. "When we perform a Healthy Homes Assessment, education for the family living in the home is our primary focus."

MacDonald and COEC Manager Neasha Graves have extensively trained fifteen health practitioners in healthy homes concepts, providing resources they can use to educate their clients and patients,



community outreach and engagement



including a model home assessment form, role playing and other strategies used to prepare professionals to identify health hazards during home visits. Participants have included community health workers, asthma program coordinators, social workers and nurses. MacDonald has also partnered with the North Carolina Central University Nursing Department to train and prepare thirty senior community health nursing students to conduct home assessments, in which they will be identifying indoor air quality hazards and educating Durham area families about ways to prevent or eliminate those hazards.

Says MacDonald, "In the past 15 years, collaboration between well-trained staff in NC agencies has led to a 95 percent reduction in lead poisoning cases. As our state's housing stock ages and we see an increased prevalence of health conditions like asthma, there's clearly a need to train these same environmental health staff to identify and address other environmental health hazards in homes. In fact," she adds, "the US EPA, HUD and CDC are implementing holistic strategies

to promote healthy homes through programming initiatives and funding. So the shift in the focus from lead poisoning to healthy homes is a national movement that we're excited to implement in North Carolina."

The NC Healthy Homes Initiative has already earned national and state recognition, specifically at 2010 conferences of the American Public Health Association and Smart Start, as well as the Annual NC Asthma Summit.

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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COMMUNITY OUTREACH AND ENGAGEMENT CORE

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