

Your Health &

News from the
University of Rochester
Environmental Health
Sciences Center

Fall 2010



The Environment

Special Issue: State of the Environmental Health Sciences Center

The University of Rochester's Environmental Health Sciences Center is celebrating its 35th anniversary. In this edition of our newsletter, we recognize this accomplishment with articles on the history of the EHSC, the recent Center grant renewal, and an overview of center members' contributions to clinical and translational research.



History of the University of Rochester Environmental Health

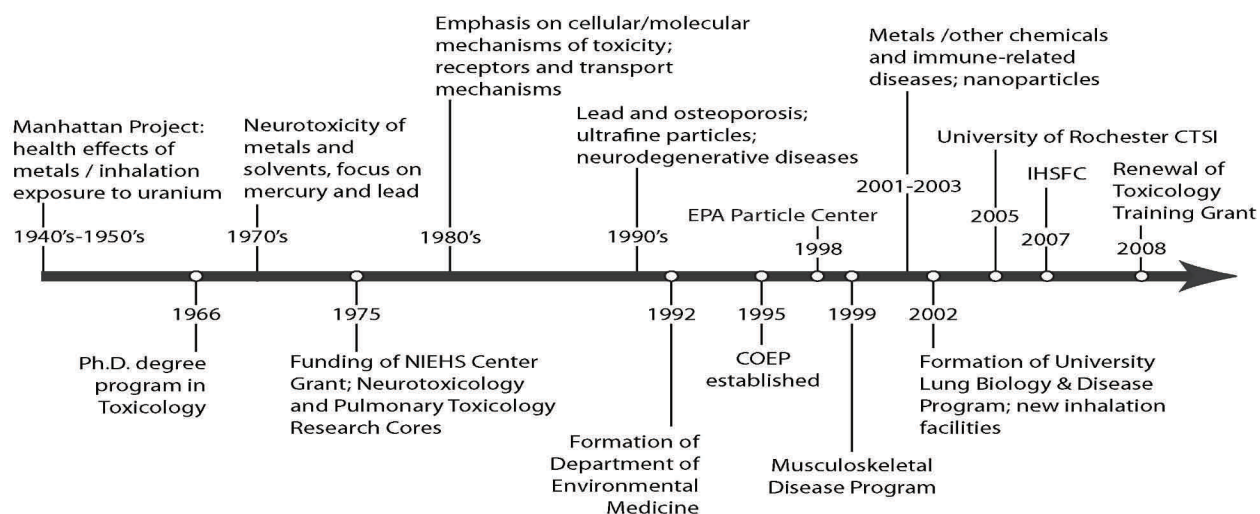
Sciences Center

The National Institute of Environmental Health Sciences (NIEHS) currently funds 23 Environmental Health Sciences Centers (EHSC) throughout the country. These centers are designed to support and encourage environmental health research by focusing on an interdisciplinary approach. Their goal is to improve the health of communities nationwide through novel approaches to research. These centers include Community Outreach and Education Cores (COEC) that assist in translating their research to the public, and responding to communities' needs for information about environmental health topics.

The University of Rochester Medical Center has been proud to host an EHSC for the past 35 years. In 1975, Tom Clarkson, then head of the University's Toxicology Division, was awarded an NIEHS grant to establish the Center. The EHSC grew out of the Division of Toxicology's research program, which had a particular emphasis on the environmental health effects of heavy metals. The breadth of the EHSC's research has expanded over time to include areas such as environmental effects on neurodevelopmental disorders and neurodegenerative disease, immune response, cancer, and cardiovascular and respiratory health, to name a few. Every five years since the original grant, the University has successfully competed for NIEHS funding to continue the EHSC. Our most recent award will support the center into 2015.

The EHSC supports multidisciplinary research programs, including both clinical and basic research. In 1995, the EHSC established a COEC to promote two-way communication between researchers and communities.

This newsletter is one of the many ways the public can learn about the research and outreach programs of the EHSC. The EHSC web site, this newsletter, an active Community Advisory Board, community lectures and forums, and involvement with numerous community and interest groups sustain this two-way communication.



History of the University of Rochester Environmental Health Sciences Center

A Test of Character

by Center Director Tom Gasiewicz

One of the best things to be said about a job candidate is having the intelligence, drive, and character to “do what it takes” to be successful. The recent renewal of our NIEHS-funded Center grant indicates that for the past 35 years our team of faculty, students, and staff has indeed had “what it takes” to continue a tradition of excellence in research in the environmental health sciences. While the accolades are most often given when the award notice for the funding comes from the NIH, most of us recognize that the true reward comes in knowing that our research programs are having a positive impact on public health. Indeed, through a strong multi- and interdisciplinary framework, our Center programs have fostered numerous advances in both basic and translational research examining the relationships between environmental exposures and human disorders and disease. So lest I be accused of being a Grinch or Scrooge, let us take an additional five seconds to congratulate ourselves on a job well done!

This accomplishment is especially significant because in the most recent NIH Center Grant review, several well-established and extremely successful NIEHS Centers were *not* funded. The total number of Centers funded by NIEHS has gone down and that obviously means the competition is getting tougher. In addition, The National Institute of Health (NIH) has shifted more of an emphasis to research programs demonstrating clearer directions towards translational outcomes. NIEHS is emphasizing research programs with more definitive impacts on public health not only in the United States but relevant to global environmental health issues. There is a further emphasis on being more efficient and utilizing the best strategies by fostering partnerships and integrative science across disciplines, institutions, and other Centers. There also is a need to advance and utilize new research approaches and tools in epigenetics, bioinformatics and systems biology to address questions related to the fetal/childhood basis of adult disease, nanoparticles, stem cells, obesity, and other diseases for which there are environmental components. Fortunately our Center is in an excellent position to continue its work along many of these lines as well as to launch toward new directions.

It is very important to recognize our strengths and, in many cases, make the effort to build upon these. However, it is also important to take a lesson from a Rochester company which realized (perhaps too late) that making better photographic film will not alone continue to breed success, when pictures can be made better and faster through the use of newer technology and approaches. Simply said, our Center will only continue to be successful if we can clearly demonstrate three years from now that we are following the new directives of NIH and utilizing the best tools and partnerships possible to advance cutting-edge research in environmental health sciences to have an impact on public health.

It is often said that a true measure of character is not based on the number of accolades, accomplishments and awards, but how one responds to the challenges that “tough times” often bring. Given the funding context and new directions of the NIEHS, the next couple of years will be a true test of character for our Center.

Our past success has truly resulted from a remarkable team effort, and I am confident that our Center team will be able to continue future efforts to serve the health needs of our communities.



NIEHS awards the University of Rochester's EHSC a five-year, \$5 million grant

"While the average human life expectancy has been increasing, there remain populations and communities for which health outcomes remain poor or are deteriorating... The rising incidence of...diseases cannot be explained by genetics alone, and this underscores a critical role for environmental and chemical exposures as co-factors in the development and progression of human disease."

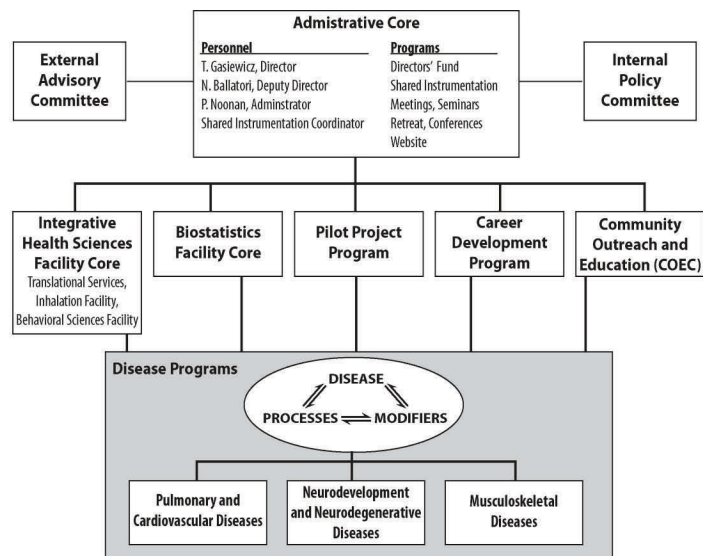
- From the "Center Theme" section of University of Rochester's EHSC grant application

The University of Rochester Environmental Health Sciences Center's (EHSC) eighth NIEHS Center grant (termed a "P30" grant) was awarded in fall 2009 with a start date of March 2010. This five-year grant will allow the EHSC to build on its 35 years of environmental health research and develop in new directions. In our grant application to the NIEHS we noted the Center's past contributions to understanding the role of environmental factors in pulmonary and cardiovascular diseases, neurodevelopmental disorders and neuro-degenerative diseases, and musculoskeletal diseases.

Within these areas of focus, the Center's goal is to support environmental health research that builds understanding of the complex interactions that occur between biological processes and environmental (as well as genetic) modifiers that ultimately determine disease development, progression and outcomes. The center's mission is "to identify the means by which environmental and chemical exposures act as modifying factors for human disease and dysfunction, and to use this information to develop strategies to prevent or ameliorate adverse health consequences and thereby improve public health."

So...what does the EHSC do, anyway?

Our Center grant funding from NIEHS does not directly support research (faculty/staff salaries, lab supplies, etc); rather, it provides services, co-ordination, and support to investigators whose work is funded through a wide variety of other grants. Our Center includes administrative support services, a Biostatistics Core, an Integrative Health Sciences Facilities Core (IHSFC), a Pilot Project program, a Career Development Core, and a Community Outreach and Education Core (COEC). Our Center hosts seminars by researchers from outside the University and organizes an annual retreat for all Center members. The Center's Administrative core determines center membership and solicits input from an external advisory committee.



Continued on page 5

A strong network of cores and programs supports EHSC researchers...

The Career Development Core

supports new researchers and faculty new to environmental health research. This support is established through a mentoring team of senior Center investigators tailored to the faculty members' research goals.

The Center is administered through the Department of Environmental Medicine, but Center investigators come from over fifteen different home departments. At present, there are 47 Center members, fourteen (30%) of whom are MDs, with one DVM and one DDS. Our breadth of scientific and clinical expertise is a key Center strength, allowing the formation of collaborative groups that can address pressing issues in environmental health. The EHSC cores and programs described here create the framework that supports our researchers' programs.

The Integrative Health Sciences Facility Core (IHSFC)

facilitates translational research by helping researchers obtain access to specialized equipment, tissue samples, and providing assistance with human subjects research. The IHSFC also assists researchers in navigating the regulatory system for human subjects research. The IHSFC is also involved in supporting seminars and other events, to help faculty in other departments learn about ways in which environmental factors might be related to their research or clinical interests.

The Community Outreach and Education Core's (COEC)

mission is to support two-way communication between the public and researchers about environmental health sciences. The EHSC COEC primarily focuses on serving local communities on issues of great local concern such as lead poisoning and healthy housing. The COEC works with Center scientists to help translate their findings related to improving environmental health while continuing to respond to the local community's needs for environmental health information. The COEC also coordinates with the IHSFC to help researchers share their findings with interested communities and study participants.

The EHSC supports small research projects through the Pilot Project Program. These grants allow researchers to try new approaches, develop new collaborations, and generate pilot data that often lead to more research funding. Targeted areas for future pilot projects include: 1) proteomics in environmental health; 2) dietary interventions in environmentally-related disease; 3) stem cells as targets of environmental agents; and 4) epigenetics in the fetal basis of adult disease.

The Center's Biostatistics Facility Core

provides statistical and data management services to members of the EHSC. These services help Center researchers design their studies properly and take advantage of sophisticated statistical and modeling tools.

The Coalition to Prevent Lead Poisoning Received an EPA Environmental Justice Award

Rochester's Coalition to Prevent Lead Poisoning (CPLP) is proud to be one of five partnerships from throughout the nation to be presented with a U.S. Environmental Protection Agency (EPA) Environmental Justice Achievement Award in 2009. Judith Enck, regional administrator for the EPA, presented the award to CPLP members on July 22, 2010. The partners were congratulated on their tireless dedication to protecting children in the City of Rochester from lead poisoning. EPA selected award recipients based on their success in developing a partnership involving multiple stakeholders, and demonstration of innovative strategies that result in significant improvements in environmental justice. Selected programs must also "successfully leverage resources, build capacity, and demonstrate long-term sustainable programs and partnerships."



The CPLP was selected as a recipient based on its contributions to lowering the incidence of childhood lead poisoning in Rochester by 84% over the last 10 years, a feat that, according to Enck, "demonstrated...that community leaders can provide solutions to health threats people face." The EPA recognized the City of Rochester, the Monroe County Department of Public Health, the University of Rochester, Empire Justice Center and the Finger Lakes Health Systems Agency as Coalition partners, in addition to the many contributions by child advocates, neighborhood organizations, doctors, nurses, educators, housing officials, researchers, public interest lawyers, health insurers, property owners and community residents. The CPLP's keystone accomplishment, the City of Rochester's 2005 lead law, has been recognized as a national model for innovative strategies to combat childhood lead poisoning. The CPLP's community-based strategy for action has also served as a model for local groups working together on childhood obesity prevention efforts. During the award presentation, partners emphasized the need to continue in the work to reach children who are still at risk of being poisoned. Bryan Hetherington, chief counsel for the Empire Justice Center and former co-chair of the CPLP, emphasized that "no one can rest on their laurels...I think we need to rededicate ourselves."



NIEHS Director Awarded Honorary Degree for Work in Environmental Health

Dr. Linda Birnbaum, Director of the National Institute of Environmental Health Sciences (NIEHS) and the National Toxicology Program (NTP), was awarded an honorary Doctor of Science degree from the University of Rochester (UR) in May 2010. Dr. Birnbaum graduated from UR with a B.A. in Biology in

1967. She moved on to the University of Illinois for her Masters and PhD in Microbiology. Much of her career was at the US Environmental Protection Agency, where she rose through the ranks becoming Director of the Experimental Toxicology Division at the National Health and Environmental Effects Research laboratory before assuming the helm at NIEHS/NTP. Dr. Birnbaum's career is distinguished by her outstanding scientific research and by her dedication to public service. Her research focuses on the pharmacokinetic behavior of pollutants, mechanisms of actions of toxicants, and efforts to link real-world exposures to adverse health effects. In addition, she has demonstrated exemplary public service through her efforts in scientific research, environmental and public health, and public outreach. She is an active member of the scientific community, and throughout her career has served in many leadership positions to various scientific societies, including the Society of Toxicology, the American Society of Pharmacology and Therapeutics, and the American Aging Association.

Annual Toxicology Retreat

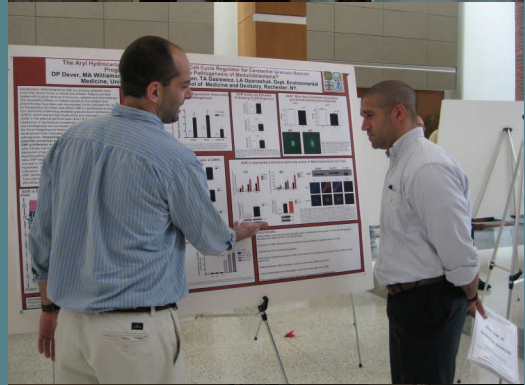
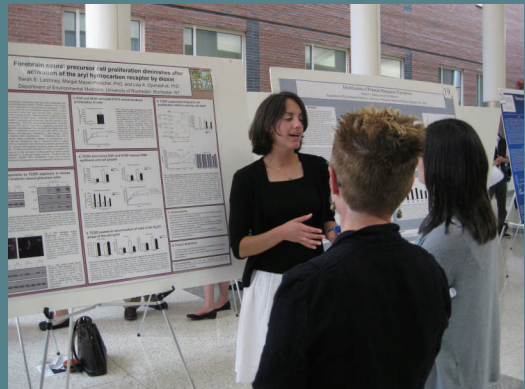
The department of Environmental Medicine held its annual Toxicology Retreat on May 27, 2010. The event began with a keynote lecture by Dr. Howard Hu, "A New Twist to an Old Story: The Evidence for Early Life Lead Exposure as a Risk Factor for Alzheimer's Disease through Epigenetic Programming." Dr. Hu is the National Science Foundation International Department Chair, Environmental Health Sciences, and professor of Environmental Health Sciences, Epidemiology and Internal Medicine. .

As co-director (with Dr. Robert Wright) of the Michigan-Harvard Metals Epidemiology Research Group, Dr. Hu investigates the effects of metals exposure and genetics on children's development and chronic diseases in adults.

The retreat included training workshops and a poster session where toxicology graduate students and post-docs showcased their work. The Department of Pharmacology and Physiology hosted a guest seminar by Dr. Francis E. Lund, *Modulation of Inflammation and Autoimmunity by Gaq Containing Trimeric G Proteins*. Graduate students Shilpa Aggarwal and Denise Skrombolas also presented.

Five graduate students and post-docs received awards for their outstanding work: Jennifer Head received the William F Neuman Award for exemplifying academic, scientific and personal qualities "that were characteristic of the life of Dr. William F. Neuman"; Sam Caito was acknowledged for his "especially mentorious research in toxicology" and quality of his graduate thesis with the Harold Hodge Award; pre-doctoral students Shuji Shi and Zhengyu Yin, and postdoctoral student Mei Cui received Robert Infurna Awards for the "best research paper as first-author in a peer-reviewed journal." Other toxicology students who received awards during the 2009-2010 academic year were: Fanny Casado, Melissa Badding, Daniel Dever, Bethany Winans, Brittany Serke, Whitney Christian, Casey Manning, David McMillan, Matt Giannandrea, Amber Rinderknecht, Betina Lew, Guangbi Jin, Hongwei Yao, Ramil Sapinoro, and Peter Vitiello.

The day concluded with a dinner for toxicology faculty, staff and students.



The EHSC says goodbye to summer interns and hello to new students!

The Toxicology Training program welcomed six new students this fall:

Sage Begolly (Neuroscience, University of Delaware)

Amanda Croasdell (Biochemistry, Utah State University)

Khatera Rahmani (Biology, Brooklyn College)

Emily Resseguie (Biology, Calvin College)

Brenn Stacey (Biology, University of Montana)

Zichao Wang (Biochemistry, College of Charleston)



The Community Outreach and Education Core also hired two summer interns this year, who stayed on-board through mid-August.



Emma Caldwell is currently a sophomore at the University of Rochester where she plans to double major in Public Health and Environmental Studies. Emma worked primarily on Dr. Korfmacher's Caregiver's Lead Knowledge pilot project. She conducted surveys, organized data, and helped run focus groups in order to assess if parental knowledge could be accurately measured. In addition to these tasks, Emma helped with some internal organization and Healthy Homes trainings.

Reema Singh is a recent graduate from the University of Rochester. She double majored in Clinical and Social Psychology and Anthropology and completed a minor in French. During her undergraduate years, Reema engaged in student organizations and helped organize philanthropic events. From serving as a geriatric research assistant and participating in the Urban Fellowship Program to volunteering with the Burmese refugee community, Reema spent much of her off-campus time getting to know Rochester and its residents. This past summer Reema continued her work in Rochester through an internship with the Community Outreach and Education Core. She conducted individual and group trainings to teach people how to reduce environmental health hazards in their homes. She created educational materials used to screen individuals for potential home health hazards and connected with children, young parents, and refugee populations. Currently, Reema is looking to further her community development experiences outside of Rochester, where she hopes to explore a career in Urban & Environmental Planning & Policy.



EHSC faculty and students remember graduate student Kurt Bertram



Kurt Bertram, a doctoral student in the Toxicology program, unexpectedly passed away on August 29, 2010, at the age of 29. Kurt completed his undergraduate degree at Northeastern in 2004, worked as a research assistant at Beth Israel Deaconess Medical School (Boston), and later entered the UR Toxicology program in 2006 under advisor Dr. Richard Phipps. Kurt's thesis research focused on age-related macular degeneration.

Kurt performed admirably in the Ph.D. program, successfully passing his doctoral qualifying exam in February. He recently published a first-author publication in the American Journal of Cell Physiology and was selected to receive a National Eye Institute Travel Grant to the 2009 Association of Research in Vision and Ophthalmology Annual Meeting.

"Kurt was a dedicated, hard-working student with a passion for toxicology and vision research," said Richard P. Phipps, Ph.D., Dean's Professor of Environmental Medicine. "He was gregarious and good-hearted, and will be missed by his fellow students, staff and faculty. We are deeply saddened by this loss and extend our sympathy to his family and friends."