

NEWSLETTER Volume 2, Issue 1

Fall 2013

### **Message from Department Chair: New Curriculum Progress & Other Highlights**

Welcome to all incoming and returning EHS students! We are thrilled to have you join us for our second year of a newly revised curriculum.

As many of you may know, this past year has seen dramatic changes to the educational program across Mailman and within EHS. All core courses are taught in the first semester with 5 integrated “studios”. What was once the EHS core course is now Biological and Environmental Determinants of Health. In addition, there is a yearlong case study-based course, Integration of Science and Practice (ISP), where small student groups read and discuss cases relevant to public health, such as one dealing with the SARS outbreak or another on arsenic contaminated drinking water in Bangladesh. In the spring, all students will take Leadership and Innovation, which is designed to help students develop professional and life skills.

At the department level, all MPH students now take an EHS core curriculum, which includes Fundamentals of Toxicology, Risk Assessment, and three new courses. Environmental Determinants of Human Health II is team-taught and provides a more in-depth look at current topics in EHS. Dr. Julie Herbstman taught Analysis of Environmental Health Data, where students learn statistical software (STATA) and analyze actual data from different types of real-life EHS research. Critical Thinking and Analysis in EHS will be taught in the last semester by Drs. Norman Kleiman and Matt Perzanowski. In this capstone course, students will delve deeply into a couple of key environmental health topics.

Finally, each student will graduate with a state-certified [certificate](#). EHS offers five certificates: Toxicology, Molecular Epidemiology, Environmental Policy, EHS Global Health and Climate and Health.

I am also proud to have been awarded \$100,000 from the Columbia University Provost’s Postdoctoral Research Scientist Program, to be used for the recruitment of an outstanding postdoctoral scholar from an underrepresented minority group.

I would also like to welcome Nina Kulacki to our department as our new Associate Director of Academic Affairs, who begins with us in October. Ms. Kulacki previously worked at Johns Hopkins. Finally, I want to acknowledge two key administrators that are moving on to new opportunities. Ms. Kenny Ferreiras worked as Assistant to the Chairman for the past 3 years. She has relocated to Texas to start her new role as the Executive Assistant at the College of Natural Sciences & Mathematics at the University of Houston. Dr. Alysa Turkowitz has helped support our academic programs for the past 6 years. She will be staying at Columbia University and moving to a new role in Central Human Resources as Director of Learning & Development.

Please join me in celebrating all of the wonderful achievements of EHS as well as in giving my best regards to both Kenny and Alysa as they make their next steps.

Best Regards,

*Tomás*

Tomás Guilarte, PhD  
Leon Hess Professor and Chair

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## Recent Events in EHS:

### Sewell Lecture

The 20th Annual Sewell Distinguished Lecture in Environmental Health Sciences was held on Wednesday, April 10, as part of the Mailman School's [Grand Rounds](#) on the Future of Public Health series. Barry M. Popkin, PhD, gave a talk titled, "Global Obesity: Current Patterns, Dynamics, and Future Challenges." Dr. Popkin is the W.R. Kenan, Jr. Distinguished Professor in the Department of Nutrition and director of the Nutrition Transition Research Project at the University of North Carolina at Chapel Hill. In his talk, Dr. Popkin said the red-meat industry is consuming high amounts of water and yet being ignored in most climate projection models. He traced the boom of the red-meat industry to the 1950s, a time when the diet of the poor was mainly beans and grains, while the rich ate meat and eggs. With the advent of cheap meat production, the poor began eating more meat and fast food, while wealthier people began to dine on a vegetable, bean and grain diet. Public health data has shown the disease burdens once associated with wealth, such as heart disease, diabetes and hypertension, have shifted to poorer populations. Today, we know this as the global obesity epidemic.

Visit <http://bit.ly/SewellLecture> for more information about Granville H. Sewell, the annual lecture, and past honorees.



From left to right, Dr. Joseph Graziano; Dr. Martha Merrill; Dean Linda Fried; Dr. Tomas Guilarte, Chairman of EHS; Dr. Brad Sewell, son of Granville Sewell; and Dr. Barry Popkin.

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### Alumni Career Panel

At the end of April, the Department held our annual EHS Alumni Career Panel, co-hosted by the Office of Alumni Affairs. Current students heard from a panel of alumni, pictured from left to right: Alyssa Creighton, MPH '12, Marjorie Kaplan, DrPH '90, William J. O'Connell, DrPH '08, George Padilla, MPH '11, and Anne Seeley, MPH '86. This was a successful event with over 50 students and faculty in attendance, as alumni also got to catch up with their favorite mentors. The alumni took individual questions and gave insights into how they ended up in their current roles. Let's see what they're doing now:



Alyssa Creighton received her MPH in Environmental Health Policy from Mailman in February 2012. She is now the Program Coordinator of the Community Outreach and Translation Core at the Columbia Center for Children's Environmental Health (CCCEH). Dr. Marjorie Kaplan is Associate Director of the Rutgers Climate and Environmental Change Initiative (CECI) where she leads the program office and manages the full portfolio of CECI activities. Dr. William J. O'Connell is a board-certified medical physicist at

Dose Management Services. Dr. O'Connell works to lower patient radiation exposure while maintaining image quality, and he will be assisting GE Healthcare to implement enhanced tools to refine clinical imaging procedures. George Padilla began his environmental consulting career working as an industrial hygienist for commercial buildings in New York City. He is currently a project manager for Velocity Consulting in NYC, where he conducts Phase I Environmental Site Assessments for the commercial real estate and financial industries. Anne Seeley is Section Chief of Health Assessment and Policy Coordination at the NYC Department of Environmental Protection in the Bureau of Water Supply's Water Quality Directorate. Check out the lineup for 2013 graduates in this [video](#).

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## Welcome, new members of EHS:



### Cindy Gorn, MA

Cindy Gorn joined EHS in Fall 2013 to teach Geographic Information Systems. Ms. Gorn has experience using GIS data with international non-governmental organizations such as Human Rights Watch for the purposes of campaigning against cluster munitions and landmines, as well as in domestic non-profits working with mentally disabled elderly people. Her MA is in geography from the University of Washington, where she maintained a focus on public health and disability. In addition to teaching the skills needed to master GIS, Ms. Gorn is excited to teach the critical mapping skills necessary to use spatial analysis in real-world situations, as well as the skills to know when not to use mapping, and to instead draw on the other foundations built in the EHS department. In addition to teaching at Columbia, Ms. Gorn teaches urban studies at Hunter College and has taught GIS at the College of Staten Island.

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## Who's in EHS Labs:

### Interview with Megan Niedzwiecki, PhD Candidate



*What year are you in the doctoral program?*

I am entering my sixth year in the program, and I plan to defend my dissertation this fall.

*Can you share a little bit about your current research in the department and your dissertation topic?*

With my advisor, Mary Gamble, I study the consequences of arsenic exposure in a

population in Bangladesh. Arsenic is metabolized through a series of methylation reactions that are dependent upon a biochemical pathway called one-carbon metabolism. People who are better methylators are able to excrete arsenic more rapidly and are at lower risk for arsenic-related diseases. We're examining how factors related to one-carbon metabolism influence arsenic methylation capacity and risk for arsenic-induced skin lesions (precursors to skin cancer). We're also examining whether variants in genes involved in

one-carbon metabolism are associated with skin lesion risk. In addition, we are exploring the relationship between arsenic exposure and alterations in global DNA methylation, which might be one of the mechanisms through which arsenic causes cancer.

*Have you presented any of your research at a conference? Where? What did you learn from that experience?*

I've given two oral presentations at conferences. The first was at the 2011 Superfund Research Program Annual Meeting in Lexington, Kentucky, and the second was at the 2012 FASEB One-Carbon Metabolism Conference in Crete, Greece. At first, it is a bit intimidating to present your work in front of a group of experts, but the experience is invaluable. I've learned to clearly and efficiently communicate my research findings, and I've improved the quality of my presentations. Conferences are also a great way to network with people in your field.

*What has been the highlight of your time within EHS thus far?*

Definitely the trip to Greece! The conference itself was an excellent networking opportunity, and I was able to extend the trip to see Athens and some of the Greek Islands.

*What are your post graduate intentions/goals?*

I will start a post-doctoral fellowship in January in the Division of Environmental Health at Mount Sinai.

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## Student Highlights

### Allison Larr, MPH Candidate

Allison Larr is a second year MPH student in the Environmental Health Policy Certificate. For her practicum she completed an internship with the Clinton Foundation's Clinton Climate Initiative, in which she researched the electric vehicle market and developed a model of the demand for a fast-charging station in Southern California. Over the summer Allison worked at the Energy Office of the NYC Department of Environmental Protection. She analyzed economic metrics of long-term capital projects, engaged in planning sessions for the DEP's 2014-2017 Strategic Plan and began a draft of their inaugural annual energy report. Allison will continue to work for the DEP in a similar capacity during the year. She is Co-President of Students for Environmental Action and will serve as a representative of Mailman on the Earth Institute Student Advisory Council.

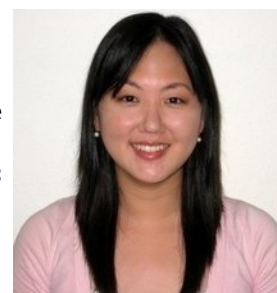


### Claire Shea, MPH Candidate

Claire is a second year MPH student in the Climate and Health Certificate. For her practicum, Claire worked at the Ecole des Hautes Etudes en Sante Publique in Rennes, France as a data analyst intern. Her project investigated the relationship between ambient air pollution and congenital birth defects in the Rhone-Alpes region of France. She used Stata to perform multivariate analysis and ArcGIS to geocode the data. Having no experience with Stata prior to Columbia, Claire says it was Dr. Julie Herbstman's Analysis of EH Data class that prepared her for this job. This fall, Claire will continue her role as treasurer of Students for Environmental Action and serve as a TA for the Environmental Determinants of Human Health Core class for first year students.

### Sunny Jeong, MPH Candidate

Sunny Jeong is a second year MPH student in the Climate and Health Certificate. She has been doing research in Dr. Guilarte's lab for her summer practicum on the role of Pb<sup>2+</sup> as a risk factor for schizophrenia, and looking at parvalbumin positive neuron levels in the striatum, frontal cortex, and hippocampus in Pb<sup>2+</sup> exposed animals. She received the 2013 KSEA-KUSCO Graduate Scholarship from the Korean-American Scientist and Engineers Association and was invited to present her research at their annual US-Korean Conference (UKC) in East Rutherford, New Jersey. At the conference, she was awarded second place in the poster competition in the Science and Technology & Professional Forum. Sunny Jeong has also received the 2013 SETAC/EA Engineering Jeff Black Fellowship Award from the Society for Environmental Toxicology and Chemistry.



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## Alumni Highlights

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### Kathleen Crowley, PA-C, MPH'91, DrPH'13



Kathleen Crowley completed her doctoral degree from our Department in February 2013. She received the I. Bernard Weinstein Award for Academic Excellence in Environmental Health Sciences as the DrPH/PhD for outstanding academic achievement and promise in the field of public health. Two chapters from her dissertation entitled *Factors Influencing Pandemic Vaccine Intentions among Faculty Staff and Students at a University Dental/Medical Center* were accepted for publication. The first, *Prevalence and factors associated with 2009 to 2011 influenza vaccinations at a university medical center*, was published in the *American Journal of Infection Control*. This chapter was based on her 2011 study to identify individual and organizational-level barriers and facilitators to influenza vaccination among clinical and nonclinical personnel; she identified that most of the risk factors associated with lack of vaccination uptake are amenable to organizational strategies. A second [chapter](#), *Using Participatory Action Research to Identify Strategies to Improve Pandemic Vaccination*, was accepted in *Disaster Medicine and Public Health Preparedness*. Dr. Crowley is the Associate Vice President for Environmental Health & Safety for

Columbia University and leads a team of more than 40 safety professionals across all five of Columbia's campuses. Check out her [post](#) in the Columbia Public Health: Student Voices blog.

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## Recent EHS Accomplishments:

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### Dr. Matthew S. Perzanowski, PhD, Has Been Awarded Tenure

Matthew Perzanowski, pictured below holding a glass, was joined by faculty, students and staff during the summer to

celebrate his newly awarded tenure status. Chairman Tomás Guilarte, pictured right, gave a gracious speech and congratulated him on his achievement. Beginning with a postdoctoral fellowship at Columbia, Dr. Perzanowski's primary research focus has been exploring paradigms of exposures related to asthma in an area of the world with one of the greatest asthma burdens: low and middle income neighborhoods in

NYC. In addition to collaborating on several established prospective studies of asthma, Dr. Perzanowski is the principal investigator on the NIH- and HUD-funded NYC Neighborhood Asthma and Allergy Study that is examining neighbor-

hood differences in asthma prevalence and persistence to better understand the great disparity in asthma risk be-



tween children living just city blocks apart. He established an initiative to implement non-invasive measurements of airway inflammation in pediatric population-based studies in order to better understand the relationship between exposure to air pollutants and respiratory disease.

Dr. Perzanowski works closely with established community environmental action groups, including as a board member of a Community Outreach and Education Partner-

ship. He also developed a course, Asthma and Allergic Disease, for MPH students, and has been active in the renewal of the MPH curriculum at the school and department level.

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### Dr. Shaman's Recent Paper Won the ISDS Outstanding Research Article in Biosurveillance

Shaman J, Karspeck A. [Forecasting seasonal outbreaks of influenza](#). *PNAS*. 2012;109(50):20425–20430. doi:10.1073



**Jeffrey L. Shaman, PhD**, was awarded the 2013 Outstanding Research Article in Biosurveillance, in the category of scientific achievement, from the International Society for Disease Surveillance. Dr. Shaman combines his background in climate, atmospheric science, hydrology and biology to study the environmental determinants of infectious disease transmission.

He is interested in the effects of meteorology on human health and is currently working toward developing systems to forecast infectious disease outbreaks at a range of time scales. In addition, he studies a number of climate phenomena, including Rossby wave dynamics, atmospheric jet waveguides, the coupled South Asian monsoon-ENSO system, extratropical precipitation, and tropical cyclogenesis.

Information on his ISDS award, nomination and selection process can be found at

<http://www.syndromic.org/communities/research/award-outstanding-research-articles/2013>

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## Recent EHS Accomplishments:

### Haseena Sahib, MPH'13

Haseena Sahib, MPH '13 gave a presentation on May 4th at the Public Health Association of New York City 8th Annual Student Conference with Rahma Mkuu, a Columbia MPH candidate in the Department of Sociomedical Sciences. The presentation was titled, "Project MARHABA: Understanding the Barriers to Breast and Cervical Cancer Screening for Muslim Women in New York City." Project MARHABA is a two-year research study being conducted at the Center for Asian and Asian American Health at New York University. The study utilizes community-based participatory research and a mixed-method approach (quantitative survey and qualitative interviews) to understand the attitudes and beliefs that Muslim women in New York have toward breast and cervical cancer screening, and whether these beliefs play a role in their access to care. Ultimately the goal is to understand their barriers to receiving these services in order to promote systemic and policy change. Haseena was accepted to be a part of their research team and worked as an intern during the past Spring 2013 semester.



From left to right, Monika Khan and Rhamna Mkuu, MPH students in SMS, and Haseena Sahib, MPH student in EHS.

### Environment and Health Conference 2013

Students joined EHS faculty members Robin Whyatt, Frederica Perera, and Andrew Rundle in presenting at the ISEE/ISES/ISIAQ Conference in Basel, Switzerland from August 19<sup>th</sup> to the 23<sup>rd</sup>. Three societies organized the conference: the International Society of Environmental Epidemiology, ISEE; the International Society of Exposure Sciences, ISES; and the International Society of Indoor Air Quality, ISIAQ.



From left to right: Ashlinn Quinn and Kate Weinberger, PhD candidates; Lori Hoepner, DrPH Candidate; and Whitney Cowell, PhD Candidate

Current student attendees included Ashlinn Quinn, 2016 PhD candidate who presented "Summertime Indoor-Outdoor Temperature and Humidity Relationships in New York City Residences"; Kate Weinberger, a third-year PhD student presented "Spatial Variation of Ragweed Pollen Across New York City"; Lori Hoepner, 2014 DrPH candidate presented "Prenatal Bisphenol A and Birth Weight in an Urban Minority Birth Cohort"; and Whitney Cowell, 2017 PhD candidate presented "Prenatal Exposure to Stressful Living Conditions & Attention Problems at Age 7-Years in a Prospective Birth Cohort." Data for these projects was collected and analyzed by the students from the Columbia Center for Children's Environmental Health. Check out the Center's current projects at <http://ccceh.org/our-research>. For details about the conference, please visit <http://www.ehbasel13.org>.

### Manganese neurotoxicity: new perspectives from behavioral, neuroimaging, and neuropathological studies in humans and non-human primates

*Affiliated Investigator: Tomás Guilarte, PhD Environmental Health Sciences*

In his published study, Dr. Guilarte reviews the current research about manganese effects on the brain, from occupational studies and among drug-user populations to draw new insights into toxicity of the metal with emerging evidence using neuroimaging technology.

The occupational studies have historically shown that exposure to high levels of manganese in miners leads to symptoms that resemble Parkinson's disease, which cannot be treated by L-dopa therapy. Recent experimental studies in primates have shown that at chronic low doses, it can also cause non-motor neurological effects such as cognitive function deficits. This newer evidence suggests that chronic exposure impacts working memory, possibly through changes in brain structures such as in the caudate nucleus in the striatum, the frontal cortex and the parietal cortex. Using the advances in neuroimaging, studies show that because of exposure to manganese, there is a marked decrease in dopamine release in the absence of dopamine neuron degeneration. This dysregulation of the dopaminergic system may be the cause of both the motor and cognitive deficits.

**Dr. Guilarte** has also been appointed to the National Advisory Environmental Health Sciences Council by the National Institute of Environmental Health Sciences.

frontiers in  
**AGING NEUROSCIENCE**



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## EHS Grant Announcements:

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### Dr. Manuela Orjuela Receives a Phase I Planning Grant

#### *Collaborative and Multidisciplinary Pilot Research (CaMPR)*



Manuela Orjuela, ScM MD, assistant professor of clinical pediatrics and clinical environmental health sciences, received a grant for her project, "Inhaled and Ingested Exposures in Mexican Immigrant Mother-Child Pairs Participating in Early Head Start." Dr. Orjuela focuses her research on gene-nutrient and gene-environment interactions during pregnancy and early childhood, and the development of early carcinogenic changes in childhood cancer. Her principal focus is on retinoblastoma and folate pathway metabolism. CaMPR is a two-phase grant program that provides planning and start-up funds to new, multidisciplinary investigative teams to support the planning of novel projects. Dr. Orjuela is the academic track director for the Global Health Certificate in EHS and has a joint appointment in the Division of Pediatric Oncology.

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### Dr. Joseph Graziano Receives Two Supplements to his Superfund Grant

#### *"Health Effects and Geochemistry of Arsenic and Manganese"*



Joseph Graziano is the recipient of two grants. The first is a three-year supplement for a total of \$201,159 that was awarded for training to support the tuition and stipend of Tiffany Sanchez who is conducting her PhD dissertation research with Dr. Graziano. The second is a small supplement of \$16,000 awarded to support the presentation of findings from the Columbia Superfund Program's research and those of others at the 15th International Conference of the Pacific Basin Consortium for Environmental Health, which will be held September 24th-27th in Honolulu. The supplements help bring the total annual Superfund Research Program grant award to a total of \$3,019,684. These funds support six inter-related research projects, four core laboratories, a Research Translation Core, and a Community Engagement Core.

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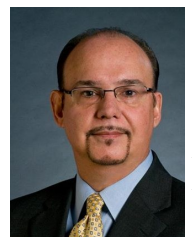
### Dr. Jeffrey Shaman Receives Funding from NIGMS MIDAS Program



The National Institute of General Medical Sciences, Models of Infectious Disease Agent Study (MIDAS) Program is a collaboration of research and informatics groups to develop computational models of the interactions between infectious agents and their hosts, disease spread, prediction systems and response strategies. Dr. Shaman's grant, an award of \$450,000 from September 2013 to August 2014, will support his ongoing research into forecasting influenza. His project titled, "Real-Time Forecast of Influenza," adapts techniques used in modern weather prediction to turn real-time, Web-based estimates of influenza infection into local forecasts of seasonal flu. Using past New York City data as a test, his team's results have predicted the peak timing of a flu outbreak more than seven weeks in advance of the actual peak.

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### Dr. Tomás Guilarte Receives \$1.5 Million for Five Additional Years of TSPO Research



Dr. Guilarte and his team examine the function of Translocator Protein 18 kDa (TSPO), a biomarker of brain injury and inflammation. Previously called Peripheral Benzodiazepine Receptor, TSPO is now commonly used in preclinical and clinical studies of neurodegenerative disorders using brain imaging technologies such as Positron Emission Tomography (PET). This grant originally funded in 1995 by the National Institute of Environmental Health Sciences (NIEHS) has validated TSPO as a biomarker of brain injury and inflammation in a variety of animal models of toxicant-induced neurodegeneration. The goal of the current studies is to understand the function of TSPO in glial cell, microglia and astrocytes, as it relates to response to brain injury and inflammation, and as a potential therapeutic target.

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### Dr. Matthew Perzanowski Receives HUD Grant



The U.S. Department of Housing and Urban Development (HUD) awarded Columbia University \$722,378 to identify the major fungal taxa across selected homes in New York City, to develop a unique panel to quantify New York City-specific fungal burden, and to test for associations with allergic-sensitization and asthma in children. The researchers, lead by Dr. Perzanowski, will determine whether or not the individual species and concentrations of domestic dust-borne fungi vary across the City's middle-income housing by neighborhood and housing type. This funding highlights the link between housing and health, and aims to protect children and other vulnerable groups from health hazards in their homes.

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## Feedback



Please email Kathryn Heinemann, MPH student and Department TA, at [kmh2191@columbia.edu](mailto:kmh2191@columbia.edu) with questions and suggestions about future newsletter content. For more information about the Department of Environmental Health Sciences, please visit our [website](#) and our [EHS Facebook Page](#).

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