

# Your Health & The Environment

News from the University of Rochester  
Environmental Health Sciences Center

Summer 2015



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# Revisiting the Evidence: Methylmercury and Fish Consumption

## Recent Findings from the Seychelles Child Development Study

### *About the Seychelles Child Development Study*

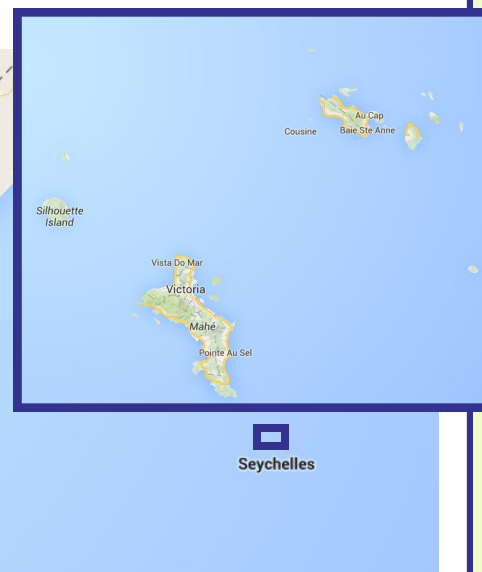
The Republic of Seychelles is an Indian Ocean island nation where fish consumption is very high – an average of 8 fish meals a week. As a result, the population has about ten times higher exposure to methylmercury from fish than do people in the United States. Many of the factors that complicate study of methylmercury exposure in other regions are relatively consistent across the Seychelles population, because health care and education are free, malnutrition is low, and there are few industrial toxicant exposures in that region.

Recognizing that these characteristics made the Seychelles Islands an ideal place to assess developmental effects of methylmercury (MeHg) exposure at naturally-occurring levels, Dr. Thomas W. Clarkson began the Seychelles Child Development Study (SCDS) in the mid-1980s. Following Dr. Clarkson's retirement, the study continued under the leadership of Dr. Philip W. Davidson of the Department of Pediatrics and Dr. Gary J. Myers of the Department of Neurology, in collaboration with additional researchers from the University of Rochester, the Republic of Seychelles, Ulster University in Northern Ireland and, most recently, Karolinska Institute in Sweden. Project leadership is currently shared by Dr. Davidson and Dr. Edwin van Wijngaarden of the Department of Public Health Sciences. The SCDS continues to track the development of three cohorts of children, the oldest of whom are now in their mid-20s. The study is funded by several National Institutes of Health grants and in-kind contributions from the Seychelles government.

The initial cohort of 779 children was assessed six times over 11 years for multiple developmental outcomes including cognition, memory, motor and social behavior. Initial results of these studies demonstrated no consistent evidence of adverse effects of prenatal MeHg exposure from fish consumption. Some beneficial associations have also been found, suggesting the nutritional benefits of fish consumption may outweigh any potential adverse consequences of MeHg exposure. The study recently reported that maternal nutritional status may modify MeHg associations with developmental outcomes. Emerging evidence suggests that the mother's genetics also may be important in influencing the metabolism of MeHg and subsequent toxicity. These findings illustrate the complexity of MeHg exposure as it pertains to health outcomes, and highlight the importance of robust longitudinal research. The SCDS continues to develop new tools and approaches to explore these interactions and their influences on development over the life course.

In 2009, *Your Health & the Environment* highlighted the Seychelles Child Development Study (SCDS) (<http://bit.ly/Fall2009EHSC>).

In this issue, we highlight recent findings from the SCDS's continuing longitudinal research. For more information on the Seychelles Child Development Study, visit: <http://www.urmc.rochester.edu/pediatrics/research/Seychelles/>



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# Revisiting the Evidence: Methylmercury and Fish Consumption

## *Recent Research Directions of the Seychelles Child Development Study*

The association between prenatal exposure to MeHg from fish consumption and developmental outcomes is complex and challenging to study. There are many beneficial nutrients contained in fish that may mask or counteract the effects of MeHg. These nutrients include long chain polyunsaturated fatty acids (LCPUFAs). LCPUFAs are an important factor in maternal and fetal health because they contribute to development of the neurological, vision and immune systems. Recent research from the SCDS suggests that these beneficial effects of LCPUFAs may protect the brain from the adverse effects of MeHg.

The study team evaluated the interaction between LCPUFA and MeHg in a cohort of 1,265 mother-child pairs. They measured hair MeHg and PUFA concentrations in the mother's blood, and assessed mental, psychomotor and communication development of the children at around 20 months of age. The team measured individual PUFAs as well as total n-6 and n-3 fatty acids (commonly known as omega-6 and omega-3, respectively) in order to assess whether specific PUFAs or the ratio of n-6 to n-3 fatty acids impacted developmental outcomes. Fish are the primary source of n-3 fatty acids, which are known to have anti-inflammatory properties. N-6 fatty acids, which primarily come from other meats and cooking oils, can promote inflammation leading to a wide range of negative health effects.

Study results were consistent with past SCDS findings of a lack of overall adverse relationships between prenatal MeHg exposure from fish consumption and developmental outcomes. But the study also indicated that this relationship may be influenced by a mother's PUFA status, with potentially adverse MeHg associations present only at relatively high maternal n-6/n-3 ratios. The study also found that the children of mothers with higher n-3 levels performed better on tests of psychomotor development and communication, and children of mothers with relatively higher levels of n-6 had lower scores on tests designed to measure motor skills.

These findings demonstrate that the combined effects of MeHg and PUFA status on developmental outcomes are more complex than previously thought. The SCDS recently received additional NIH funding to further study these relationships in this cohort.



Source: <https://www.urmc.rochester.edu/pediatrics/research/seychelles-child-development-study/scientific-approach.aspx>

These findings were published January 21, 2015 in the *American Journal of Clinical Nutrition*.

Strain JJ, Yeates AJ, van Wijngaarden E, Thurston SW, Mulhern MS, McSorley EM, Watson GE, Love TM, Smith TH, Yost K, Harrington D, Shamlaye CF, Henderson J, Myers GJ, Davidson PW. 2015. Prenatal exposure to methyl mercury from fish consumption and polyunsaturated fatty acids: associations with child development at 20 mo of age in an observational study in the Republic of Seychelles. *Am J Clin Nutr* 101(3):530-7. doi: 10.3945/ajcn.114.100503

The SCDS design allows the study team to add new research questions over time. Recently, researchers have assessed the impacts of prenatal MeHg exposure on additional health outcomes, including birth weight and risks for autism-like behaviors.

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## *MeHg and Autism-like Behaviors*

The question of whether or not Autism Spectrum Disorders (ASD) are among those neurodevelopmental problems that may result from methylmercury exposure arose in the late 1990s, when similarities were recognized between the symptoms of mercury poisoning and ASD symptoms. ASDs are a group of developmental brain disorders. The term “spectrum” refers to the wide range of symptoms, skills, and levels of impairment or disability that children on the autism spectrum can have. Some children are mildly impaired, but others are severely disabled.

When the Seychelles cohort children were ages 7-24 years old, parents or caregivers were asked to answer questionnaires that are commonly used to detect autism-like behaviors. Researchers analyzed the relationship between the mercury levels they found in the mothers’ hair and scores from the questionnaires using statistical models.

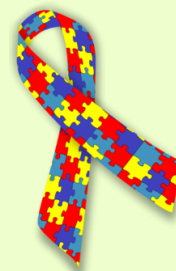
They did not find any dose-response trends between the amount of methylmercury that was present in the mother’s hair at birth and the severity of reported autism-like behaviors. Thus, this study does not suggest a connection between the dose of methylmercury that a fetus was exposed to and increased autism-like behaviors in childhood.

## *MeHg and Birth Weight*

In addition to studying the effects of MeHg exposure on neuro-behavioral development, the SCDS has recently explored the impact of fish consumption on markers of physical development such as birth weight. There are plausible mechanisms by which LCPUFAs might increase birth weight, and by which MeHg might decrease birth weight. However, results from past studies are inconclusive and in some cases contradictory.

The Seychelles study team recently used SCDS data to evaluate whether prenatal exposure to methyl mercury and maternal LCPUFA status, alone and in combination, are associated with birth weight. Low birth weight is of interest because of its association with a host of health outcomes later in life, including coronary artery disease, increased BMI and increased overall mortality in adulthood.

Researchers collected data on MeHg and LCPUFA levels in 230 mother-child pairs and compared them to birth weight. Their results showed no association between either MeHg or LCPUFA and birth weight. Their results also showed no apparent interaction between MeHg and LCPUFA with respect to birth weight. These results support those of previous studies.” However, this study’s limitations, such as a small total sample size, a low number of low birth weight babies, and potential LCPUFA measurement errors, may have affected the results. The authors note that future studies should continue to examine the impacts of fish consumption on birth weight and other biomarkers.



van Wijngaarden E, Davidson PW, Smith TH, Evans K, Yost K, Love T, Thurston SW, Watson GE, Zareba G, Burns CM, Shamlaye CF, Myers GJ. 2013. Autism spectrum

disorder phenotypes and prenatal exposure to methylmercury.

*Epidemiology* 24(5):651-9. doi: 10.1097/EDE.0b013e31829d2651

van Wijngaarden E, Harrington D, Kobrosly R, Thurston SW, O'Hara T, McSorley



EM, Myers GJ, Watson GE, Shamlaye CF, Strain JJ, Davidson PW. 2014. Prenatal exposure to methylmercury and LCPUFA in relation to birth weight.

*Ann Epidemiol* 24(4):273-8. doi: 10.1016/j.annepidem.2014.01.002

# Revisiting the Evidence: Methylmercury and Fish Consumption

## New Evidence for a Genetic Component to Mercury Susceptibility

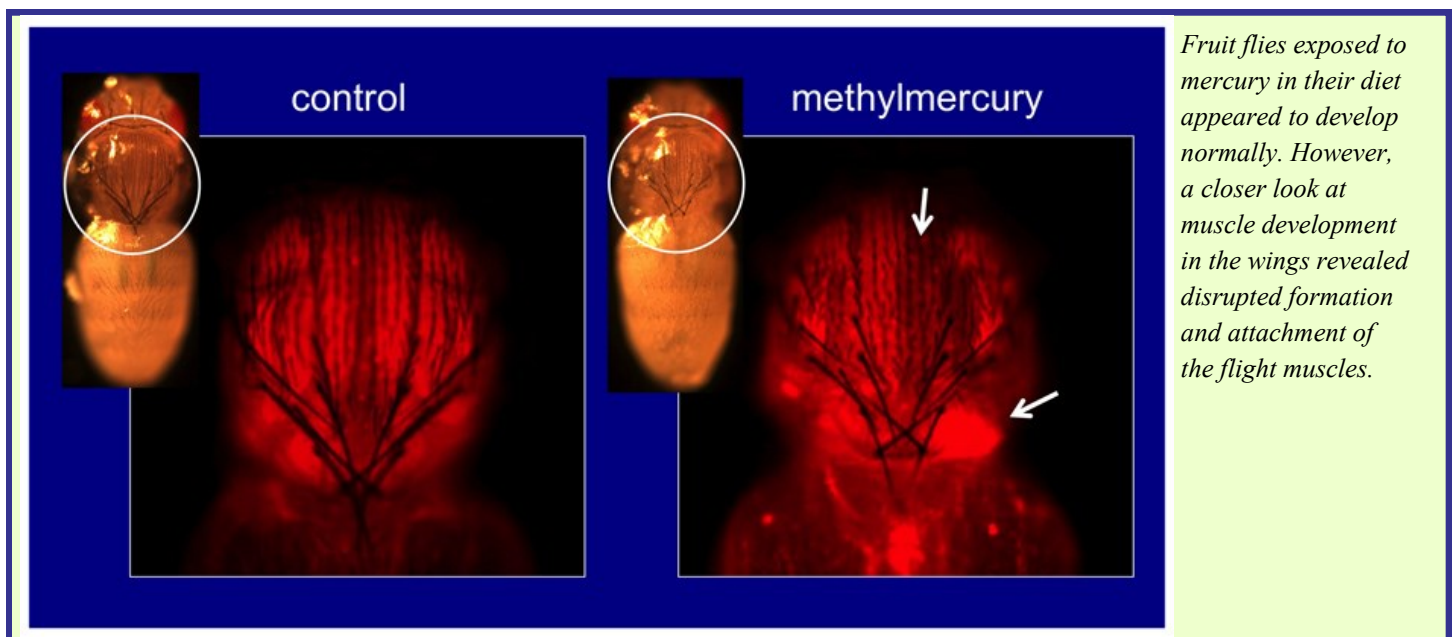
Dr. Matthew Rand, a biochemist and developmental biologist at the University of Rochester Environmental Health Sciences Center, focuses his lab's research on potential genetic components to differences in individuals' susceptibility to MeHg toxicity.

Findings from his most recent work support this hypothesis and point to a potential mechanism not often studied – the effects of MeHg on muscular development. In a paper published October 2014 in PLOS ONE, Dr. Rand points out that although MeHg has the potential to affect multiple cellular pathways during development, research has almost exclusively focused on neurodevelopmental effects of MeHg. His study sought to identify novel genes associated with modifying MeHg's effect on overall development. Using a *Drosophila* (fruit fly) model, Dr. Rand identified alternative MeHg-sensitive pathways that point to the embryonic musculoskeletal system as a mercury target.

This study produced several findings, including:

- » There appears to be a significant genetic component to MeHg susceptibility
- » MeHg negatively affected flight muscle development in fruit flies, which has significant implications for overall development of the fly
- » Dietary intervention – in this case the addition of caffeine – may protect against negative effects of MeHg
- » The protective effects of diets may also be linked to genetics

These results help generate new questions, and open the door for further research. Although this research was conducted in a fruit fly model, the findings suggest a need for further research in humans, since the majority of the genes identified have human homologues. Dr. Rand's research also highlights muscle development as a potential mechanism for MeHg toxicity that complements what is known about MeHg effects on the nervous system and warrants further study.

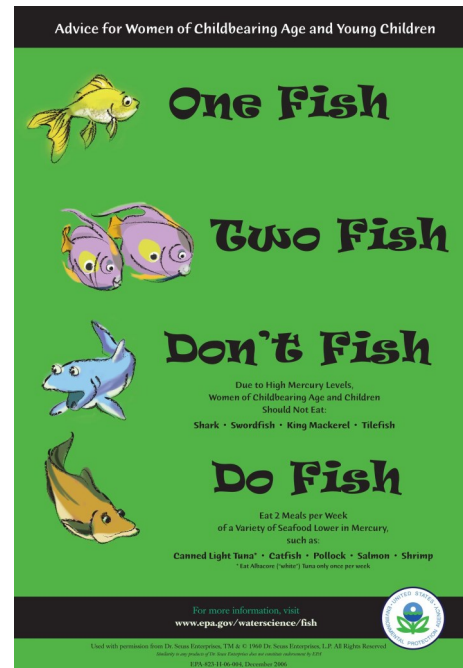


# Revisiting the Evidence: Methylmercury and Fish Consumption

## Changes Expected in the FDA/EPA Fish Consumption Advisory

The work of EHSC researchers adds context to the ongoing national debate about fish consumption. The U.S. Food and Drug Administration (FDA) and U.S. Environmental Protection Agency (EPA) are currently revising the advice they offer about how much fish to consume during pregnancy.

Research suggests that women may be excessively limiting their fish consumption due to concerns about contamination, thus depriving their babies of beneficial nutrients like PUFAs. In June 2014, the FDA and EPA asked for public comment on their new proposed advisory. Whereas the prior advisory told pregnant women to eat “up to 12 ounces of low-mercury fish” per week, the revision suggests eating “at least 8 ounces and up to 12 ounces (2-3 servings) per week.” The advisory also includes more information on mercury levels in different types of fish, suggests limiting or avoiding consumption of certain types of fish, and encourages women to check for local advisories that may be more restrictive. Overall, the aim of the new advice is to help women choose fish that will be good sources of nutrients with lower levels of contaminants. The agencies are currently considering public comments and are expected to release the new advisory this year.



Source: <http://www.epa.gov>

For more information about the draft advice, visit <http://www.fda.gov/Food/FoodborneIllnessContaminants/Metals/ucm393070.htm>

## About Local Fish Consumption Advisories in Western NY



Source: <http://bnriverkeeper.org>

One reason advice on eating fish is so complicated is that some people are more susceptible to the effects of contaminants in fish than others. Fish consumption advisories focus on pregnant women and young children because some of the contaminants found in fish can impact a person’s development early in life.

Another reason is that the advice changes based on the type of fish and where the fish comes from. The FDA/EPA advisory focuses on store-bought fish. For these fish, the FDA is most concerned with methylmercury.

Locally caught fish, however, may have other contaminants of concern depending on the water quality where they live. Many states publish advice for consuming locally caught fish, and this advice is often different from the FDA advice. For example, contaminants of concern for fish caught in waters around the City of Rochester include PCBs and dioxins. The New York State Department of Health publishes annual fish consumption

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guidelines for over 120 waterbodies in the state. The advisories differ by region, and include tables outlining who can safely eat which kinds of fish. Information about healthier ways to clean and cook fish is also included. Quick reference guides with maps and reference tables are available by region.

Visit <http://nyhealth.gov/fish> to view and order copies of the NYS advisories.

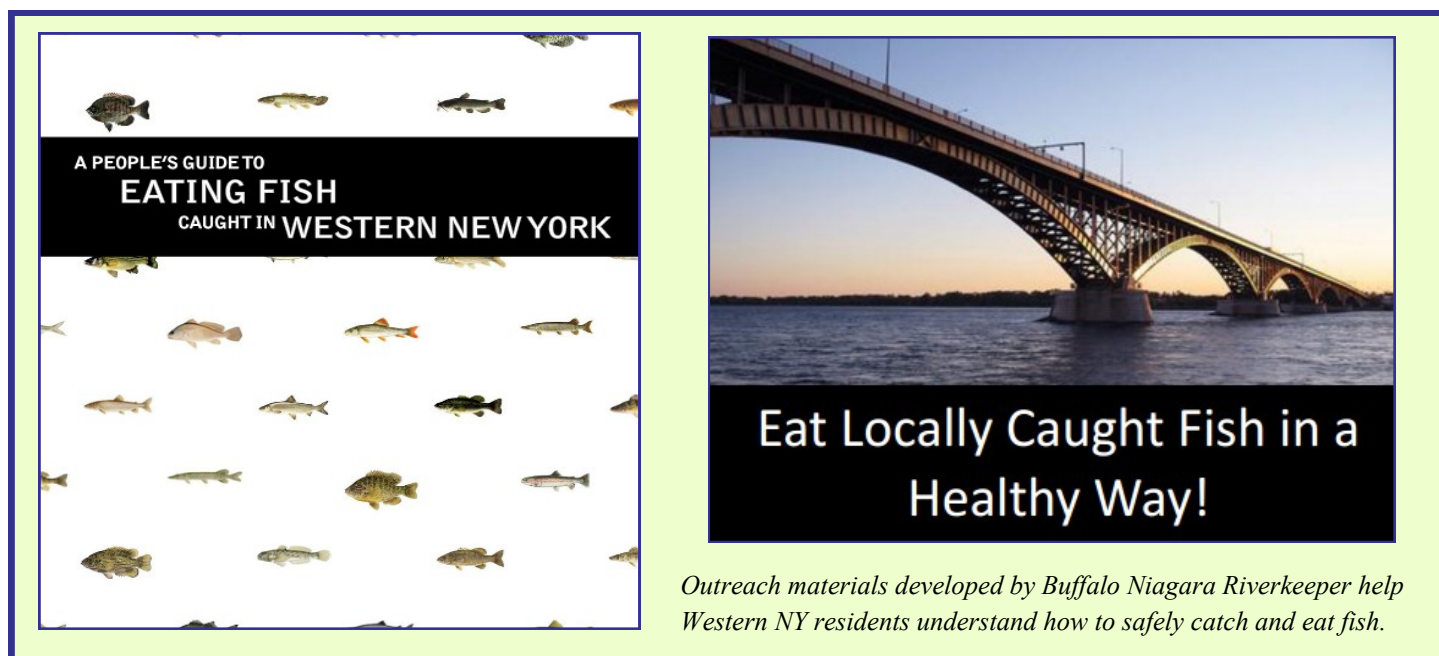
Buffalo Niagara Riverkeeper (BNR), a non-profit organization committed to protecting the Niagara River, offers more information for local anglers to help clarify the consumption debate. “Can I Eat the Fish?” provides information on the history and impact of industrial pollution of waterways, and answers some common fish consumption questions: <http://bnriverkeeper.org/can-i-eat-the-fish/>.

These materials were developed from a project initiated in partnership with EHSC COEC in 2009 to document how many people in Rochester and Buffalo ate local fish. In this project, BNR staff noted that many low-income residents rely on locally caught fish as a key source of protein. Many of these anglers are immigrants and refugees who speak little or no English. In addition to the website referenced above, BNR developed a set of consumption advisory materials, including flyers in 5 languages (Burmese, Nepali, French, English and Spanish), pocket books in 2 languages (Burmese and English), and a comprehensive guide in English.

For digital copies of these materials, visit:

<http://bnriverkeeper.org/projects/public-health-environmental-justice/>

<http://bnriverkeeper.z-paper.com/FCA/#/1/>



# Environmental Health Sciences Center News

## Community Outreach and Engagement Updates

### Recent Speakers



Dr. Philip Landrigan  
Photograph: Gary Wayne Gilbert  
Source: [http://bcm.bc.edu/issues/winter\\_2007/features/public-defender.html](http://bcm.bc.edu/issues/winter_2007/features/public-defender.html)

In January 2015, the COEC partnered with the Finger Lakes Children's Environmental Health Center and the Child Care Council to host a community discussion with Dr. Philip Landrigan. Dr. Landrigan is Director of the Children's Environmental Health Center and Chair of the Department of Preventive Medicine and dean for Global Health at The Mount Sinai Medical Center. At the Child Care Council, he spoke about the importance of addressing children's environmental health issues through policy, practice, and consumer choices. His talk focused on research linking common environmental exposures with childhood diseases, and outlined practical steps parents and caregivers can take to protect children. The event was attended by child care professionals, politicians and community members. Dr. Landrigan also presented Pediatric Grand Rounds at the University of Rochester during his visit in order to increase pediatricians' understanding of children's environmental health issues.

In February 2015, the COEC again partnered with the Finger Lakes Children's Environmental Health Center and the Child Care Council to host Nsedu Obot Witherspoon, Executive Director of the Children's Environmental Health Network (CEHN), a national multi-disciplinary organization whose mission is to protect children from environmental health hazards.

Ms. Witherspoon participated in two public events during her visit. At the University of Rochester Medical Center, Ms. Witherspoon presented Public Health Grand Rounds about CEHN's efforts to implement their renewed blueprint for protecting children's environmental health through research, education, and policy change. Implementation of this new vision includes promoting changes in local, state, and federal policies and the contributions of scientists, public health and health care professionals, community leaders, and policy makers.



Nsedu Obot Witherspoon

The following day, Ms. Witherspoon joined the Child Care Council and Clean & Healthy New York in celebrating their work implementing CEHN's Eco-Healthy Child Care® program in New York. Through this program, Child Care Council trained over 400 child care providers in reducing environmental exposures in the child care setting. The program demonstrated a major reduction in participating child cares' use of chemicals that are known to have an impact on children's health. Clean & Healthy NY's project report, *Reducing Toxic Chemicals in Child Care: Successes and Lessons Learned*, offers more detail about the project:

[http://media.wix.com/ugd/a2c2a6\\_e3c3133dc6c8415ba201a6e4caedb162.pdf](http://media.wix.com/ugd/a2c2a6_e3c3133dc6c8415ba201a6e4caedb162.pdf).

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*Dr. Erin Haynes speaks to community members about citizen science*

Dr. Erin Haynes, Associate Professor in the University of Cincinnati College of Medicine Department of Environmental Health, was invited to present in the EHSC research seminar series in March 2015. In this seminar, Dr. Haynes highlighted her research on the neurodevelopmental effects of early life exposure to lead and manganese. Her work was discussed in the context of engagement with citizen scientists to conduct robust environmental health research. During her visit, the COEC arranged an evening community lecture with Dr. Haynes, in which community members engaged in lively discussion about the benefits and challenges of conducting citizen science.

## ***Engaging Students in Hands-On Environmental Health Science Education***

The COEC partnered with Science Take-Out, LLC (STO) to develop new environmental health science kits. University of Rochester faculty members Dina Markowitz, PhD and Susan Holt, MS Ed started STO in 2008 in order to make interactive, hands-on science education more convenient and economical for teachers and their students. STO offers inexpensive “lab in a bag” kits that use hands-on experiments to teach kids about science. STO’s current inventory includes over 40 different kits teaching core STEM concepts including biology and chemistry topics. An NIEHS Small Business Technology Transfer (STTR) grant provided COEC and STO an opportunity to incorporate environmental health topics into eight new STO kits.



These new Science Take-Out kits teach core science and health concepts through interactive environmental health problem-solving. The activities engage students in learning through hands-on, personally relevant scenarios in order to increase students’ environmental health literacy. The environmental health STO kits were pilot tested by science teachers across the country in spring 2015. Once the final kits are adapted and developed, they will be available for purchase online ([www.sciencetakeout.com](http://www.sciencetakeout.com)). The COEC and STO also plan to partner to adapt these kits for use in informal education and community outreach.

## ***OBGYN Grand Rounds on Mercury***

Prenatal care providers are a key source of environmental information for women during pregnancy, a “window of susceptibility” to environmental chemicals. Because health care providers seldom receive continuing education about environmental health topics, the COEC has increased its outreach efforts to prenatal care

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providers, including an annual environmental health-themed OB-GYN Grand Rounds. This year, the topic was fish consumption during pregnancy. The COEC partnered with Dr. Edwin van Wijngaarden to share recent findings from the SCDS and focus attention on the expected new FDA/EPA fish consumption advisory. Because the new advisory has the potential to encourage women to eat more fish, it is important for providers to know and communicate that most fish caught around Rochester are contaminated with PCBs and not recommended for consumption by pregnant women. The joint research-COEC presentation addressed the benefits of fish consumption, the new FDA/EPA advisory, and information about locally caught fish.

## EHSC Research Updates

**Dr. Günter Oberdörster**, Professor Emeritus of Environmental Medicine at the University of Rochester, was awarded the 2015 Society of Toxicology (SOT) Merit Award. This honor is awarded to an SOT member who has made distinguished contributions to toxicology throughout their entire career. A dedicated member of SOT since 1983, Dr. Oberdörster is widely known as “The Father of Nanotoxicology.” His inhalation research has led the field in understanding the toxicity of nanomaterials and informed safe and beneficial applications for nanomaterials. He also served as President of the SOT Inhalation and Respiratory Specialty Section and was an active participant in the Nanotoxicology Specialty Section. Dr. Oberdörster joins several current and former University of Rochester faculty in receiving this distinction, including Drs. Harold Hodge, Thomas Clarkson, Bernard Weiss, and Michael “Miki” Aschner.



## Several EHSC Researchers Received National Media Coverage this Year

A recent paper from **Dr. David Rich's** Beijing Olympics Birth Study was widely disseminated through major news outlets in April. His team found that women who were pregnant during the Beijing Olympics gave birth to heavier babies than women who were pregnant in other years. The findings suggest that the air quality improvements made during the Beijing Olympics had a positive impact on fetal development and infant health, in addition to several other health benefits of better air quality that have been identified in his team's work. The research team's most recent paper, published in June, notes that they did not see an association between air quality and pregnancy complications such as risk of hypertensive disorders or fetal-placental conditions. However, because birth complications are relatively rare, these findings may be a factor of small sample size.

Rich DQ, Liu K, Zhang J, Thurston SW, Stevens TP, Pan Y, Kane C, Weinberger B, Ohman-Strickland P, Woodruff TJ, Duan X, Assibey-Mensah V, and Zhang J. 2015. Differences in birth weight associated with the 2008 Beijing Olympic air pollution reduction: Results from a natural experiment. *Environ Health Perspect*. DOI:10.1289/ehp.1408795

Assibey-Mensah V, Liu K, Thurston SW, Stevens TP, Zhang J, Zhang J, Kane C, Pan Y, Weinberger B, Ohman-Strickland P, Woodruff T, Rich DQ. 2015. Impact of the 2008 Beijing Olympics on the risk of pregnancy complications. *Arch Env Occup Health*. DOI: 10.1080/19338244.2015.1058236

Results from a mouse model study were published in April by **Drs. Robert A. Mooney, Edward Puzas, and Eric Beier**. Their research showed that the combination of lead exposure and a high fat diet has a negative effect on bone health. They found that a stem cell pathway important for bone development is negatively affected by the combined effects of a high-fat diet and lead exposure. Their results add to growing evidence of the importance of considering environmental exposures in combination with other risk factors.

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Lead is also known to impact bone health in other ways, including disrupted function of protective epiphyseal plates at the ends of long bones, constrained growth of long bones, and lowered peak bone mass. In a study published in May, Beier et al. identified another potential mechanism by which lead affects bones. They found that lead disrupts Wnt/ $\beta$ -catenin signaling, a key pathway for bone formation. Adversely affecting this pathway contributes to osteoporosis. Understanding these mechanisms is essential for identifying potential clinical interventions such as reactivation of pathways using pharmacological interventions.

Beier EE, Inzana JA, Sheu TJ, Shu L, Puzas JE, Mooney RA. 2015. Effects of combined exposure to lead and high-fat diet on bone quality in juvenile male mice. *Environ Health Perspect*. DOI: 10.1289/ehp.1408581

Beier EE, Sheu TJ, Dang D, Holz JD, Ubayawardena R, Babij P, Puzas JE. 2015. Heavy Metal Ion Regulation of Gene Expression: Mechanisms by Which Lead Inhibits Osteoblastic Bone Forming Activity through Modulation of the Wnt/ $\beta$ -catenin Signaling Pathway. *J Biol Chem* doi:10.1074/jbc.M114.629204

Combined effects of multiple stressors were also highlighted in a February *Ensaia* article published by Elizabeth Grossman that focused on the effects of environmental chemicals on the brain. This article highlighted **Dr. Deborah Cory-Slechta's** research on the combined effects of stress and heavy metals. Grossman's article described Dr. Cory-Slechta's research that used animal models to approximate combined human exposures to environmental factors and may have greater significance for health outcomes than either on their own. Dr. Cory-Slechta's current work focuses on maternal exposures and their potential implications as a "fetal basis for life-long disorders."

Grossman, E. "What are we doing to our children's brains? Environmental chemicals are wreaking havoc to last a lifetime." *Ensaia*. Feb 16, 2015. <http://ensia.com/features/what-are-we-doing-to-our-childrens-brains/>

**Drs. Richard Phipps** and Collynn Woeller published a study that may shed light on the causes of obesity. The team found that the Thy1 protein may be important in preventing certain human cells from turning into fat cells. They also found that a loss in Thy1 function in mice resulted in increased production of fat cells. The team continues to research new questions, such as why and how Thy1 changes the body in this way; ongoing study includes whether environmental agents affect Thy1 levels.

Woeller CF, O'Loughlin CW, Pollock SJ, Thatcher TH, Feldon SE, Phipps RP. 2015. Thy1 (CD90) controls adipogenesis by regulating activity of the Src family kinase, Fyn. *FASEB J* 29(3): 920-31. DOI: 10.1096/fj.14-257121

**Dr. Irfan Rahman** and colleagues published two papers identifying toxic effects from e-cigarettes, which are commonly believed to be a safer alternative to cigarettes. Research in the Rahman lab demonstrated that e-cigarettes led to oxidative stress and inflammatory response in the lung in in vitro and mouse model studies. E-cigarettes may have higher concentrations than cigarettes of contaminants such as copper that may affect toxicity and environmental impact after disposal. These findings suggest potential for e-cigarettes to damage lung tissue more than was initially thought.

Lerner CA, Sundar IK, Yao H, Gerloff J, Ossip DJ, McIntosh S, Robinson R, Rahman I. 2015. Vapors produced by electronic cigarettes and e-juices with flavorings induce toxicity, oxidative stress, and inflammatory response in lung epithelial cells and in mouse lung. *PLoS One* 10(2):e0116732. doi: 10.1371/journal.pone.0116732

Lerner CA, Sundar IK, Watson RM, Elder A, Jones R, Done D, Kurtzman R, Ossip DJ, Robinson R, McIntosh S, Rahman I. 2015. Environmental health hazards of e-cigarettes and their components: Oxidants and copper in e-cigarette aerosols. *Environ Pollut*. 198:100-7. doi: 10.1016/j.envpol.2014.12.033

# Environmental Health Sciences Center News

## Student Recognitions and Awards

The 2015 Annual Toxicology Retreat was held on June 11<sup>th</sup>. Dr. Andrew Maynard, Director of the University of Michigan Risk Science Center, delivered the keynote lecture on the safety of nanomaterials and communicating the uncertainty of risks. The day concluded with student presentations and a poster session.

Awards received by students at the Tox Retreat included:

- » Shannon Lacy – Best Poster Award by a First Year Graduate Student
- » Brian Palmer – Best Overall Poster by a student or postdoc
- » Megan Falsetta, PhD – Best Overall Presentation by a student or postdoc
- » Carrie Klocke – Best Question Award during the Tox 558 Seminar
- » Chad Lerner – The Robert Infurna Award for best 1<sup>st</sup> author of a scientific publication
- » Lisa Prince – The Robert Infurna Award for best 1<sup>st</sup> author of a scientific publication
- » Claire McCarthy – The William F. Neuman and Margaret W. Neuman Award
- » Michael Rudy – The Weiss Toxicology Scholar Award
- » Elissa Wong – The Weiss Toxicology Scholar Award
- » Jennifer Judge – The Cardno ChemRisk travel award to attend the 2016 SOT conference

Other student awards received recently include:

- » Amanda Croasdell – Abstract Scholarship to attend and give an oral presentation at the 2015 American Thoracic Society Conference
- » Brittany Baisch, PhD – The Nanotoxicology Specialty Section Best Publication 2015 Award
- » Sage Begolly – Travel Award to attend the 2015 Society of Toxicology Annual Meeting
- » Elissa Wong – Travel Award to attend the 2015 Society of Toxicology Annual Meeting
- » Marissa Sobolewski Terry, PhD – 2<sup>nd</sup> place for the Society of Toxicology Neurotoxicology Specialty Section Toshio Narahashi Postdoctoral Fellow Poster Award

Pierrot Rutagarama, a summer undergraduate research fellow in the Rahman lab, won 4th place for his scientific platform oral presentation at the 2015 Summer Undergraduate Research Fellowship (SURF) Program retreat.

Congratulations to **Bethany Winans** and **Katherine Ringo** for completing their theses and becoming the Tox Training program's most recent PhD Graduates! Several other PhD students successfully qualified for their MS degrees this spring:

- » Jennifer Judge
- » Elissa Wong
- » Parker Duffney
- » Lisa Prince
- » Jessica Meyers
- » Carrie Klocke

# Environmental Health Sciences Center News

## Welcome to the Environmental Health Sciences Center!

### *Elaine Hill, PhD*

Dr. Elaine Hill is an Assistant Professor in the Department of Public Health Sciences. She received her doctorate in applied economics from Cornell University in May 2014. As an economist, her research is at the intersection between health, health policy, the environment and human capital formation and offers a unique perspective to the research conducted in the EHSC.

Dr. Hill is particularly interested in how prenatal and early life exposures affect health and educational attainment for children. Her dissertation research focused on the effects of proximity to shale gas development on reproductive health. Dr. Hill continues to study the effects of hydro-fracking on infant and child health, and plans to partner with center members to expand this research. She is particularly interested in integrating population studies, utilizing administrative data, with primary data collection (e.g. biomarkers, personal exposures), and collaborating with basic scientists to better understand biological mechanisms, exposure pathways and opportunities for informing health policy.



## Celebrating 50 Years at URM and Saying Goodbye: Victor Laties

### *By Steve Brown*

In 1965, a young Victor Laties left Johns Hopkins for the University of Rochester and never looked back. In 2015, Vic celebrated his 50<sup>th</sup> year at the University of Rochester Medical Center—a feat not surpassed by many. Primarily in the Department of Environmental Medicine, Vic has touched many lives over the years with his great work ethic, caring attitude, his love of toxicology, and his fantastic photos that have graced the Environmental Medicine, Environmental Health Sciences Center (EHSC), and Toxicology websites over the past 50 years.

The first director of the toxicology training grant, that is now in his 37<sup>th</sup> year, Vic has been integral to its success and has created many memories and passed down a wealth of knowledge to hundreds of students. Beginning in the departments of Biophysics, Psychology, and Pharmacology Vic has also made many a friend and has been a valued colleague to his peers. Vic has remained on the editorial board for the Journal of the Experimental Analysis of Behavior since 1962 (and the webmaster for the JEAB/JABA site), and has served as editor for several other experimental therapeutics and pharmacological journals throughout the years.

Vic won the Distinguished Service to Behavior Analysis Award from the Society for the Advancement of Behavior Analysis (SABA) in 1995 and 2003—the only person to win this award twice. He was a major figure in the development of both behavioral pharmacology and behavioral toxicology. His work with the Society for the Experimental Analysis of Behavior (SEAB) journals has been essential to their development and their sustained excellence over the last forty years. To date he has published well over 100 journal articles, book chapters and various other publications.

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Vic's love of toxicology and the department is surpassed only by his love for his wife and family as he officially retires today and moves to Maryland to be closer to them and enjoy the nice weather. The department and all of his colleagues wish to express their heartfelt gratitude for the many years of service and contributions that he has given. He is truly one of a kind and will be missed.

To read more about Vic's many accolades, please see the Association for Behavior Analysis International article (<https://www.abainternational.org/constituents/bios/victorlaties.aspx>) and view his CV ([http://www.urmc.rochester.edu/neuroscience/\\_shared/News/1352/CV%20of%20VictorLaties.pdf](http://www.urmc.rochester.edu/neuroscience/_shared/News/1352/CV%20of%20VictorLaties.pdf)).

