

Mailman School of Public Health Environmental Health Sciences Department Newsletter Spring 2015

Table of Contents

Letter from the Chair	2
Faculty Spotlights	3-5
NRDC Workshop	6-7
Research Spotlight	8
Student Spotlight	9-10
New Students	11-12
Alumni Spotlight	13-14
Greetings from SEA	15
Publications	16-17

CONTINUED SUCCESSES IN EHS BRING MUCH TO CELEBRATE

Another academic year is coming to a close and spring is finally here! Despite the cold and snowy winter weather, EHS has many successes to celebrate. First, I am delighted to continue to share the impressive accomplishments of our MPH and doctoral students. For example, Felicia Castriota, Erika Eitland, and Augusta Williams have been accepted to doctoral programs and Madeleine Hopson and Erika Zerda are on their way to medical school. I wish them, and all of our graduating MPH students, much success in their new endeavors. I am sure that we will continue to hear wonderful news from our graduating class.



I am proud to report that this past December Meredith Loth, a doctoral student in my laboratory, received Best Poster Award in the TSPO Function Category, Mitochondrial Stress Response Pathways: Functions and Applications of TSPO International Meeting at the Royal Veterinary College in London. Congratulations Meredith on this well deserved award!

We also welcome new postdoctoral fellows to the Department. Under the mentorship of Dr. Jeffrey Shaman are: Nicholas DeFelice, Julia Reis, and Teresa Yamana. Under the mentorship of Dr. Patrick Kinney are Jennifer Nguyen, Victoria Lee, Katrin Kurkhart, and Zheng Zhou. The Climate and Health Program continues to attract outstanding young scientists, who we would like to extend a warm welcome to the EHS family.

I want to also welcome our newest Assistant Professor, Dr. Diane Gourion-Arsiquauad, who started her appointment in EHS in October, 2014. Diane is a neuroscientist interested in studying the role of environmental toxins in neurodegenerative disease. See more of her story in this edition of the newsletter. Our faculty continues to write successful grant proposals and I am happy to announce that Dr. Greg Freyer and Dr. Joe Graziano, in collaboration with Dr. Lissette Delgado-Cruzata at John Jay College of Criminal Justice, have been awarded an R25 to establish an Undergraduate Research Program to Promote Diversity in Environmental Health Sciences. The program goes by the name of **PRIMER (Program to Inspire Minority Undergraduates in Environmental Health Science Research)** and the first cohort of students will start with us this summer. Congratulations on this timely award!

Finally, after many years of dedicated and successful research, teaching, and mentoring MPH and doctoral students, as well as being co-director of the Columbia Children's Center for Environmental Health, I am sad to say that our own Dr. Robin Whyatt has decided to retire at the end of this academic year. Robin has been an outstanding faculty member and has provided much success to EHS, the Mailman School of Public Health, and Columbia University. Her contributions will continue to be part of the Columbia community for many years to come. I believe that I speak for all members of the EHS community in saying that we are sorry to see her go but we wish her and her husband Tom much happiness and health on this new stage of their lives. I know that Robin will remain committed to EHS. Thank you Robin for your past and continued efforts for EHS.

Wishing you all the best in the coming months and always.

A handwritten signature in black ink, appearing to be 'James' or similar, written in a cursive style.



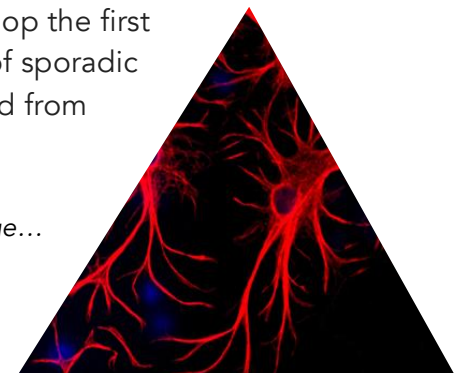
Dr. Diane Re aka Gourion-Arsiquaud is a newly hired Assistant Professor in EHS. A native of France, she received her PhD in Neuroscience from the University of Aix-Marseille in 2004. Her early work focused on star-shaped cells called astrocytes, whose importance in the brain function has been undervalued for decades, as compared with the much less numerous but more widely studied neurons. Dr. Re's thesis showed that astrocytes normally support neuronal survival and transmission but astrocytes can degenerate in acute brain insults, such as stroke.

EHS Welcomes New Faculty

In 2005, Dr. Re crossed the Atlantic to perform her post-doctoral training in the Department of Neurology at Columbia University under the mentorship of Dr. Serge Przedborski. There, she acquired extensive experience in neurodegenerative diseases and animal models with a special emphasis on the adult-onset paralytic disorder Amyotrophic Lateral Sclerosis (ALS). Notably, she pioneered the notion that in ALS, the motor neurons responsible for voluntary movement degenerate due to the development of a hostile cellular environment. In particular, astrocytes undergo a transformation from benign supportive cells into potent motor neuron killers. In 2008, Dr. Re was hired as an Associate Research Scientist by the Department of Pathology and Cell Biology, where she led the Motor Neuron Disease Team in Dr. Przedborski's laboratory at the Motor Neuron Center.

There, she continued to unravel the cellular and molecular basis of ALS while becoming increasingly interested in developing models of the sporadic form of the disease, which account for 90% of cases, and may have a strong environmental component. On the basis of this research effort, in 2010, Dr. Re received a Career Development Award from the NIEHS Center of Northern Manhattan, which helped her develop the first entirely humanized *in vitro* model of sporadic ALS by using cells directly produced from sporadic ALS patients.

Continued on the next page...



EHS Welcomes New Faculty Continued...

In collaboration with Dr. Guilarte's laboratory, using this *in vitro* model, Dr. Re has identified that the translocator protein, TSPO, is a potential therapeutic target for motor neuron degeneration in ALS. She was awarded a Department of Defense grant to investigate the efficacy of TSPO ligands in animal models of ALS, work she is now performing in the EHS Department. Lately, Dr. Re obtained a Pilot Project Grant from the NIEHS Center of Northern Manhattan for a new project in collaboration with Dr. Guilarte on the industrial metal manganese, another possible environmental trigger of neurodegeneration.

Independently, Drs. Re and Guilarte identified that the same protein is overexpressed in ALS patients' astrocytes and in animals exposed to manganese. Dr. Re is also developing research on the potential involvement of cyanobacteria neurotoxins in ALS and dementia. In the coming years, Dr. Re also plans to teach a course on the environmental causes and molecular underpinnings of neurodegeneration.



Dr. Re's Selected Publications

Ré D.B., Nafia I., Melon C., Shimamoto K., Kerkerian-Le Goff L., Had- Aïssouni L. Glutamate leakage from a compartmentalized intracellular metabolic pool and activation of the lipooxygenase pathway mediate oxidative astrocyte death by reversed glutamate transport. *Glia* (2006); 54(1):47-57

Nagai M*, Ré DB*, Nagata T, Chalazonitis A, Jessell TM, Wichterle H, Przedborski S. Astrocytes expressing ALS-linked mutated SOD1 release factors selectively toxic to motor neurons. *Nat Neurosci.* (2007) May;10(5):615-622.

*These authors contributed equally to this work. *This work was highlighted in Science and Nature.*

Ré DB, Le Verche V, Yu C, Amoroso MW, Politi KA, Phani S, Ikiz B, Hoffmann L, Koolen M, Nagata T, Papadimitriou D, Nagy P, Mitsumoto H, Kariya S, Wichterle H, Henderson CE, Przedborski S. Necroptosis Drives Motor Neuron Death in Models of Both Sporadic and Familial ALS. *Neuron.* 2014 Mar 5;81(5):1001-8



Faculty Spotlight

Erika Eitland, MPH '15 interviews our beloved Associate Professor in EHS, Dr. Greg Freyer, as he shares his thoughts on environmental health and his passion for teaching.

EE: How many years have you been in the Environmental Health Sciences department at MSPH?

GF: I have been at Columbia University, the medical school, since 1989, but I moved to the department of Environmental Health in 1994, so it's been 20 years.

EE: You are so involved in the EHS department and teach the CORE BEDH studio with Dr. Joe Graziano, to many students you are the EHS-guru. Did you always want to focus on environmental health sciences?

GF: I didn't start out being drawn to EHS, I'm a biochemist and molecular biologist by training. My love of science and my desire to do research grew from the idea of problem solving and trying to understand mechanisms. Still, when I think about what really gets me interested about research, it's not curing diseases or trying to make the world a better place, or even solving the world's environmental crises, (which I think are really important), but what excites me about research is understanding mechanisms. I'm less interested that BPA causes diseases, and more interested in *how* BPA causes the disease.

EE: I'm excited to hear that you are nominated for the presidential teaching award again this year. What made you so passionate about teaching?

GF: I always knew I wanted to teach and do interesting scientific research. I went on a very straight trajectory from undergraduate to graduate school, to post-docs, and then onto academic positions. I was

always very interested in teaching and became most interested as a graduate student when I started teaching a lab course. I decided that the lab course was really taught poorly and students were just bored and going through the motions. So I conceived of an idea that you should have lab courses that built on each other. When I was a post-doc at Harvard, I had the opportunity to develop the whole curriculum to teach local high school students. Initially, we set out writing a set of laboratories, that we taught on the weekends and weeklong courses in the summer. However, it evolved into a nation-wide curriculum that included a laboratory textbook called *DNA Science*, with the help of David Micklos. The whole idea is that students learn by doing.

EE: EHS is a field that is very much a melding of other fields, including biology, epidemiology, and even economics. What is your favorite part about working with diverse public health students?

GF: I think on the teaching side, especially during the CORE, is when you have that eureka moment and really get to enlighten students on the importance of public health education, and the relevance of it to their lives. A lot of what Dr. Graziano and I teach in the class is not only about public health but also in relation to their daily lives. I'm also inspired by a lot of public health students; especially those doing global and international work, because of their personal sacrifices with the idea of the greater good. I like the diversity of the public health student body, with different backgrounds; all having an interest in public health but not necessarily the science background.

Goal of the Workshop

To develop and disseminate recommendations on the best ways to expand heat-health syndromic surveillance networks in the U.S.

Background

On March 17-18, 2015, the Department of Environmental Health Sciences and the Climate & Health Program hosted and co-sponsored the National Heat-Health Surveillance Expert Workshop. Organized by the Natural Resources Defense Council (NRDC), the workshop gathered experts from various regions of the United States working in government, non-governmental and nonprofit organizations, and academia. With backgrounds in climate change, disease tracking, data collection, and health, experts discussed strategies to develop more robust, rapid tracking and estimation of the health impacts caused by extreme heat. Due to climate change, heat waves are projected to increase in frequency, intensity and duration. Integrating the work and data of multiple stakeholders will improve prevention of heat illness and death, and better inform climate change preparedness policy throughout the country.



National Heat-Health Surveillance Expert Workshop



Students of All Years Support the Event

For his practicum, Corey Park, MPH '15, worked with Dr. Kim Knowlton (DrPH, EHS), Senior Scientist at NRDC and Co-Deputy Director of NRDC's Science Center. Corey extensively researched heat syndromic surveillance systems in North America and Europe. Within the United States, he examined states, cities, and regions performing heat syndromic surveillance, compiling information used for the Workshop's background materials. Corey, along with fellow EHS, MPH students Erika Eitland '15, Meghan Kiernan '16, and Denise Patel '15,

documented information discussed during the Workshop. This information will be published in the forthcoming Workshop Proceedings, and will inform NRDC's communications to advance advocacy on heat-health and climate change.



Workshop Objectives

National Heat-Health Surveillance Expert Workshop

- Review and discuss current practices of various states and cities in the U.S. related to syndromic surveillance of heat-health impacts. Questions asked included:
 - What are the research methods & evaluation protocols being used?
 - How are various sites applying the information gathered to inform or modify interventions?
- Share best practices in collecting, interpreting, and using heat-health surveillance data to inform response
- Discuss opportunities and identify challenges in conducting timely surveillance of heat-health impacts
- Discuss ways this data can inform climate change preparedness policy
- Recommend specific steps to help jurisdictions bolster heat-health surveillance, including identifying priorities for collaboration and funding.

Distinguished Attendees

Multiple expert stakeholders from throughout the United States attended the Workshop. Representatives included: George Luber from the Centers of Disease Control and Prevention, Rob Mathes and Tom Matte from the New York City Department of Health and Mental Hygiene, Michelle Hawkins from NOAA Climate Services Division, Patrick Kinney from MSPH Department of Environmental Health Sciences, as well as state and regional health department officials from Vermont to Arizona, and foundations such as the National Association of County and City Health Officials, Association of State and Territorial Health Officials, Council of State and Territorial Epidemiologists, and the Public Health Institute.

Attendees heard presentations on heat-health syndromic surveillance background and current practices, validation and statistical assessment and definitions, and case studies of locations currently implementing heat-health syndromic surveillance. Before formulating recommendations from the Workshop, participants engaged in small group discussion to brainstorm how to expand heat-health syndromic surveillance systems in the US based on current capacity, implementation of data sharing, and communication to inform extreme heat preparedness and climate change and adaptation policy.



Special thanks to Dr. Kim Knowlton, Corey Park, and Haruka Morita for all of their hard work in making this a true success!

Corey Park & Kim Knowlton

Meet the Team Taking on Infectious Disease Modeling

Dr. Jeff Shaman's group develops model-inference systems for the production of infectious disease forecasts. These systems typically use a combination of dynamical modeling and Bayesian inference, much as is employed for numerical prediction. They are currently working to expand their disease prediction capabilities and generate operational real-time forecasts of influenza, other respiratory pathogens, and mosquito-borne diseases. This work involves:

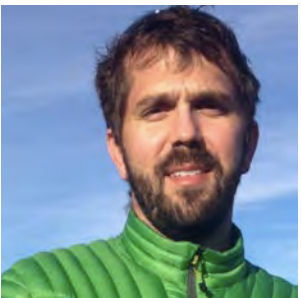
1. Development, testing and analysis of a variety of model, inference systems and prediction strategies;
2. Establishment of a dedicated operational center for maintaining, running and disseminating the forecasts in real time through a free, user-friendly web portal; and
3. Work with public health agencies and officials to ensure that the forecasts and web portal meet their needs.



Julia Reis joined the team last December and is actively developing mathematical models to assimilate clinical data into skillful, ensemble-based predictions of respiratory viruses. Julia's doctoral work at the University of Virginia focused on creating simulation and optimization models of hydropower reservoirs in Lao PDR and Ethiopia, and used these tools to analyze interventions for improving rural livelihoods and health. She is interested in developing mathematical models of interactions between climate, health, and socio-economics, and developing technologies to monitor and mitigate water-borne vector diseases.



Wan Yang joined Dr. Shaman's group in June 2012 as a postdoctoral student and later an Associate Research Scientist. Wan became interested in how infectious diseases spread in the population and the underlying mechanisms, when working on influenza transmission as a PhD student at Virginia Tech '12. In the Shaman group, Wan develops algorithms for infectious disease forecast systems and runs computer simulations to predict their epidemic trajectories.



Nick DeFelice joined in March 2015 as a postdoctoral student after completing his doctorate in Environmental Science & Engineering at the University of North Carolina - Gillings School of Global Public Health, where he examined the intersection of infrastructure, environmental exposures, and public health by constructing mathematical models to quantify the burden of disease attributable to exposure to contaminated drinking water in North Carolina. At Columbia, his work will focus on developing dynamic disease transmission models to forecast the epidemic trajectories of West Nile virus and other vector-borne infectious diseases.



Teresa Yamana recently finished her PhD in Civil & Environmental Engineering at MIT, modeling climate change impacts on malaria transmission. She recently started as a postdoctoral student and is very excited to be joining Jeff's team. Teresa will be focusing on dengue, an important mosquito-borne disease that is endemic in many tropical areas.

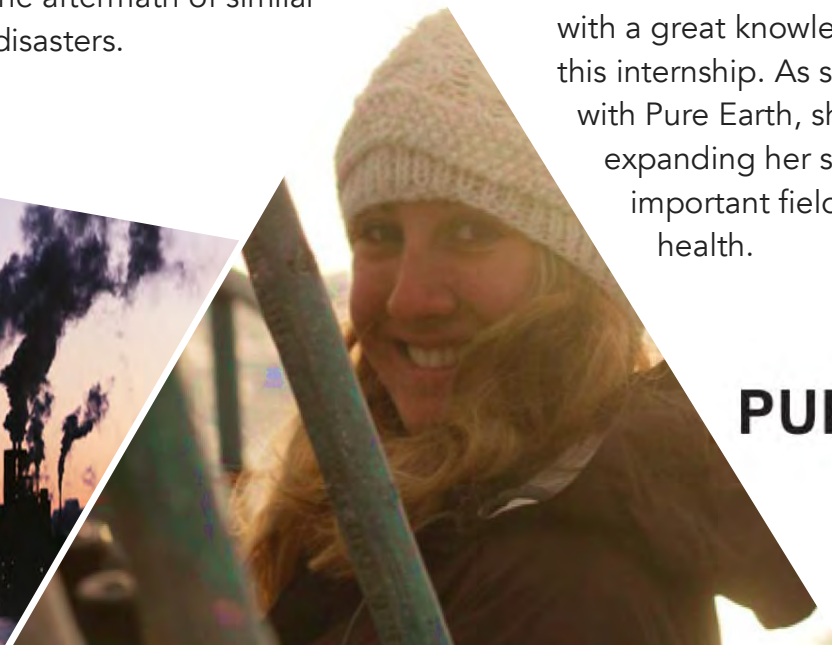
Student Spotlight

Helping Hands

Sara Schlegel and Erika Zerda-Oliver, MPH '15, have been working with the National Center for Disaster Preparedness and New York Medical College under the supervision of Dr. Michael Reilly and colleagues. They are contributing to a National Institute for Occupational Safety and Health (NIOSH) project evaluating the effectiveness of a NYC DOHMH training program for cleanup workers after Superstorm Sandy. They have been assisting with recruitment and data organization. By evaluating the NYC DOHMH training program, the study will be able to assess whether similar programs should be implemented at health departments across the country to reduce the negative health impacts during the aftermath of similar natural disasters.

Taking on Toxins

Cory Hood, MPH '15, is interested in providing research support and conducting policy analysis to improve air and water quality. In January 2015, she became Pure Earth's Toxic Site Identification Program (TSIP) Intern. Pure Earth, formerly known as the Blacksmith Institute, is an international non-profit organization dedicated to solving pollution problems in low and middle-income countries. The TSIP database has collected information from over 3,000 site investigations of active and legacy pollution sites of various sources, including industrial, agricultural, and residential contamination. Cory's primary responsibilities at Pure Earth focused on coordinating with site investigators, updating sites and identifying information gaps, and creating summary reports to track progress of ongoing projects. Many of the concepts from classes, such as Risk Assessment & Communication, Fundamentals of Toxicology, and Environmental Justice, have provided her with a great knowledge and skills base for this internship. As she continues working with Pure Earth, she looks forward to expanding her skills in an exciting and important field of environmental health.



Student Spotlight

Foodie Enthusiasm

On March 7th, the Times Center was packed with inspiring restaurateurs, organic farmers, economists and foodie star power that would make Julia Child blush. The 5th annual TEDx Manhattan event, “Changing the Way We Eat”, started off with Danny Meyer, renowned chef and founder of Shake Shack. Alia El-Kadi, Erika Eitland, and Lauren Westley, MPH '15, captured the excitement throughout the day as they served as social media volunteers. Over 20 speakers provided the audience with a brief, well-rehearsed glimpse into their passion for good food, sustainable agriculture, and everything in between. A favorite moment included, hearing Debra Eschmeyer, White House Executive Director of *Let's Move!* and Senior Policy Advisor for Nutrition Policy, eloquently illustrate her deeply personal connection to the food movement and enumerate her ideas for a healthier America.

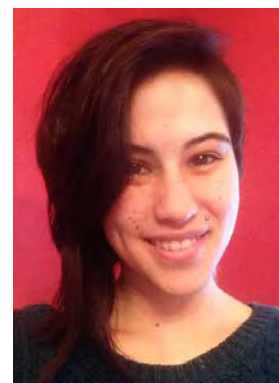
To see all of the talks from this amazing day, visit www.tedxmanhattan.org/video/2015-talks/



Lauren Westley, Erika Eitland, Alia El-Kadi

MPH Thesis: On the Way to Improving Nutrition Globally

As part of Quentin O'Brien's, MPH '15, thesis research, she is collaborating with researchers at the Institute of Human Nutrition (IHN) and the School of International and Public Affairs (SIPA)



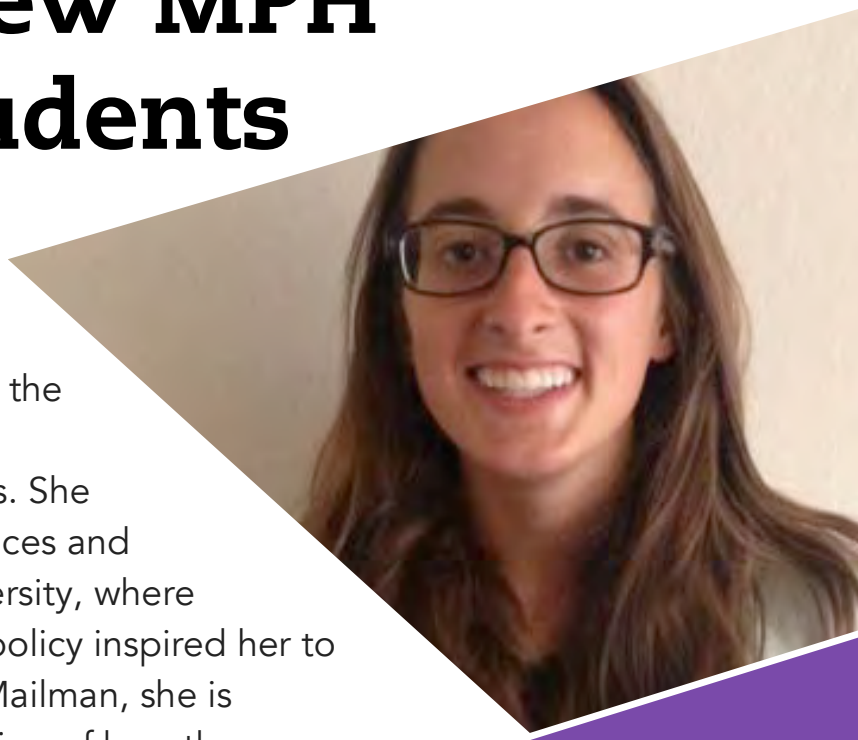
to create a nutrition education program targeted at mothers in rural Senegal. The program will specifically aim to improve infant and young child feeding (IYCF) practices, as well as women's dietary diversity. This nutrition education will be combined with a drip-irrigation agricultural intervention that will allow communities to scale up horticulture. Using an RCT design, she will be able to compare the effectiveness of delivering nutrition education via traditional modes and via cell phone messaging, and evaluate the combined impact of nutrition education and agricultural production on nutrition outcomes. The work they are doing is incredibly important, as food insecurity remains a critical public health issue in the Sahel region, and poor nutrition and health profiles contribute to a cycle of poverty in affected regions. Quentin's hope is that through this project, they will be able to delineate a successful model for scaling up nutrition and agriculture to improve health and spur poverty reduction. After graduation, she will be headed to Southeast Asia to work with WorldFish. Quentin is truly excited to contribute to WorldFish's work by conducting impact evaluations of their small-scale aquaculture programs.



Sosy Tatarian received a BS in Biological Sciences with a concentration in Physiology and Neurobiology from the University of Maryland, College Park, in December 2010 (go Terps!). As a former pre-medical student, she has extensive clinical experience working beside physicians. During the summer of 2013, she volunteered as a health educator at a non-profit organization called the Children of Armenia Fund. Sosy spent 10 weeks traveling to various villages within Armenia and taught women and children the importance of living a healthy lifestyle through nutrition, diet, exercise and personal hygiene. This life-changing experience ultimately led her to pursue her MPH. Although she began her time at Columbia with the Department of Population & Family Health, she is very excited to be a part of EHS and is eager to learn about the field of Toxicology. During her free time, she enjoys playing volleyball and exploring the city.

Welcome New MPH Transfer Students

Laura Buckley is excited to join the EHS Department and to further explore the link between environmental determinants and health disparities. She received her BA in Biological Sciences and Anthropology from Fordham University, where her studies in ecology and health policy inspired her to pursue an MPH degree. While at Mailman, she is hoping to build on her understanding of how the environment shapes health and social conditions, while also learning how policy can aptly respond to the resulting challenges.





Amy Martin received a BS in Biological Anthropology from the University of Arizona in 2010. Prior to coming to Columbia, she worked for a non-profit organization where she helped implement and evaluate health programs in low-income communities in Tucson, Arizona and Savannah, Georgia. She became involved in agricultural efforts after working on urban gardening projects in these communities. Amy is interested in exploring the effects of globalization and urbanization on land and water use, and hopes to contribute to sustainability efforts in underserved communities. In her spare time, she enjoys trying new recipes, running, and exploring the city.

Welcome New MPH Transfer Students

Fatima Riaz a Virology and Immunology major in undergraduate school, founded and led the first youth-run public health organization in Pakistan, as well as an international polio advocacy campaign in association with the Global Poverty Project and the World Health Organization. She has an interest in water-borne diseases and hopes to return to Pakistan to work for improved sanitation and child health. Fatima has an unhealthy obsession with the songstress Adele and a healthy addiction to Pilates and running.



Less than a year after graduation, Jenny Coico, MPH '14 provides her insight as an EHS graduate and Public Health Research Methods certificate.



Where do you work now? Why?

Farmigo is a mission-driven startup that's working to strengthen local food systems by making it easier to buy sustainably produced food from local farmers and food producers. I wrote my EHS masters thesis on the environmental health impacts of industrial agriculture and the benefits of policies that support local agriculture. So I'm excited to be working for a company that aims to strengthen local agriculture on a large scale.

How did your experience in EHS help you after graduating?

The knowledge I gained in writing my thesis definitely helped me get the job I have now. Also, the data analysis skills I gained have helped me take a more analytical approach to my work even though it's not a data-focused job.

If you had to give 1 piece of advice to current EHS MPHers, what would it be?

Take advantage of every opportunity to customize your course of study. Take extra electives outside of your certificate or find a part-time internship that you're passionate about. The more you focus in on the topics and skills that you care about, the easier it will be to find work or pursue future studies that are a great fit for you.

Alumni
Spotlight

Alumni Spotlight

Greetings from Texas!

Emily Hall, MPH '12 and global health track, was working as an epidemiologist for the Dallas County Health Department during the Dallas Ebola response, where she worked 12-16 hour days to complete contact tracing. Her team has published numerous articles, including in CDC's Mortality and Morbidity Weekly Report and a feature in Vanity Fair. She left Dallas county in November and is happily working as an environmental epidemiologist with the Texas Department of State Health Services!



Dallas County chief epidemiologist Dr. Wendy Chung, far right, and members of her team—from left, Sonya Hughes, Emily Hall, and Sibeso Joyner. Chung suspected Thomas Eric Duncan had Ebola and urged that he be tested, despite doubts from the Centers for Disease Control and Prevention., Photograph by Dan Winters.

Upcoming Alumni Panel will Feature...

Allison Larr MPH '14

Certificate: Environmental Health Policy

Russell Dowling MSPH '13

Track: Global Health

Bailey Matis MPH '14

Certificate: Infectious Disease
Epidemiology

Shoko Kubotera MPH '14

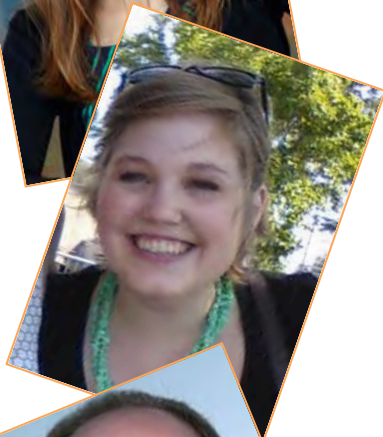
Certificate: Molecular Epidemiology

Sashti Balasundaram MPH '08

Track: Environmental & Molecular
Epidemiology

Arthur Panov MPH '10

Track: Molecular Epidemiology





The 2015 Students for Environmental Action Invite you to participate!

Dear EHS,

We, the e-board of Students for Environmental Action (SEA), are tremendously excited to share with you our events and initiatives for the upcoming year. We are committed to improving environmental awareness at CUMC and look forward to creating a collaborative space where students and faculty from the department and across campus can come together, instill awareness, and make a long lasting impact on the CUMC community.

This semester, we've taken on the task of identifying gaps in the current glass, plastic, paper, and electronic waste-recycling infrastructure on campus. We plan to promote awareness and improve the visibility of the existing infrastructure, as well as work with Facilities to reallocate or purchase new bins to meet demand. We hope to incorporate information about recycling in the new student orientation materials in the fall, as well as to students living in campus housing. In addition to promoting the existing recycling infrastructure, SEA hopes to work with the office of Environmental Stewardship to strengthen other areas of recycling, such as electronic waste, over the next year.

SEA has already hosted two exciting events this semester, including a volunteer day with Harlem Grown on March 28th, and SEA of Thoughts – where EHS Professor Greg Freyer and SIPA Professor Glenn Denning will discuss the impact of climate change on pollinator decline, agriculture, and food security, drawing from their respective disciplines – on March 31st. We will also host events April in celebration of Earth Week and we look forward to seeing you all there!

Thank you in advance for your support of Students for Environmental Action. If you are interested in getting involved with one of these initiatives, or attending any of our upcoming events, please feel free to reach out to SEA President Julia Casciotti (uni:jjc2258).

We look forward to a fruitful year!

Best,

Cara, Julia, Meghan, Robyn, and Valorie
The E-Board of Students for Environmental Action



Lead Exposure in Rats Sheds Light on Human Schizophrenia in New EHS Publication



Results of a recent study by Dr. Guilarte’s lab were published in *Translational Psychiatry*. The study indicates that brains of rats exposed to lead show similarities with brains of humans with schizophrenia, which adds compelling evidence that lead is a risk factor in the onset of schizophrenia.

During the study, rats were exposed to lead prior to birth and during early stages of life. Results showed that exposure had detrimental effects on brain cells in the medial prefrontal cortex, the hippocampus, and the striatum, all brain regions implicated in schizophrenia. The researchers also measured density of Parvalbumin-Positive GABAergic interneurons, or PVGI. In lead exposed rats, PVGI declined by approximately a third, the same percent decrease observed in human schizophrenia patients. As well, higher levels of the D2R dopamine receptor were observed in lead exposed rats, matching the magnitude of increase of D2R observed in human schizophrenia patients.

Senior Author, Dr. Tomas Guilarte, stated about the findings, “The similarities in the brain structure and neuronal systems between what we see in lead-exposed rats and human schizophrenia patients are striking, and adds to a growing body of literature suggesting that early lead exposure primes the brain for schizophrenia later in life.”

Additional authors on the study include: Kristen N. Ruby, Barbara Soares, Jennifer L. McGlothan, and Xinhua Liu.

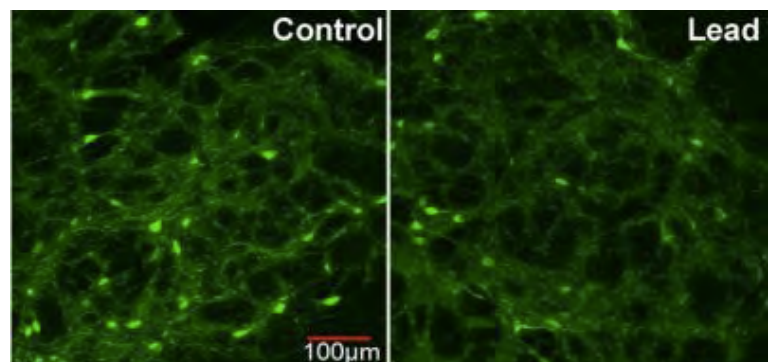


FIGURE: RATS EXPOSED TO LEAD HAD A LOWER CELL DENSITY OF PARVALBUMIN-POSITIVE NEURONS COMPARED WITH CONTROLS

Selected Publications

Boamah EA, Asante K, Ae-Ngibise K, Kinney PL, Jack DW, Manu G, Azindow IT, Owusu Agyei S, Wylie BJ. **Gestational Age Assessment in Ghana Randomized Air Pollution and Health Study (GRAPHS): Ultrasound Capacity Building, Fetal Biometry Protocol Development, and Ongoing Quality Control.** JMIR research protocols, 3(4), e77. 2014.

Factor-Litvak P, Insel B, Calafat AM, Liu X, Perera F, Rauh VA, Whyatt RM. **Persistent Associations between Maternal Prenatal Exposure to Phthalates on Child IQ at Age 7 Years.** PLoS One. 2014.

Halloran ME, Vespignani A, Bharti N, Feldstein LR, Alexander KA, Ferrari M, Shaman J, Drake JM, Porco T, Eisenberg JN, Del Valle SY, Lofgren E, Scarpino SV, Eisenberg MC, Gao D, Hyman JM, Eubank S, Longini IM Jr. **Ebola: Mobility Data.** Science. 2014.

Hong A, Schweitzer L, Yang W, Marr LC. **Impact of Temporary Freeway Closure on Regional Air Quality: A Lesson from Carmageddon in Los Angeles, United States.** *Environmental Science & Technology* 2015 49 (5), 3211-3218.

Howe CG and Gamble MV. **Enzymatic cleavage of histone H3: a new consideration when measuring histone modifications in human samples.** *Clinical Epigenetics*; 7(7). 2015.

Miller RL and Peden D. **Environmental impacts on immune responses in atopy and asthma.** *Journal of Allergy and Clinical Immunology*, 134: 1001-8, 2014.

Morita H, Yang S, Unger N, Kinney PL. **Global Health Impacts of Future Aviation Emissions under Alternative Control Scenarios.** *Environmental Science & Technology*. 2014.

Peters BA, Hall MN, Liu X, Neugut YD, Pilsner JR, Levy D, Ilievski V, Slavkovich V, Islam T, Factor Litvak P, Graziano JH, and Gamble MV. **Creatinine, Arsenic Metabolism, and Renal Function in an Arsenic Exposed Population in Bangladesh.** PLoS ONE 2014.

Rosa MJ, Yan B, Chillrud SN, Acosta LM, Divjan A, Jacobson JS, Miller RL, Goldstein and Perzanowski MS. **Domestic airborne black carbon levels and 8-isoprostane in exhaled breath condensate among children in New York City.** *Environmental Research*, 135C:105-110, 2014.

Shaman J., Yang W., and Kandula S. **Inference and Forecast of the Current West African Ebola Outbreak in Guinea, Sierra Leone, and Liberia.** PLoS Curr. 2014.

Yang W., and Shaman J. **Does exposure to poultry and wild fowl confer immunity to H5N1?** *Chinese medical journal*, 127(18), 3336. 2014.

Yang W., Lipsitch M., and Shaman J. **Inference of Seasonal and Pandemic Influenza Transmission Dynamics.** *Proc Natl Acad Sci USA*. 112(9):2723-8. 2015.

This is a small sample of EHS publications from the past six months. We encourage you to check all their great work!

***Congratulations to all of
our EHS 2015 graduates!
We wish you the best in
your future endeavors!***



Created & Designed By: Erika Eitland
Copy Editors: Nina Kulacki & Corey Park

If you have questions, comments, news to
share, please contact Nina Kulacki at
ninakulacki@columbia.edu or visit our website.