

Your Health &

News from the
University of Rochester
Environmental Health
Sciences Center

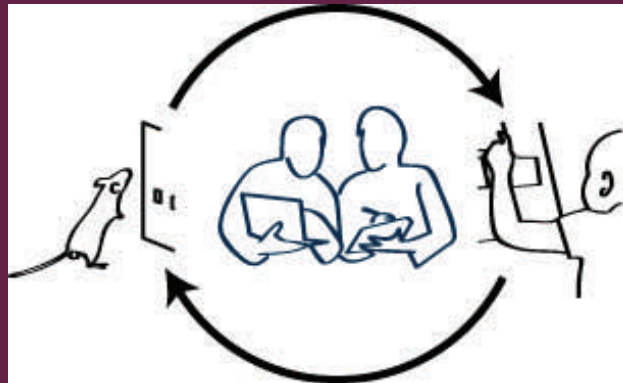
Fall 2012



The Environment

A Structural Overhaul Pumps New Life into Behavioral Research

Researchers conducting behavioral experiments face many challenges, one of which can be identifying the appropriate model for a particular study. Is it practical to conduct a human assessment, or would an animal model be more appropriate (and if then, what species)? Once the model is selected, a researcher must then identify and become familiar with the appropriate assessment test and methodology.



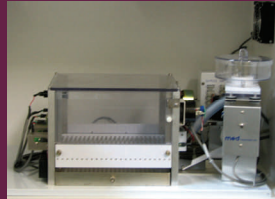
The University of Rochester Environmental Health Sciences Center's Behavioral Sciences Facility Core (BSFC) helps researchers overcome these challenges. The BSFC specializes in helping researchers collect quality behavioral data and conduct translational research. This unique facility is co-directed by Dr. Deborah Cory-Slechta and Dr. Daniel Mruzek, who collectively boast over 45 years of human and animal behavioral research. A wealth of human and animal behavioral experience among the faculty of the Core provides investigators the opportunity to work bi-directionally, applying animal research to human studies and human research to animal studies.

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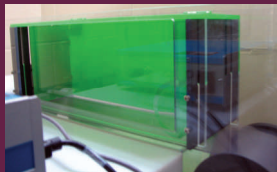
Behavioral Sciences Facility Core, Continued

The BSFC employs photo-beam chambers (right, top) to study movement and behavior in mice and rats. Operant chambers (right, bottom) are used to study conditioned behaviors.



The BSFC has ten home-cage photo-beam chambers (left), which connect to a camera for 24-hour measurement. This tool is perfect for circadian studies.

The treadmill (right, top) and walkway (right, bottom) connect to tGaitScan, part of the new Cleversys video system. The high speed camera measures various data such as stride length and gait. Other elements of the Cleversys system include Social Interaction and TopScan software. SI monitors and records social interactions. TopScan tapes and scores common behavioral procedures such as novel object.



Earlier this year, the BSFC significantly expanded its services and moved to a new location. The new facility helps the Core better serve researchers in the EHSC and other departments. For example, Center member Dr. Philip Davidson worked with BSFC staff to conduct neurocognitive and behavioral tests of learning, memory and attention on children in the Seychelles Islands to test the effects of mercury exposure from fish consumption. Through use of the BSFC's photobeam activity system, Center member Dr. Irfan Rahman tested cigarette smoke's effects on circadian rhythm. The BSFC's Animal Behavioral Assessment unit assisted with setup and operation of this system. Dr. Christoph Pröschel, a faculty member in the Department of Biomedical Genetics studying memory loss and impaired cognition after traumatic brain injury, has employed the services of the Core to reduce staff time and collect more robust data through computer automated operant chamber techniques. The Core's recent expansion of services will enhance their ability to encourage translation between human and animal research.

While BSFC has always been designed to operate bi-directionally between animal and human models, the two sides of the facility have historically been functionally separate. Co-location of these facilities within the Saunders building will foster collaboration and crossover among animal and human behavior studies.

In addition to a physical location change, BSFC is enhancing its services through the addition of new research equipment and services. For example, the Core recently acquired a Cleversys video system, which allows researchers to record animal behavior during several behavioral tests, and to "score" the videos using a software program that saves hours of lab work and eliminates human error from certain studies.

More information about the BSFC can be found online at <http://www2.envmed.rochester.edu/envmed/EHSC/behavioralfacilities/index.html>.

Center Researcher Leads Effort to Protect Children Nationwide from Lead

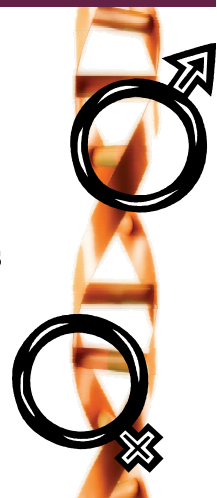
A growing body of evidence suggests that a “level of concern” for childhood lead poisoning (formerly 10 µg/dL, or micrograms per deciliter) is not protective of children. Researchers continue to find harmful effects at lower levels, and most agree that there is no safe level of lead in children’s blood. In 2010, the US Centers for Disease Control and Prevention (CDC) Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) responded to growing concerns about the potentially harmful effects of low blood-lead levels (BLLs) by forming the Blood Level Work Group. This group, co-chaired by EHSC researcher Dr. Deborah Cory-Slechta, was tasked with evaluating new approaches and strategies for protecting children from elevated BLLs.

In January 2012, the work group delivered a set of recommendations to the CDC. The work group recommended discontinuing use of the term “level of concern,” as it indicates a safe level of lead in blood. Instead, the group recommended referring to the action level as the “reference value.” Similarly, the group recommended that the reference value be dropped from 10 µg/dL to “the 97.5th percentile of the population BLL in children ages 1-5 (currently 5 µg/dL),” and should be updated every four years, using the two most recent National Health and Nutrition Examination Surveys. Other recommendations made to the CDC included developing a national primary prevention strategy to protect children before they are irreversibly affected, encouraging clinicians to be a resource for patients, and continuing education and outreach efforts to inform the public about the dangers of lead poisoning. The work group also recommended that funding be available for primary prevention strategies, including removal of lead hazards from homes.

The CDC responded to and adopted a majority of the working group’s recommendations in May 2012. Funding availability limits implementation of several suggested primary prevention initiatives. However, the CDC has committed to adopting these recommendations where funding permits. For more information, visit <http://1.usa.gov/Yo9Tbt>.

Understanding the Biological Basis for Gender Differences

Exposures to environmental chemicals such as BPA, phthalates, lead and methyl mercury may affect males and females differently, often through hormonal systems in the body. In September 2012, the Women’s Health and the Environment over the Entire Lifespan (WHEEL) fellowship program hosted a workshop to explore the biological basis for gender differences in health and disease, and associated implications for public health and medicine. During the half-day symposium, eight speakers shared their insights on the impact of environmental chemicals on women’s health, with particular focus on reproductive health. Dr. Larry Cahill (University of California, Irvine) delivered the keynote address titled “Sex Influences on Brain and Emotional Memory: The Burden of Proof has Shifted.” WHEEL scholars Dr. Emily Barrett and Dr. Danielle Benoit presented their work, along with University of Rochester researchers Drs. Martha Blair, Michael Sellix, Douglas Portman, and Bernard Weiss.



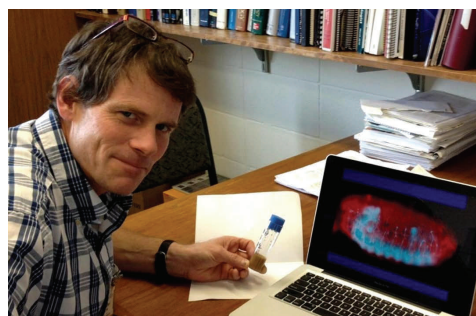
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Understanding the Biological Basis for Gender Differences, Continued

The WHEEL program is designed to connect junior and senior faculty who research women's health differences, and provides salary and research support for junior faculty members for up to three years, with possible renewal for up to two additional years. It includes a structured curriculum of courses, mentoring, research, and grantsmanship that can be tailored to scholars' individual needs. WHEEL – funded by the National Institutes of Health Office of Research on Women's Health Building Interdisciplinary Research Careers in Women's Health program – began in 2010 and is led by Dr. Deborah Cory-Slechta and directed by Dr. Edwin van Wijngaarden.

Welcoming the New Fly Guy

In September, the EHSC welcomed new Center researcher Dr. Matthew Rand, who comes to us from University of Vermont. Dr. Rand spends his time searching for clues about the neurodevelopmental effects of methyl mercury (MeHg). His use of fruit flies to study the influence of genetics on MeHg toxicity adds a new twist to the EHSC's longstanding work in this area. Dr. Rand is investigating several new research hypotheses, one being that polymorphisms in Cytochrome p450 (CYP) genes can influence susceptibility to MeHg toxicity during development, both in flies and in humans. A portion of this work will be funded through an NIH Virtual Consortium for Translational/Transdisciplinary Environmental Research (ViCTER) grant, acquired by Dr. Philip Davidson as a two-year extension of R01 funding for the Seychelles Child Development and Nutrition Study.



Parker Duffney from SUNY Geneseo College

Jennifer Judge from SUNY Cortland

Carrie Klocke from Boise State University

Jessica Meyers from University of Pittsburgh

Lisa Prince from Juniata College

Elissa Wong from Swarthmore College

Welcome New Tox Students!

Healthy Waterways: Considering Health in a Local Program

The COEC received a grant from the Health Impact Project – a collaboration between the Pew Charitable Trusts and the Robert Wood Johnson Foundation – to prepare a Health Impact Assessment (HIA) to inform Rochester’s Local Waterfront Revitalization Program (LWRP). HIA is a voluntary policy and planning tool for informing decision-makers in non-health related sectors of potential health impacts of proposed plans and policies for communities they serve. The overall goal of HIA is to ensure that health is considered during the decision making process.

The LWRP, conducted as part of the New York State Division of Coastal Resources statewide coastal management program, will guide decisions affecting Rochester’s waterways into the next decade. The Healthy Waterways HIA involves soliciting input from stakeholders and assessing potential health impacts under different waterfront use scenarios. COEC staff will use this information to make recommendations to the City of Rochester for maximizing potential health benefits and avoiding potential risks, giving particular attention to health issues affecting children and low-income populations. Specific issues analyzed will depend on stakeholder input, but issues related to physical activity and the built environment, water quality, and fish consumption are likely to be included.

This project is the first local HIA, and COEC staff hope this project will set an example for Rochester of how to incorporate health in decision making. Aligning with this goal, the COEC remains active in a local HIA learning group, initiated by COEC Director Dr. Katrina Korfmacher in 2011, which seeks to expand local knowledge of HIA and provide a forum for local practitioners to move the practice forward. To learn more, visit <http://bit.ly/QorjRS>.

NIEHS Supplements Support Collaborative Work Between COECs

The National Institute of Environmental Health Sciences (NIEHS) awarded the UR COEC two supplements in 2012. COEC Director Dr. Katrina Korfmacher is Principal Investigator of “Health and Hydrofracking,” a needs assessment of community information needs related to potential health effects of high volume horizontal hydraulic fracturing in New York, North Carolina, and Ohio. Dr. Korfmacher partnered with COEC Director Kathleen Gray at the Center for Environmental Health and Susceptibility, Gillings School of Global Public Health, University of North Carolina - Chapel Hill; and COEC Director Dr. Erin Haynes at the Center for Environmental Genetics, University of Cincinnati.

Dr. Shaw-Ree Chen partnered with COEC Director Marti Lindsey (PI) at the Southwest EHSC, University of Arizona to fast-track the process of finding consensus on what Environmental Health Literacy (EHL) means. There is a significant lack of clarity over the definition and application of EHL. This lack of agreement is a detriment to EHL research and outreach efforts because it limits progress in measurement of EHL, and could delay solutions to the significant health problems associated with low literacy. The team aims to address this issue by developing a consensus definition of the term. This will set the stage for further research that includes developing comprehensive measures, identifying the consequences of low versus high EHL, and implementing methods of improving EHL.

Awards and Grants



Center researchers and graduate students received numerous awards and grants in 2012. The following are just samples of the Center's achievements this year.

Select Grants

- ☀ Dr. Richard Phipps, along with multiple other Co-Principal Investigators, received funding through the National Institute of Child Health and Human Development (NIHCD) to study "Localized Vulvodynia Pathogenesis: Fibroblast, Yeast, and Melanocortin." The long-term goal of this project is to develop an understanding of the vulvodynia pain mechanism.
- ☀ Dr. David Rich received two new grants in 2012. One titled "*Ambient and controlled particle exposures as triggers for acute ECG-changes, and the role of antioxidant status,*" funded by the Health Effects Institute, will assess whether exposure to ultrafine and fine ambient air particles affect cardiac rhythm, and will assess whether antioxidant capacity, exercise, and personal characteristics modify cardiac response to particle exposure. For this project, Dr. Rich is Co-Principal Investigator with Annette Peters of Helmholtz Zentrum München (Munich, Germany). Dr. Mark Utell and Dr. Rich are Co-Investigators for a project funded by the New York State Energy Research & Development Authority (NYSERDA) titled "*Health impacts of changes in energy generation systems upwind of Western New York.*"

Student Awards

- ☀ Brittany Baisch (Toxicology) received a Tox Scholar Travel Award from Society of Toxicology (SOT), the William F Neuman Award, a Young Scholar Award for outstanding student presentation at the Nanotoxicology Conference in Beijing, China, and was a student representative for the Committee on Diversity Initiatives for SOT.
- ☀ Eric Beier (Toxicology) was awarded 1st place for his SOT Metals and Ethical Legal and Social Issues Excellent Research posters. He also received an American College of Toxicology Travel Award.
- ☀ Whitney Christian (Toxicology) was honored with the Robert N. Infurna Award for best scientific publication by a graduate student. Her paper was also selected by students as the October 2012 publication of the month.
- ☀ Sesquile Ramon (Microbiology and Immunology) received an American Association of Immunologist Young investigator award.

Awards and Grants, Continued

Faculty Awards

☀ Dr. Katrina Korfmacher received the Breast Cancer Coalition of Rochester's (BCCR) 2012 Harriet Susskind-Rosenblum "Advocate's Spirit Award," which is named for a BCCR founder and advocate. Dr. Korfmacher was recognized by the coalition for her advocacy efforts surrounding environmental health issues. In giving this award, the BCCR said, "Not only does Dr. Korfmacher bring relevant, sound research to the table, she is also recognized for her efforts in working with community groups to interpret developing research and use the information in their prevention efforts."



☀ Dr. Irfan Rahman received a Lifetime Scientific Membership Award from the Oxygen Club of California (OCC). Dr. Rahman accepted the award at the OCC World Congress in Alba, Italy, May 2012. This award recognizes the friendship/goodwill and support of OCC organization by outstanding scientists. Along with two other recipients, Dr. Rahman was recognized for his work on epigenetic modulation in inflammation by bioactives (molecules in food that can have a biological effect).

☀ Dr. Bernard Weiss' novella *The Alzheimer President* was honored at the University of Rochester's "Celebration of the Book" this past March. The Provost's annual event celebrates faculty books and other volumes, published compositions and performances. Written during the Reagan Administration, *The Alzheimer President* questions our ability to identify early signs of neurobehavioral dysfunction in our nation's leaders. Further, the work asks whether and how effectively scientists could determine whether exposure to chemicals damages the brain. *Teaching Environmental Health to Children: An Interdisciplinary Approach* (Springer International Press) was also honored at the event. The book's co-authors and editors are from the University of Rochester, David Hursh, PhD (Warner Graduate School of Education, Teaching and Curriculum) and Camille Martina, PhD (School of Medicine and Dentistry, Public Health Sciences); some chapters are from other NIEHS funded project sites; Hilarie Davis, EdD (University of Miami) and Michael Trush, PhD (Johns Hopkins). This book highlights NIEHS-funded curricula from nine universities throughout the U.S. that teach young students about reducing their risk of exposure to environmental chemicals and ways they can interface with their community to promote public health policy changes. The authors' goal in writing this text was to expand application of these curricula to an international audience and through global applications for all age levels.

Faculty, Staff and Students Remember Ned Ballatori



There is no doubt that bittersweet memories will visit center members this holiday season as we remember Dr. Ned Ballatori, who passed away last winter. Dr. Ballatori was a friend, colleague and mentor to many. During his career Dr. Ballatori mentored more than 30 graduate students. Researchers from Japan, the Netherlands, Thailand and China traveled to his laboratory to learn from him. An acclaimed scientist, Dr. Ballatori helped build and bring the Environmental Medicine and EHSC to the international research spotlight. “Ned gave everything he had to his colleagues, his students, his family, his laboratory and the department,” said Dr. Deborah Cory-Slechta. “He set the bar very high, and his views were very well respected. Even though he is no longer with us, his advice will long be remembered and will continue to influence our activities for many years.”



If you have questions or comments about this newsletter, please contact Valerie_Garrison@urmc.rochester.edu