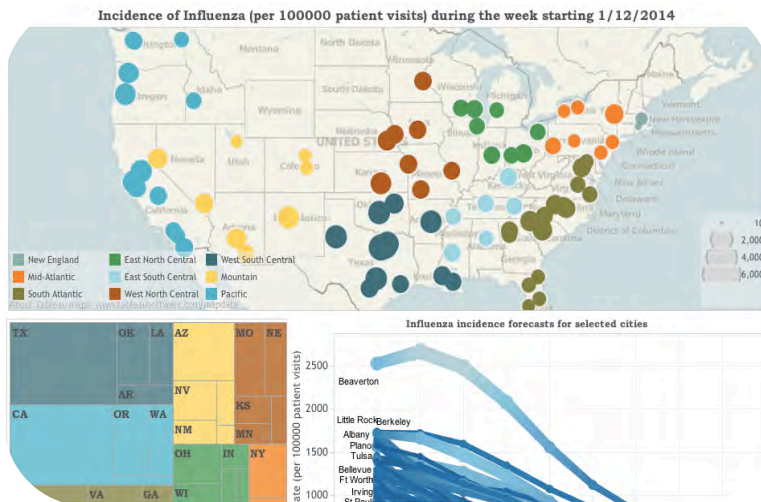


DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCES

New Forecasts: A Website that Predicts the Flu by Dr. Jeff Shaman



In a joint effort by the Mailman School of Public Health and the International Research Institute for Climate and Society at the Earth Institute, Dr. Shaman and his team present a new website for influenza incidence in U.S. cities during the first 16 weeks of the 2013-2014 flu season. Visitors to the site can select cities or regions to create a

tailored map of prevalence by season, plot predictions for their selected cities, see comparisons, and other robust functions on the site. *The New York Times* discusses impacts of the site [here](#), as does our Mailman School [press release](#). Check out the forecast in your hometown: www.cpid.iri.columbia.edu.

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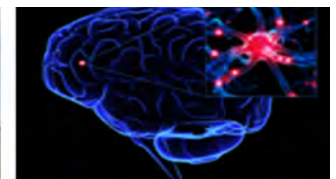
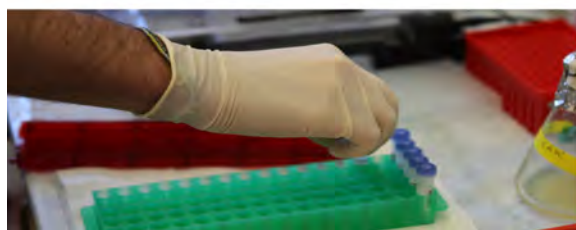
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Tomás Guilarte: EHS Chairman

I hope everyone had a refreshing winter break and the semester is going well. As we anxiously await the return of spring, we look forward to our first graduating class of the exciting new integrated Core in May. At this time, our first-year students are looking forward to finishing up a fruitful year of classes while they research potential practicum experiences for the summer ahead. Meanwhile, in the past few months, our faculty have published some exciting papers and received many awards, some of which are listed in this newsletter. Please join me in congratulating them on these accomplishments.

Over the next few months, I hope to see you all at our EHS seminars as well as the Twenty-first Granville H. Sewell Distinguished Lecture on April 23rd. We are honored to have Dr. Linda Biernbaum, director of the National Institute of Environmental Health Sciences, as this year's speaker. I also look forward to seeing everyone at our EHS social events such as the End of Year Party in May. As we look to the future of our Department, we are pleased to announce that we will offer a new MS program in Fall 2015.

Best Regards,

Tomás

Tomás Guilarte, PhD
Leon Hess Professor and Chair

MS in Environmental Health Sciences

We will soon offer an MS degree program in EHS. There will be two tracks: Toxicology and Radiation Sciences. This program will have the unique feature of integrating environmental health into these disciplines. Both programs have full-time and part-time options.

Toxicology is a one-year (12-month) program.

Coursework is designed to prepare students to take the board exams in either toxicology through the American Board of Toxicology (DABT) or industrial hygiene through the American Board of Industrial Hygiene (CIH). In addition, participants will receive practical, hands-on experience as well as at least one OSHA certificate.

Radiation Sciences is an 18-month program, and will have two options: Health Physics and Radiation Biology. Health Physics will train students for careers in the field of radiation safety and will prepare students to take the exam for certification in health physics. Radiation Biology includes a 6-month practicum that will enhance the student's experience and provide them with hands on experience in evaluating the biological consequences of radiation exposure.

Stay tuned for further information about this exciting new degree offering in our Department!

~Research from the Chairman's Lab~

Click to see the papers in PubMed

[Rats with minimal hepatic encephalopathy due to portacaval shunt show differential increase of translocator protein \(18 kDa\) binding in different brain areas, which is not affected by chronic MAP-kinase p38 inhibition.](#)

[Sex Differences in Translocator Protein 18 kDa \(TSPO\) in the Heart: Implications for Imaging Myocardial Inflammation.](#)

[Regional brain distribution of translocator protein using \[11C\]DPA-713 PET in individuals infected with HIV.](#)

Dr. Graziano: Chair of the NRC Committee on Inorganic Arsenic

Joseph Graziano, PhD, recently served as Chair of the National Research Council's committee on inorganic arsenic. The committee was formed in response to a congressional mandate made to the EPA to address critical scientific issues in preparing an updated Integrated Risk Information System (IRIS) assessment for inorganic arsenic. The committee held a workshop on April 4, 2013, to gather input from a variety of researchers and stakeholders on the significant elements of hazard identification and dose-response assessments required. From this workshop, the committee assembled a report for the EPA detailing their recommendations for assessing the effects of oral exposure to inorganic arsenic. In a [press release](#), the head of EPA, Gina McCarthy, commended the report.

The [report](#) recommends "EPA develop risk estimates for the variety of health effects on which there is adequate epidemiologic evidence and then derive risk-specific doses to address the needs of analyses that would typically use a reference dose (RfD)." There is the possibility, the report continues, to use a low-dose model that is more accurate for inorganic arsenic, and extrapolates to a lesser degree than the current linear model. In a departmental seminar on November 26th, Dr. Graziano presented the findings of the committee to students and faculty. The next steps for the committee are to await the EPA's IRIS assessment, expected in late 2014 or early 2015, and then review EPA's assessment to assure that it meets the recommendations of the NRC committee.



Dr. Graziano is the recipient of the 2014 Career Achievement Award from the Metal Specialty Section of the Society of Toxicology. He will be presented with the award at the annual SOT meeting in March.

He is also recognized by student evaluations with a Mailman School Teaching Excellence award for the Core module: Environmental Determinants of Human Health.

Dr. Jack: Global Health Initiative Grant and Research in Chile



Building ties in Chile and Ghana, Dr. Jack seeks to reduce exposure to household air pollution

Darby Jack, PhD, received a grant from Columbia's Global Health Initiative for his project titled, "Cardiovascular effects of household air pollution – pilot evidence from Ghana." Household air pollution (HAP) in developing countries is most often caused by exposure to smoke from cooking fires and stoves. In Dr. Jack's abstract he states evidence that, "cardiovascular disease is estimated to cause 60% of the 3.5M deaths from HAP and 44% of Disability Adjusted Life Years (DALYs)." Through his alliance with the Ghanaian Ministry of Health's Kintampo Health Research Centre, and a new collaboration with top CUMC cardiologists, Dr. Jack and his team will measure the cardiovascular benefits of interventions that reduce HAP exposure in communities in Ghana.

Dr. Jack also received an award from the Chile Global Center to develop new ties with the University of Chile to pursue research that quantifies the health benefits of current and alternative public policies to reduce air pollution. Similar to the study in Ghana, Dr. Jack notes, "Many urban households in southern Chile meet their home heating needs by burning wood in low efficiency stoves. As a result, substantial populations are exposed to very high levels of fine particulate matter, and thus to elevated risk of lung disease, heart disease, respiratory infections, and other serious health problems." He hopes to develop efficient policy responses to address these public health issues. There will be a meeting to scope out a funding proposal in Santiago, Chile this spring.

Dr. Perera: Emerging Research on Social Stress and Child Health

Frederica Perera, PhD, has evidence that the combination of air pollution exposure and maternal psychological distress during pregnancy is linked to childhood behavior problems. Her [article](#), “Prenatal exposure to air pollution, maternal psychological distress, and child behavior” was published in *Pediatrics* in November 2013. The results of the study, following a longitudinal birth cohort in Poland, show that maternal demoralization, a measure of psychological distress capable of affecting a mother’s ability to cope with stressful situations, was linked with a number of behavioral problems, including anxiety, depression, attention problems, rule-breaking, externalizing problems, and aggressive behavior. The effects of demoralization were greatest among children with higher levels of prenatal exposure to polycyclic aromatic hydrocarbons (PAH) in air.

Dr. Perera’s editorial, “Climate Change and Our Children”, was also [published](#) in the *Huffington Post* in July 2013. The Columbia Center for Children’s Environmental Health, which Dr. Perera directs, was featured in a cover story in the Winter 2013 issue of *OnEarth Magazine*. The article, titled “Generation Toxic” is written by Florence Williams and can be found [here](#).

Dr. Perera was also a speaker at the International Neurotoxicology Association meeting 2013 in Egmond aan Zee, the Netherlands, and the Conference on Environmental Health for Obstetricians and Gynecologists organized by the Mid-Atlantic Center for Children’s Health and the Environment in Arlington, Virginia.



Visit CCCEH.org to stay up to date on the Center’s research

Dr. Shen: Grant Award to Study microRNAs and Cancer

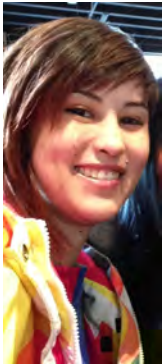


Jing Shen received MS and MD degrees from Nanjing Medical University, and his PhD from Peking University.

Jing Shen, PhD, received a grant award from the National Institute of Health and the National Cancer Institute for his project titled “MicroRNAs and Early Prostate Cancer Detection” in a collaboration with Alicia McDonald, PhD in the North Shore-Long Island Jewish Health System. This study will examine genome-wide circulating microRNA profiles in biopsy-confirmed, localized prostate cancer, precancerous prostate lesions, and prostate cancer-free controls to identify specific microRNAs with potential as early biomarkers for men who had a positive prostate cancer-screening test. Dr. Shen and the team propose to examine whether some of the microRNAs can be used to monitor prostate disease status of men being treated for prostate cancer. There is the added benefit that microRNAs could ultimately be a more accurate, and non-invasive, alternative to the current prostate-specific antigen (PSA) test.

Dr. Shen is first author on a recent paper that was published in the December 2013 issue of *Cancer Epidemiology, Biomarkers & Prevention*, titled “Exploration of Genome-Wide Circulating MicroRNA in Hepatocellular Carcinoma: MiR-483-5p as a Potential Biomarker.”

~Q&A with First Years~

**Quentin O'Brien, MPH '15,
Health & Human Rights*****Why did you choose EHS?***

In college, I pursued materials engineering with the wide-eyed goal of fixing the energy crisis. However, I quickly learned engineering is also about money and that not many are interested in achieving idealistic goals. Halfway through undergrad, I changed my major to environmental science. But once again, I hit a roadblock. Many people aren't interested in environmental issues that don't directly impact them. Thus, I decided to pursue EHS at Columbia because I realized the best way to show people these issues matter is by showing them how their health will be affected.

What is your favorite class so far?

I have really been enjoying ISP, the Integration of Science and Practice. It's great to see public health in action and to incorporate all aspects of the MPH program.

What has been the highlight of your first year within EHS?

I like the community feel that you can find within the EHS department. I love that we have get-togethers that are casual and fun. I think our sense of community really sets us apart from other departments.

Do you already have postgraduate intentions/goals?

Currently, I'm doing food safety research for the NYC Department of Health, and I could see myself continuing to work here. However, part of me would also like to pursue a doctoral degree in sociocultural anthropology with a focus on health.

Ryan Napper, MPH '15, Global Health***Why did you choose EHS?***

EHS fits my existing interest in environmental health and I found it to be the department that was a strong inter-disciplinary mix. Coming from a biology background, I always felt that focusing on the biology of disease was important. However, when addressing public health issues, there's much more than just the strict biology. I think that the EHS department really embraces a holistic approach to public health understanding.

What is your favorite class so far?

I would say my favorite has been BEDH (Biological & Environmental Determinants of Health) in the Core. Dr. Freyer made the material interesting and engaging.

What has been the highlight of your first year within EHS?

The chili cook-off; It was a fun experience, with good food, and a great time to meet people in the department.

Do you already have postgraduate intentions/goals?

After graduating from the MPH program, I would like to apply to a doctoral program in global or environmental health. Hopefully, I will be researching the environmental impacts on infectious disease one day.

**Richard Remigio
First year PhD student*****Can you share a little about what you did before beginning at Mailman?***

I earned my MS at Stanford in Environmental Engineering and Science in 2007. I interned with the Los Angeles County Sanitation District as a project engineer and worked for the US Environmental Protection Agency as an environmental engineer in the San Francisco and Washington, DC offices.

While at the EPA, I worked on issues related to protecting water quality and controlling wastewater discharges under the Clean Water Act. I largely dealt with approaches to implementing water quality standards into discharger permits that assure the protection of aquatic life and human health.

What is your current research?

I am fulfilling my rotation requirement for first-year doctoral students. One of the pluses to this program is being able to explore and familiarize myself with the research in the department. This is an invaluable way for students such as me to "dabble" and to learn new skill sets while developing a better sense of a dissertation topic to pursue.

Continued on page 7

~Continuing Students~

Interview with Kate Weinberger, PhD Candidate, Climate & Health



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

I'm interested in how climate change could affect timing and magnitude of the pollen season, and how changes in the pollen season could affect the development and exacerbation of allergic diseases like asthma. My dissertation research aims to answer questions about present-day pollen and health relationships: whether daily concentrations of allergenic pollen affect emergency room visits for asthma across New York City neighborhoods; and whether spatial variation in allergenic pollen within NYC affects the development of allergic sensitization and disease in children. To answer the second question, I've installed a network of 45 pollen monitors on light poles across the city to help me quantify spatial variation in pollen.

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

It's hard to choose just one! One of the best experiences I've had so far was being the teaching fellow for Julie Herbstman's course, Analysis of Environmental Health Data during the first semester it was offered. Dr. Herbstman let me work very closely with her on the course structure and materials, so I felt like I was making a real contribution,

and I learned a lot about the way new classes are put together. I'm really looking forward to working on the class again this spring! Another big highlight for me has been watching the Climate and Health program grow over my time here.

Have you presented any of your research at a conference? Where?

Yes. I gave an oral presentation titled "The Association of Tree Pollen Concentration Peaks and Allergy Medication Sales in New York City: 2003-2008" at the 19th International Congress of Biometeorology in Auckland, New Zealand in December 2011, and I gave a poster presentation titled "Spatial Variation of Ragweed Pollen Across New York City" at the joint conference of International Society for Environmental Epidemiology, the International Society of Exposure Science, and the International Society of Indoor Air Quality in Basel, Switzerland in August 2013. One thing I learned at these conferences is that speaking to people from different but related areas of study can really change and improve how you think about your own research.

What are your post-graduate intentions/goals?

I'd love to eventually find an academic position that will allow me to be involved in both research and teaching. I'll most likely start with a post-doctoral fellowship as a stepping-stone.

Colleen Lanier-Christensen, SMS MPH '14, EHS Policy



Colleen Lanier-Christensen is a second-year MPH student in the Department of Sociomedical Sciences with her certificate in Environmental Health Policy. As a result of her practicum work with the Environmental Defense Fund (EDF), she has been featured in the Friday Letter series of the Association of Schools and Programs of Public Health (ASPPH) [here](#) for her contributions to the EPA workshop: Applying Systematic Review to Assessments of Health Effects of Chemical Exposures. Ms. Lanier-Christensen also recently published a commentary with EDF scientists Jennifer McPartland and Juleen Lam in *Environmental Health Perspectives* titled, "A Valuable Contribution toward Adopting Systematic Review in Environmental Health." Check out the article [here](#).

Interview with Rosie Martinez, EHS MPH '14, Molecular Epidemiology*Continued from page 5...***Richard Remigio**
First year PhD student

This past semester, I have been working with Dr. Darby Jack on the Ghana cook-stove study. I have been assessing some of the personal biomass exposure data and determining whether a shorter window for sampling continuous data collection is statistically representative of a longer sampling window (e.g. six days). This has been a great exercise in working with multiple large data sets and learning to code in R.

What has been the highlight of your time within EHS thus far?
Surviving (and excelling) the graduate course in biochemistry with my fellow PhD counterpart, Meredith Loth, this past semester. Seriously, it was the hardest course I've ever taken.

What are your post-graduate intentions/goals?
I'd like to teach or work abroad integrating both my professional and academic background into environmental health engineering and sciences research. Down the road, I would be interested in building a startup (with some brilliant Columbia peers, perhaps!) that focuses on emerging environmental issues and developing integrative solutions to offer policymakers in the public and private sectors.



Can you share a little bit about your current research in the department?

This past summer for my practicum, I cultured human mesenchymal stem cells (hMSCs) collected from umbilical cords and investigated RNA expression in genes related to obesity as part of Lori Hoepner's DrPH thesis to discern possible mechanisms for Bisphenol A effects on gene expression. Currently, I am investigating the methylation patterns and basal level gene expression of the hMSCs in two specific genes related to obesity, PPAR γ and DLK-1 for my master's thesis. I originally wanted a lab practicum to gain more bench experience, but working on these projects has sparked my interest in how environmental exposures can influence epigenetic changes.

Can you share more specifics about your thesis topic?

My thesis topic will include investigating the methylation patterns of the aforementioned genes in the hMSCs and comparing them to matched cord-blood samples. I will also attempt to look at the basal level expression of the same genes in hMSCs and see if there is a correlation with the methylation patterns.

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

My major highlight thus far has been getting to know the professors and my peers really well. I've gotten several fantastic letters of recommendation from some of the best professors I could ever have. The friendship and camaraderie that I have developed with my peers is irreplaceable. We have struggled together through classes, shared lots of fun experiences, and supported each other during the past year or so. Because the EHS department is a small one, I've not only been able to develop a strong network that will help me further my career, but also a wonderful support system. My experience in the EHS department has allowed me to combine my passions for research and human health. I hope to take everything I've learned here and apply it in my future studies.

What are your post-graduate intentions/goals?

I applied to PhD programs that are focused in molecular biology and environmental epidemiology. Recently, I was accepted into the Harvard School of Public Health Doctorate of Science program in the Environmental Health Department. I want to investigate the effects of environmental exposures on epigenetic programming or reprogramming. I think that epigenetic changes with the body, either prenatal or in adult life, play major roles in determining disease. I'm excited to move to Boston, MA and start the next chapter of my life at Harvard!

~Alumni~

Dr. Crowley: New President of the Alumni Association

We are happy to report that Kathleen Crowley, PA-C, MPH'91, DrPH'13, was recently nominated and voted-in as President of the Mailman School of Public Health Alumni Association. Dr. Crowley is the first graduate from the Environmental Health Sciences (EHS) department who has been elected President of the Alumni Association. She succeeds Thomas Campbell Jackson, MPH98 (HPM), who served as president from 2011-2013. Dr. Crowley has been a Board member since 2006 and continues to be an active member for the Mailman community. As president, she looks forward to working with the Board comprised of thirty-three alumni from each of MSPH's six-departments.

Dr. Crowley is the Associate Vice President of Environmental Health & Safety (EH&S) for Columbia University across all five campuses

including the medical center, Morningside Heights, Lamont, Nevis and Manhattanville. She is responsible for environmental, health and safety matters and for ensuring regulatory compliance with OSHA, EPA, NYC DOH, NYC DEP, NYS DEC, FDNY. Dr. Crowley leads a team of more than 45 safety professionals to address all safety matters including biological, chemical, environmental, industrial hygiene, fire life safety and radiation. Each of the safety and health programs have been integrated creating a model with program oversight across all five campuses. In collaboration with the research community and facilities, a proactive safety program has been implemented along with programs for hazardous, radioactive, universal, and regulated waste with a focus on reduce, reuse, and recycle.



Visit Mailman's Alumni page for more information here:
<http://www.mailman.columbia.edu/alumni>

Sashti Balasundaram and Jonathan Sury, MPH '08: Founders of We Radiate

Sashti, left, and Jonathan, right

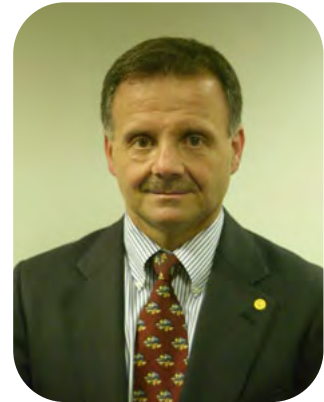
We Radiate is a social enterprise founded by EHS alums Jonathan Sury MPH '08 and Sashti Balasundaram MPH '08. Sashti and Jonathan were recently selected as finalists for a social entrepreneurial competition, where their We Radiate enterprise was ultimately awarded the January 2014 grantee of \$1,000 from the Awesomeness Foundation. The mission of We Radiate is to enable communities to have control of their own energy, generated locally from compost. Follow the organization on twitter at [#weradiatenyc](https://twitter.com/weradiatenyc) and on the web at weradiate.com.

~Alumni~

Dr. Maddaloni: New Publication on Soil Lead Mitigation

Dr. Maddaloni received his DrPH in Environmental Health Sciences in 1998 under the mentorship of Dr. Joseph Graziano. His thesis was titled, "Measurement of Soil-Borne Lead Bioavailability in Adults, and its Application in Biokinetic Modeling." Recently, he is a contributing author of a publication in the *Journal of Toxicology and Environmental Health*, titled "Amending Soils With Phosphate As Means To Mitigate Soil Lead Hazard: A Critical Review Of The State Of The Science." Dr. Maddaloni has been employed as an EPA Region II toxicologist since 1991 and currently holds the position of Regional Risk Assessment Coordinator in the Office of the Regional Administrator.

He has chaired a sub-committee of EPA's Technical Review Workgroup for lead that developed a methodology for assessing the hazards of soil-borne lead in adults. Prior to the EPA, Dr. Maddaloni served as a clinical toxicologist at the New York City Poison Control Center, where his area of expertise was environmental and occupational exposures. He currently serves on the New York City Department of Health's Institutional Review Board and the New Jersey Department of Environmental Protection's Science Advisory Board. Dr. Maddaloni is a Diplomate of the American Board of Toxicology and a member of the Society of Toxicology.



Dr. Maddaloni, DrPH '98, is Regional Risk Assessment Coordinator at EPA's Region 2 office in downtown Manhattan

~Course Highlights~

New GIS Section

Due to the success of Cindy Gorn's Public Health GIS course P8371 in our department (read her bio in our previous edition [here](#)), we have added a second GIS section beginning this spring semester, taught by Steve McFarland.

Steve McFarland is a doctoral candidate in Geography at the CUNY Graduate Center. His dissertation is on the spatiality of the U.S. labor movement. His research interests include GIS, urban geography, and cultural geography. He earned his Masters in city and regional planning at Cornell, and has taught at Brooklyn College, Hunter College, Sarah Lawrence College, and the Joseph S. Murphy Institute. He was born and raised in Park Slope, Brooklyn.

Revamped Water Course

Jeffrey Shaman, PhD, has revamped his course P8329, Water, Sanitation and Human Health, to present an in-depth analysis of issues relating to water and hygiene in both the developed and developing worlds. It is being taught by a cohesive team of both public health and engineering faculty, designed to foster dialogue between these two communities. As a course intended for students of both disciplines, the material covers the hydrologic cycle, major causes of enteric morbidity and mortality, as well as the design, financing and implementation of sanitation systems.

Led by Dr. Shaman, the faculty team includes: Leslie Roberts, Associate Clinical Professor in the Dept. of Population and Family Health; Brian Mailloux, Assistant Professor at Barnard; William Becker, Adjunct Professor at the School of Engineering; and Kartik Chandran, Associate Professor at the School of Engineering.

Upcoming Events: Save the Date!

- Wednesday, April 23** 21st Annual Sewell Distinguished Lecture, given by Linda Birnbaum, Ph.D., D.A.B.T., A.T.S., Director of NIEHS and the NTP, Join us for this special talk, “When Our Environment Acts Like Medicine...”
- Tuesday, April 29** EHS Alumni Career Panel: A unique opportunity for students to meet and connect with our alumni
- Friday, May 16** EHS End of Year Party, hosted by Drs. Graziano and Gamble

Past Events: Chili Cook-Off and Winter Party!

Look out EHS Chefs: Dr. Perzanowski wins the Chili Cook-Off!



Prepared by Kathryn Heinemann, MPH Class of 2014 and Department TA.

Keep In Touch!



*To submit content for future newsletters, please contact:
Nina Kulacki
Associate Director of Academic Affairs
at ninakulacki@columbia.edu.*