

YOUR HEALTH & THE ENVIRONMENT



NEWS FROM THE UNIVERSITY OF ROCHESTER ENVIRONMENTAL HEALTH SCIENCES CENTER

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Human Health and the Environment Symposium

The University of Rochester's new Institute for Human Health and the Environment (IHHE) hosted a research symposium on June 29th featuring a wide variety of research related to human health and the environment. Over 130 University faculty, staff, and students, as well as community members, gathered for a day of keynote presentations, short talks, and a poster session.



NIEHS Director Rick Woychik, PhD

The symposium began with welcome addresses from B. Paige Lawrence, PhD, Chair of the Department of Environmental Medicine and Director of the Institute and of the Environmental Health Sciences Center, and Mark Taubman, MD, Dean of the School of Medicine and Dentistry and CEO of the URMC.

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Symposium (continued)

Rick Woychik, PhD, Director of the National Institute of Environmental Health Sciences and the National Toxicology Program, gave the morning keynote address focused on the topic of the growing NIH research program in climate change and human health. Speakers highlighted environmental health research on topics including children's exposure to secondhand hazards such as marijuana smoke, the health benefits of hazardous waste site cleanups, the measurement and inhalation of microplastics, the health effects of air pollution, mechanisms for PFAS impacts on hypertension, and climate change. Additional research was presented through 31 posters by faculty, students, and guests. The event concluded with a robust discussion of future research directions, challenges, and opportunities to engage in science communication and policy.

To learn more about the Institute, visit the IHHE web site:

<https://www.urmc.rochester.edu/institute-for-human-health-and-the-environment.aspx>.



Left to right: Drs. Martha Susiarjo, Rick Woychik, Deborah Cory-Slechta, Pamela J. Lein, Lee Murray, and B. Paige Lawrence.

Inaugural Community Capacity Building Project: The Marketview Heights Tree Canopy Initiative



Cornell Cooperative Extension (CCE) of Monroe County received the EHSC's first Capacity Building Project award in 2022 for their Tree Canopy Initiative. Street trees can advance health in urban neighborhoods by improving air quality and reducing the urban "heat island effect." CCE Monroe County partnered with the Marketview Heights Neighborhood Association and the City of Rochester's Forestry Division to conduct education about urban forestry, obtain community input on tree location, and plant trees along streets in northeast Rochester.

The Tree Canopy Initiative seeks to promote environmental health, combat environmental injustices, and offer climate mitigation tactics while offering education, engaging residents, and providing tree canopy cover through planting 30 trees in disadvantaged communities in Rochester, New York. The location for tree planting for the first year of the initiative was determined through community networking and evaluating the tree equity score in Rochester's neighborhoods. A tree equity score considers many aspects of a neighborhood, including age, employment rate, existing tree canopy, income, health, population density, race, and surface temperature. North Marketview Heights was identified as a neighborhood lacking street trees where a community group (the Marketview Heights Collective Action Project) was interested in promoting resident engagement around tree planting.

Over the summer and fall of 2022, CCE held several events in the neighborhood, including a tree walk and two public presentations. CCE staff and volunteers canvassed 600 homes and surveyed residents about their interest in having a street tree. Working with the City, CCE identified appropriate species and planted 30 trees in the North Marketview Heights neighborhood.



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Tree Canopy Initiative (continued)

The EHSC Community Engagement Core continues to work with CCE to apply for grants and build connections to support expansion of this work in the future. They also supported development of a Tree Equity curriculum that CCE staff have integrated into their education programming. As well, staff remain involved in expanding efforts to promote urban forestry in Rochester and beyond.

The Tree Canopy Initiative achieved the goal of the EHSC's Capacity Building Project program: to provide funding for local organizations to grow their engagement in environmental health disparities in the greater Rochester region.



The second Capacity Building Project was awarded to the Rochester Museum and Science Center in January 2023 to support their "Climate Action Days." Community Engagement Core staff will work with the museum throughout the year to build environmental health into their programming, education, and outreach activities.

Spreading the Word about Diacetyl, Coffee Roasting, and Lung Health

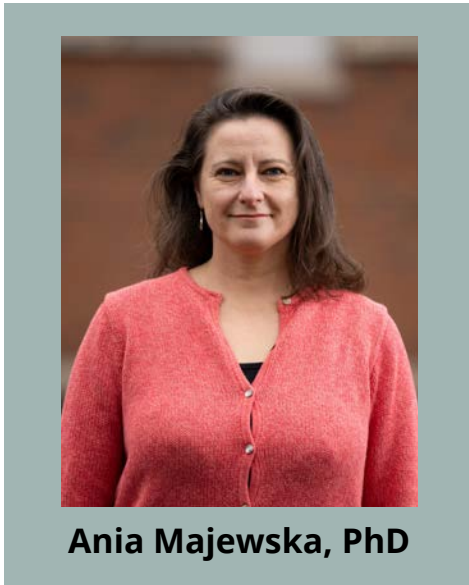
Exposure to diacetyl, a chemical widely used in the flavoring industry, can cause *bronchiolitis obliterans*, a potentially fatal disease that can attack and quickly destroy the respiratory system. The condition has been found in popcorn factory workers and more recently, coffee roasting workers, among others. Diacetyl is also a common ingredient in e-cigarettes. The Community Engagement Core team, including undergraduate student Sophia Samantaroy, worked with Center member Dr. Matt McGraw and the Finger Lakes Occupational Health Services team to create an infographic on the risks of diacetyl and how to reduce occupational exposure. Dr. McGraw's research was featured in the Winter 2023 EHSC newsletter article "A One-Two Punch: Low Levels of Coffee Roasting Chemical and Mild Flu May Damage Lungs."

Fact Sheet	
<h3>Diacetyl, Coffee Roasting, and Lung Health</h3> <p>Diacetyl is a Harmful Chemical Released During Industrial Coffee Roasting</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <chem>CC(=O)C(C)=O</chem> Diacetyl is a chemical with an intense buttery flavor that is released naturally when roasting coffee </div> <div style="text-align: center;"> Breathing diacetyl has been linked to a severe rare lung disease called bronchiolitis obliterans </div> <div style="text-align: center;"> Workers may be exposed to diacetyl when grinding or roasting coffee </div> </div>	
How to Reduce Exposure	Air Quality Monitoring Air monitoring for diacetyl is not widely available, but you can take steps to reduce the chance of harm.
	Personal Protective Equipment Wear a respirator that protects against organic vapors and particulates.
	Improved Ventilation Systems Use a closed system, isolation, or local exhaust ventilation when roasting coffee beans.
	Consult Your Health Care Provider Report new, persistent, or worsening breathing-related symptoms.
	For more information Flavorings Related Lung Disease: Questions & Answers NIOSH CDC www.cdc.gov/niosh/topics/flavorings/qa.html <small>Centers for Disease Control and Prevention guidelines suggest that diacetyl is not a health risk in coffee shops or homes. This fact sheet was developed by the Community Engagement Core of the University of Rochester Environmental Health Sciences Center with support from National Institute of Environmental Health Sciences grant P30 ES001247. Last updated 7/16/2022.</small>

View and download the infographic at:
<https://www.urmc.rochester.edu/environmental-health-sciences/community-engagement-core/projects-partnerships.aspx>

Welcome to New EHSC Members

The EHSC welcomes five new members: Ania Majewska, PhD; Souvarish Sarkar, PhD; Kristin Scheible, MD; Jing (Jason) Wu, PhD; and Jeff Wyatt, DVM, MPH.



Ania Majewska, PhD

Ania Majewska, PhD, holds a Dean's Professorship in Neuroscience with a joint appointment in the Center for Visual Science. Dr. Majewska is also co-Director of the University of Rochester Intellectual and Developmental Disabilities Research Center. She is deeply committed to mentoring and directed the Neuroscience Graduate Program from 2012 to 2020. She was also awarded the 2022 Landis Award for Outstanding Mentoring by an NINDS investigator.

Dr. Majewska's work examines the interactions between microglia, the brain's immune cells, and neuronal networks in development, adulthood, aging and disease. In 2010, her lab showed that microglia, which were largely thought to be inert until activated by pathological stimuli, dynamically interacted with neuronal elements even in the absence of pathology.

Since then, the lab has imaged these dynamic interactions between microglial processes and synaptic structures and shown that microglia are important participants in normal brain function, contributing to processes such as experience-dependent plasticity, which underlies proper wiring of the brain. More recently, the lab has examined how microglial roles at synapses contribute to deficits that arise in neurodevelopmental and neurodegenerative disorders.

Dr. Majewska grew up in Poland and Kuwait, where she completed much of her secondary education. She moved to the United States for college and completed a BS in Biology and Chemistry and an MS in Neuroscience at Stanford University. Her PhD work at Columbia University under the guidance of Dr. Rafael Yuste explored the efflux pathways controlling synaptic calcium signals using two-photon microscopy. She continued to use imaging tools to explore synaptic changes that underlie experience-dependent plasticity in her postdoctoral work at MIT with Dr. Mriganka Sur. She is excited to continue using optical techniques to examine brain plasticity in the context of developmental exposure to environmental toxicants. Dr. Majewska has been an active mentor in the Toxicology Training program for several years and looks forward to increased interaction with EHSC faculty and students as a Center member.

Welcome to New EHSC Members

Souvarish Sarkar, PhD

Dr. Souvarish Sarkar received his undergraduate degree in Biotechnology in 2013 from the Heritage Institute of Technology, West Bengal, India, and his PhD in Molecular, Cellular, and Developmental Biology from Iowa State University. As a doctoral student with Dr. Anumantha Kanthasamy, his research focused primarily on understanding the molecular mechanisms and signaling pathways of neuroinflammation in Parkinson's disease. He completed his post-doctoral fellowship in Dr. Mel Feany's lab at Brigham and Women's Hospital, Harvard Medical School, where he studied the role of various genetic factors in regulating Parkinson's disease etiology.



Souvarish Sarkar, PhD

He received a K99/R00 career transition grant from the NIH in 2022 and joined the Department of Environmental Medicine at the University of Rochester Medical Center as a tenure-track Assistant Professor in July 2023.

Dr. Sarkar studies gene-environment interactions in neurodegenerative disorders using *Drosophila*, patient-derived iPSCs, and rodent models. His research group will seek to identify key molecular targets for disease-modifying therapy in neurodegeneration. Beyond research, Dr. Sarkar aims to be a mentor for students and fellows and engage in community service. He looks forward to working in the EHSC as an excellent multidisciplinary home to perform his proposed research as well as work with the community.

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Welcome to New EHSC Members



Kristin Scheible, MD

Kristin Scheible, MD

Kristin Scheible, MD, is an Associate Professor of Pediatrics with a secondary appointment in Microbiology and Immunology. She also serves as Associate Chief of Research and Program Development in the division of Neonatology.

Dr. Scheible's lab seeks to explain the molecular programs that determine human age-related immune cell-intrinsic behavior, the specific pathways through which early exposures disrupt normal immune development, and the clinical consequences of abnormal immune development during infancy. She has a particular interest in adaptive immunity and the microbiome, given the dynamic changes during infancy of these systems and the potential to imprint long-term

maladaptive responses with harmful or mistimed exposures. Her lab deploys a systems biology approach, using high-throughput and single cell techniques to interrogate how various exposures reprogram T cell receptor, cytokine signaling and functions in various stages of fetal and postnatal development.

Dr. Scheible first encountered the world of health and environmental exposures while working in her father's commercial lab that performed water and wastewater testing for microbial and chemical contaminants in New York and New Jersey. She completed her undergraduate degree at SUNY Buffalo in Anthropology and Women's Studies. She earned her MD and completed her Pediatrics Residency and Neonatology Fellowship at the University of Rochester. During her Fellowship, she worked in Dr. David Topham's lab on human T cell responses to pandemic H1N1 influenza infection. She has since focused her attention on human pre-, peri- and postnatal immune system development. She is currently co-leading three longitudinal human cohort studies examining the molecular program of T cells from early ontogeny and immune-mediated clinical outcomes related to perinatal exposures. Examples of exposures currently being studied in her lab include prenatal maternal stress, PFAS, air pollution, metabolome, and microbiome.

Dr. Scheible collaborates with several EHSC faculty, including working with Drs. B. Paige Lawrence and Todd Jusko on immune system effects of PFAS. She is a Principal Investigator on the URMC-based Environmental influences on Child Health Outcomes (ECHO) team, and she is excited to explore new approaches and ideas through the EHSC that improve infant health outcomes. (For more about ECHO, see the Winter 2023 EHSC newsletter article "ECHO in Rochester".)

Welcome to New EHSC Members

Jing (Jason) Wu, PhD

Dr. Wu is Assistant Professor in the Department of Medicine, Nephrology, with a joint appointment in Pharmacology and Physiology. He is an early stage investigator trained in the fields of vascular biology, immunobiology, and hypertension. His laboratory investigates renal hemodynamic mechanisms in hypertension, the ability of the vascular-immune interface to regulate kidney perfusion and electrolyte handling, and the vulnerability of these processes to genetic polymorphisms, oxidative stress, and environmental toxins.



Jing (Jason) Wu, PhD

Human PFAS exposures are associated with hypertension and renal dysfunction, but the causal effect has not been established. Dr. Wu is investigating the effects of chronic PFAS exposure on vascular redox balance, hemodynamics, and renal sodium/water transport in the pathogenesis of hypertension and chronic kidney disease. The lab's expertise in redox biology, cardiovascular function, and renal physiology provides them with a unique set of research tools to study the mechanisms of PFAS toxicity in the vascular and renal systems. These studies are significant in filling gaps in understanding the impact of environmental chemical exposures on human health and disease.

Dr. Wu was recently awarded an Early Faculty Independence Award from the American Heart Association, with Center Director Dr. B. Paige Lawrence and Dr. Thu Le as mentors. As a member of the EHSC, Dr. Wu plans to work closely with the Community Engagement Core to educate the community on the significance and environmental relevance of research on PFAS and other environmental toxins.

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Welcome to New EHSC Members

Jeff Wyatt, DVM, MPH



Jeff Wyatt, DVM, MPH

Jeff Wyatt, DVM, MPH, is Professor and Chair of Comparative Medicine. Dr. Wyatt's research focuses on fish as bioindicators and biomonitors of the Rochester Embayment EPA Area of Concern for persistent chemical contamination. A \$300,000 Great Lakes Restoration Initiative EPA grant funded his novel approach using fish blood samples instead of whole carcasses to measure PCBs, dioxins/furans, mercury, cadmium, nickel, silver and mirex, an organochlorine pesticide unique to Lake Ontario. Dr. Wyatt's University of Rochester team and partners from United States Geological Survey (USGS) and New York State Department of Environmental

Conservation (NYS DEC) study repatriated lake sturgeon (*Acipenser fulvescens*), a state and federally protected species, as bioindicators of ecosystem health. Sturgeon, a native bottom-feeding fish living up to 150 years and weighing up to 300 pounds, serve as ideal research subjects because they are able to donate large volumes of blood as well reflect trends of legacy and emergent pollutants over time. Findings from this work and successful spawning of the repatriated sturgeon are supporting next year's delisting of the Rochester Embayment as an EPA Area of Concern. (For more about Dr. Wyatt's work and the Genesee River sturgeon population, see the article "How Sturgeon are Returning to Rochester" on page 11.)

Currently, Dr. Wyatt is leading a two-year, EPA- and DEC-funded, community collaborative environmental justice project to identify risk factors of subsistence refugee anglers consuming 24 species of locally caught, chemically contaminated fish. The eight-phase project, in partnership with Rochester Refugee Resettlement Services, began in June 2023 enrolling 12 refugee community college students as paid researchers conducting household surveys. Phase two will mentor the students to statistically evaluate the survey data for use in phase three to develop culturally relevant outreach platforms. The goals of the project are to develop, deliver and assess educational platforms about health risks and benefits of consuming local fish species as well as engaging the student researchers in capacity building experiences and a pipeline to careers in environmental and community health.

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Welcome new EHSC members (continued)

Dr. Wyatt graduated from The Ohio State University College of Veterinary Medicine in 1982 before being accepted to the University of Rochester School of Medicine and Dentistry's residency training program in comparative medicine. He earned an MPH at the University of Rochester in 1995 with a thesis mentored by Nana Bennett, MD, (founder and Director of the University of Rochester Center for Community Health and Prevention) identifying risk factors for rabies post-exposure prophylaxis in Upstate New York communities in the face of the Mid-Atlantic rabies epizootic. In addition to his role as Attending Veterinarian of the University of Rochester, Dr. Wyatt served 35 years as Director of Animal Health and Conservation and more recently as Environmental Justice Advocate at Seneca Park Zoo. He recently returned from working with communities in Madagascar that consume bushmeat (meat from wildlife species), where he led the veterinary team of a "One Health" project collecting blood samples from lemurs, rats and bats for RNA viruses of pandemic potential. After completing the two-year fish consumption study, he will begin his Fulbright Specialist awarded program developing a "One Health - Planetary Health" curriculum at Bogor University in Indonesia.

Center Member Highlighted by NIEHS and Society of Toxicology



Irfan Rahman, PhD

Center member Irfan Rahman, PhD, Dean's Professor in the Department of Environmental Medicine and Director of the Center for Inhalation and Flavoring Toxicological Research at URMC, received the Leading Edge in Basic Science Award and an Inhalation and Respiratory Specialty Section Career Achievement Award from the Society of Toxicology (SOT) for his research investigating how cigarette and e-cigarette smoke causes lung injuries and disease. The Leading Edge in Basic Science Award recognizes a scientist who, has made a recent, seminal scientific contribution or advance to understanding fundamental mechanisms of toxicity. Rahman delivered the Leading Edge in Basic Science Award Lecture, "Flavors, Vaping, and Enigma in Toxicology," at the 2023 SOT Annual Meeting and ToxExpo.

Rahman was interviewed about his work by NIEHS Director Rick Woychik in the April 2023 Environmental Factor newsletter "Director's Corner". His interview can be found here:

<https://factor.niehs.nih.gov/2023/4/feature/4-e-cigarette-research>.



How Sturgeon are Returning to Rochester

Written by Jack Fox, Pittsford Sutherland High School Student

On a Saturday in October 2022, twenty-five sturgeon were released into the Genesee River. This event was led by University of Rochester scientist Dr. Jeff Wyatt and USGS scientist Dr. Dawn Dittman. I got the opportunity to attend this event and release a couple sturgeon myself. Afterwards, I interviewed some of the research team members about their research and experiences.



**Jack Fox releasing a six-month-old sturgeon.
Photo by Lindsay Prichard Fox.**

On average, how many sturgeon do you see each year?

Sturgeon are netted in the Genesee River by USGS from as early as March to as late as October. The annual numbers netted in the Genesee range up to approximately 200 fish.

How do sturgeon benefit our local waterways? How do they tie into the food web?

The repatriated (reintroduced) sturgeon have re-established a more natural ecosystem, consuming abundant invertebrate (fly larvae to mollusks) prey, and will soon be providing an abundant natural food source for other fish in the form of thousands of eggs spawned in May that do not grow up to become sturgeon. The repatriated sturgeon are also healing the Great Lakes, consuming two of the Great Lakes' most invasive and damaging species, zebra mussels and round goby.

How do you track the sturgeon? How do you differentiate them?

All 8,000 hatchery-reared sturgeon released since 2003 have a specific scale (scute) removed from their side making a small scar that helps us identify the year they were released when we net them later. Fish are also internally Passive Integrated Transponder tagged using the same technology making it possible to scan lost pet dogs or cats. We also place an external tag with a unique identifier number and our phone number to report a sturgeon sighting by anglers who catch them by mistake and immediately release them since they are protected and illegal to possess. Over the past two years, we have been surgically implanting transmitters inside the repatriated fish to track their travel patterns in the Genesee River and throughout Lake Ontario from Niagara Falls to the St. Lawrence River in both Canadian and U.S. waters.

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Sturgeon's Return (continued)

What are some of the biggest threats to sturgeon currently? What were their biggest threats ten to twenty years ago?

The current biggest threats to sturgeon are loss of habitat and spawning sites, dams, uneducated anglers, and pollution. The past threats 50 to 150 years ago were overfishing and pollution.

Have the sturgeon you've released bred in the wild? How do you know if they have or have not?

Yes - the 18- to 19-year-old sturgeon have recently naturally spawned (bred) in the Genesee. We have identified babies that are completely unmarked (no scute scars).

How long are the sturgeon raised in captivity before being released? Why is that?

Sturgeon gametes (eggs and sperm) are collected from adult sturgeon in the St Lawrence River every May/June coinciding with natural spawning. The fertilized eggs are reared at two fish hatcheries (NYS DEC Oneida Fish Hatchery in Oneida, NY and U.S. Fish and Wildlife Service Genoa Fish Hatchery in Wisconsin). They are released in early October when they are 4 months old (about 2-3 inches long), when they are of a size to avoid natural predation and to avoid overwintering them to a size that will outgrow the hatchery. Our surveys indicate that well over 90% of these 4-month-old babies survive over the winter and through the summer of the following year.

What is your research with sturgeon like outside of the water?

At the USGS Tunison Laboratory of Aquatic Science in Cortland, NY, we study the best nutrition for aquaculture-reared fish (salmon, sturgeon, whitefish/*Coregonus bloaters*) for release into Lake Ontario, best methods to surgically implant transmitters, and conduct postmortem examinations of beached sturgeon to determine cause of death and age (by counting rings on ear bones (otoliths) if the fish are not tagged).

How can someone who's interested find more info about sturgeon and your program?

Check out this NYSDEC link: <https://www.dec.ny.gov/animals/26035.html>.



Rochester Research on Microplastics and Human Health

The Laurentian Great Lakes comprise the largest freshwater system in the world, holding more than 20% of global surface freshwater. While significant progress has been made over the past 50 years to improve the health of the Great Lakes, a larger issue has arrived: plastic pollution. The potential for microplastics to impact human health is of great concern to researchers, community members, and policy makers. Past research indicates that anthropogenic debris entering aquatic environments is a significant source of microplastics that may pose a threat to human health through ingestion (drinking water, consuming fish, etc.), dermal contact (swimming, boating, etc.) or inhalation of particles that enter the air. Due to the way plastic degrades over time and the large-scale effects of pollution, there is an expected increase in microplastics in the environment. The smallest of these particles may enter the air, resulting in additional human exposures. Despite the growing research on microplastics, the lack of information about the sources, fate, distribution, and characteristics of microplastics in the Great Lakes environment makes predicting exposure and risks to humans and the environment challenging. An integrated, multidisciplinary approach is needed to build our understanding of potential human health impacts of microplastics.

Several researcher teams from the University of Rochester (UR) and the Rochester Institute of Technology (RIT) are exploring multiple aspects of this complex problem to develop a better understanding of the potential harms that microplastics have on human health and inform solutions. Ongoing research addresses questions including: How can we analyze microplastics and simulate real-world microplastic particles in an experimental setting? How do microplastics get into the environment – and what happens when they get there? How are humans exposed to microplastics? How do microplastics affect health?



Jim McGrath, PhD

Measuring microplastics

Challenges of studying microplastics' impacts on human health include (1) difficulty isolating particles from environmental or biological samples so they can be counted and characterized and (2) lack of reference control particles that resemble particles found in the environment and standardized methods for microplastic research. Center member **Dr. Jim McGrath's** lab is working to overcome these barriers by utilizing silicon nanomembranes to capture and isolate microplastics so they can be studied. They are also developing reference particles that closely mimic environmental microplastics and standardized methods to study microplastics.

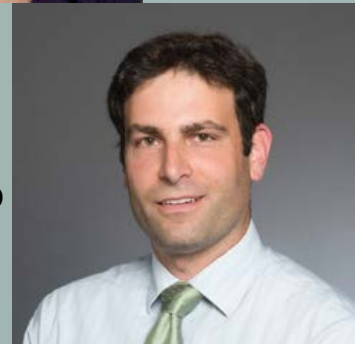
Rochester Research on Microplastics (continued)

Plastic debris in the environment

Dr. Christy Tyler and **Dr. Matthew Hoffman's** team at RIT is collecting debris from stormwater drains using "Littatrap" to measure the long-term spatial (urban, suburban, and rural) and temporal (across seasons and years) variation in materials entering the environment and to characterize the transformation of plastic in the environment, including into microplastics, as the climate changes. To see the possible changes over time, this team works to develop models to predict shifts in input, transport, and fate of debris in Lake Ontario.



**Christy Tyler,
PhD**



**Matthew
Hoffman, PhD**



Alison Elder, PhD

Exposure to microplastics

Humans are exposed daily to microplastics by ingesting them from water or food, skin contact from swimming or boating, or inhaling particles in the air. Center member **Dr. Alison Elder's** team seeks to determine the size distribution of plastic particles in the air to see where in the lungs inhaled particles may be deposited. This will enable future work on whether and how microplastics affect the lungs and other organs.

Microplastics and human health

Center member **Dr. Lisa DeLouise's** lab focuses on understanding human exposure to microplastics in Lake Ontario and how persistent organic pollutants may modify the toxicity of microplastics. Her team focuses on microplastics small enough to breach the epithelial barrier. Using silicon nanomembranes, her team is working to characterize the bioactivity of filtered debris from Lake Ontario water and to explore potential effects on human health.



**Lisa DeLouise, PhD
MPD**

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Rochester Research on Microplastics (continued)



Top: Jacques Robert, PhD
Right: *X. laevis* tadpole



Microplastics and human health (continued)

Center member **Dr. Jacques Robert** studies the effects of microplastics on the immune system. Using the amphibian *Xenopus laevis* as a model organism, previous work has shown that tadpoles absorb microplastics into their bodies even with short exposure times. Dr. Robert's team aims to see how exposure to reference microplastics affects development, fitness, immune homeostasis, chronic inflammation, and antiviral immunity in *X. laevis*. They also seek to find the differences between new and aged microplastics in the environment.

Addressing the problem at its source

As our scientific understanding of how microplastics may affect human health grows, it is important to increase public awareness of microplastics and of what steps may be needed to address microplastics in the environment. RIT and UR outreach staff are partnering with community groups to understand their concerns and integrate emerging knowledge about microplastics and human health into their work. They aim to engage diverse partners to promote environmental health literacy around microplastics and to engage community members, interest groups, and policy makers.

Promoting collaborative microplastics research in Western New York

The Microplastics Workgroup of Western New York is an informal collaborative of over 30 researchers, trainees, private sector businesses, and agency staff that has been meeting for nearly 3 years. Coordinated by Dr. Sami Romanick, a postdoctoral fellow in the McGrath lab, the Workgroup's goal is to promote transdisciplinary research on microplastics in Western New York. The Second Annual Western New York Microplastics Workshop was held on June 23, 2023. The daylong event featured a keynote speaker on the circular economy and a dozen talks on various aspects of microplastics research. Over 40 attendees gathered at RIT, including researchers, students, agency staff, and guests from across the region.



Legacy of Racism in Housing Policies Continues to Impact Maternal Health in Rochester

Rochester housing policies established more than eight decades ago that effectively trapped people of color in low income and segregated neighborhoods continue to impact the health of residents to this day, specifically resulting in poor obstetric outcomes such as pre-term birth. That is the conclusion of a 2021 study in the journal *JAMA Open Network* by researchers at the University of Rochester Medical Center (URMC), including EHSC member Elaine Hill, PhD.

“These findings suggest the potential influences of a system of profound structural inequity that ripple forward in time, with impacts that extend beyond measurable socioeconomic inequality,” said Hill, an economist in the URMC Department of Public Health Sciences and co-author of the study. “In our study population of a single midsized U.S. city, historic redlining was associated with worse outcomes in pregnancy and childbirth experienced by Black women in the modern day.”

Beginning in the 1930s and 40s, the federal government created thousands of area descriptions for cities across the U.S. First created by the federal Home Owners’ Loan Corporation (HOLC), these policies were adopted by the Federal Housing Administration and the Department of Veterans Affairs and delineated areas where mortgages could be insured. The term redlining comes from the color that was used on HOLC maps to identify neighborhoods comprised predominately of people of color and labeled “hazardous”.

These redlining policies, which remained in effect until the 1960s, led to decades of community disinvestment, concentrated poverty in inner city neighborhoods, and denied residents the ability to build intergenerational wealth through home ownership. The recent digitization of the original HOLC maps by the University of Richmond Mapping Inequality project have enabled researchers to examine links between historical redlining and current health inequities.

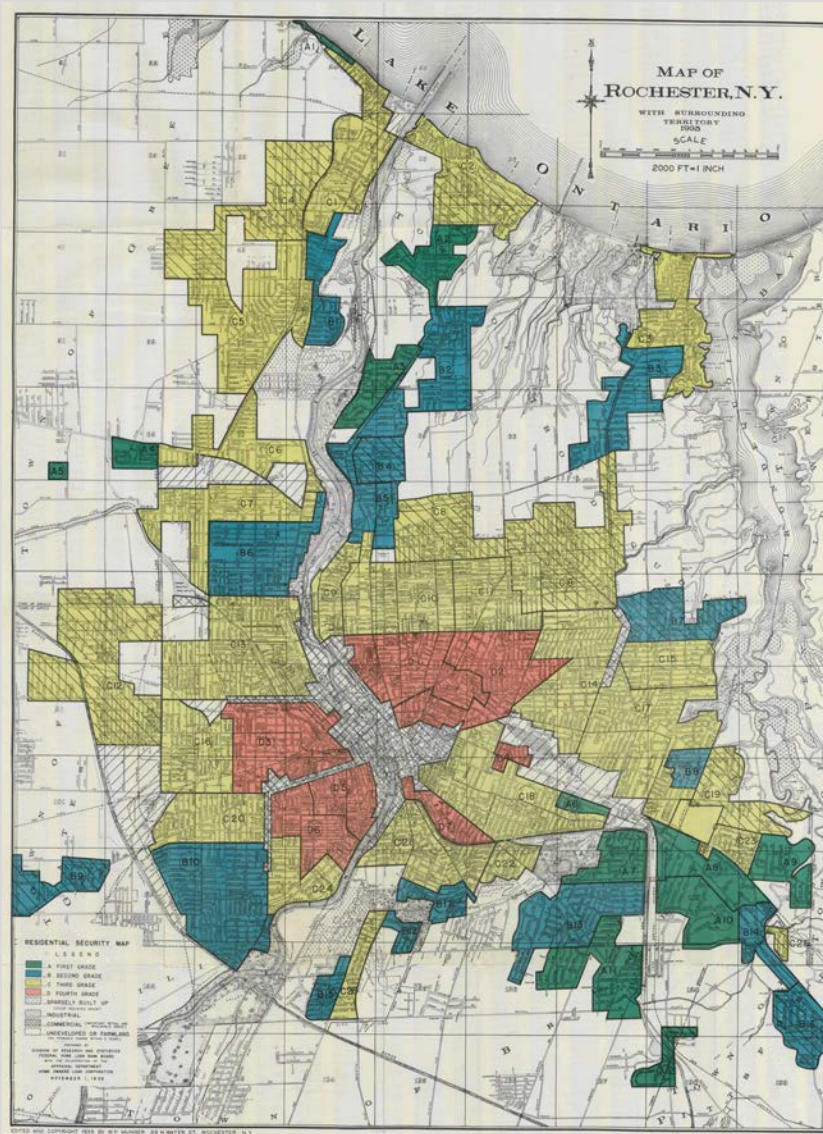


Elaine Hill, PhD

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Housing policies and maternal health (continued)

Home Owners' Loan Corporation "redlining" map of Rochester, NY. Areas in green were categorized as "Best," blue as "Still Desirable," yellow as "Definitely Declining," and red as "Hazardous."



Hill presented this work to the EHSC Community Advisory Board in May 2023, including more recent findings connecting birth outcomes and air quality. She also asked EHSC Community Advisory Board members for feedback on additional environmental factors to consider for future research.

Adapted from URMC Communications:

<https://www.urmc.rochester.edu/news/story/legacy-of-racism-in-housing-policies-continues-to-impact-maternal-health>

Science Take-Out community environmental health kits used in educational interventions in Puerto Rico

Students from the Department of Natural Sciences of the University of Puerto Rico in Aguadilla, led by former URM post-doctoral trainee Nancy R. Cardona-Cordero, DrPH, MS, won best poster for their presentation "Lead Poisoning Among Puerto Ricans: An Educational Intervention" last year at the 2022 Dellinger Symposium at Louisiana State University.



Some of the University of Puerto Rico in Aguadilla students with their winning poster.

The students, Verónica Morales Rodríguez, Paola Rodríguez Montoyo, Deytzalíe Rodríguez Hernández and Sailyn Cordero Álvarez, tested the effectiveness of the Science Take-Out Kit, "Preventing Lead Poisoning", as an educational intervention in Hispanic communities. They found that many people were not aware of the effects of lead poisoning.

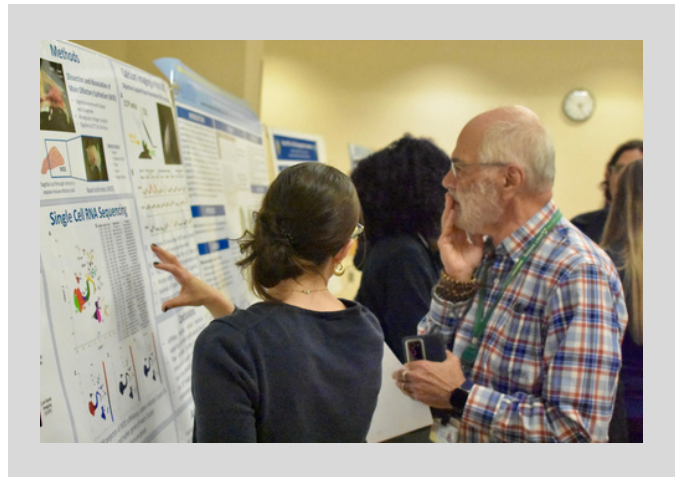
Another group of students tested a different Science Take-Out Kit, "Breast Cancer Risk Factors." This group, composed of Tsunami Núñez Irizarry, Kerely Lorenzo Méndez, Victoria Pellot Ortiz and Alanis Rivera Ramos, presented their findings virtually at the 42nd annual Research and Education Forum of the University of Puerto Rico Medical Sciences Campus and gave an invited presentation at the National Environmental Justice Conference in Washington, D.C. in March 2023. The kit was used to increase knowledge among Puerto Ricans about the risks of breast cancer and methods for prevention. The research aimed to raise awareness and encourage residents to adopt lifestyle changes lowering the risk of breast cancer, which has a high incidence in Puerto Rico.

Both Science Take-Out kits were developed as a partnership between the EHSC Community Engagement Core and Rochester-area small business Science Take-Out, LLC as part of a line of environmental health science kits for use in community-based settings and were adapted by Dr. Cardona-Cordero and her students for use in their research.

Adapted from Metro Puerto Rico articles <https://www.metro.pr/estilo-vida/2022/03/28/estudiantes-de-upr-aguadilla-obtienen-galardon-del-mejor-poster-en-simposio-de-luisiana/> and <https://www.metro.pr/estilo-vida/2022/04/21/estudiantes-de-upr-aguadilla-presentan-un-kit-educativo-sobre-cancer-de-seno-en-ciencias-medicas/>.

Toxicology Training Program Awards and News

The Toxicology Training Program's annual retreat was held on May 25th, 2023 and included a keynote address by Suzanne Fitzpatrick, PhD, DABT, ERT, Senior Science Advisor for Toxicology in FDA's Center for Food Safety and Applied Nutrition. Her talk was titled "Advancing Regulatory Science at FDA: New Approach Methodologies." The event also featured a poster session and platform presentations by trainees Alexandra Strohm and Emily Quarato, recent graduate and current postdoctoral fellow Janine Cubello, PhD, and postdoctoral fellow Gagandeep Kaur, PhD.




Annual Toxicology Training Program awards were received by:

- **Alma Avila Oropeza**, a first-year graduate student, and Thomas Lamb Jr., a graduate student in Dr. Irfan Rahman's lab, won awards for Best Poster Presentation.
- **Emily Quarato**, a graduate student in Dr. Laura M. Calvi's lab, was awarded Best Platform Presentation.
- **Elizabeth Plunk**, a graduate student in Dr. Ania Majewska's lab, was awarded Most Inquisitive Student.
- The Mentoring Award was won by **Adelaide Weidner**, a graduate student in Dr. Olga I. Astapova's lab.
- The 2023 William F. Neumann Award for Exemplary Scholarship and Citizenship was awarded to **Alexandra Strohm**, a graduate student in Dr. Ania Majewska's lab.
- Weiss Toxicology Scholar Awards were given to **Alyssa Merrill**, advised by Drs. Marissa Sobolewski Terry and Deborah Cory-Slechta, and **Elizabeth Plunk**.
- Robert Infurna awards for outstanding first-author research publications were given to **Joseph Lucas**, a graduate student in Dr. Irfan Rahman's lab, and Dr. **Christina Post**, a postdoctoral scholar in Dr. B. Paige Lawrence's lab. Joe's paper, titled "Perfluorooctane Sulfonic Acid Disrupts Protective Tight Junction Proteins via Protein Kinase D in Airway Epithelial Cells," was published in *Toxicological Sciences* in 2022 and coauthored by Qixin Wang and Irfan Rahman. Christina's paper was published in *Toxicological Sciences* in 2023 and is titled "Postnatal administration of S-adenosylmethionine restores developmental AHR activation-induced deficits in CD8+ T cell function during influenza A virus infection." Coauthors are Jason R. Meyers, Bethany Winans, and B. Paige Lawrence.

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Toxicology Updates (continued)

Other trainee awards and accolades from the past year include:

- **Knickole Bergman** received the Mary L. and Robert L. Sproull University Fellowship.
 - **Jithin George** won best graduate oral presentation at the 36th annual Allegheny-Erie Society of Toxicology regional meeting.
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- A photograph of four people standing in front of a brick wall and a window. From left to right: a woman in a white cardigan and black and white patterned top; a woman in a black dress holding a certificate; a woman in a blue patterned dress holding a certificate; and a man in a blue button-down shirt and grey pants. The certificates they are holding appear to be awards or fellowships.
- Alison Elder, PhD, Elizabeth Plunk, Alyssa Merrill, PhD, and Matt Rand, PhD**
- **Joe Lucas** was elected the Graduate Student Representative for the Lake Ontario Regional Chapter of the Society of Toxicology.
 - **Connor McGuire** was awarded the Mitzi and Prakash Nagarkatti Research Excellence in Immunotoxicology Award from the SOT's Immunotoxicology Specialty Section.
 - **Alyssa Merrill** won 3rd place in the Neurotoxicology Specialty Section's Toshio Narahashi Graduate Student Poster Competition, was elected as the NTSS Graduate Student Representative, and was invited to give a talk at the Environmental Endocrine Disruptors Gordon Research Seminar. She also successfully defended her dissertation!
 - **Sarah Morgan** received a Graduate Women in Science travel award and was a finalist in the University of Rochester's 2022 3-Minute Thesis competition.
 - **Elizabeth Plunk** received a pilot grant from the University of Rochester's Intellectual and Developmental Disabilities Research Center to support her thesis project.
 - **Traci Pressley** was selected to attend the Frontiers in Environmental Science and Health workshop at Morehouse School of Medicine.
 - **Emily Quarato** was selected to give a talk at the annual Rochester Aging Research Symposium and won a Short Talk Award. She was also a finalist in the 2022 3-Minute Thesis competition, and received two awards at the 27th annual Wilmot Cancer Institute Symposium in November 2022 for best overall poster and best cancer microenvironment poster.
 - **Alexandra Strohm** received a Scholar in Training Travel Award from the Radiation Research Society and gave a platform presentation at the 2022 Annual Radiation Research Society Conference.
 - **Adelaide Weidner** was selected to give an oral presentation at the Endocrine Society conference and received an Outstanding Abstract Travel Award.

For Questions or Comments, Please Contact:

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